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## FROM THE SR VICE CHAIRMAN'S DESK



### Shaping the Future: PU Tech 2025

By Siddharth Malani, Senior Vice President IPUA

T

he true power of chemistry lies in its ability to transform raw materials into solutions that shape a better future. Polyurethane, in its versatility, embodies this transformative potential.

The true power of chemistry lies in its ability to transform raw materials into solutions that shape a better future. Polyurethane, in its versatility, embodies this transformative potential.

As Peter Drucker said, "The best way to predict the future is to create it". The recent PU Tech 2025, the flagship event of the Indian PolyUrethane Association (IPUA), proved to be the platform to influence, shape and create the future of the PU Industry.

The exhibition floor buzzed with unprecedented activity, welcoming a significantly higher number of visitors and exhibitors. This surge in participation highlighted the industry's robust and steady growth and underscored its increasing global significance.

A truly international flavour pervaded the event, with prominent representatives from esteemed organizations like EUROPUR and ISOPA actively participating. IPUA has entered into a strategic partnership with both the organizations to offer Certipur and Isocyanate training modules respectively.

While hindsight is 20/20, foresight is priceless. The continued efforts and focus of IPUA are on the latter.

For the first time panel discussions, featuring visionary business leaders, sparked crucial conversations about the industry's direction and future opportunities. This complemented the comprehensive conference program offering deep insights into cutting-edge advancements and sustainable solutions.

PU Tech 2025 was more than just a trade fair; it was a vibrant testament to the Indian polyurethane industry's progressive spirit, its global integration, and its unwavering commitment to a sustainable and prosperous future.

"The Future is FOAMTASTIC®" Let's keep shaping the future – together.

## ► EDITORIAL

Polyurethane, a versatile and dynamic polymer, continues to redefine industry standards across diverse sectors, from construction and automotive to footwear and electronics. As technological innovations accelerate, the focus on combining performance with sustainability emerges as the key driver shaping the future of polyurethane applications. This was clearly evident in the recently concluded PUTECH 2025, of which you will find this edition a celebration of in many aspects.

In recent years, breakthroughs in formulation chemistry have led to the development of eco-friendly, low-emission products that align with global environmental goals. Bio-based polyols, derived from renewable resources, are now making their way into commercial production, reducing reliance on petrochemicals and lowering the carbon footprint.

Moreover, advancements in nanotechnology have enabled the creation of polyurethane composites with enhanced mechanical strength, thermal stability, and chemical resistance. These materials open new frontiers in lightweight construction, durable coatings, and high-performance foams, meeting the rigorous demands of modern engineering.

The industry also faces challenges, such as addressing end-of-life disposal and recyclability. Innovative approaches, including chemical recycling and the design of recyclable formulations, are gaining momentum, promising a circular economy model for polyurethane products.

As the sector progresses, and indeed it has progressed, as you may have seen in the recent Plastindia post on LinkedIn that PU comes second only to PP in automotive industry consumption, collaboration among raw material suppliers, manufacturers, and end-users will be vital. Enhanced testing protocols, standardization, and transparency are essential to ensure safety, quality, and sustainability.

In conclusion, polyurethane stands at the intersection of innovation and responsibility. Its ongoing evolution promises a future where high-performance materials not only meet industry needs but also contribute positively towards environmental stewardship. Embracing these advancements will be pivotal for industry stakeholders committed to building a more sustainable and resilient world.

Best regards,



Isaac Emmanuel



# Polyurethanes

*today*

AN INDIA MAGAZINE

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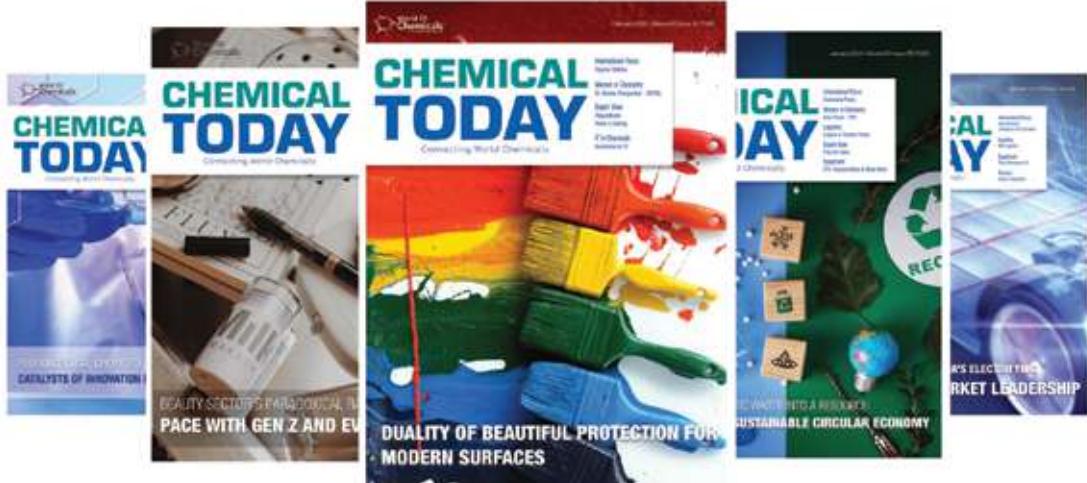
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INDIA ON THE MOVE 

April 02, 2025

## *Laader Berg Signs Landmark Contract with Shaya Polymers Limited, for State-of-the-Art Foam Plant in India*

**A**alesund, Norway – Laader Berg, a global leader in foaming machine production, is excited to announce a groundbreaking partnership with Shaya Polymers Limited, a renowned manufacturer of technical foam for high-end automotive components and comfort products for furniture and mattresses. This collaboration will see the establishment of a cutting-edge foam plant in Chennai, India, integrating advanced foam production into Shaya Polymers' existing manufacturing facilities.

**Shaya Polymers** is making a significant investment in this project, which includes the installation of Laader Berg's highly customized Multimax™ foaming machine. This state-of-the-art equipment will enable Shaya Polymers to produce a diverse range of foam types essential for their product lines, including Standard, HR, Hypersoft, Visco, FR, and other specialized applications.

**The Multimax™ foaming machine** represents the pinnacle of innovation in foam production, offering superior efficiency, versatility, and high-quality output. With this new machinery, Shaya Polymers will be equipped to produce all types of foam required for their mattress and

sofa manufacturing, ensuring top-notch quality and consistency.

This contract is the largest single deal for Laader Berg's history in the Indian Market, highlighting the company's leadership in the foam machinery sector and its ability to meet the complex needs of top-tier manufacturers.

Laader Berg is on track to achieve its best year ever in 2025, with projected sales growth exceeding 30%. This milestone underscores the company's strong market presence and ongoing success in driving industry-leading innovations.

**Per Henning Vaagen**, CEO of Laader Berg, expressed, "We are honoured to be chosen as the partner for Shaya Polymers' ambitious expansion in India. Our Multimax™ foaming machine is a testament to our commitment to innovation and excellence, and we are confident it will significantly enhance Shaya Polymers' production capabilities."

**Dr. Ram Sai Yelamanchili**, Chairman and Managing Director of Shaya Polymers, remarked, "This investment is a strategic step forward for Shaya Polymers. Integrating advanced foam production directly into our

manufacturing process will not only improve efficiency but also ensure that we maintain and continue to be in the forefront with the highest quality standards of Technical foam as well as Comfort foam for our customers"

Based in Aalesund, Norway, Laader Berg is a global leader in the design and manufacture of foam machinery, renowned for its cutting-edge technology and customer-centric solutions. The company is dedicated to advancing the foam production industry through continuous innovation and excellence.

**Shaya Polymers** is a leading manufacturer of high-quality foams, adhesives, chemicals, and components for the automotive industry, as well as a premier manufacturer of technical foam and comfort products, specializing in mattresses and sofas.

Under the leadership of Dr. Ram Sai Yelamanchili, Shaya Polymers is committed to delivering superior quality and comfort, driven by a passion for excellence and innovation. The company continually explores new technologies to develop cutting-edge solutions, with sustainability at its core through eco-friendly practices and materials.



## ▶ INDIA ON THE MOVE

### About Laader Berg:

Located in Aalesund, Norway, Laader Berg is a global leader in the design and manufacture of foam machinery, renowned for its cutting-edge technology and customer-centric solutions.

The company is dedicated to advancing the foam production industry through continuous innovation and excellence.

About Shaya Polymers Limited, a leading manufacturer of high-quality foams, adhesives, chemicals, and components for the automotive and a premier

manufacturer of comfort products, specializing in mattresses and sofas.

Under the leadership of Dr. Ram Sai Yelamanchili, Shaya are committed to delivering superior quality and comfort, driven by a passion for excellence and innovation.

Our team of experts continually explores new technologies to develop cutting-edge solutions. Sustainability is at our core, with eco-friendly practices and materials integrated into our processes.

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### PEOPLE



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Privileged to have convened my inaugural meeting as Chairman of the CII Kerala State Council today in Kochi. It was an incredibly productive session where we delved into the strategic activities planned for the upcoming year.

A special thanks to all the Zonal Chairs and vice chairs & 13 panel heads for their insightful presentations and comprehensive action plans.

We had detailed discussions on key initiatives that will drive growth and address pertinent issues for the industries in Kerala. I'm truly excited about the collective vision and commitment of the council members. Together, we are set to achieve significant milestones for the state's industrial landscape. Special thanks to all the past Chairs including Sri. [Vinod Manjila](#), Kutty Sir, Sivdas B Menon Sir, Jose Dominic sir etc. Special thanks to the CII Secretariat headed by Mr. [JEIKRISHNAN BALAKRISHNAN](#).

#CIIKerala #Chairman #FirstMeeting #CII



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INDIA ON THE MOVE 

# Stronger Together: Shaya Polymers Limited Joins Hands with Pioneer and ICOL to Shape the Future

**Driven by Innovation. Defined by Purpose.**

**A**t Shaya Polymers Limited, we go beyond products—we pioneer progress. From advanced automotive foams and adhesives to molded furniture components and performance chemicals, our solutions are built on quality, trust, and innovation.

Partnering with global leaders, we engineer technologies that are smart, sustainable, and future-ready. Behind it all is a passionate team, united by one goal: building a smarter, greener tomorrow.

## Shaya Polymers Acquires ICOL Chemicals Pvt. Ltd.

A Powerful Partnership. A Bold Step Forward. Shaya Polymers Limited proudly announces the acquisition of ICOL Chemicals Pvt. Ltd., a trusted name with a rich legacy, nationwide footprint, & unwavering commitment to quality.

This strategic alliance unites complementary strengths & shared values, unlocking new potential. With ICOL now part of the Shaya family, we're expanding our capabilities, extending our reach, and reinforcing our promise of exceptional quality across industries.

“

*At Shaya, we've always believed that innovation is stronger when it's shared. These new chapters with ICOL and Pioneer are about more than growth — they're about building a future where collaboration drives change.*

— Dr. Ram Sai Yelamanchili,  
Founder & MD, Shaya Polymers Limited

”



## Shaya Polymers Limited Welcomes Pioneer Coldstore & Cladding Chemicals Pvt. Ltd. to the Shaya Family

**Joining Forces for Smarter, Stronger Solutions**

**S**haya Polymers is proud to partner with Pioneer Coldstore & Cladding Pvt. Ltd. (PCC)—an industry leader in insulated panels and cladding. This collaboration fuses Pioneer's world-class panel manufacturing with Shaya's deep expertise in polyurethane chemistry, setting the stage for breakthrough innovations

Fueled by a \$20 million investment, this partnership is primed to deliver high-performance, energy-efficient, and sustainable solutions across India—powered

by advanced manufacturing units and a shared commitment to progress.

“

*We're excited to work closely with Shaya and bring even more value to our customers through advanced, reliable, and sustainable solutions.*

— S. Vasudevan,  
MD, Pioneer Coldstore & Cladding Pvt. Ltd.

”



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Brussels/New Delhi, 9 April 2025

## *EUROPUR and IPUA Partner to Extend CertiPUR™ Certification Scheme to India*

EUROPUR, the European Association of Flexible Polyurethane Foam Blocks Manufacturers, and the Indian Polyurethane Association (IPUA) have signed a strategic agreement to extend the CertiPUR™ certification scheme for flexible polyurethane foams to India. The agreement, signed today between the leaders of both associations, presents an important step in advancing health and safety standards for flexible PU foams used in bedding and furniture applications across the Republic of India.

Under the terms of the contract, IPUA will collaborate with EUROPUR to offer the CertiPUR™ certification scheme for both slabstock and moulded PU foams in India, under the same conditions as EUROPUR does in Europe. Technical requirements, testing methods and laboratories will be the same as those applicable in Europe.

CertiPUR™, a trademark owned by EUROPUR, is a voluntary testing, analysis and certification programme for flexible polyurethane foams. It specifies substances that may not be used in the production of PU foams and sets stringent maximum limits for some components. Today more than 70 companies worldwide are CertiPUR™-certified already.

Speaking on the occasion, **Mr. Bart J. ten Brink**, President of EUROPUR, stated:

*Our two associations have had a successful cooperation for many years. We are pleased to partner with IPUA to offer the*



*CertiPUR™ certification in India. This collaboration will enhance our industry's high standards and provide Indian consumers with additional health and safety guarantees in PU foam-containing products.*

**Mr. Harneet Kochar**, Chairman of

*IPUA, added:*

*IPUA is committed to supporting initiatives that enhance product quality and safety in India. Through this agreement with EUROPUR, we aim to encourage Indian PU foam manufacturers to adopt best practices in line with advanced international certification standards.*

For more information about CertiPUR™ certification, please visit [www.europur.org](http://www.europur.org) or contact [d.andrasek@europur.org](mailto:d.andrasek@europur.org).

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## ► IPUA NETWORKING FOR YOU



### *GWG Update*

- The Global Diisocyanate and Polyurethane Working Group (GDPWG) held its meeting on April 7th and 8th in Greater Noida, India, hosted by the Indian Polyurethane Association (IPUA). This group comprises of representation from California Plastics Institute, Isocyanate producers association Belgium, Japan Urethane Industry Institute, Korea Polyurethane Industry association, China Polyurethane Isocyanate Association, Polyurethane Isocyanate Association Thailand and Brazilian Chemical Industry Association.
- The GDPWG, initiated in 2011 by ISOPA and ACC, is a voluntary group operating under a code of conduct and antitrust guidelines.
- The meeting in Indian included representation of President ISOPA, Mr Christopher Metz, President Europur Mr Bart Brink, IPUA Senior Vice Chairman Mr Siddharth Malani, and Mr Rajesh Nathan Director ISOPA and Senior Product Director EMEAI and Global Product Director, Isocyanate. Dow Chemicals.

- The meeting covered updates on chemical regulations, product stewardship, and polyurethane benefits with presentations from all regions.

- Presentations included overviews of the industry situation in India, the USA, and Europe, focusing on topics such as safety training, occupational exposure limits, and relevant policies in each region. All regions also provided an update on Sustainability which included best practices followed by the PU Industry.

- China's ISA association structure and key policies were also discussed. Carbon Peak and neutrality goals were presented by China. The meeting covered application promotion (fire safety), spray foam installer training, and CPUF foam quality certification.

- A South Korea presentation detailed KPUA member updates, focusing on product stewardship, spray PU foam Insulation standards revision, HFC phase-out, and K-Reach,



aiming for a 32.8% greenhouse gas emission reduction by 2030

- The Japan update covered regulatory matters, including TDI and ambient Isocyanate, circular economy developments, combustibility, and PFAS information
- Europur president also reported on their association's growth and CertiPur concept.
- The meeting concluded with thanks to all members who shared their time and contribute with beneficial inputs



Bart of EUROPUR & Harneet of IPUA at the signing event.

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## ► IPUA NETWORKING FOR YOU

### *IPUA and ISOPA form a strategic alliance*



The Indian Polyurethane Association (IPUA) and the European Isocyanate Producers Association (ISOPA) have formed a strategic alliance.

ISOPA, possessing extensive expertise in aromatic Isocyanate and Polyol—the fundamental components of polyurethane—has developed comprehensive training modules to promote safe handling practices.

IPUA is dedicated to fostering safer work environments for its member organizations, thereby supporting the growth of India's polyurethane industry. To achieve this goal, IPUA has partnered with ISOPA to provide access to the training resources developed by ISOPA.

Isocyanate safety training is crucial for regulatory compliance and worker safety. ISOPA's foundational online training program is now accessible to IPUA members. This

program was launched on May 23rd in Greater Noida during an IPUA-led safety training program for the slab stock polyurethane foam industry. In excess of 800,000 individuals across the globe have already taken this training and are benefitting from the learnings in their daily work practises.

IPUA members must register their employees for this program; training

will be scheduled accordingly. Upon successful completion of an online assessment, participants will receive a five-year valid certificate. This training is provided at no cost; participants only need to allocate 90 minutes of their time. The training is available in English and Hindi languages. The program is designed for all individuals potentially exposed to Isocyanate, including service transport providers, material unloaders, raw material store employees, and personnel in material handling and processing departments. Members may nominate any number of employees.

Registration is now open. Please email details to [secretary@ipua.in](mailto:secretary@ipua.in).



**N**anosafe is a startup in material science using tech to deliver safe, scalable, and science-proven material science solutions. Investor-backed and revenue-generating, we power hygiene across plastics, textiles, water, and surfaces—redefining safety, one molecule at a time.

**Dr. Anasuya** is a material scientist and founder-CEO of Nanosafe Solutions, a startup transforming hygiene through safe, scalable, science-backed antimicrobial tech. With a PhD in antimicrobial tech from IIT Delhi, she's won national and international awards, represented Nanosafe in Singapore and the US, and is building a global footprint with investor-backed growth.

## *Integration of Active Copper in Polyurethane Foams for Broad-Spectrum Antimicrobial Performance*

**Dr. Anasuya Roy, Founder & CEO, Nanosafe Solutions**

**Prof. Mangala Joshi, Department of Textile and Fibre Engineering, IIT Delhi**

### Abstract

Flexible polyurethane (PU) foams are widely used in bedding, furniture, automotive interiors, and healthcare. However, their high porosity and moisture retention make them susceptible to microbial colonization, leading to hygiene concerns, odor development, and premature material degradation. In this study, we demonstrate the incorporation of a proprietary active copper formulation into PU foams to impart durable, broad-spectrum antimicrobial functionality without compromising mechanical properties or comfort. The copper-based additive, designed as a microcomposite, enables uniform dispersion in PU matrices during the foaming process. Characterization and microbial challenge tests confirm >99.9% efficacy against *E. coli*, *S. aureus*, and mixed spores suspension according to ASTM

standards. This approach offers an environmentally responsible, non-leaching antimicrobial solution for PU foams across industrial and consumer applications.

### Introduction

Polyurethane foams are integral to daily life, offering comfort, resilience, and energy absorption. However, microbial growth in PU foams—especially under humid or warm conditions—can result in malodors, health hazards, and foam degradation. The COVID-19 pandemic has further heightened the demand for antimicrobial materials across product categories. Traditional antimicrobial strategies, including silver-based additives or organic biocides, face limitations due to toxicity concerns, regulatory pressures, and environmental leaching.



**Dr. Anasuya Roy**

Copper, an essential trace element and historically recognized antimicrobial agent, offers a broad-spectrum mode of action that is effective against bacteria, fungi, and viruses. Its antimicrobial efficacy stems from multiple mechanisms, including the generation of reactive oxygen species (ROS), disruption of microbial cell membranes, protein denaturation, and

## ► STARTUP CORNER

interference with DNA replication. These multimodal effects reduce the risk of microbial

resistance, making copper especially attractive for long-term hygiene-critical applications such as bedding, automotive interiors, and healthcare cushioning.

However, incorporating copper into polyurethane (PU) foams without disrupting the inherent physical and chemical characteristics of the foam matrix presents significant material science challenges. Unmodified copper particles tend to aggregate, sediment, or oxidize under the reactive conditions of foam synthesis, particularly in the presence of polyols, isocyanates, surfactants, and catalysts. This can lead to inhomogeneous dispersion, local cell collapse, inconsistent foam rise, discoloration, and deterioration in mechanical performance such as compression set or tensile strength.

Additionally, copper ions are chemically active and can interfere with the catalytic balance of the foaming reaction, especially in water-blown systems where gas generation and cell structure are sensitive to minor compositional variations. Achieving a thermodynamically stable and chemically inert copper formulation that is dispersible in polyol premixes, thermally robust during exothermic foaming, and anchored within the polymer matrix to ensure long-term antimicrobial efficacy—while meeting cost and scalability constraints—is a non-trivial

materials engineering task.

To address these challenges, our formulation leverages activated copper encapsulated within a ligand-stabilized carrier system, allowing uniform dispersion, minimized reactivity with isocyanate groups, and effective in-situ immobilization within the foam's open-cell structure. This not only preserves the foam's mechanical and comfort attributes but also ensures antimicrobial action over prolonged use cycles, even after repeated physical compression and thermal exposure.

### Materials and Methods

**Active Copper Additive:** A patented copper microcomposite, stabilized with functional ligands for thermal and chemical compatibility with PU prepolymers. **Foam Preparation:** Both MDI and TDI-based ether and ester PU foams were used. The copper additive was added and homogenised to the polyol premix before foaming.

### Testing Protocols

To evaluate antimicrobial performance, copper-based polyurethane (PU) samples are typically assessed using standardized test protocols ASTM E2149:2020 (bacteria) and ASTM G21 (fungi), which is widely accepted in industrial and regulatory settings.

ASTM E2149 (Standard Test Method for Determining the Antimicrobial Activity of

Immobilized Antimicrobial Agents Under Dynamic Contact Conditions) evaluates the activity of antimicrobial agents that are not intended to leach from the substrate. This method involves immersing the test specimen in a bacterial suspension under constant agitation to simulate dynamic conditions, such as in real-use environments. The microbial reduction is quantified by comparing bacterial counts before and after exposure (usually 2–24 hours), offering insights into the efficacy of immobilized agents like embedded copper. ASTM E2149:2020 assesses performance under dynamic exposure—making them ideal for benchmarking copper-based PU additives in hygiene-sensitive applications. The antimicrobial efficacy testing was conducted on 1 g ( $\pm 0.1$  g) samples of polyurethane (PU) foam, pre-treated by ethylene oxide (ETO) sterilization to eliminate any pre-existing microbial contamination. The test inoculum comprised a buffer solution of 0.3 mM KH PO containing 0.01% Triton X-100 as a wetting agent, with a total volume of 50 ml. The treated and control samples were incubated with the inoculum for 24 hours under continuous agitation using a wrist-arm shaker to ensure uniform contact. Post-incubation, microbial enumeration was performed using soybean-casein digest agar, with plates incubated at 37 °C for 24 hours to determine viable colony-forming units (CFU).

ASTM G21 is a standardized test method developed by ASTM International to evaluate the

resistance of synthetic polymeric materials to fungal growth. In this method, test specimens are exposed to a mixture of common fungal species under controlled conditions of temperature and humidity. The extent of fungal growth on the specimen surface is visually rated over a 28-day period. This test is widely used to assess the antimicrobial efficacy of materials such as polyurethane when formulated with additives like copper, helping validate their suitability for use in humid or biologically active environments.

Specimens of size 50 mms x 50 mms were placed on Nutrient salt agar. Composite spore suspension as listed below was sprayed on specimen. The Nutrient salt agar provides all of the trace nutritional elements needed by Fungi except Carbon source. Fungus grows only when it is able to use

polymeric material as Primary carbon source. Inoculated samples were incubated and examined for fungal growth. Temperature and humidity were maintained for the duration of the test. Adequate positive and Negative controls were also included along with specimen. Mixed spore suspension of - Aspergillus niger ATCC 9642, Penicillium pinophilum ATCC 11797, Gliocladium virens ATCC 9645, Chaetobium globosum ATCC 6205, Aurobasidium pullulans ATCC 15233 was chosen for the study.

## Results and Discussion

The copper-treated polyurethane (PU) foam demonstrated excellent broad-spectrum antimicrobial efficacy, as assessed by ASTM E2149:2020 and ASTM G21 test standards. Against *Staphylococcus*

*aureus* (ATCC 6538) and *Escherichia coli* (ATCC 25922), the treated foam exhibited >4-log reduction (>99.99%) in viable bacterial counts after 24 hours, indicating strong contact-active bactericidal performance. In contrast, the untreated control samples showed increased bacterial growth over the same period. For antifungal assessment under ASTM G21, the copper-treated PU foam consistently received a rating of "0" across all replicates and timepoints up to four weeks, signifying complete resistance to fungal colonization. In comparison, untreated control specimens showed progressive fungal growth from Week 1 (rating 1) to Week 4 (rating 4), indicating heavy infestation. These results confirm the long-lasting antimicrobial and antifungal efficacy of copper integration within the PU matrix.

### Antibacterial testing

Test Organism : *Staphylococcus aureus* ATCC 6538

Test Organism : *Staphylococcus aureus* ATCC 6538

Quantitative Assessment of Activity : ASTM E 2149: 2020			Av. Count	Log
Untreated Lab Control : Inoculum on untreated sample at 0 hours CFU/ml			1.25 x 10 <sup>5</sup>	5.09
Untreated Lab Control : Inoculum on untreated sample at 24 hours (C) CFU/ml			2.65 x 10 <sup>5</sup>	5.42
Sample Identification	No. of Bacteria on treated Sample (A) CFU/ml	Log of Bacteria on treated sample (A)	Antimicrobial Activity (R)	
Copper treated	<10	<1	>4.42 (>99.99%)	-
PU Foam				

Test Organism : *Escherichia coli* ATCC 25922

Quantitative Assessment of Activity : ASTM E 2149: 2020			Av. Count	Log
Untreated Lab Control : Inoculum on untreated sample at 0 hours CFU/ml			1.42 x 10 <sup>5</sup>	5.15
Untreated Lab Control : Inoculum on untreated sample at 24 hours (C) CFU/ml			3.60 x 10 <sup>5</sup>	5.55
Sample Identification	No. of Bacteria on treated Sample (A) CFU/ml	Log of Bacteria on treated sample (A)	Antimicrobial Activity (R)	
Copper treated	<10	<1	>4.55 (>99.99%)	-
PU Foam				

R (Percentage Reduction) = C-A/C x 100/ R (Log Reduction) Log10 C - Log10 A  
A = CFU/ml for the flask containing the Treated sample after specified contact time  
C = CFU/ml for the flask containing the Untreated sample after specified contact time



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## Antifungal testing

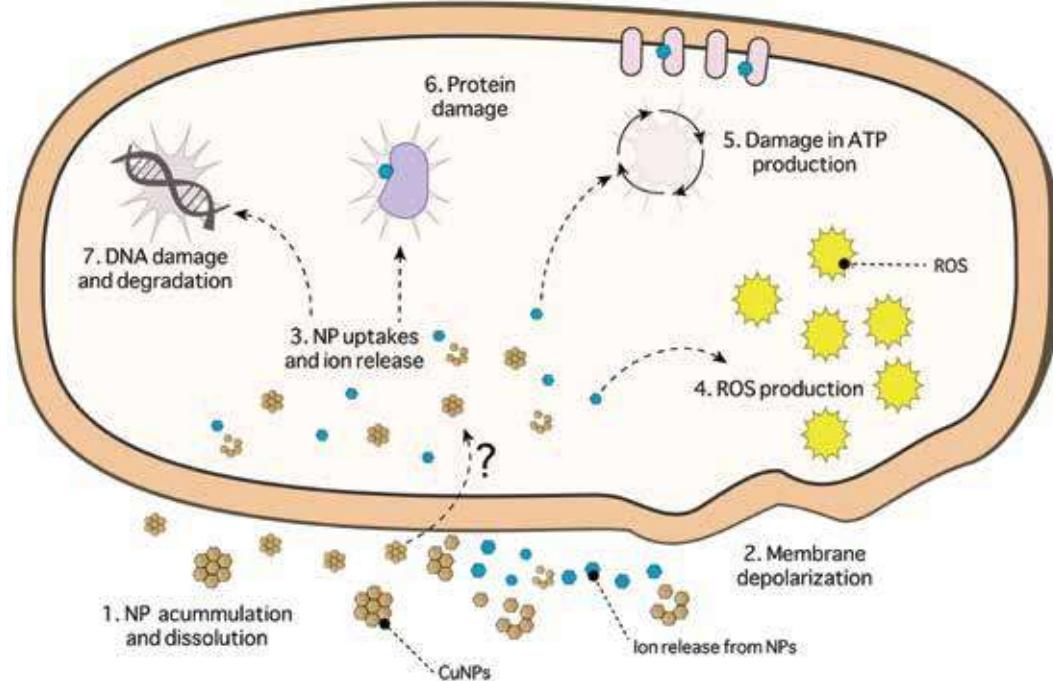
Observations were made on weekly basis for appearance for the density of fungal growth. The filter paper control pieces had copious fungal growth at 2 weeks.

At 4th week, samples were rated "0" or "1" were examined microscopically to confirm the Ratings Rating scale for the test is as follows:

Growth on specimen	Rating
None	0
Trace of Growth (< 10 %)	1
Light Growth (10 to 30 %)	2
Medium Growth (30 to 60 %)	3
Heavy Growth (60% to complete coverage)	4

Sample Identification	Duration of the test				
	Replicates	Week 1	Week 2	Week 3	Week 4
Copper treated PU foam	Set I	0	0	0	0
	Set II	0	0	0	0
	Set III	0	0	0	0
Control	-	1	2	3	4

Figure 2: Mechanism of Antimicrobial Action of Copper in PU Matrix



- a. [Ramos-Zúñiga, J., Bruna, N., & Pérez-Donoso, J. M. (2023). Toxicity mechanisms of copper nanoparticles and copper surfaces on bacterial cells and viruses. International Journal of Molecular Sciences, 24(13), 10503.]
- b. Nanosafe Solutions.

## ► STARTUP CORNER

### Mechanism of Antimicrobial Action of Copper in PU Matrix:

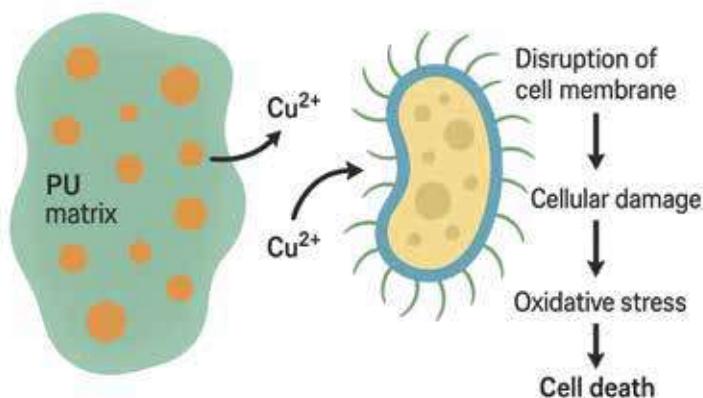


Figure 2 illustrates the mechanism of antimicrobial action of copper embedded in a polyurethane (PU) matrix. Copper ions are gradually released from the PU matrix upon contact with moisture, allowing interaction with microbial cell membranes. This results in membrane disruption, intracellular protein oxidation, and generation of reactive oxygen species (ROS), ultimately leading to cell death. The diagram highlights each stage—from copper release to oxidative stress—depicting the broad-spectrum and contact-active antimicrobial efficacy of copper in the polymeric environment.

### Safety and Regulatory Overview

Copper is an essential trace element and is listed as Generally Recognized as Safe (GRAS) by the U.S. Food and Drug Administration (FDA) under 21 CFR §182.99, allowing its use as a nutrient supplement in food contact applications. Furthermore, the U.S. Environmental Protection Agency (EPA) has registered multiple copper compounds (e.g., copper sulfate, cuprous oxide) as active ingredients in antimicrobial

pesticides under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act), and permits the use of copper in drinking water systems up to 1.3 mg/L (per 40 CFR §141.80). These recognitions reflect copper's long-standing safety profile when used within prescribed exposure limits. Our copper-based additive system is formulated for polyurethane matrices with intended skin-contact applications, such as bedding and seating. The formulation is designed to minimize leaching and optimize fixation within the polymer network, aligning with safe use principles. While formal biocompatibility assessments such as cytotoxicity (ISO 10993-5) and dermal irritation (ISO 10993-10) are planned, the additive system has been engineered with regulatory-compliant ingredients and exposure-conscious dosing to support future skin safety and environmental validation.

### Applications and Commercial Validation

The copper-based antimicrobial PU foams are currently under commercial evaluation in:

- Mattresses and Pillows

- Automotive Seat Foam
- HVAC Insulation Foams
- Hospital Mattresses and Wheelchair Cushions

### Conclusion

Active copper presents a safe, scalable, and scientifically substantiated antimicrobial strategy for polyurethane (PU) foams, addressing the increasing demand for hygiene-enhancing additives in bedding, automotive interiors, healthcare cushioning, and consumer products. Unlike conventional antimicrobial agents that may leach, degrade, or alter foam characteristics, our copper-based additive system is designed for in-situ integration into PU matrices with no adverse impact on foam density, rebound, cell structure, or mechanical resilience.

The formulation demonstrates excellent chemical compatibility across a variety of PU systems—including ether- and ester-based foams—and retains its antimicrobial efficacy even after prolonged environmental exposure and mechanical stress. It is thermally stable during foam curing, does not interfere with

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## ► PRODUCT NEWS

April 03, 2025



# Evonik unveils innovative "Debonding on Demand" concept for more sustainable adhesives

- New debonding approach enhances material recyclability and repairability in modern manufacturing processes
- Demonstrates significant cohesive strength loss after heat treatment in 1k and 2K-adhesive system applications
- Designed to integrate with existing technologies, promoting operational flexibility

**E**ssen, Germany. Evonik has developed a breakthrough "Debonding on Demand" concept to meet the growing requirements of today's manufacturing industry to increase circularity by improving the sustainability of adhesives. Developed in collaboration between Evonik's strategic innovation unit and business incubator, Creavis, and advanced polyurethane experts from the Comfort C Insulation business line, this innovative technology aims to address the pressing need for adhesives that can be easily removed for recycling and repair.

Adhesives are essential for modern manufacturing because they allow for efficient assembly, bonding of diverse materials, and lightweight construction. However, traditional adhesives can present challenges when it comes to the repair and recycling of bonded components. Evonik's innovative debonding on demand technology addresses these challenges by leveraging reversible or cleavable covalent bonds as the foundation of the chemical network,



*Evonik's introduction of Debonding on Demand at the European Coatings Show.  
From left to right:  
Dr. Alexander Azzawi, Dr Kai-Oliver Feldmann and Dr. Christian Brandl*

ensuring economic viability and operational efficiency. This new development is highly applicable and will complement existing thermal debonding technologies, such as stretch-and-detach or electric debonding, making it an attractive option for a wide range of industries. It has the potential to transform the circular economy by making the disassembly and recycling of products easier and more efficient.

"Despite the growing demand for debondable adhesives, to date there have been limited effective solutions available in the market to make disassembling material parts easier," said Dr. Nicolai Kolb, Manager Business Development at Creavis. "Evonik is committed to leading the way in adhesive innovation and our new approach is a positive step forward in developing more sustainable adhesive solutions that align with the principles of the circular economy."

This innovative approach is compatible with existing adhesive technologies, including polyurethanes, enabling integration into existing manufacturing processes. The new debonding on demand concept from Evonik has low viscosity, enhancing ease of use in various applications. It offers a flexible range of debonding temperatures (80-150°C), compatible with both 1K and 2K adhesive systems, making it suitable for a wide range of applications.

"The development of this breakthrough technology is particularly timely, as regulatory

pressures and sustainability concerns continue to shape the adhesive market," said Dr. Christian Brandl, Technology Manager Advanced Polyurethanes, Comfort C Insulation business line. "We are excited by the potential of our new debonding on demand concept to meet these regulatory requirements by offering significant advantages in terms of material recovery, waste reduction, and product longevity."

Evonik is currently collaborating with selected players in the adhesive market to prepare market demonstrators for this innovative technology. Initial proof of concept

trials have shown promising results, indicating significant loss of cohesive strength after heat treatment, further validating the effectiveness of the debonding process.

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### **Evonik: Leading beyond chemistry**

Evonik goes beyond the boundaries of chemistry with its combination of innovative strength and leading technological expertise. The global chemical company, headquartered in Essen, Germany, is active in more than 100 countries and generated sales of €15.2 billion and earnings (adjusted EBITDA) of €2.1 billion in 2024. The common motivation of the approximately 32,000 employees: to provide customers with a decisive competitive advantage with tailor-made products and solutions as a superforce for industry, thereby improving people's lives. In all markets. Every day.

#### **About Creavis**

Creavis is the strategic innovation unit and business incubator of Evonik. For more than 25 years, it has been paving the way for new technologies and innovative business models that make a livable future possible. Its approximately 200 employees worldwide develop sustainable solutions for key challenges arising from climate change and population growth. In doing so, they drive new economic ecosystems and value chains.

#### **About Custom Solutions**

The Custom Solutions segment focuses on innovation-driven, tailor-made solutions for customers in specific

growth markets. These solutions include additives for coatings, adhesives and sealants, polyurethane foams and lubricants, catalysts, and ingredients for the cosmetics, cleaning and pharmaceutical industries. In 2024, the segment generated sales of €5.7 billion with around 7,000 employees.

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## ► PRODUCT NEWS



# AI Accelerates Innovation: Covestro TPU Solutions Drive Smart Device Advancement

**M**aterial innovation emerges as a critical enabler as AI transforms smart devices across sectors. From thermal management in edge AI computing to durability requirements in IoT devices and performance demands in robotic components, next-generation smart devices are undergoing significant evolution. Global materials leader Covestro recently showcased its innovative thermoplastic polyurethane (TPU) solutions for the AI era at a technical symposium in Taipei.

## Advanced Materials Meet Smart Device Challenges

The rise of AI models is driving a new generation of high-performance laptops. Addressing thermal management and weight reduction challenges, Covestro's Desmopan® XHR series TPU offers exceptional **thermal wear resistance** for heat-exposed components such as foot pads. In a breakthrough innovation, Covestro pioneered a **single-material design approach**, using high-hardness TPU to replace conventional PC/ABS in laptop bottom covers while integrating seamlessly with TPU foam foot

pads. This advancement enhances component integration while improving product lightweighting and recyclability.

"Taiwan stands as a global hub for laptop and semiconductor industries," says Alec Yang, Head of Sales and Market Development Taiwan of Covestro TPU. "We are working closely with leading local ODM manufacturers to address emerging material requirements for high-performance laptops. The Desmopan® XHR series has demonstrated significant improvements in component durability and reliability, while we continue to validate innovative structural designs that will expand possibilities for the industry."

## Expanding Application Boundaries

Wide-area IoT deployment requires higher environmental adaptability of devices. Covestro's Desmopan® IT series, with superior **overmolding capabilities**, enables innovative design solutions for smart Wi-Fi router. When integrated with PC/ABS materials in router panels and base plate it enhances **tactile experience and vibration dampening** while

ensuring long-term stability through UV resistance and low migration properties.

In the robotics sector, the rising cleaning robots demand sophisticated component performance. The Desmopan® IT series TPU, engineered with enhanced **hydrolysis resistance, slip resistance, and tear strength**, ensures reliable performance for high-frequency use components like wheels and cleaning brushes. For wearables, specialized **soft-grade TPU** formulations balance comfort with chemical resistance and antimicrobial properties.

"Covestro is actively advancing sustainability initiatives," states Kevin Ho, Head of Sales and Market Development APAC of Covestro TPU. "Through bio-based materials, mass balance approach, and recycling systems, our Desmopan® CQ series achieves up to 80% sustainable content. Our bio-based TPU solutions, now commercially adopted by leading global laptop manufacturers, contribute to carbon footprint reduction goals. As a PFAS-free recyclable material, TPU single-material solution simplifies product recycling processes, pioneering industry sustainability."

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Low VOC emissions protect both,  
the environment and our engineers at work

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Methylene Chloride free foam

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Reduced carbon footprint

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## ▶ PRODUCT NEWS

### Innovative Materials Shape Future Design

Covestro's TPU APAC R&D center and production site in Taichung provides rapid technical support for the region. TPU's excellent surface finish replication enables direct molding of various textures from high-gloss to textile-like effects. "Combined with TPU foaming technology and innovations in TPU fibers and synthetic leather, these materials enhance product functionality and aesthetics. Through collaboration with value chain partners and commitment to sustainable innovation, Covestro is advancing TPU solutions to help brands reimagine smart device design for the AI era.

### About Covestro:

Covestro is one of the world's leading manufacturers of high-quality polymer materials and their components. With its innovative products, processes and methods, the company helps enhance sustainability and the quality of life in many areas. Covestro supplies customers around the world in key industries such as mobility, building and living, as well as the electrical and electronics sector. In addition, polymers from Covestro are also used in sectors such as sports and leisure, telecommunications and health, as well as in the chemical industry itself.

The company is geared completely to the circular economy. In addition, Covestro aims to achieve climate neutrality for its Scope 1 and Scope 2 emissions by 2035, and the Group's Scope 3 emissions are also set to be climate neutral by 2050. Covestro generated sales of EUR 14.2 billion in fiscal year 2024. At the end of 2024, the company had 46 production sites worldwide and employed approximately 17,500 people (calculated as full-time equivalents).

Find more information at the Covestro Homepage.

Read our Corporate Blog.

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### *IPUA Stall @ PUTECH 2025. Center of Gravity*



CIRCULAR ECONOMY 

# The Hidden Life of Polyurethane

## Recycling for a Greener Future

Credit: Isaac Emmanuel with support from Priya Fonseca

Polyurethanes (PU) represent a highly versatile family of synthetic polymers that can be engineered as both thermoplastic and thermosetting materials, leading to a wide range of applications. Polyurethane based products, are undoubtedly durable and versatile.

However, their extended lifecycles raise significant environmental concerns due to the accumulation of post-consumer waste. As these materials persist in the environment, managing their end-of-life has become increasingly important. This is reflected in the growing number of publications focused on PU recycling, highlighting the urgency of developing sustainable disposal solutions.

The primary goal is to move away from conventional methods like landfilling and incineration, which not only occupy valuable space but also risk releasing toxic by-products into the environment. Additionally, there is a strong motivation to reduce dependence on fossil fuels by promoting recycling and the development of alternative materials.

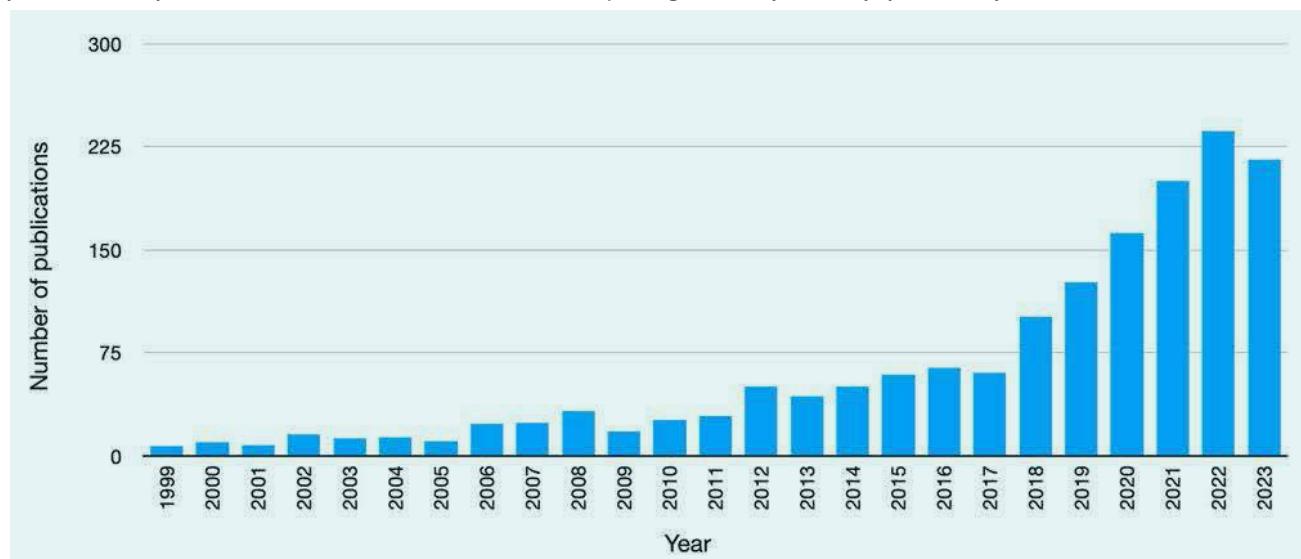
With growing global emphasis on circular economy principles and increasing awareness of the environmental impact of plastic waste, polyurethane recycling has emerged as a critical area of focus. The need to develop efficient and sustainable recycling and recovery methods for PU is driven by both ecological and economic

motivations.

As industries seek to reduce landfill dependency and minimize environmental harm, recycling PU waste offers a viable path forward. Among the most promising approaches are feedstock recycling, particularly glycolysis, and mechanical recycling, both of which offer potential for effective material recovery and reuse. As research progresses, advancements in these technologies are expected to play a vital role in improving the sustainability profile of polyurethane-based products.

In terms of classification, polyurethanes can be broadly classified based on their intended applications, reflecting the

Number of publications (from 1999 to 2023) in peer-reviewed journals, dealing with "recycling AND polyurethanes" (data collected from the Web of Science™ database, accessed on Oct 27, 2023). Image: The Royal Society of Chemistry 2024

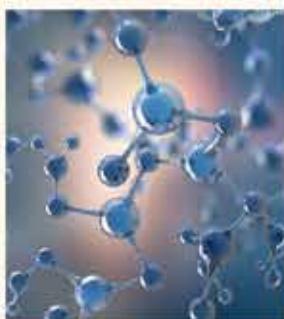


## ► CIRCULAR ECONOMY

# The Chemistry of Polyurethanes: Understanding the Building Blocks

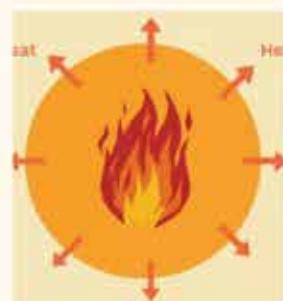
## 1 the chemical reaction

The versatility of polyurethanes stems from the fundamental chemical reaction used in their production: the reaction between diisocyanates and diols/polyols.



## 4 polymer blowing or foaming

The reaction of isocyanate with water produces an unstable carbamic acid, which decomposes into an amine and carbon dioxide, leading to the blowing or foaming of the polymer.



## 2 the exothermic reaction

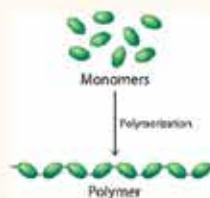
This reaction, which forms the characteristic urethane group (-HN-COO-), is exothermic and often occurs spontaneously, even at room temperature. Catalysts are typically employed to accelerate the reaction.

## 5 the substituted urea

The as-obtained primary amines may react again with isocyanate groups giving a substituted urea.

## 3 The hydroxyl-containing compound

The hydroxyl-containing compound can be a diol, polyol, or water (used as a blowing agent to produce polyurethane foams).



## 6 polymerization reactions

Isocyanates themselves can undergo polymerization reactions. Dimerization yields symmetric or asymmetric uretdiones. Trimerization leads to the formation of isocyanurate rings that are responsible for the high thermal stability of polyisocyanurate foams.

## CIRCULAR ECONOMY

material's adaptability across diverse industries. The main types include flexible and rigid foams, ionomers, waterborne polyurethanes, as well as formulations used in adhesives, coatings, and sealants. Each type serves a specific purpose such as: flexible foams are commonly used in bedding and furniture, rigid foams in thermal insulation, and other forms in automotive instrument panels, haemodialysis tubing, and sporting goods.

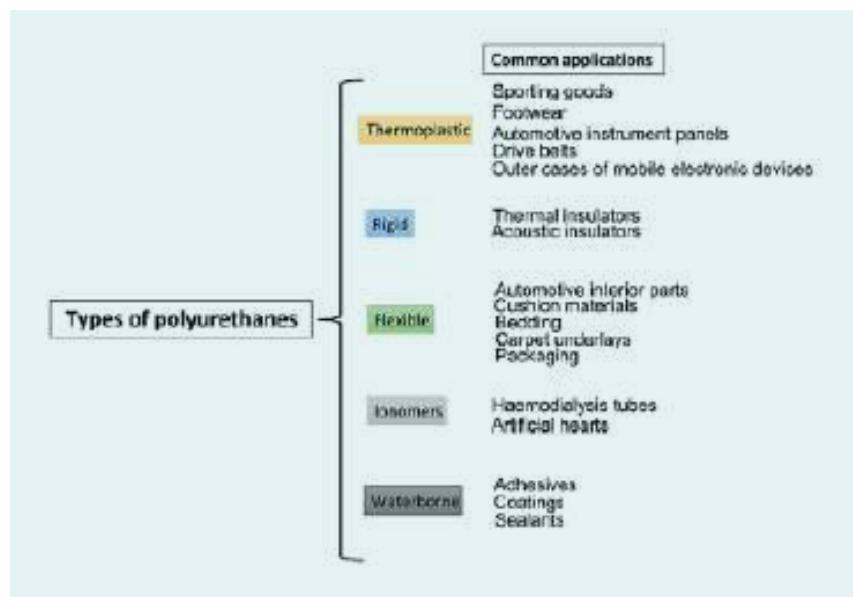
Within the EU27 + 3 countries, polyurethanes constitute a substantial share of total plastic production, underscoring their critical role in meeting the region's evolving material demands.

Polyurethane production involves the reaction of isocyanates, typically bifunctional and either aliphatic or aromatic with a broad range of polyols. For specific applications such as flexible foams, elastomers,

and thermoplastic polyurethanes, prepolymeric isocyanates are commonly employed. Polyols, which can be hydroxyl-terminated or amino-terminated, play a critical role in determining the processing behaviour and final properties of the polymer. The chemical structure of the polyols directly influences the nature of the resulting linkages, most of which are carried over into the polyurethane matrix. The diversity and availability of these co-reactants allow manufacturers to tailor the properties of polyurethanes across a wide spectrum from flexible thermoplastics to rigid thermosetting polymers. As a result, polyurethanes are used in a wide range of applications, including upholstered furniture, wall and roof insulation, thermoplastic footwear, medical devices, commercial refrigeration, adhesives and sealants, and protective coatings.

Recycling polyurethanes offers several advantages that contribute to both environmental sustainability and material performance. Polyurethanes can serve as effective substitutes for conventional synthetic plastics such as polystyrene, PVC, and synthetic rubbers, as well as natural polymers like leather, thereby reducing reliance on less sustainable materials. The use of bio-sourced polyols in recycled PU production further minimizes environmental impact, offering a greener alternative to traditional fossil-based counterparts. Additionally, innovations such as waterborne polyurethane coatings eliminate the need for toxic organic solvents, enhancing safety and environmental compatibility. Recycled polyurethanes also retain or even improve upon the material's inherent benefits, including high durability, strong adhesive and electrical properties, and resistance to a wide range of solvents and chemical compounds. These attributes make recycled PUs not only a sustainable choice but also a technically robust one for a broad range of applications.

### *Classification of general uses*



*Image: The Royal Society of Chemistry 2024*

Primary and secondary recycling, also known as mechanical and physical recycling, represent the simplest and most cost-effective strategies for managing polyurethane waste, aside from landfill disposal. These processes require relatively low investment in equipment and involve multiple steps to reduce the original particle size of the material for reprocessing in secondary manufacturing.

Polyurethane waste, including

## CIRCULAR ECONOMY

general

### RECYCLING CLASSIFICATIONS



Recycling processes can be classified as primary, secondary, tertiary, and quaternary.

#### Primary Recycling

Recovered plastic is reused in equivalent-performance products via closed-loop mechanical recycling.



#### Tertiary Recycling

Feedstock recycling uses waste plastic to produce chemicals and fuel through chemical, thermochemical, or microbial processes.



#### Quaternary Recycling

Energy is recovered from waste plastics by incineration.



recycled components or production scraps such as trimmings and defective parts, is first converted into powders, pellets, or flakes. This fragmentation is achieved using techniques like shredding, tearing, cutting, or grinding. Thermoplastic polyurethanes (TPUs), in particular, can be efficiently reprocessed using extrusion, hot compression, or injection moulding methods without the need for any binders.

#### Primary recycling

**Mechanical recycling** (closed-loop) by extrusion, compression and injection moulding

Products with the same performance as virgin ones

#### Secondary recycling

**Size reduction**: (shredding, tearing, cutting, and grinding)

- **Mechanical recycling** (open-loop) by extrusion, compression and injection moulding
- **Physical recycling** (rebonding, adhesive pressing)

Products with less demanding performance than virgin ones

#### Tertiary recycling

- **Chemical recycling**: hydrolysis, glycolysis, aminolysis, ammonolysis, phosphorolysis
- **Thermo-chemical recycling**: (pyrolysis, gasification, hydrogenation)
- **Biodegradation**

Monomers, oligomers  
Chemicals, Fuels  
 $\text{CO}_2, \text{H}_2\text{O}, \text{CH}_4$

#### Quaternary recycling

- **Energy recovery**

Energy

Possible treatment and recycling processes for PU wastes. Image: The Royal Society of Chemistry 2024

A common challenge in mechanical recycling of polyurethanes is the degradation of polymer properties with each recycling cycle, primarily due to thermo-mechanical and thermo-oxidative degradation. As a result, the material can typically withstand only two or three reprocessing cycles before its

quality diminishes significantly.

The potential for PU waste to melt and bond in its molten state is heavily influenced by its degree of cross-linking. Some polyurethanes produced through reaction injection moulding (RIM) or reinforced RIM (RRIM),

Photographs depicting crushed automobile bumper and its appearance after sorting



Image: <https://www.mdpi.com/2313-4321/10/2/74>



Image: <https://www.boxheadplastics.co>

though classified as thermosets, can still be mechanically recycled due to their low cross-linking density. For instance, end-of-life PU components such as car bumpers are often reground into fine particles and then compressed under high temperatures and pressures.

Additionally, structure reaction injection moulding (SRIM) allows for the use of coarsely ground PU scrap as a core material in a sandwich structure, flanked by two layers of glass fibre.

Re-bonding and chemical (tertiary) recycling are two approaches used to manage polyurethane waste more effectively. In the re-bonding process, PU flakes or granules are coated with an adhesive and then exposed to a hot water stream or steam at temperatures typically above 100° C. This melts the polyurethane, which is then compressed to form contoured parts.

On the other hand, chemical recycling involves partially reversing the polymerization of polyurethanes under suitable conditions. Gradual depolymerization can occur when the polymer reacts with organic compounds that contain active hydrogen atoms capable of attacking the polar groups in the polymer's main chain.

Currently, the main commercial and industrial recycling routes for polyurethanes include mechanical, physical, and feedstock recycling, the latter involving degradation or depolymerization reactions. Among these, hydrolysis and glycolysis are the most widely used chemical recycling methods, as they enable the recovery of polyols that can replace up to 50% of virgin polyols in the production of new polyurethane foams. Hydrolytic

degradation primarily targets ester, urea, and urethane bonds. Ester bonds revert to acids and alcohols, with the resulting acid catalysing further ester hydrolysis, making the reaction autocatalytic. Urea bonds break down into carbamic acid and amines, while urethane linkages, though less reactive, can also hydrolyse into carbamic acid and alcohol.

Specific chemical recycling methods for polyurethanes include hydrolysis, glycolysis, aminolysis, ammonolysis, acidolysis, and phosphorolysis. These processes, unlike mechanical recycling, enable the recovery of higher-value products but require selected types of polyurethane waste and involve higher energy consumption.

Among these methods, glycolysis is currently the most widely implemented on an industrial scale. Chemical recycling is particularly suited for thermoset polyurethanes, with hydrolysis being the earliest technique developed for recycling foamed PU waste. This process involves reacting the polymer with water, either in liquid form or as steam. Looking ahead, future research in chemical recycling will focus on developing strategies with lower environmental impact.

The development and implementation of feasible and reliable recycling strategies for fossil-derived polymers like polyurethanes have significantly mitigated concerns about their end-of-life challenges and difficult recyclability, enhancing their image as materials with intrinsic value. However, the complexity of PU waste, stemming from variations in chemical structures, molecular weights, crystallinity, crosslinking densities, and hard-

to-soft segment ratios, complicates recycling efforts.

No single, scalable recycling method suits all PU types; instead, tailored approaches are essential to maximize yields, purity, and usability while minimizing environmental impact and energy consumption. Mechanical recycling (e.g., regrinding and compression molding) and chemical recycling (notably glycolysis) have shown the greatest promise, both in lab research and industrial application.

Other methods, including pyrolysis, gasification, and two-stage combustion, face challenges such as emissions control. Biodegradation remains limited by slow rates and the scarcity of effective microorganisms, though advances like metagenomic analysis may accelerate progress.

The varied forms of PU products, foams, elastomers, and bulk materials, further complicate strategy selection. Selective waste collection and assessment of recyclate effects on final product properties are crucial.

Despite the absence of a structured recycling market, the outlook is positive. Continued research is expected to improve PU recycling technologies, enabling environmentally friendly, cost-effective solutions that align with circular economy goals and elevate the role of polyurethanes as valuable recyclable materials.

#### Source:

From the journal Green Chemistry:  
*Recycling of polyurethanes: where we are and where we are going*  
By Gabriele Rossignolo, Giulio Malucelli and Alessandra Lorenzetti



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# The Untapped Potential of Polyurethane foam: Domestic Insulation is not prevalent in India!

By Devi Ramamoorthy<sup>1</sup>, Surya Maran<sup>2</sup> and Siva Manogaran<sup>3</sup>

1 & 2 Thaalchemy Innovations 3 Assistant Professor at SRM Easwari Engineering College, Dept of Civil Engineering

## Introduction: The Missing Layer of Efficiency in Indian Homes and Its Urgent Imperative

India, a nation characterized by diverse climatic zones ranging from scorching summers to biting winters, faces a persistent challenge in maintaining thermal comfort within its residential buildings. While air conditioning (AC) systems are rapidly gaining ground in urban and semi-urban homes as a primary response to rising temperatures, the fundamental concept of thermal insulation in domestic buildings remains largely ignored or undervalued. This oversight has significant repercussions: the absence of proper insulation leads to excessive heat gain during the relentless summer months and substantial heat loss during the chilly winters, culminating in a dramatic and often unnoticed increase in energy consumption for both cooling and heating.

The idea of insulating homes to regulate indoor temperatures efficiently has been a standard and often mandated practice in countries with extreme climates worldwide. However, India, despite experiencing both

intense heatwaves and notable cold snaps across various regions, lags significantly behind in the widespread adoption of this crucial energy efficiency measure. This article delves deeply into the multifaceted reasons why insulation has not yet become mainstream in Indian households. More importantly, it explores the profound and transformative impacts if every Indian house were to be adequately insulated,

quantifies the substantial energy savings that could be achieved, and specifically highlights the critical role of advanced materials like Polyurethane (PU) insulation panels. By painting a compelling picture of this largely untapped potential, we aim to underscore the urgent imperative for India to embrace domestic insulation as a cornerstone of its energy security, environmental sustainability, and citizen well-being initiatives.

Figure 1. A home without insulation (left) and with insulation



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### Domestic Insulation – Why India Lags Behind?

Several factors contribute to the limited adoption of domestic insulation in Indian homes:

**i. Low Awareness:** A significant portion of the population, including builders and homeowners, lacks awareness about insulation and its long-term benefits. Most people do not realize how much heat enters or leaves a home through walls, roofs, and windows, or the resulting energy waste. A survey by The Energy and Resources Institute (TERI) indicated that less than 25% of Indian builders are familiar with advanced energy-saving solutions like insulation, with even lower awareness for specialized materials like PU.

**ii. Initial cost Perception:** The upfront cost of insulation materials and retrofitting is perceived as high, especially for low and middle-income segments, despite the potential for long-term savings. For instance, advanced materials like aerogels remain cost-prohibitive for many, and even common materials like XPS sheets or Rockwool can noticeably increase overall construction costs. Developers often perceive green building projects, which typically include insulation, as costing 15-20% more than conventional buildings.

**iii. Construction Practices and Regulatory Gaps:** Traditional materials like brick and concrete are still widely used without additional thermal resistant layers, and insulation is not mandated by many local building codes.

While India has energy codes like the Energy Conservation Building Code (ECBC 2017) and Eco-Niwas Samhita (2018) for residential buildings, their enforcement remains least addressed and inconsistent across states. Many local bodies lack the expertise and resources for effective compliance monitoring, leading to a disregard for energy efficiency standards.

**iv. Climatic Misconception:** People believe insulation is only beneficial in cold climates, ignoring its crucial role in reducing heat gain and lowering cooling loads during India's hot summers. This misconception overlooks that insulation prevents heat from entering a home, thereby reducing the need for air conditioning.

**v. Lack of Policy Push and Financial Incentives:** Unlike solar panels or electric vehicles, insulation has not received substantial policy incentives or subsidies to stimulate demand. Financial institutions rarely offer favourable loans or specific incentives for green building projects incorporating insulation.

**vi. Informal Construction Sector and Skilled Labor Shortage:** A significant portion of India's construction sector is informal, relying on traditional practices and lacking standardized training. There is a shortage of skilled labour proficient in the correct installation techniques for modern insulation materials, and improper installation can significantly reduce insulation effectiveness.

### 1. The Untapped Potential of Polyurethane (PU) Insulation



Figure 2. Polyurethane panels for domestic insulations

Polyurethane (PU) foam insulation is a closed-cell material with exceptionally low thermal conductivity, typically ranging from 0.03–0.05 W/m·K. It can be applied as rigid boards, spray foam, or sandwich panels, offering versatility for various housing formats. Despite its widespread use in industrial cold storage, PU remains underutilized in Indian homes.

### 2. Benefits of PU Insulation in Indian Housing

**High Thermal Resistance:** Compared to concrete (with thermal conductivities of 0.9–1.74 W/m·K), PU's conductivity is nearly 50 times lower. Even a thin PU layer (i.e. 2–5 cm) significantly reduces heat flow. (See Figure 3).

**Energy Savings:** Simulations and field studies show that PU-insulated walls can reduce heat transfer by over 80-85% compared to non-insulated concrete walls.

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This translates to a daily cooling energy reduction of 3-4 kWh/day per room section of 120 Sq. Feet, or ~₹26/day in savings per wall, equating to over ~₹10,000 per year.

#### Cost-Effectiveness and Return

**Moisture Resistance:** PU is closed-cell and water-resistant, making it suitable for humid regions like Kerala or coastal Maharashtra where other insulation materials might degrade. It acts as an effective moisture barrier, preventing water

and strength to walls and roofs. It also provides excellent sound insulation, leading to quieter indoor environments.

#### 3. Energy and Cost Analysis – With vs. Without Insulation

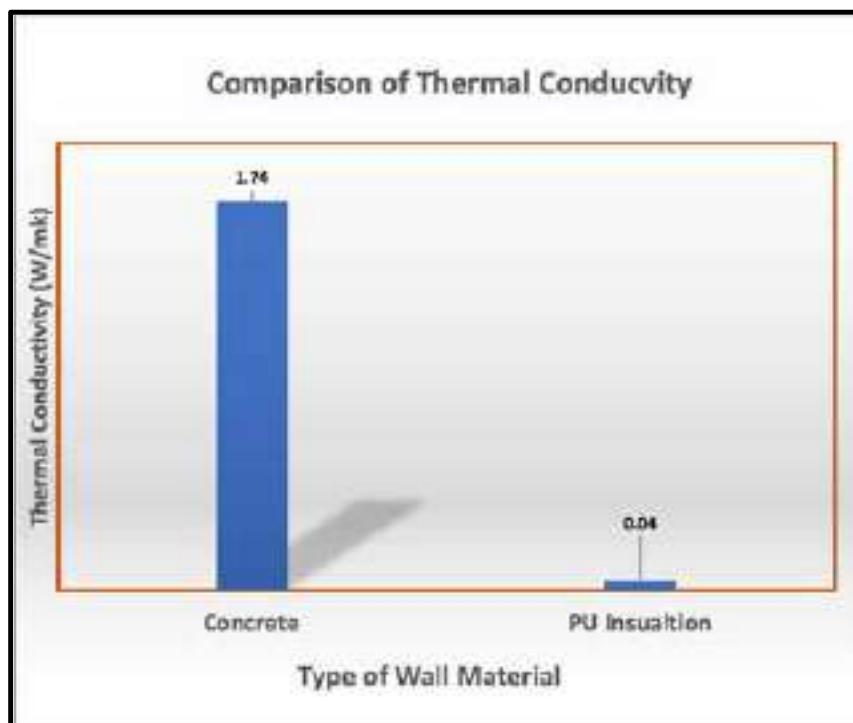


Figure 3. Thermal conductivity of building materials

The room has a net wall insulation area of 37.84 m<sup>2</sup>, with a temperature difference ( $\Delta T$ ) of 11°C between inside and outside. The wall thickness is 0.21 meters, and the thermal conductivity of the concrete wall is 1.74 W/m·K. The PU insulation thickness is 0.025 meters, with a thermal conductivity of 0.04 W/m·K. The air conditioner used is 1.5 tons, operating 8 hours per day, with an assumed COP of 3. The electricity rate is ₹8 per kWh. Each PU panel covers 0.04 m<sup>2</sup>, weighs 0.32 kg

**on Investment:** While PU might have a higher initial cost than some traditional insulators, its superior performance leads to a relatively short payback period of 3 to 4 years through energy bill savings.

infiltration and reducing mold and mildew growth.

**Enhanced Structural Integrity and Noise Reduction:** Closed-cell PU foam can add rigidity

Case	Power (kWh/day)	Electricity Cost (Rs./day)
No Insulation	9.21 kWh	Rs. 73.70
With Insulation	1.49 kWh	Rs. 11.92

Table 1. Heat Transfer Reduction

If even half of Indian homes adopted PU insulation, the energy impact would be monumental. If PU insulation saves an average of 4 kWh/day/home during cooling months (about 180 days/year), that's: 180 days × 4 kWh/day = 720 kWh/year/home 125 million homes × 720 kWh = 90 TWh/year in savings.

This is nearly 25% of India's current residential electricity use. It would avoid emissions of approximately 75–90 million tonnes of CO<sub>2</sub>/year and result in energy cost savings of approximately ₹54,000 crore or more annually.

#### 4. Broader Impacts and Policy Recommendations

The widespread adoption of domestic insulation, particularly high-performance materials like PU foam, holds immense transformative potential for India.

**Environmental Impact:** Massive



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reduction in carbon emissions due to lower fossil fuel-based power generation. This directly supports India's commitment to climate action and Paris Agreement targets, contributing significantly to its net-zero 2070 target. Reduced energy consumption also means a lower carbon footprint and a more sustainable lifestyle.

### **Economic Benefits:**

- Job creation in insulation manufacturing and retrofitting sectors.
- Long-term savings for homeowners on energy bills (₹6,000–₹10,000 per home annually).
- Reduction in government energy subsidies and oil imports.
- For the country as a whole, energy cost savings could reach over ₹2–3 lakh crores annually.

**Enhanced Comfort & Health:** More stable indoor temperatures enhance comfort and reduce health issues linked to heat stress, especially for vulnerable populations. Reduced noise pollution in urban homes and improved indoor air quality (with proper installation of closed-cell PU spray foam) creates a healthy environment.

### **Grid Stability and Energy Security:**

- Load leveling for power utilities during peak summer months.
- More stable power supply in rural and semi-urban areas.
- Widespread insulation would flatten peak demand curves, reducing the need for costly new power generation and transmission infrastructure, thereby enhancing

India's energy security by reducing reliance on imported fossil fuels.

### **5. Policy Recommendations for Mass Adoption**

To mainstream insulation in Indian homes, a multipronged approach is necessary:

**Policy Push:** Enforcing mandatory thermal performance standards in all residential buildings under national and state building regulations.

**Awareness Campaigns:** Conduct mass public messaging to educate citizens, homeowners, builders, and architects on the comfort, cost, and health benefits of insulation.

**End-of-Life Management:** Address environmental considerations for PU disposal by promoting the use of recycled PU foams.

### **Conclusion:**

Despite clear economic and environmental benefits, insulation remains a missing piece in India's energy efficiency strategy. The data unequivocally shows that significant cost savings and energy reductions can be achieved with insulated walls. The widespread adoption of domestic insulation, particularly high-performance materials like Polyurethane foam, holds immense transformative potential for the construction sector in India. By embracing domestic insulation as a national priority, India can not only unlock massive energy savings, reduce its

carbon footprint, and alleviate strain on its power grid, but also fundamentally improve the quality of life for millions of its citizens, offering them comfortable, healthy, and affordable homes that are resilient to the vagaries of a changing climate. The time to insulate India's homes has come, and its future, is here.

## ► TECHNICAL ARTICLE

# About the Authors

### Dr. Devi Ramamoorthy

Dr. Devi Ramamoorthy, the CEO of ThaalChem Innovations, is based in Chennai, Tamil Nadu, and



A distinguished researcher, Dr. Devi holds a Ph.D. in Polymer Science from the renowned Indian Institute of Technology Madras (IITM, batch 2018). With over 15 years of research and industrial experience, her unparalleled expertise in polymers and extensive research have led to the development of patented technologies, demonstrating her ingenuity and dedication to advancing scientific frontiers. Dr. Devi's contributions are further recognized by her prestigious international publications and several Indian patent grants.



### Dr. Siva Manogaran

Dr. M. Siva is an Assistant Professor in the Department of Civil Engineering, SRM Easwari Engineering College and has over 6 years of experience in teaching and notable experience in Industry. He received his doctorate degree from Indian Institute of Technology Madras in 2017 and post graduate degree on Structural Engineering with distinction from Anna University, Chennai in 2009.

His research interest is in the areas of Advanced Concrete technology, Lightweight concrete, Sustainable materials, and Recycled aggregate concrete. He has the credit of academic publications in SCI, Scopus and UGC indexed journals. He has published patents on application of Robotics in Construction, IOT application in smart homes. He has authored many books in the field of Construction Technology. He is also a reviewer in Institution of Engineers series A and Current science journals.

notably supported by the Tamil Nadu Government. Her company specializes in the chemical recycling of polyurethane foam into polyol, with an impressive capacity of 2000 MT per annum. ThaalChem Innovations has achieved significant success in both rigid and flexible polyurethane foam recycling, offering a highly cost-effective solution.

Dr. Devi Ramamoorthy, the CEO of ThaalChem Innovations, is based in Chennai, Tamil Nadu, and notably supported by the Tamil Nadu Government. Her company specializes in the chemical recycling of polyurethane foam into polyol, with an impressive capacity of 2000 MT per annum. ThaalChem Innovations has achieved significant success in both rigid and flexible polyurethane foam recycling, offering a highly cost-effective solution.

### Surya Maran



Mr. Surya Maran is Junior Researcher at ThaalChem Innovations with a Master's in Chemistry. His interest lies in polymer research with a focus on sustainability, and he is passionate about developing innovative and environmentally friendly solutions.



# *Biobased Feedstock for Polyurethanes: Initiative Towards Sustainability*

By Dr. Snehalata

Polyurethanes are the most versatile class of polymers, due to their wide range of applications in different physical forms such as elastomers, fibres, foams, adhesives, coatings, sealants, etc.<sup>1</sup> In response to the demand for more eco-friendly materials and call for sustainable products and minimizing the environmental impact, research has increasingly focused on developing new routes for PU synthesis using renewable feedstocks. The diisocyanates being very reactive, it was easier to replace the fossil-based polyols with bio-based alternatives and it

biomass (sawdust, bark, forestry droppings, and by-products from pulp/paper mills). Other plant-derived materials, such as cardanol, eugenol, and terpenes, are also being studied.<sup>2</sup>

In the vegetable oils group, castor oil and Lesquerella seed oil are the oils that naturally contain hydroxyl groups in their basic structure, making them suitable for direct use. Other vegetable oils can be modified by the virtue of their carbon–carbon double bonds or ester linkages present in the chemical structure to introduce

containing inherent hydroxyl group in it.<sup>4</sup>

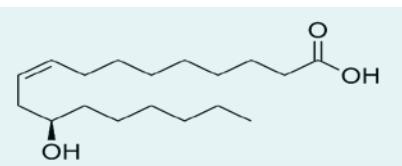


Figure 2. Ricinoleic acid

As per the requirement for different application, various strategies are employed for modification of oils or their fatty acid glycerides. These reaction strategies are not very complicated and require no big capital investment. Figure 3 shows some important chemical routes for converting glycerides into polyols.



Figure 1. Bio based feedstocks for producing bio-polyols<sup>3</sup>

has emerged now as a promising strategy. Explored sources for synthesizing biobased polyols include vegetable oils such as sunflower, soybean, canola, palm, and castor oil, and lignocellulosic

hydroxyl functionalities, so as to use them as bio-polyols for PU Synthesis. Castor oil needs special mention here as this is the only vegetable oil having more than 90% ricinoleic acid content

## Polyols prepared via Epoxidation

Soyabean oil and rapeseed oils are the two most successfully used oils for modification by epoxidation route. As compared to petroleum oil-based polyols, reactivity of epoxidized oil-based polyols with di isocyanate is low due to presence of secondary hydroxyl group, they require longer curing time for complete cure. They are used in preparation of rigid and flexible PU foam formulation, their reactivity is enhanced by post modification with alcoholysis OR by blending with commercial petroleum-based polyols.

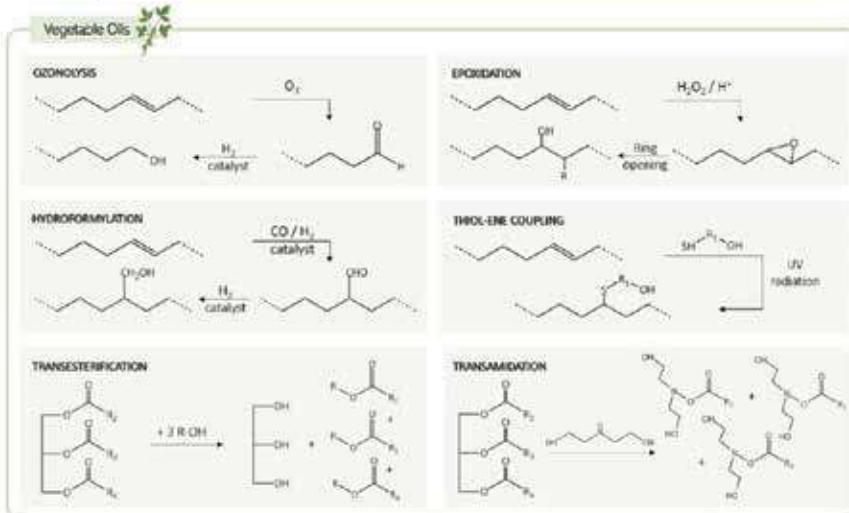


Figure 3. Modification of bio-oils by various routes for the synthesis of bio polyol<sup>3</sup>

### Hydroformylation Route

Similar to epoxidation, hydroformylation route introduces hydroxyl group in the middle of the acid chain as shown in Figure

of bio-oils yield different products depending upon the reaction conditions. As seen from Figure 2. The polyols obtained by ozonolysis are comparatively short

of thiol at the unsaturation site takes place. This reaction is accompanied by various side reactions products such as disulphides, intra and inter reaction products, therefore not much popular.

### Transesterification and Trans-amidation

In transesterification and trans-amidation reaction, ester groups of triglycerides are used for chemical modification, depending upon the diols, triols OR amino-alcohols, their stoichiometry with triglycerides and reaction conditions, mixture of polyols are obtained.

### Commercially available bio-polyols for PU Application

No.	Company	Trade Name	Source	Application
1	Covestro	Baydur	Soyabean oil	Rigid and Flexible foam
2	BASF	Lupranol Balance 50	Castor oil	Rigid and Flexible foam
3	BASF	Sovernol	Soyabean oil	Rigid and Flexible foam
4	Biobased Technologies	Agrol	Soyabean oil	CASE
5	Cargil	BiOH	Soyabean oil	Flexible Foam
6	Avril-Olion	Radia	Rapeseed oil	Rigid and Flexible foam
7	Arkema	Vicol	Soyabean oil	Encapsulation for fertilizers
8	Croda	Pripol, Priplast	Soyabean oil	Coatings
9	Dow	Renuva	Soyabean oil	Flexible and CASE
10	EmeryOleochemicals	Emerox	Palm Oil	Rigid, Flexible, CASE
11	Huntsman	Jeffac dd	Soyabean oil	CASE
12	Polylabs	BioPolyol	Rapeseed Oil/Tall oil	Spray Foam
13	Urethane Soy System	Soyol	Soyabean oil	CASE, Rigid
14	Jayant Agro Organics Ltd	Jagropol	Caster oil	Flexible and Rigid
15	Polyols technologies	Technol	Soyabean oil / Castor oil	Flexible Rigid/Shoe Sole
16	Expanded Polymer Systems	Comfy Puff Bio 54	Castor oil	Flexible Foam

Table 1. List of commercially available bio-polyols<sup>4</sup>

2. However, due to the presence of primary hydroxyl group, polyols show faster curing as compared to epoxidized polyols.

### Ozonolysis

Reaction products of ozonolysis

chain polyols leading to higher crosslinking and comparatively higher mechanical properties.

### Thiol-Ene route

In thiol-ene reaction, fatty acids are reacted with thiols wherein grafting

Above is a list of bio-polyols produced by various companies for different PU Applications.

### Initiatives for making bio-based Diisocyanates

There has been strong interest

in using bio-based chemicals such as amino acids, furan derivatives, carbohydrates, lignin-based aromatics, cashew nut shell liquid and vegetable oils as precursors for synthesis of di-/ poly-isocyanates. There are reports in the literature which describe the synthesis of biobased diisocyanates. Table 2 shows the structure and CAS Number of the bio-based isocyanates<sup>5</sup>. However, we will restrict our discussion to three main commercially available biobased diisocyanates namely Penta methylene-diisocyanate (PDI) from Covestro, L-lysine ethyl ester diisocyanate (LDI) from Infinite Chemicals; and Dimer acid Diisocyanate (DDI ) from Henkel.

**Bio-Based Penta-methylene-diisocyanate (PDI)** is one of the potential building blocks for polyurethanes with significant biocontent (70% renewable carbon) and is the first example of bio-based diisocyanate which has been commercialized. It is produced very efficiently from biomass using biotechnological and chemical processes. The trimeric PDI which is useful as a hardener has been commercialized under trade name DESMODUR® eco N 7300 by Covestro<sup>5</sup>.

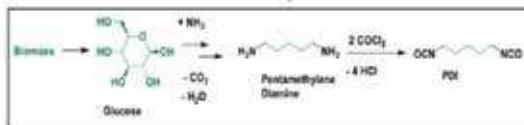


Figure 4. Synthesis of PDI from Glucose

The above system is known for its ability to provide lightfast coatings, It also offers good resistance to chemicals, scratching, and weathering, along with outstanding mechanical properties.

#### US20L-lysine ethyl ester diisocyanate (LDI):

L-lysine ethyl ester diisocyanate (LDI) is a bio-based diisocyanate derived from the amino acid

Sr. No.	Di/poly-isocyanate	CAS Registry Number	Ref.
1.		[93289-70-4]	31
2.		R=R' = -CH <sub>3</sub> [1008130-81-1] R=R' = -H [88768-51-8] R= -CH <sub>3</sub> , R' = -H [88768-52-9]	32,33
3.		[96732-82-0]	34
4.		[4747-80-2]	34
5.		R=R' = -CH <sub>3</sub> , m = 1, [88768-56-3]	35-37
6.		[357981-18-1]	29
7.		[404947-88-2]	29
8.		[1478879-31-0]	30
9.		[1478879-17-2]	30
10.		[4538-42-5] Supplier: 007Chemicals, The Netherlands	
11.		[18020-78-5]	9
12.		[10124-86-4]	8
13.		[7192-79-2] Supplier: Chemieliva Pharmaceutical, China	
14.		[1239615-05-4]	45
15.		[1428263-79-9]	8
16.		R = -CH <sub>3</sub> , [455257-96-2]	28
17.		[68239-06-5] Supplier: Henkel Corporation company	46-49
18.		Dimer acid Diisocyanate (DDI) (appox. Structure) Poly-isocyanate from Soyabean oil	50
19.		[34050-00-5] Supplier: Infinite Chemicals	27
20.		Methyl ester L-lysine diisocyanate (MELDI) [45172-15-4] Supplier: Infinite Chemicals	27
21.		Ethyl ester L-lysine diisocyanate (EELDI) [45172-15-4] Supplier: Infinite Chemicals	27
22.		R= -OCH <sub>3</sub> , m = 3, [2078003-65-1] R= OCH <sub>3</sub> m = 2, [2078003-65-0] R = H, m = 3, [2078003-63-9] R = H, m = 2, [2078003-62-8]	39
23.			43
			44

Table 2. List of Bio-based diisocyanates reported in the literature 5

Sr. No. 22, 23 Cardanol based diisocyanates are reported in Patent No. US20170369427A1



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Sr. No.	AB monomer	CAS Registry Number	Ref
1.		R= -OCH <sub>2</sub> , m = 11, [1808283-20-6] R = OCH <sub>2</sub> m = 6, [1808283-18-2] R = H, m = 11, [1808283-16-0] R = H, m = 6, [1808283-14-8]	51
2.		[1224635-75-9]	52
3.		[1423959-79-8]	53
4.		[1390647-96-7]	53

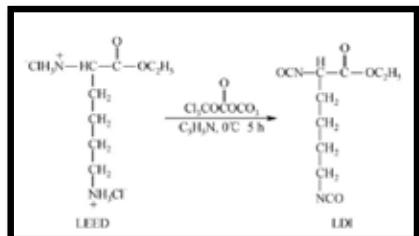


Figure 5. Synthesis of LDI from LEED

lysine. It's a versatile chemical used in synthesizing biodegradable polyurethanes. LDI's presence in polyurethanes contributes to their biodegradability and biocompatibility, making them suitable for bio-medical applications and other uses.

#### Dimer acid diisocyanate (DDI):

DDI is derived from dimerized fatty acids (Toll oil derivatives)<sup>6</sup>. It's a linear, saturated diisocyanate

with a carbon chain length of 36 or 38 atoms, depending on the synthesis method. DDI is used in various coatings applications due to its good physical properties and resistance to hydrolysis. Its low reactivity and ability to form stable polymers make it suitable for printing inks. DDI has also been used in military fields for applications like thermal insulation layers in rocket engines. In a nutshell the use of naturally derived monomers is part of the sustainability movement, as it reduces dependence on petrochemical feedstocks and minimizes environmental impact. There are several bio-polyols commercially available for PU application, certain Diisocyanates are also commercially available

to be utilized for PU synthesis; However, the final utility and value of these bio-based monomers can only be assessed by carrying out the detailed end use application validation.

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6. Chinese Patent: CN101830832A
7. Joanna Neisiobedzka *et al*, *Green Chemistry* (<https://doi.org/10.1039/D2GC04644J>)



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*By Rishi Madan, Executive Committee Member, IPUA & Chairman, PUTECH 2025 Director, Goodie International Pvt. Ltd.*

**P**

U TECH 2025 came to a meaningful close – leaving behind new ideas, renewed connections, and a stronger sense of purpose.

Our theme this year, “Shaping the Future,” was more than a phrase. It was a shared commitment – to create a platform that drives knowledge, builds trust, and fuels long-term industry progress. And that spirit came alive in every corner of the show.

From the moment the doors opened, the momentum was palpable. A rich mix of experienced professionals and first-time attendees filled the space with curiosity and conversation. Across the exhibition floor, conference halls, and networking zones, the atmosphere reflected something deeper than just commercial exchange – it reflected community.

The conference, in particular, stood out. With 33 papers and 2 powerful panel discussions, the content was curated to spark thought, not just fill time. Over 1,100 delegates engaged in discussions that addressed real challenges and inspired fresh thinking – further underlining PU TECH’s role as a knowledge-driven forum.

Our new event app brought added convenience, while the design and feel of the venue reflected a more contemporary, cohesive experience. Everything was intentionally built to raise the bar – and offer real value.

PU TECH, under the guidance of IPUA, is more than just an event. It is a key driver for the polyurethane ecosystem in India. By bringing the world to India – and bringing Indian changemakers into the spotlight – PU TECH helps catalyze what’s next. It brings out the best in both worlds. The exhibition serves as the primary source of funding for IPUA’s ongoing work – including education, technical training, policy advocacy, industry research, and outreach. Every visitor and exhibitor contributes directly to efforts that strengthen the foundation and future of our industry.

When we come together at PU TECH, we aren’t just supporting an event – we’re investing in the collective advancement of the Indian polyurethane sector. A strong, unified platform creates clarity, credibility, and momentum. To everyone who made PU TECH 2025 possible – thank you. This show belonged to all of us.

And now, we turn the page. Work on PU TECH 2027 – to be held from 10th to 12th February – is already in motion. We move ahead with sharper focus, bigger ideas, and even greater unity.

Let’s keep shaping the future – together.

## ► PUTECH 2025

# *Buzz, Business, and Breakthroughs at PUTECH 2025*

Compiled by Priya Fonseca

**P**UTECH 2025 was a tremendous success, uniting prominent voices from the global polyurethane industry to discuss the opportunities shaping India's future in this vibrant sector. Many companies used the event to launch new products, innovations, and equipment. Highlights included live demonstrations and engaging conversations. A key takeaway from panel discussions, interviews, and dialogues was a shared optimism about India's potential to become a major player in the global PU market. Industry leaders agreed that India is well-positioned to lead due to its abundant resources, growing consumption-driven economy, and skilled workforce.

Sustainability was a central theme at the event. Experts emphasized that unlike mature markets needing to retrofit aging infrastructure, India has the advantage of developing new manufacturing facilities with sustainability and recyclability integrated from the start. The country's strong foundation in mechanical recycling—particularly in the large re-bonding sector for mattresses and furniture—was highlighted as a best practice that other regions could emulate. India's dynamic business environment, extensive customer base, robust supply chain potential, and adaptability make it ideally suited to participate in global growth sectors.

An industry expert on a panel pointed out that India holds a

strategic advantage over many Southeast Asian countries. When raw material access is limited and recycling is used to recover resources, a combined, integrated approach is both efficient and strategic. This positions India to turn its resources and needs into opportunity. The expert concluded that India has everything necessary to succeed; all that remains is to seize the moment and "Just do it."

Additionally, leaders stressed the importance of building consumer trust in PU products, especially with regard to safety as a key differentiator. The move towards localization, supported by government policies and organizations like IPUA, is fostering an environment ripe for innovation and growth. With proactive government initiatives, favourable demographics, and a rising middle class, India is poised on the brink of a major growth story—ready to lead the future of the global polyurethane industry.

Here we capture some word-bytes from exhibitors which add to the unique memories and wish lists.

### ► Opportunities Unlocked: Exhibitors Reflect on PUTECH

#### Aadi Polymers Private Limited

PUTECH 2025 provided an excellent platform for Aadi Polymers Private Limited to showcase our latest high-density and specialty foams, connect with industry peers, and observe cutting-edge trends in polyurethane technology. The event's scale and diversity of participants from raw material suppliers to end users, enabled us to understand market needs and innovations first-hand. The event met and exceeded our expectations offering ample opportunities for networking, business discussions, and knowledge sharing. We engaged

*Aadi Polymers Private Limited*



with both existing and potential clients, which has already translated into promising business leads and collaborative prospects. The polyurethane industry is on a robust growth trajectory, driven by demand in construction, automotive, and furniture sectors. We foresee continued expansion and exciting opportunities ahead for all stakeholders.

*Mr. Lokesh Jain, MD, Aadi Polymers Private Limited*

### Aryanvi PU Solutions Pvt. Ltd.

PUTECH 2025 proved to be an immensely rewarding platform, exceeding expectations in both engagement and visibility. The event attracted a significant number of enquiries, particularly from the targeted market segments, providing an ideal opportunity to showcase our products and services to a highly relevant audience. The level of interest and interaction was far greater than anticipated.

The event was excellently organized, offering an effective environment for demonstrating innovation, networking with industry peers, and building valuable connections with potential clients. Business engagement was a highlight, with meaningful conversations held with key decision-makers. Many of these interactions have already begun evolving into tangible business opportunities. While the overall experience was positive, there is room for improvement in managing the Gala Dinner Night. Enhanced crowd control and a



more structured layout would contribute to smoother movement and foster better networking in a more relaxed and effective setting.

Looking ahead, we are optimistic about the growth trajectory of the PU industry. The rising demand across various sectors, coupled with an increasing emphasis on sustainable and innovative solutions, positions the industry, and our role within it, for strong future expansion and development.

*Nitin Kolekar, Founder & Managing Director, Aryanvi PU Solutions Pvt. Ltd.*

### AS Enterprises

PUTECH 2025 was an enriching and impactful event, showcasing innovations across various segments of the polyurethane industry. The exhibits highlighted cutting-edge technologies and advancements that are shaping the future of the sector. We particularly

*AS Enterprises*



## ▶ PUTECH 2025

appreciated the insightful panel discussions on sustainability, market trends, and other key industry developments.

The event met our expectations, providing valuable opportunities for engagement. We had the privilege of connecting with industry peers, exploring potential collaborations, and expanding our business network through well-structured interactions. The overall atmosphere fostered learning, exchange of ideas, and meaningful business discussions.

To further enhance future editions, broader international and domestic participation, early engagement with global and regional stakeholders, tailored packages for international exhibitors, and sustained promotional efforts could add even more value.

Looking ahead, we remain optimistic about the polyurethane industry's growth trajectory. The ongoing advancements, coupled with strong domestic and global demand, indicate a promising future. Our participation reinforced our commitment to innovation and delivering high-quality machines to our customers, worldwide.

*Anuraag Purie, AS Enterprises*

### Azelis (India) Pvt. Ltd.

PUTECH 2025 in Delhi proved to be a flagship event for the polyurethane industry, and Azelis India was proud to be part of it. Our participation successfully



*Azelis (India) Pvt. Ltd.*

highlighted our growing presence and commitment to the PU sector. The event provided an excellent platform to showcase our latest innovations and offerings, including advanced additives, foam and PU solutions, flame retardant technologies, and antimicrobial systems.

The event fully met our expectations. It offered us valuable opportunities to engage with industry leaders, domain experts, and key decision-makers. These interactions helped strengthen our existing relationships and opened doors for future collaborations.

PUTECH also provided a well-rounded environment for meaningful conversations, technical discussions, and business development. The quality of interactions and the diversity of attendees contributed significantly to the success of our participation. As a suggestion for improvement, a more structured networking zone or

dedicated business matchmaking sessions could enhance targeted engagements.

Looking ahead, we see immense potential for the PU industry in India. With increasing demand for comfort, safety, and mental well-being, PU-based solutions are poised to play a crucial role across industries. Azelis India remains committed to driving innovation and delivering sustainable, value-added solutions in this dynamic market.

*Sumeet Pednekar, Manager Marketing,  
Azelis (India) Pvt. Ltd.*

### Britas Polymers Pvt. Ltd.

As an exhibitor at PUTECH 2025, I found the event to be highly rewarding and well-structured. It offered good market intelligence across rigid, flexible, and CASE segments, and gave us the perfect platform to enhance brand visibility and connect with key stakeholders from across the industry.

The exhibition met our expectations in every way facilitating quality interactions, meaningful engagement, and new business opportunities. We gained valuable insights into the latest product and technology developments and had the chance to benchmark against international competition and standards. It was encouraging to see the direction in which the Indian PU industry is evolving.

Looking ahead, we anticipate strong growth for the industry, around 15% vis-a-vis other industrial



segments. We also anticipate a rising demand for skilled manpower. The potential to attract FDI is also promising, especially in the backward integration of raw materials like PO, polyols, MDI, and Adipic acid. With upcoming new product and packaging standards like BIS/limited usage drums/IBC for Isocyanates etc., the Pu industry is well-positioned for a transformative phase.

To keep the event fresh and impactful, a three-year cycle would be ideal. Overall, PUTECH 2025 was a success and an essential platform for anyone invested in the future of polyurethane.

*Vasant Gori, Britas Polymers Pvt. Ltd.*

### Chemie Products Private Limited

PUTECH India 2025 was the biggest and grandest event of India till now. World over exhibitions are generally getting smaller but the amount of participation in PUTECH India has shown the world that we have grown as an industry and we are one of the biggest industry and show in the world.

The event surpassed expectations. There's nowhere that we are able to meet almost all stakeholders of the industry under one roof like we did here at PUTECH. Moreover, we met a lot of global visitors as well.

Over the duration of the conference, we had ample opportunities to network, and interact. It served as a wonderful avenue where the

who's who of the industry along with every newcomer as well was present. We eagerly await for this stage to reconnect with our friends and connections every alternate year. To make PUTECH an even more comprehensive and well-rounded event, it would be valuable to encourage greater participation from sectors such as automotive, rigid foam, and footwear.

There is no doubt that PU industry in India is an ever-growing industry with an expected growth rate of 8% to 10% for next 5 years. Apart from volume increase in the existing products, we are experiencing new applications every year as well. So it is exciting to be a part of an industry which has a very positive outlook.

*Gaurav Sachdeva, Director, Chemie Products Private Limited*

### Flexipol Foams Pvt. Ltd.

PUTECH provided an excellent platform to connect with industry peers and gain valuable insights into the evolving landscape of the polyurethane sector. One of the most encouraging takeaways was the growing confidence in Indian manufacturers which presents a significant opportunity for domestic players. There is a clear and promising shift towards higher quality standards and greater innovation across the industry, an advancement we have long championed. The event reaffirmed our belief that the Indian PU sector is poised for a strong, innovation-led growth trajectory.

The event was well-organized and provided a good platform for meetings and industry exposure in general. It provided meaningful opportunities to connect with both existing and potential partners and was a good platform for networking and business development.

*Flexipol Foams Pvt Ltd*





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While it was an extremely well-organized event, one suggestion would be to consider a venue closer to the airport for added convenience.

The PU industry in India is on a strong growth path. With rising demand and a focus on innovation and sustainability, we see great potential for Indian manufacturers to lead globally.

*Flexipol Foams Pvt. Ltd.*

### Graco India Pvt. Ltd.

PUTECH is the largest and most important exhibition for the polyurethane industry in India. A key highlight for us was the launch of Graco's new Reactor 3 Hydraulic system. With advanced control, improved spray performance, and real-time system data, the Reactor 3 HXP3 helps contractors spray faster and more consistently. The event brings together both major and emerging players,

*Graco India Pvt Ltd.*



making it a great platform to showcase innovations, explore new technologies, and understand evolving market trends.

PUTECH is one of the best platforms for networking. It offers a unique opportunity to connect with key industry professionals under one roof, helping us strengthen relationships and explore new business opportunities.

We are happy with the overall experience and participation. However, we would appreciate more focus on the polyurea segment in future editions, as the current emphasis is largely on PU foam. It would also be great to expand focus on sectors like waterproofing and other related applications.

The PU industry in India is very promising and continues to grow steadily. We truly appreciate the efforts of the PUTECH team in

contributing to the development and visibility of this market.

*Neha Sharma, Marketing Specialist, Cross Division, Graco India Pvt. Ltd.*

### Jindal Petro Foam

PUTECH 2025 lived up to expectations once again, offering a dynamic platform to reinforce partnerships and discover new business opportunities. The event showcased a clear shift towards sustainable polyurethane solutions, with several exhibitors emphasizing eco-friendly innovations. Another key focus area was fire safety, reflecting the industry's growing commitment to responsible manufacturing and product development.

As always, PUTECH proved to be a valuable learning experience, with new technologies, applications, and ideas around every corner. It successfully enabled meaningful interactions with both existing partners and new contacts across the chemical, machinery, and allied segments of the PU industry.

This year's improved exhibition layout, with well-defined category zones, made navigation more intuitive and productive for both visitors and exhibitors. The overall experience was more streamlined and engaging compared to previous editions.

Looking ahead, the future of the polyurethane industry in India appears very promising. With increasing disposable income driving demand across sectors, an

## ► PUTECH 2025

### Jindal Petro Foam



estimated 11% to 12% growth rate is a significant and encouraging sign.

*Abhinav Jindal, Managing Partner,  
Jindal Petro Foam*

### Kromatiks

The key takeaway for Kromatiks was definitely the maximising of synergies between allied stakeholders in the PU industry. We were able to derive several significant parameters in terms of product deliverables. We had the opportunity to partake in diverse discussions with customers based in the northern regions which were quite insightful in measuring distance gaps and finding solutions towards these.

PUTECH is an event we look forward to with great anticipation since it is an open platform to engage with customers and stakeholders in the industry. This year we were able to integrate our expectations with tangible results,

however we did find some gaps in the presence of end users and more of raw material suppliers. We hope to see more of a balance between end users and suppliers in future editions.

We were quite occupied for the duration of the event with interactions and engagement with visitors, at times multiple alignments at the same time.

Thankfully our team was equipped to handle simultaneous strategic conversations during this time.

There is a vast horizon beyond furnishings in terms of polyurethane applications, and we look forward to uncovering new avenues where colourants can play a transformative role.

*Tanya Dutt, Director, Kromatiks*

### Manali Petrochemicals Ltd.

The PUTECH event was well planned, widely advertised, superbly organized, and exceeded our expectations. The seminars in PUTECH were informative, and we appreciated the diverse range of topics covered, including innovations in polyurethane technology and industry trends. Key takeaways included:

- Used the platform to announce our long-term strategic plans

*Kromatiks*





*Manali Petrochemicals Ltd.*

such as Chennai plant's capacity additions and the announcement of new state-of-the art plant for System Polyol piece of business in western India.

- Exhibited our technical expertise and showcased our diverse range of Specialty Chemicals, meeting the requirements of entire gamut of the PU industry.
- Witnessed good footfall to our stall, meeting our expectation.
- Numerous opportunities for growth and collaboration in the PU industry.

The event provided valuable insights on industry trends, latest

PUTECHnologies, and invaluable networking opportunities with industry stalwarts and peers. It offered sufficient opportunities for interactions, allowing us to connect with industry professionals, discuss potential collaborations, and explore business opportunities.

During promotion of the event, we feel that an enhanced focus on domestic manufacturers like MPL, shall ensure more visibility given the current trend to support local manufacturers. We look forward to the same in the future events. Additional time for networking and discussions could further enrich the experience.

We are confident that the PU industry is poised for growth, driven by increasing demand for

product for domestic usage, drive towards sustainable materials, technological advancements, and expanding applications. We anticipate that continued innovation, and collaboration will shape the industry's future, and we are happy and proud to be a vital part of the PU industry growth story.

*Saravanan Rajavel, General Manager Marketing, Manali Petrochemicals Ltd.*

### Recaz Chemicals

PUTECH 2025 was a great platform to showcase our catalysts, silicone additives, and new innovations. We saw strong interest and had valuable discussions with both current and potential partners.

The event exceeded our expectations in terms of visibility and networking. It offered excellent opportunities to engage with key players across the industry, which we believe will lead to strong business relationships.

The show was well-managed. For future editions, more focused B2B meetings and technical sessions would add even more value.

We see a positive outlook for the PU industry, especially with growing demand in construction, automotive, and sustainable technologies. Recaz Chemicals is proud to support this growth with high-quality, eco-friendly solutions. We thank the organizers for a successful PUTECH 2025 and look forward to the next edition.

## ► PUTECH 2025

*Mohammed Z Altaf, Country Head,  
Recaz Chemicals*

### **Shakun Industries**

PUTECH 2025 was an exceptional platform for Shakun Industries to showcase our latest innovations in polyurethane chemistry. Among the many highlights, the overwhelming interest in our sustainable product range, especially our bio polyol-based systems, water-blown spray foams, and recyclable packaging solutions stood out.

It was encouraging to see a shared industry focus on environmental responsibility, application-specific customization, and advanced manufacturing integration. Our discussions with OEMs, technical consultants, and machinery partners revealed a growing alignment towards end-to-end innovation, something we've championed through our in-house capabilities from mould design to final foam production.

PUTECH 2025 not only met but exceeded our expectations in terms of footfall quality, technical engagement, and industry representation. The event enabled us to connect with existing clients while also opening doors to new sectors and international buyers interested in specialty PU systems. We were particularly pleased with the traction our PU stone panels and safety body armor solutions received, highlighting the market's increasing openness to niche, value-added applications of polyurethane.

We appreciated the diverse cross-section of attendees, from R&D heads to procurement managers ensuring we had the right conversations that go beyond surface-level sales and focus on long-term business development.

While PUTECH 2025 was well-organized, a few additions could enhance the experience even further. Introducing more structured networking sessions, dedicated innovation showcases, and technical roundtables could help foster deeper dialogue. A focus on start-ups, sustainability challenges, and digital transformation in PU processing would also add contemporary relevance. Nevertheless, the current format is strong, and we appreciate the efforts of the organizers in facilitating a seamless and professionally curated event.

The polyurethane industry is entering a pivotal phase where sustainability, performance,

and specialization are no longer optional, they are imperative. At Shakun Industries, we see tremendous growth opportunities in lightweight mobility components, advanced insulation materials, circular economy products, and bio-based chemistry. With regulatory landscapes shifting and end-users demanding more eco-conscious materials, the future of PU lies in agile innovation backed by solid technical grounding. As a forward-looking system house, we are excited to be at the forefront of this transformation.

*Keshav Goyal, Executive Director,  
Shakun Industries*

### **Shaya Polymers**

Shaya Polymers' involvement in PUTECH 2025 has significantly bolstered its business by enhancing brand visibility, facilitating valuable industry connections, promoting technological innovation, and

*Shaya Polymers*



reinforcing its commitment to sustainability.

By exhibiting at PUTECH 2025, Shaya Polymers aligned itself with the industry's leading innovators, showcasing its commitment to advancing polyurethane technologies. The theme, "Polyurethane: Shaping the Future for a Better Tomorrow," resonated with Shaya's focus on sustainability and innovation, reinforcing its image as a forward-thinking company.

With over 180 exhibitors and 7,000+ trade visitors, the exhibition provided excellent exposure and networking opportunities. Shaya Polymers engaged directly with clients, partners, and industry leaders, forging new business relationships and strengthening existing ones to expand market reach and collaborations.

PUTECH 2025 offered a robust platform for technical and commercial engagement. It reinforced that sustainability, innovation, and collaboration are key to growth, and that recognition through awards motivates excellence. Participation helped Shaya stay abreast of technological trends, enhancing R&D and maintaining a competitive edge.

The event offered strong industry representation and effective branding opportunities. Shaya showcased new projects like continuous foaming with the import of a hi-tech foaming machine, and announced its entry into the rigid segment through

collaboration with M/s. Pioneer Coldstore & Cladding Pvt. Ltd.

The conference sessions were insightful, and the platform provided effective branding and exposure opportunities for exhibitors. To enhance future events, grouping exhibitors by application segments, rotating venues regionally, and hosting more frequent training programs could increase access and foster continued industry growth.

The outlook for the PU industry is strong, driven by rising demand, sustainability, and innovation across sectors. Companies that embrace eco-friendly materials, digital integration, and regional collaboration will lead the next wave of industry expansion.

*Indrajith PK, Chief Operating Officer,  
Shaya Polymers Ltd.*

### Surendra Elastomer Pvt. Ltd.

PUTECH 2025 was definitely a success for us, highlighted by our live demonstration of the Alpha PU Dispensing Machine integrated with an MDI system. This demonstration attracted

strong interest, offering attendees a valuable opportunity to witness the benefits and applications of MDI technology in real time. The Alpha machine demonstrated how MDI systems can streamline material handling processes, reducing waste and improving productivity. Attendees saw the precision and accuracy of the MDI system in mixing and dispensing polyurethane materials, ensuring consistent product quality. The demo showcased how the MDI system contributes to enhanced product quality, including improved physical properties and durability.

The event itself saw high-quality visitors from across India, including smaller towns, indicating effective marketing and outreach. It was encouraging to see strong engagement opportunities not only from domestic customers but also from international suppliers. The energy at the event reflected an industry that is expanding steadily and is expected to grow manifold in the years ahead. However, awareness in regions like the Middle East and ASEAN countries remains limited, and greater efforts are needed to expand the event's global reach.

*Surendra Elastomer Pvt. Ltd.*



## ► PUTECH 2025

We suggest that better hotel arrangements be negotiated in advance, ensuring more availability and affordable options for all participants. Perhaps the organizers could explore alternate venues like Dwarka or Pragati Maidan to improve accessibility and convenience. Looking ahead, we plan to participate in an even bigger way.

*Indra Parekh, Managing Director, SRI*

### **Tegral India Pvt. Ltd. (Formerly Overseas Polymers Pvt. Ltd.)**

The event provided excellent exposure to the latest advancements in polyurethane technologies. We saw strong interest in our product portfolio, particularly from sectors like cold chain and automotive seatings.

We also observed the enhancing polyurethane community in India. The participants are expanding with new faces and establishments carving patch ahead. It is a promising sign of growth prospect.

PUTECH met and, in some aspects, exceeded our expectations in terms of footfall, industry relevance, and engagement quality. The event provided valuable engagement opportunities. We had focused discussions with potential clients and partners, resulting in several promising leads. A dedicated segment on equipment and emerging trends in PU applications would enhance the event's value further. Organizers can also



explore the rotational policy for the event to expand its reach to western and southern region of India.

We remain optimistic about the future of the polyurethane industry in India. The sector is clearly on a growth trajectory, driven by innovation, environmental focus, and expanding market demand.

*Ketan Pachorkar, Tegral India Pvt. Ltd.*

### **Varahamurti Flexirub Industries Pvt. Ltd. (Springfit)**

As first-time participants at the PUTECH Expo, the entire experience was a milestone for our brand. It provided an excellent platform to showcase our premium products to industry leaders and potential customers. The highlight was undoubtedly the successful

introduction of our brand. It truly made a mark and resonated well with the audience.

We had high expectations for PUTECH, but the actual experience went far beyond what we had envisioned. From the quality of footfall to the engaging conversations we had with industry experts, potential partners, and curious visitors, every aspect of the event added immense value to our participation. The exposure we received, especially as a new brand entering the market, was tremendous. Not only did it allow us to present our innovations, but it also gave us meaningful insights into market trends, customer needs, and potential collaborations. Overall, PUTECH proved to be a powerful platform that exceeded all our expectations.

The event offered meaningful interactions, high-value

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engagements, and strong business prospects. It allowed us to not only increase our brand visibility but also build credibility among established players. We had the opportunity to connect with several industry giants who showed genuine interest in our products and technological approach.

One of the most exciting aspects of our participation was the discussion around how we're integrating AI-driven solutions into our product development and customer experience strategy. Our approach to using AI for process optimization, quality control, and smart material recommendations sparked thoughtful conversations and opened doors to potential collaborations. As a result, we successfully initiated deals across multiple segments and established promising leads that we're confident will convert into long-term partnerships.

We would say the event has lived up to its name. It was well-managed and we had a seamless experience throughout. The event offered a strong platform for networking, business opportunities and brand visibility.

The PU industry is growing rapidly, offering great potential and opportunities. With advancements in technology and increasing demand across various sectors, the future looks promising for businesses in this space.

*Bhavya Rana, Assistant Brand Manager, VFI Group*

### Wanhua International (India) Private Limited

During PUTECH 2025, the themes of various reports and forums organized by IPUA are very forward-looking, providing participants with a good understanding of the ideas of industry experts. Wanhua HQ Management also highly appraise the role of this exhibition.

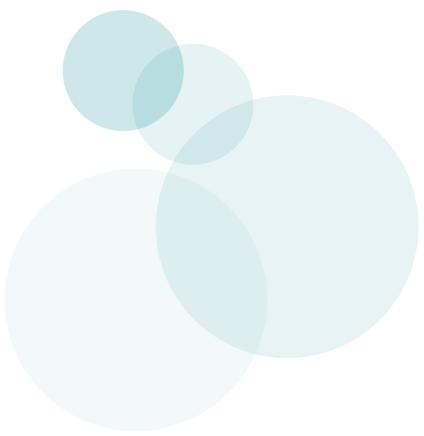
cooperation relationships were established.

*Brian Yang, MD, Wanhua International (India) Private Limited*

*Wanhua International (India) Private Limited*



The event certainly met our expectations and as Wanhua, we can feel that during this exhibition, the attention paid to our products and technical solutions has significantly increased. Many customers who had never cooperated before actively enquired, and a series of new customers and business





## Interview

# *Interview with Christopher Metz, ISOPA*

**P**U Today: Welcome, Christopher. Is this your first visit to India?

**Christopher Metz:** Yes, it is. And I must say, I'm highly impressed by the openness, the friendliness, and the incredible drive of this country. It's wonderful.

**PU Today:** You've been the President of ISOPA for five years now. Was India on ISOPA's radar back then?

**Christopher Metz:** Actually, yes. Thanks to our General Secretary, India has always been part of the conversation. He's done a fantastic job connecting ISOPA with various regional associations—whether in China, Korea, South America, or India. For the past 14 to 15 years, we've had a working group that regularly exchanges updates on regulatory and market developments. So India has been on the map from the very beginning.

**PU Today:** That's great to hear. Now with the new training program from ISOPA, has it already launched in India?

**Christopher Metz:** It's just getting started. The training is available to everyone, but now the IPUA has partnered with ISOPA to offer it more actively here in India.

**PU Today:** And I understand it's also available in Hindi which is a really important and thoughtful step.

**Christopher Metz:** Absolutely. Local language accessibility is very important and critical for the well-being of the environment here.

**PU Today:** So what kind of support and resources can the Indian industry expect from ISOPA as this collaboration grows?

**Christopher Metz:** India, through its connections with ISOPA and EUROPUR, will now have access to a vast body of work developed over years in other regions. That gives India a chance to leapfrog and scale up quickly by learning from those experiences. The learning curve, in terms of regulatory and wording adjustments, can be quite steep but the tools are there.

**PU Today:** Will ISOPA also assist with advocacy efforts in India?

**Christopher Metz:** We handle advocacy mainly for Europe, but we certainly share documentation and learnings. What happens in one region increasingly affects others. Especially for India, which is not just producing for its own market, but looking outward as well understanding regulatory



**Christopher Metz,**  
ISOPA

requirements in export markets becomes essential.

**PU Today:** A major pillar for ISOPA is sustainability and circular economy. India has a way to go in that space. Do you see any key learnings from Europe that could help India grow faster?

**Christopher Metz:** Yes. The most critical element is a stable and long-term regulatory framework that makes sustainability both viable and investable. When that framework is in place and predictable it allows businesses to make the right decisions. And of course, customer demand is equally important. That's where regulations can help shape behavior. Without these two drivers, it's hard to move the needle.

## ► PUTECH 2025

**PU Today:** So the consumer is central. That means communication and education will be crucial.

**Christopher Metz:** Exactly. And I think India has a very unique advantage. As I mentioned earlier today, polyurethane (PU) is a molecule that fits across virtually every sector - appliances, automotive, construction, and new energy. Given India's climate, solar energy applications are huge.

**PU Today:** Yes, the potential is enormous.

**Christopher Metz:** And India's other big asset is its skilled, young, and entrepreneurial workforce. That's essential because PU is a molecule invented to be reinvented. It needs smart people who can see

opportunities and solve problems creatively. India has that in abundance. With over 200 million young people coming into the workforce, there's a tremendous opportunity ahead.

**PU Today:** That's very encouraging. And demand is clearly growing too.

**Christopher Metz:** Absolutely. With India's growing prosperity, demand is rising fast. That's why I said during my talk today that IPUA shouldn't wait too long to host the next event like this one. The pace of change in India over 24 months is equivalent to 36 months of development in Europe or North America. The industry should keep connecting, keep sharing ideas, and bring in experts maybe even legislators and academic partners.

**PU Today:** That's a very valuable insight. How does Europe view India in relation to China?

**Christopher Metz:** India is seen as a country of immense potential. It has a highly skilled and entrepreneurial population, and the opportunities are vast. What's needed now is investment in local infrastructure and manufacturing, especially to support downstream industries. Yes, we are in a globalized world, and that's good. But recent trends show us the value of building local resilience. And India is well-positioned to do that.

**PU Today:** Thank you, Christopher. That's a powerful note to end on.

**Christopher Metz:** Thank you. It's been a pleasure.

### Here are some interesting anecdotes related to polyurethanes:

**Invention of Polyurethane:** Polyurethane was accidentally discovered in 1937 by Dr. Otto Bayer, a German chemist working for IG Farben. He was attempting to create synthetic fibers when he stumbled upon the versatile polymer, which has since revolutionized numerous industries.

**NASA's Use of Polyurethane:** During the Apollo missions, polyurethane foam was used extensively for insulation. The lightweight and insulating properties of polyurethane foam helped keep spacecraft cool and protected astronauts from extreme temperatures in space.

**Recycling Breakthrough:** A remarkable story involves a company that developed a method to transform discarded polyurethane foam into usable products like shoes and insulation panels. This innovation helped reduce solid waste and encouraged recycling initiatives in the industry.

**Unique Applications:** In the world of art and design, polyurethane resins have been used to create hyper-realistic sculptures and intricate jewelry, showcasing the material's versatility beyond industrial uses.



## Interview

# *Interview with Bart ten Brink, EUROPUR*

**P**U Today: Bart, welcome back to India. Just a couple of days ago, there was an exciting announcement about the IPUA and the EUROPUR reaching an understanding. Can you tell us more about how this collaboration is expected to unfold in the coming months?

**Bart ten Brink:** Thank you, Isaac. Yes, indeed it's a significant step. What's happening is that we are transferring the knowledge and know-how of the CertiPUR certification scheme to IPUA. As EUROPUR, we firmly believe that with polyurethane products, we must raise the bar on safety and eliminate the use of harmful chemicals. Polyurethane sells well because consumers trust the product, and that trust is rooted in safety and quality.

Sunny Kochar asked whether we could assist with this, and I suggested that India consider creating a CertiPUR-type system. After reviewing it, I realized it would be a considerable effort. CertiPUR in Europe has over 70 label holders, so setting up all the necessary standards is no small task. But thanks to the strong cooperation between EUROPUR and IPUA, we've agreed that India can essentially create a 'copy-paste' version of the CertiPUR

system we have in Europe.

**PU Today:** That's excellent, and I think it has the potential to really transform the Indian industry.

**Bart ten Brink:** Absolutely. Let me be clear, I'm not saying the foam produced in India is unsafe. But implementing CertiPUR sets a benchmark for safety, and that benchmark builds consumer confidence. The CertiPUR system doesn't just apply to flexible slabstock foams. It extends to moulded foams as well, and soon, we'll be rolling out labels for rebonded foams and proven recycled content. This is the future. As an industry, we must lead the way. We shouldn't wait for regulators to push us.

**PU Today:** Is it true that 75 labels are currently CertiPUR certified?

**Bart ten Brink:** Yes, that's correct.

**PU Today:** And in terms of market coverage it is about 40%?

**Bart ten Brink:** Right, but it's important to understand the nuance. That 40% doesn't mean 40% of all foamers are using CertiPUR for everything. CertiPUR is predominantly used for foams that come into direct contact with consumers like mattresses and



**Mr. Bart J. ten Brink,  
President of EUROPUR**

furniture. It doesn't usually apply to technical foams or foams used for acoustics, sponges, etc. So while we say 40%, the rest of the market often includes products that don't need certification. But yes, the certified segment is significant.

**PU Today:** So, would you say CertiPUR's adoption rate is where you'd like it to be, or could it be faster?

**Bart ten Brink:** Of course, we'd always like to see quicker adoption. But again, context matters. The certified segment is very specific to consumer-facing comfort foams. If you looked only at that subset, I'd say CertiPUR adoption is strong and growing. And yes, it could be faster, but it's progressing well.

**PU Today:** How far do you think

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India has to go in terms of catching up with CertiPUR standards?

**Bart ten Brink:** That's tough to answer precisely, but I'll say this, India has tremendous internal growth potential. In Europe, flexible slabstock foam production is around 1.3 million tons. In India, it's about 300,000 tons so you have a catch up to do in four times. That's the gap, and while it won't close in two or three years, India is on the right path.

India is also a very price-sensitive market, which is fine. But that should never come at the cost of safety. And if Indian companies want to compete globally especially in Europe they need to forget about using 100% filler foam. That just won't work, no matter the price. European consumers want durability, performance, and sustainability.

**PU Today:** Speaking of sustainability, how do you see CertiPUR playing into that?

**Bart ten Brink:** Sustainability is about more than recycled content. It's also about longevity. A mattress that lasts 10 years is far more sustainable than one that lasts three. It's simple math when you do a life cycle assessment. High filler content might reduce cost,

but it increases foam fatigue and collapse over time which is not what consumers want.

Look at brands like Casper and Emma in Europe. They guarantee 100 nights sleep and offer a 10 year guarantee. You can't offer that unless your product physically holds up. That's the standard we're talking about.

**PU Today:** How do you view Indian consumer behavior in this space? Mattresses here tend to be used for much longer.

**Bart ten Brink:** That's true and it often comes down to awareness. Awareness about sleep, lifestyle, hygiene, and health. When people understand that good sleep is better than taking a pill, behaviors

change. In India's warm, humid climate, design needs will evolve to allow for more breathable materials and better hygiene features. It's a trend I see growing in the middle and upper segments of the market.

**PU Today:** What's the goal for CertiPUR adoption in India over the next few years? Any targets?

**Bart ten Brink:** We don't have rigid targets. For now, we're keeping it organic. Harneet, Sunny, and I are in regular contact almost every 2 to 3 months. Adoption doesn't mean every product line has to be certified. But I can share that one Indian foamer has already signed on, and seven others have expressed serious interest. That's a great start.

**PU Today:** That's encouraging. I think we'll see real transformation here in the next 5 to 10 years.

**Bart ten Brink:** I agree. What took 30 years in Europe, China managed in 15. I believe India will do it in 7. Indians are incredibly adaptive. As I always say, when I'm in India, I expect the unexpected. It's a remarkable country.

*India has tremendous internal growth potential. In Europe, flexible slabstock foam production is around 1.3 million tons. In India, it's about 300,000 tons so you have a catch up to do in four times.*



## Interview

# Interview with Pierre Termoz, Cannon

**PU Today:** Mr. Termoz, it seems like you've been coming to India quite often now. How do you see the evolution of the Indian market since PU Tech 2023?

**Pierre Termoz:** Yes, indeed. As we discussed two years ago, we began manufacturing machines and special equipment like retrofit systems in our new facility near Pune. In 2024 alone—our first year as manufacturers—we exceeded expectations by producing and selling more machines and equipment than anticipated. This success was driven by the overwhelming market response to our local manufacturing efforts. Everything is proceeding well under the close supervision of our Italian technical team, who regularly visit the Pune factory to ensure all components are assembled to CANNON's quality standards. That's absolutely critical for us.

**PU Today:** You had mentioned earlier that CANNON controls the core components. Would you say that around 70% of the machinery is still under CANNON control and about 30% sourced locally?

**Pierre:** It's actually more than 30% local now, but when it comes to high-tech, critical components



Pierre Termoz, Sales & Marketing Director,  
Cannon

like pumps and mixing heads, these are still under CANNON's direct oversight. These parts are essential to maintaining our quality in dosing and mixing. So yes, we're going in the right direction, but we're selective in what gets localized.

**PU Today:** Looking ahead, especially with the Indian market projected to grow four-fold over the next decade, how is CANNON preparing for this surge?

**Pierre:** We're on track to double our production of dosing units in 2025. Alongside that, we're also producing storage tanks, piping systems, machine modifications,

dry equipment, and mold carriers all locally. We're following the roadmap we envisioned two years ago, and it's progressing as planned. That said, we are very cautious. Growth has to be steady and controlled. Quality is non-negotiable for us. We'd rather scale gradually than rush and risk compromising our standards.

**PU Today:** How do you assess the skill levels in India to operate and maintain such sophisticated machinery?

**Pierre:** There's a strong collaboration between our teams in India and Italy. Based on 60 years of experience, we supervise from

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Italy to secure top-notch quality standards, yet, at the same time, we are leveraging local competence and expertise to provide local customers the supply they expect. Indian engineers are involved in design, and they frequently attend technical training sessions in Italy. There's continuous exchange of knowledge from design to production to sales. You'll notice our booth this year is much bigger, fully independent, which reflects our growing confidence in the team here.

**PU Today:** Speaking of training, IPUA has launched a postgraduate diploma in polyurethane technology in collaboration with Indian universities. Would CANNON be open to offering training modules for machine handling?

**Pierre:** Absolutely. We can provide training modules online or even in person. It's something we already do in many countries. We'd be happy to support this initiative and train the next generation in polyurethane technology and its evolving innovations. In fact, we've developed a special dosing unit here in India for a university lab. It's a unique machine we'll be delivering soon. We're quite excited about it and plan to promote this unit beyond India as well.

**PU Today:** How do you see India's role regionally? Do you view it as a hub for Asia?

**Pierre:** For now, our focus is India. However, our Indian team has been working in Dubai as well,

and we do support customers in the region. We also have a manufacturing facility in China. But yes, the Indian operations are becoming increasingly important.

**PU Today:** Let's talk global. With so many changes in the world economy, how is CANNON navigating the current market?

**Pierre:** Globally, we're investing in young talent both in Italy and across The CANNON Group. The generational shift is essential, especially with new technologies like AI reshaping our industry. We're also seeing innovation driven by our R&D Lab in Italy, which now has 20 people working full-time. They're constantly testing new materials and applications, often in collaboration with raw material suppliers and customers.

The Lab is a real asset, and we can be selective too. More than just R&D, it's become a sales enabler because of the special machines and prototypes it helps develop.

*The generational shift is essential, especially with new technologies like AI reshaping our industry. We're also seeing innovation driven by our R&D Lab in Italy, which now has 20 people working full-time.*

**PU Today:** So innovation is central to CANNON's strategy?

**Pierre:** Very much so. We're incredibly busy. Surprisingly so, in a good way. Even though sectors like automotive are slowing down and China is a bit challenging, we're building more special machines and offering tailored solutions. We can't compete solely on price and we don't want to. Our value lies in specialization, quality, and long-term performance. The machines we build in India have allowed us to stay competitive in this market, where pricing is critical. But more importantly, we offer durability, service, and a strong follow-up culture.

**PU Today:** Finally, what's your key message to the Indian polyurethane industry?

**Pierre:** I wouldn't presume to give advice to the Indian industry. It's a vast, dynamic market. On the contrary, I believe we need to listen and learn from it. While we might have more maturity in certain aspects, this is the market of the future. So my message is: listen to this market, respect it and be humble.

**PU Today:** A powerful message and a fitting conclusion. Thank you, Mr. Termoz.

**Pierre:** Thank you. Always a pleasure.



## Interview

# Interview with Dr. Jens-Uwe Vogt, ACMOS Chemie

**P**U Today: Good morning, Dr. Jens. Could you start by telling us a little about yourself and the company you represent?

**Dr. Jens-Uwe Vogt:** Good morning. My name is Jens-Uwe Vogt, and I am Head of Marketing and Sales at ACMOS Chemie, headquartered in Bremen, northern Germany. We specialize in process chemicals, particularly mold release agents and cleaning agents, with a strong focus on the polyurethane (PU) industry. In fact, PU accounts for nearly two-thirds of our total turnover. All our products are manufactured in Germany and exported worldwide.

**PU Today:** So ACMOS Chemie would fall into the category of specialty chemical producers?

**Dr. Jens-Uwe Vogt:** Yes, absolutely. We are very much a specialty chemicals company.

**PU Today:** Given the recent challenges in Germany especially concerning energy prices and supply chain issues how is ACMOS Chemie managing, and what do you foresee in the coming years?

**Dr. Jens-Uwe Vogt:** For us, energy costs are not a major factor since our processes are not

highly energy-intensive. We're formulators. But our customers, especially manufacturers, are feeling the pressure from increased energy costs to rising raw material prices, particularly since the end of the pandemic. That's why we aim to support them with cost-saving solutions. Our high-efficiency release agents help reduce scrap rates, lower cleaning time, and increase productivity. These efficiencies are central to our value proposition.

**PU Today:** Those sound like strong unique selling points. Are there any other differentiators?

**Dr. Jens-Uwe Vogt:** Yes, another important one is our range of both solvent-based and water-based products. However, our mission is to lead the shift towards water-based and hybrid systems because they are more environmentally friendly and help reduce VOC emissions. This is a major focus in Europe due to stringent regulations and growing demand for sustainability. In India too, we have been focussing on water based and hybrid release agents with great success.

**PU Today:** Is the push for sustainable products being driven more by regulation or by customer demand?



**Dr. Jens-Uwe Vogt,**  
ACMOS Chemie

**Dr. Jens-Uwe Vogt:** It's both. Over the past two years, we've seen a significant shift in Europe toward more sustainable solutions, driven not just by regulation but also by customer pull. OEMs are demanding that their suppliers adopt greener practices, which in turn pressures our customers to evolve and they turn to us for those solutions.

**PU Today:** Is this your first visit to India?

**Dr. Jens-Uwe Vogt:** Yes, it's my first time visiting India and attending an exhibition here on behalf of ACMOS. Previously, I was only responsible for European sales. However, ACMOS Chemie has been present in India for over two

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decades. We've had a successful partnership with our representative, Goodie International.

**PU Today:** With India projected to experience significant growth, how do you view the market's potential?

**Dr. Jens-Uwe Vogt:** India holds immense potential, not just in PU but across industries. The country is extremely important for our future plans. We aim to grow alongside the PU industry here. That means staying competitive which is crucial in a price-sensitive market like India and offering innovative, cost-effective solutions. The market is competitive, with strong local and international players, but the opportunities are tremendous.

**PU Today:** How does your business model work here?

**Dr. Jens-Uwe Vogt:** In India, we operate through a strategic partnership with Goodie International. They manage local inventory, sales, and customer engagement on our behalf. This model allows us to remain agile and responsive to the needs of the Indian market without setting up a direct local subsidiary.

Goodie acts as our extended arm - handling not just distribution, but also technical support, product customization, training, and troubleshooting. This ensures customers receive hands-on assistance and solutions tailored to their specific applications.

Through this collaboration, ACMOS has successfully introduced water-based and hybrid release agents to India, delivering European-grade technology with local support. The feedback from customers has been very positive, especially in terms of performance, sustainability, and service.

**PU Today:** India has ambitions to become a global manufacturing hub. From your perspective, how do you view the country's industrial ecosystem?

**Dr. Jens-Uwe Vogt:** I'm still learning about India's infrastructure, but it's clear that things are improving steadily. India's development is different from China's. It's more organic and less structured but it's progressing in the same direction. There's a great deal of ambition and energy here.

**PU Today:** From your experience so far, what stands out most about India?

*I hope India continues to pursue sustainable development. There's much to learn from European manufacturers in terms of environmental responsibility. At the same time, I admire India's unique approach to innovation.*

**Dr. Jens-Uwe Vogt:** The eagerness to learn and improve. Indian professionals are highly motivated to enhance their processes and manufacturing quality. This drive is key to the country's future success. India has the population, the intellect, and the determination. There's vast potential not only to serve the domestic market but also to export to other Asian countries and possibly even to Europe.

**PU Today:** The Asian market is poised to dominate in the coming decade.

**Dr. Jens-Uwe Vogt:** Absolutely. China is already a giant, and India is fast becoming the next big economy. It could soon be the third largest in the world. That makes it a strategic market for any global player.

**PU Today:** Finally, what message would you like to share with the Indian market?

**Dr. Jens-Uwe Vogt:** I hope India continues to pursue sustainable development. There's much to learn from European manufacturers in terms of environmental responsibility. At the same time, I admire India's unique approach to innovation. My message would be to blend the best of both worlds. Adopt sustainability while retaining your originality and drive.



## Interview

# *Interview with Jörg Palmersheim, ISOPA*

**P**U Today: Jörg, is this your first time visiting India, or have you been here before?

**Jörg Palmersheim:** It is my first time visiting India, and I must say, I am very impressed. The hospitality, the friendliness of the people, the level of service, and the willingness to help have all been remarkable. Beyond the business and industry interactions, it's been a very impressive visit overall.

**PU Today:** That's wonderful to hear. You've been associated with ISOPA for about 12 years now. How has India's role evolved within ISOPA during this time, and what changes do you foresee?

**Jörg Palmersheim:** That's a very good question. The evolution of India's role reflects the country's own development over the past decade. We hosted our second global meeting here in 2011, and now, after 14 years, we're back. This week, we held another global meeting in India, and notably, we signed a cooperation agreement between ISOPA/ALIPA and IPUA. That, in itself, signals how much India has moved into the spotlight. The growth rates speak for themselves.

**PU Today:** That's great news, especially considering the



**Mr. Jörg Palmersheim,**  
Secretary General, ISOPA

emphasis on safety and training. Can you please elaborate on the strategic pillars of ISOPA?

**Jörg Palmersheim:** Yes, definitely. ISOPA focuses on three strategic pillars globally. One is, advocacy with authorities. So, whenever at the center of Europe, in Brussels or in the member states like Germany or France, anything pops up which might affect our industry in terms of regulation, ISOPA has to be there. Secondly, it is about product stewardship. Because without safety of our substance and our industry, we don't have a future. So, it is an important pillar of sustainability to ensure that we can handle our substance safety. And

thirdly, it is about communicating how beneficial polyurethane is for society. Because many people still do not know how close they are with polyurethanes in their daily life. These pillars are applicable everywhere, including India, even if they're pursued with some local differences.

**PU Today:** Sustainability has become a key focus area, especially in Europe. How does that compare to what you see in India?

**Jörg Palmersheim:** Sustainability is gaining traction in India, and rightly so. In Europe, the Green Deal and the Circular Economy Act have driven policy and industry

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direction for years. No one, neither industry nor you and me as private people having families and kids, wants to pollute the world with plastic. Climate change makes it essential that our industry becomes circular and carbon neutral. That means renewable energy, renewable raw materials, and a circular end-products.

**PU Today:** Absolutely. With India's projected consumption growth, this becomes even more critical. But when it comes to circularity, especially for smaller and medium-scale enterprises, how can collaboration between Europe and India help?

**Jörg Palmersheim:** In Europe, for mass applications like mattresses and refrigerators, we've seen promising industrial-scale developments. However, these require entirely new value chains such as collection, dismantling, and chemical recycling. India can certainly learn from these best practices, but the same value chains must be built here. Start with high-volume products like mattresses. Adhesives, sealants, or automotive parts with multiple polymers pose bigger challenges, but we must work toward solutions for all of them.

**PU Today:** Collection and reverse logistics remain a big hurdle in India. So does funding for circularity. Where does that responsibility lie? With governments, companies, or raw material manufacturers?

**Jörg Palmersheim:** That's a very real challenge. Over the past

few years, the chemical industry in Europe has faced a tough economic environment. It's a balancing act to manage cash flow and also stay innovative. Polyurethanes are difficult to recycle, so both mechanical and chemical recycling must be pursued. Ultimately, it must make economic sense. Industrial-scale, economically viable solutions are the goal. But high energy costs, especially in Europe, are a further burden. Still, the commitment to sustainability remains strong across our industry's leadership. In the end, our industry's commitments and efforts must be met by a stimulating legislative environment. No one single actor can take on this challenge alone. Governments, companies, and raw material manufacturers need to come together on this.

**PU Today:** Let's talk about the training you've launched in India. I noticed a QR code that leads to an online course. What's that about?

**Jörg Palmersheim:** Yes, that's a general safety training course now available in Hindi. It's about 40 minutes long and ends with a 10-question quiz. When you answer 8 questions correctly and you can do this multiple times, then you receive a certificate. It covers what diisocyanates are, how they relate to polyurethanes, associated risks, PPE, and emergency responses. We've partnered with IPUA so that all their members can access this course free of charge using a code.

**PU Today:** That's great. Is there also a module to train trainers?

**Jörg Palmersheim:** Yes. We found that many senior professionals weren't comfortable conducting safety training for their teams. So we created a six-to-seven hour online "train the trainer" module taught by a certified trainer. It equips participants with what they need to teach their own teams and comes with certification. Last week, we had our first two Indian participants one of them being Siddharth Malani, the incoming chairman of IPUA, along with a colleague from his company.

**PU Today:** That's very encouraging to hear. Finally, what would be your message to the Indian polyurethane industry?

**Jörg Palmersheim:** Stay innovative. Even after 25 years in this industry, I continue to see new applications for polyurethane. Secondly, stay safe. Understanding the chemistry and the associated risks is crucial. It's not rocket science, but it requires respect and knowledge. And thirdly, sustainability is non-negotiable. The future of the industry and our planet depends on it.



## Interview

# Interview with Martin Kruczynna, Pearl Group

**P**U Today: Good afternoon, Martin, and welcome back to India! You seem to be here quite often. We last met at Innovation Day. Now, it's the first day of PU Tech. How do you see this event shaping up compared to PU Tech 2023? How have market dynamics changed, and what's your sense of the atmosphere this time?

**Martin Kruczynna:** Isaac, thank you for being here. We are really excited about PU Tech and what it holds in store for us. For us it's a totally different situation than two years ago. Two years ago we were dipping our feet into the water. We were basically getting our name out there. Now the situation has changed completely. We have made significant progress. We already have a solid customer base in India that currently we're supplying to at first from Dubai, then from Vietnam but we're making great strides towards opening our production site in Gujarat by September this year. We are having discussions of a totally different quality with existing and prospective customers now.

**PU Today:** That's great progress, and we've been following Pearl closely. You're establishing a footprint and a handprint across geographies. Each market has its



Martin & Team, Pearl Group

own unique needs. How does India compare with or differ from other countries where you're present?

**Martin Kruczynna:** I think it's important to state that our view of the Indian market has changed drastically over the last two to three years. We have very much noted, apart from the strong growth, that the quality

required by customers has risen significantly. We have realized that there is need for high quality product, for technical service. We have seen that there is a need for support on the technical side. We have seen that previous concerns with regards to IP, with regards to stability in legal environment, have drastically improved. If I look at the global map these days, I don't think there's any

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more promising market than India in the world. If you look at projected GDP growth on the one hand but also at the structure of demand, as a very big chunk of the demand in most industries and applications is caused by internal factors. If I look at our plant in Vietnam that's partially catering to export markets or our customers, who might be catering to export markets in many areas -- in India it's different. I think this is an excellent factor for the market and it's shielding India from the global volatility that might be seen over the months to come.

**PU Today:** And how are you approaching the supply chain in India both upstream and downstream?

**Martin Kruczynna:** Our goal is to source as much as we can locally. We understand though that some of the materials that we procure are global commodities and that neighboring countries also have very attractive offers. Definitely we expect also that local production is going to reduce production costs significantly. On the one hand because you're not paying import duties anymore, transport costs will be less and then you do get access to local suppliers as well.

**PU Today:** Looking at global trends around sustainability and the circular economy, what role do you see for Pearl?

**Martin Kruczynna:** One third of global CO<sub>2</sub> emissions are caused by buildings and half of this could be avoided through proper

insulation. So polyurethane rigid foam is the most effective and efficient means of insulation there is. It's much more efficient than rockwool or polystyrene or other substitutes. So the greenest factor about all of this is the product itself. The greenest thing and the best thing for our planet that people could do is insulate more and use more rigid polyurethane for insulation applications.

Now recyclability is a relevant topic that keeps on coming up. If we're honest, if the material goes into construction application, it is difficult to close the loop. If a building has a longevity of three, four, or five decades and is being torn down, it's not likely that people will tear the rubble apart and recycle the polyurethanes.

So I think it is our obligation as the industry to search for solutions where we can include recycled products in the polyurethane formulations. We have recently started selling polyesters that contain recycled PET bottles which we are also starting to use in our polyurethane formulations. We have started using green products like soybean oil, castor oil, cashew nut oil etc.

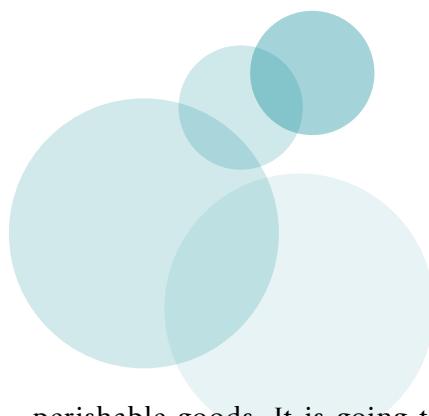
One thing that's important though is that the measures that we and our competitors take are not making the product more expensive because only a competitively priced product will help all of us in the industry to succeed against inferior substitution materials.

**PU Today:** That's a key point. Since you mentioned earlier the increasing need for technical services, what about training? IPUA has started collaborations with universities. Are you looking at something similar?

**Martin Kruczynna:** That's an excellent topic Isaac and I think there's an area where we as an industry can improve significantly. I think we need to educate decision makers in the value chain. I think everyone in the industry is already convinced about the value of polyurethanes as a product category. We need to educate architects, regulators, stakeholders in general about the benefits and this starts with high-level politicians.

If leaders of governments or municipalities commit to climate neutrality, they cannot do so without proper insulation of buildings. They need to understand the differences of polyurethane insulation to inferior insulation solutions. But then again, if architects design buildings, they should be aware of the versatility of our products as well as the green impacts. Only if we help people understand the benefits and communicate those, will they be able to act as multipliers. The issue with this is this is long-term approach. You need to invest now but have the benefits in maybe five years, seven years, eight years. We just need to get started. It's never too late.

**PU Today:** True, it's a slow process but essential. Speaking



of applications, cold chain is one major area for India, where IPUA is focusing efforts. Given India's high food wastage, are you looking at cold chain interventions here?

**Martin Kruczynna:** Basically as a new entry to the Indian market we want to learn about the needs of the market. We do have all the products required and we can educate our customers about how to optimize the efficiency of what they do. We can also pinpoint at certain gaps in the chains having seen and witnessed best practice in many other regions of the world. As you know we have been active not only in the Middle East and Africa but also in Europe also Southeast Asia, Australia. We have sales offices in Germany and in South America but it is not our goal to enter a country and know everything better. So we want to work with the IPUA, with our customers and jointly find solutions.

**PU Today:** And hopefully bring in global best practices too?

**Martin Kruczynna:** Yes. What we will bring is best practice with regards to safe handling of the product, with regards to proper ways of manufacturing the product in order to ensure the right technical specifications, etc. We can definitely support there but at the same time we want to learn about the needs of the markets, adjust our products and then jointly work with the players in the value chain in order to increase the size of the pie which by definition will reduce waste of

perishable goods. It is going to reduce thermal energy waste and thus conserve energy conserve electricity and thus CO<sub>2</sub> emissions.

**PU Today:** So your presence will span multiple segments. Can you share a bit about your investments and what's next in your India roadmap?

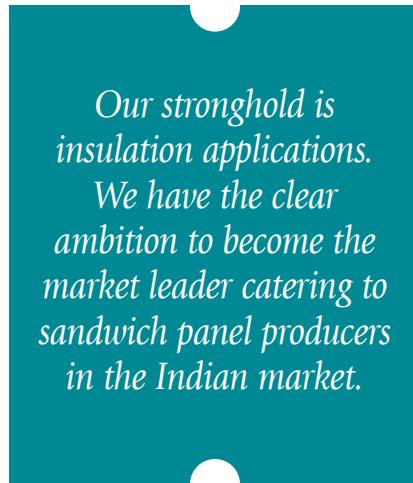
**Martin Kruczynna:** I think our investment in India is based on different phases and phase one is expected to be completed by September this year. We will produce our polyurethane systems and we will also have pre-polymer production here in India and Gujarat. As a second phase, and that should be after two to three years, we expect to also set up the backward integration into polyester polyol production. The product is intended really solely for the Indian market and not for export. We strongly believe in the potential of the market and double digit growth rates. We intend to cater to all of the applications. Of course our stronghold is insulation applications. We have the clear ambition to become the

market leader catering to sandwich panel producers in the Indian market but we also want to cater to applications like spray foam, like pre-insulated piping, like molded foam, poly-urea, flexible packaging, lamination adhesive etc etc.

**PU Today:** That sounds very exciting. One final question, what's your key message for Indian customers and partners?

**Martin Kruczynna:** I think Indian customers and partners can be very proud of the development of the Indian market. It's amazing to see how the market has developed over the last years and decades. The steps Pearl is taking now as a group are the best proof of all of this. The market has become attractive because of a critical mass of high quality customers and suppliers. I think the industry and the IPUA have done a great job of creating something that is really attractive for outside investors who have gained trust and see a bright long-term future for the market. I think this is something extremely rare and valuable in these volatile times. I can only repeat myself when I say, I don't think there's any more attractive market than India over the next years to come.

**PU Today:** Thank you very much, Martin. That's a powerful message to end on.



*Our stronghold is insulation applications. We have the clear ambition to become the market leader catering to sandwich panel producers in the Indian market.*



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## Interview

### *Interview with Thomas and Bruno, Covestro*

**P**U Today: Good morning, Thomas and Bruno. As we were just talking about the 75-year anniversary of Vulkollan®, how do you feel about this milestone?

**Thomas:** It's incredibly exciting. This anniversary reflects decades and generations of dedication, passion, and talent from chemists, engineers, application developers, and many other experts. The 75 year success story shows that performance, like the ones developed by cast PU elastomers made of Vulkollan®, truly matters in the global market. Despite economic challenges, polyurethane elastomers continue to grow because they offer unmatched performance, efficiency, and sustainability options. Compared to other elastomeric materials, cast polyurethanes excel in process efficiency and overall life cycle value.

**PU Today:** You mentioned sustainability. How is Vulkollan® progressing in terms of using sustainable raw materials?

**Thomas:** Elastomers made of Vulkollan® are already a highly sustainable solution due to the outstanding durability of this material. Its long life cycle means fewer replacements are



Thomas, EVP - Elastomers with Bruno, Global Head - Marketing, Elastomers, Covestro

needed, which inherently reduces waste. That's performance-based sustainability. On top of that, Covestro is investing in chemical recycling. We've announced the investment in a pilot plant enabling parts made of Vulkollan® to become fully circular. Additionally, we're also reducing the carbon footprint of our solutions e.g. through applying mass balancing. So, we're enabling and developing sustainability solutions, both in terms of circularity and climate impact.

**PU Today:** That's great news. Is this your first time in India?

**Thomas:** Not at all. I was based in Asia from 2005 to 2009 and have been to India several times. The development here has been phenomenal. We're seeing rapid growth, especially in infrastructure, logistics, railways, pipelines, and mining. With that comes increasing demand for high-performance elastomers. More companies are investing in polyurethane solutions and

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shifting from other elastomers to polyurethane cast elastomers, and within that, toward high-performance systems, like quasi-systems based on MDI, which offer even better efficiency and collaboration opportunities.

**PU Today:** Bruno, you've attended previous editions of Pu Tech. How do you see India evolving between the last edition and now?

**Bruno:** What stands out to me is the growing customer demand for high performance, quality, and long-lasting products. This aligns perfectly with our strategic pillars: performance, innovation, and sustainability. Indian manufacturers are aiming to elevate the quality of their output, and that's helping them serve not just domestic, but also global markets more effectively.

**PU Today:** Recently, the Indian Polyurethane Association (IPUA) started working with universities for training and skill development in polyurethane. Covestro already collaborates with institutions globally. Would India be a part of this in the future?

**Bruno:** Absolutely. Innovation is core to Covestro, and partnerships with leading universities and institutes are part of our DNA. We already do this in Germany, China, the U.S., and other regions. For elastomers specifically, we're exploring possibilities in India too. It's still early days, but with our strong presence here, it's just a matter of time. Our technical center in India already supports

tailored development, and this next step will only deepen our engagement.

**PU Today:** That's promising. How has your experience been at Pu Tech 2025 so far?

**Bruno:** Very inspiring. We've had deep, technically rich conversations with industry players. It reinforces our commitment to high-performance materials, efficient processing, and the goal of a fully circular future. Our booth's theme "One single source to cast a sustainable future" has really resonated. Yesterday, we even ran out of seats at our machinery presentation. It's clear that interest in our integrated solutions is high.

**PU Today:** Speaking of integrated solutions, we talked about materials and machinery. What about manpower? How is Covestro positioned in India in terms of technical expertise?

**Bruno:** We have a dedicated distribution partnership with SRI in India that goes beyond sales. It's a successful relationship over decades focused on collaboration, customer education, and transformation. We also operate a technical center where we conduct trials and help customers with tailored solutions. The level of engagement and technical conversation in India has really evolved. It's no longer basic inquiries. There's a focus on always trying to improve the process, and the performances. There's been a big leap in terms of the technical discussions with local players. As Thomas mentioned, it's very motivating for us because

this is really the approach and positioning that we have with our customers. We are trying to help them to grow with their knowledge and their capability to provide solutions for the applications.

**Thomas:** And we're seeing a shift. Many started with traditional elastomers, then moved to basic Pu systems. Now, we see more and more leading players opting for our quasi-MDI systems solutions like our Desmodur® MDQ75 system that meet global benchmarks for performance.

**PU Today:** To wrap up, could you share your 5-year strategy for India?

**Thomas:** India is rapidly advancing across various sectors. Our strategy is to be a full-solution partner providing materials like Desmodur®, Baytec®, and Vulkollan®, Baulé® machinery, and technical services via dedicated technical center. This is a combination of Covestro employees and long-term partners. India is a strategic market, and we are fully committed to supporting its growth.

**PU Today:** And finally, what would be your key message to India?

**Thomas:** Continue to build success on technical capabilities and performance. That's what will elevate the industry and sustain its global competitiveness and ultimately generate value.



## Interview

# *Interview with VP Nalian, Thuan and Balaji of Momentive*

**P**U Today: Good morning, and thank you for joining us. Let's begin with a broad view. As a global leader, what changes have you observed in the industry climate, both globally and in India? Were you here at the last Pu Tech?

**VP Nalian:** No, I wasn't here for the last Pu Tech, but I've been following the industry closely.

**PU Today:** So, what are your views on how things are changing?

**VP Nalian:** I'd start by saying that we shape our strategy around industry trends. When you refer to climate, I'm assuming you mean the business climate. The first trend we've identified is regulatory. There's increased scrutiny and heightened consumer awareness around sustainability, climate change, and health and wellness. What that means for us is that the cost of operating in the chemical industry is going to be extremely high over the years. Regulations will drive a set of norms. Most of it will be good. Some of it will probably be academic because you have got to balance the social cause versus progress and value creation. Therefore, costs will go up.

However, from a consumer



Thuan, Sr Global Business Director; Balaji, Regional Leader & S Asia Segment Leader - PU Slab; Nalian, President - Performance Additives

standpoint, they will seek more sustainable solutions. Solutions that are environment friendly, and healthier. So, that is the first trend. Everything and everything related to our portfolio is created around sustainable solutions.

The other trend that we all have been focusing on, especially post the pandemic is the digital economy. Which is not digitization per se, but which is what you call IT enabled services, computerization, etc. It is just an

economy that is now developing, which is completely digital. Not just in terms of banking transactions, but with everything that you can touch, including the polyurethane mattress industry, where you now have a mattress in a box.

You could not have imagined a time wherein a customer sittings thousands of miles away could have ordered a huge mattress and hoped to get it delivered home in a box. So, that is the economy.

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There is a transaction happening. Typically, traditionally, you would need to go to a shop, sit on a bed, dance on a bed, or have the children jump on a bed before you buy it, to make the order go faster. So, the digital economy has really spurred challenges, especially to the supply chains. That is the second trend.

The third is what we call insular economics, which is insularity in trade. This is more focused on what is good for us, as countries, versus globalization. There is a clear trend towards de-globalization, and we call it insular economics. So, those are the three things that we believe are relevant from a macro standpoint. And that impacts every country in the world, including India.

There are specific country nuances that are different, but these are the three things that we believe the industry is facing, and how to be responsive. This impacts us directly. The cost of operating in the chemical industry is going to rise \_\_\_\_ driven.

**PU Today:** That's a sharp analysis. Now, considering these three major trends how do you see growth happening in India? Especially since regulatory changes are sometimes slower here.

**VP Nalian:** When I look at India, I believe it has got to go beyond the simplistic view of 1.3 to 1.4 billion people, and therefore, it is going to be similar to China. I think that's

too simplistic and too idealistic a view.

Anybody who has been close to industry and business in India, will recognize that winning in India is very different from winning in China, or any other part of the world. So, the fundamentals are there. It is not going to be 10% plus growth year on year, like China did for many years.

It is going to be stable, sound, good growth, and I call it 'in the middle of organized chaos'. There is some level of chaos, whether it be infrastructure, whether it be productivity, inflation, policy fluctuations, but there is still a structure in the way it operates. People who are not familiar with it can get confused with the chaos.

People who understand know that there is still a structure, much like India's traffic. It is not that you see too many accidents, but you find a way to navigate through it. As long as you recognize that there is a structure and a discipline behind how things happen, you can find a way to win in these markets.

So, one is to understand that, and not get carried away by trying to emulate a China model in India. That way you keep your investments, and expectations in balance. Where you don't sell to your investors, that this is one of those things that will take off like a rocket. And the second is to understand that you have to be very value conscious to be able to be successful in India.

You have got to be truly local to win. If you are not local, you are not going to really have long term success. So, we have invested in India. We have been here for the last 30 plus years. We have stepped up our investments in the early 2000s. We have got our plants. We have sought permits to double our capacity. We have got those permits approved. Now, we are slowly investing into that capacity expansion.

Our first phase was extremely successful. We will continue to build application development. We have a state-of-the-art, world class block chain research and development center in Bangalore. We have got a world class plan. We have got world class people. We have got 550 plus people here in India.

So, that is a testimony of our commitment to the space. And we know how to win. I don't want to be boastful, but we have got a fantastic team. We know how to play this game. We are ethical and responsible. We are staying committed and have been staying committed for a long time.

**PU Today:** That's great to hear. As our industry expands, Momentive's involvement in education is also appreciated. I must mention the postgraduate diploma course in polyurethane technology. Which is a joint venture between IPUA and Somaiya Vidya Vihar University. Are you aware of this initiative?

**VP Nalian:** Yes, I am.

We don't usually talk much about it, but we've consistently invested in the community. We have sponsored the education of 13 childrens destitute children for the last 15 plus years. We stay focused and committed without making noise about it.

**PU Today:** Your contributions across social, environmental, and economic fronts are commendable. Let's bring in Thuan now. As the Global Segment Leader, where does India sit on Momentive's global map?

**Thuan:** I think India plays a very big part in the growth story for us. For all the reasons that Nalian just said. I think he did a really nice job summarizing. I think the population that has access to foam today is still relatively low and there is a big head space and a big opportunity.

It's not just in bedding but also in insulation and a number of applications like molded for automotive seating. It touches a number of other avenues. I would say we are excited about it. As Nalian said, it's been almost a 15 year investment with our plant in Chennai and we're very proud of it. We've got quite a bit of people here to support it. Again, we are going to continue to invest in this market and I think it's very exciting.

**PU Today:** You've launched new products recently. How has the market responded? Do you see it as a commoditized or specialized space?

**Thuan:** I'll start with the focus areas that mirror almost what Nalian said. For us, the focus areas for the slab side of the business is digitization, e-commerce, changing the way we operate, and changing the way we shop.

As Nalian said you can now buy a bed online. Compression set and foam resilience is a big part. Once you compress and roll the bed, it's got to come back up. That's where we come in. We are the enabler that allows that bed to do that and that's a big focus area for us.

The second one is regulatory. As there's more and more focus on hazardous materials, especially led by Europe, that's a big focus for us. We've introduced products like D25, which is a catalyst with 2EHA free.

The third is sustainability. I think as the population grows, the focus on sustainability will continue. I don't think it's a matter of if rather it's a matter of when.

We all play in the role of trying to make our products more sustainable and reduce our carbon footprint. When we think of sustainability, we're the enabler. We give you a surfactant that allows compression sets so you can ship foam more easily. We give you a surfactant that allows you to have a better K-factor for better insulation, whether it's construction or appliances. We give you a surfactant that allows you to have low density, so lighter weight.

That's where we play. Those are the areas that we're excited about. It's not a commoditized business for us. It's a very specialty business because again, this 1% really controls the overall performance of the foam.

**PU Today:** Speaking of sustainability, what's Momentive's involvement in mattress recycling? Balaji, would you like to comment?

**Balaji:** We don't do mattress



The Momentive team in conference



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recycling directly, but we work on recycled polyol use. Our additives enhance the performance of recycled content to match that of virgin materials. This is part of our GeoCell™ strategy, where we're developing solutions that allow for higher percentages of recycled content in foam formulations.

**VP Nalian:** Exactly. We're working with partners in Europe, Dr. Gabriel Kiss's team, for example, on projects where our additives double the usable percentage of recycled polyol in formulations. It's a productivity gain and a sustainability win. Of course, it's work in progress. The whole supply chain needs to develop. Extraction plans have come up in Europe. Now it's a question of once you extract the intermediates, how do you reuse it? The more you can reuse, delivering similar performance benefits, the more effective this whole product, and supply chain will be.

**Thuan:** I'll just piggyback on what Nalian said. Our approach really is two-fold. One is, there are companies out there taking foam back down to the polyol. We don't do that. But we provide a surfactant that allows these companies to use some virgin polyol along with recycled polyol with our surfactant, and still continue to make good products with good physical properties. That's one area.

The other area is creating a surfactant that allows you to put more bio-based polyol.

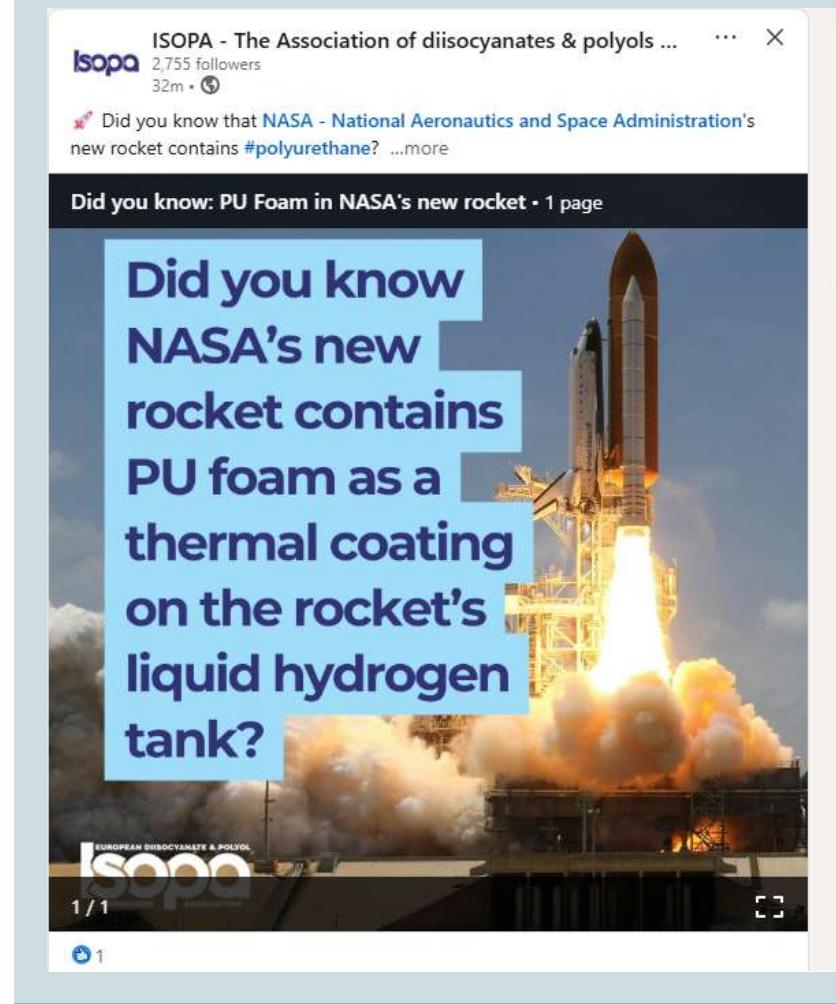
And to Nalian's point, we've now demonstrated that we can double the amount of bio-based content in the formulation with our surfactant. So there's a few ways where we're the enabler that allows this to work. That's the story that we continue to work with.

**PU Today:** That's an important story and with India being a major producer of castor oil, there's significant opportunity here.

Before we close, do you have any final thoughts or a message for the Indian market?

**VP Nalian:** I think there's just one thing. You've got to be here for the long haul. India rewards consistency. It's a market where you must deliver cost-competitive, high-quality, and sustainable solutions. If you're committed, the growth will be steady and sustainable. And that's how Momentive has built our success.

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## Interview

# *Interview with Giuseppe Librandi and Prasanna Rao, COIM*

**P**U Today: Mr. Giuseppe, is this your first time visiting India?

**Giuseppe:** No, not at all. I used to come quite often. Last year, I visited five times. This is already my second visit this year.

**PU Today:** And to PU Tech?

**Giuseppe:** This is my second PU Tech. I was here two years ago as well.

**PU Today:** What changes have you observed since then?

**Giuseppe:** This year, I noticed a lot more activity. There's much more noise with more people, more energy. We've had some good contacts, and there seems to be a rising interest, possibly influenced by global shifts. Many expect that India will benefit as companies look for alternatives to China. The general mood here feels optimistic.

**PU Today:** You've been coming here frequently over the past two years. That suggests India holds strong appeal?

**Giuseppe:** Indeed. COIM has been in India for nearly 13 years. Initially, we operated as a distribution company and a system house, mainly handling products from Singapore, predominantly



**Giuseppe Librandi,**  
President and CEO,  
COIM Group



**Prasanna Rao,**  
MD, COIM India

for footwear. While footwear remains significant, the market has changed. It's now crowded with players, prompting us to rethink our approach. We've changed management, are expanding our sales team, and want to look at India with fresh eyes. It's a high-potential market with a young, educated population, and a growing middle class. We're working on several projects to strengthen our local presence.

**PU Today:** When you say you're changing the business model, what exactly does that mean?

**Giuseppe:** We want to start doing more locally. Some projects are nearing final stages, others are still at the beginning but we're

moving in several directions. Announcements won't come today or tomorrow, but we're working to build a strong foundation. India isn't an easy country to operate in, but it's full of opportunity. If you want to stay, you have to do things the right way.

**PU Today:** COIM operates across several segments. Are there particular areas of focus here?

**Giuseppe:** We don't want to bring anything too different from what we do globally. Our main focus is polyurethane both systems and polyester polyols. Our goal is to increase our presence in specialty segments rather than compete in the crowded commodity space. For commodities, margins are



tight and competition is intense. Our focus will be on high-value, niche products where we can add real value.

**PU Today:** Speaking of value, I remember Prasanna presented on sustainability at the last Innovation Day. Could you elaborate on COIM's approach to sustainability?

**Giuseppe:** Absolutely. Being headquartered in Europe, we're bound by strict laws around sustainability. But beyond compliance, we believe it adds real value for the business and for society. Three years ago, we released our first sustainability report. Now, we track emissions, water use, and efficiency across the group.

Efficiency and sustainability go hand in hand. If you consume less water, less energy, or source materials more locally, you reduce environmental impact and cost. Our customers are also demanding it. Some want to be net zero by 2030. So we're reshaping processes and product lines to support that.

**PU Today:** That must mean changes to your products and raw materials too?

**Giuseppe:** Exactly. Some raw materials aren't sustainable, or the production processes consume too much energy. So yes, we sometimes have to discontinue or reformulate products to align with our sustainability goals.

**PU Today:** What about collaboration with academia?

**Giuseppe:** We already work closely with universities in Europe, both national and regional, to co-develop new products. We also work with high schools and students, showing them our plants and labs to raise awareness about chemistry and manufacturing. In India, we're not at the production stage yet, but as we scale up, collaboration with Indian institutions will follow naturally.

**PU Today:** Is COIM also investing in training and skill development in the polyurethane sector?

**Giuseppe:** We try to. Starting from schools and colleges, though it's not easy. Attracting talent is a global challenge, not just in India. People are drawn more to B2C or pharma roles that seem more appealing. Our work is more B2B, behind-the-scenes, so it takes extra effort to attract young talent. But we're committed to it.

**PU Today:** Prasanna, how do you see the current Indian market especially in terms of growth, sustainability, and innovation?

**Prasanna:** The current demand has been lower than expected, especially since late 2023. Geopolitical tensions have disrupted projections. But India's domestic consumption is strong enough to sustain long-term growth.

Sustainability, I believe, is a matter of choice and company culture. At COIM, it's embedded in our DNA. We're already moving towards Scope 2 reductions and looking at full green-energy manufacturing,

especially in our Italy operations. Our products increasingly reflect this shift.

Innovation-wise, we're deliberately staying out of the commodity segment. For example, in footwear, we're focusing on new-generation product range. We're also introducing hybrid range, advanced TPUs for injection and extrusion, and new-generation cast PUs. In India, COIM currently offers 4 product lines, but we aim to bring in more of the 18 lines we have globally. It's about expanding both market presence and innovation.

**PU Today:** Giuseppe, a final message to the Indian industry?

**Giuseppe:** We're in a difficult global environment. But we won't give up because the world needs chemistry, and India has immense potential. Compared to its population and economic size, India's current chemical production is still modest. The shift away from China creates opportunities here. Democracy matters. For investors, knowing your money is protected is crucial. In the past, we may have rushed into China. Now, there's a growing realization that India, with its stable democratic framework and young talent, is the right place to invest. I'm confident that investing in India today will prove to be a great success in the near future.

**PU Today:** You mentioned 'invest' quite a few times and that's very encouraging. Thank you both for your time and insights.

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# PUTECH 2025 Conference & Panel Discussions – A Summary

By Arun Kumar

Head, PUTech2025 Conference

## Overview

The IPUA Executive Committee entrusted me and the Technical Committee with the responsibility of designing and delivering a world-class conference. Our guiding principles were clear and ambitious:

- Deliver a high-quality, seamless conference infrastructure and experience.
- Curate globally relevant topics and speakers.
- Implement an objective and rigorous selection process for all submitted papers.
- Ensure technical content is relevant and applicable to the Indian PU industry.
- Showcase two impactful panel discussions reflecting both national and global perspectives.

## Panel Discussions – Strategic Focus

### 1. India's Growth and Investment Readiness

- Featured prominent Indian PU industry leaders.
- Explored India's economic trajectory and its readiness to attract domestic and foreign investments.



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### 2. Global Shifts: Markets and Manufacturing Moving to Asia

- Included senior international leaders from the global PU industry.
- Addressed evolving global supply chains and the shift of manufacturing hubs to Asia.

These panel discussions were positioned as flagship sessions, emphasizing India's growing role in global polyurethane development and encouraging thought leadership.

### Conference Design and Execution

We received an overwhelming response from professionals around the world, expressing interest in speaking at the event. Following a rigorous selection process, 33 speakers were finalized.

The conference was structured into three thematic segments spread over two days:

- Rigid
- Slabstock & Sustainability
- Specialty Foams

Sessions were conducted concurrently across three halls, and were skilfully moderated by ten experienced professionals from the Indian PU industry.

### Outcomes and Reception

The panel discussions were strategically held at the end of each day, serving as high-impact closing events.

Key Attendance Figures:

- Over 1,000 attendees participated in the conference paper sessions.
- Approximately 200 attendees joined the panel discussions.

Feedback confirmed that the technical content was highly relevant, with particular praise for the insight and quality of the panel discussions.



The successful execution of the event was the result of meticulous planning and coordination:

#### 1. Outreach and Speaker Engagement

Six months before the event, we launched a global outreach campaign via the Executive Committee, personal networks, and LinkedIn to invite speaker interest.

#### 2. Abstract Review and Selection

A dedicated committee reviewed a large number of submissions, selecting abstracts based on predefined internal quality and relevance criteria.

#### 3. Speaker Confirmation and Timeline Management

Selected speakers were confirmed three months in advance, with a clear deadline set for final presentation submissions one month prior to the event.

#### 4. Presentation Review and Feedback

All presentations were reviewed to ensure alignment with submitted abstracts. Constructive feedback was provided where needed.

#### 5. Finalization and Scheduling

Speaker slots and sessions were finalized and scheduled in accordance with the conference's overarching themes.



PU TECH 2025  
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IPUA

PU TECH 2025 PANEL DISCUSSION 1

9th April, 2025

Indian Polyurethane Markets - Opportunities, Challenges And Road Ahead

Speakers (from left to right):  
1. Jalevan (Nameplate: Jalevan)  
2. VKC Razak (Nameplate: VKC Razak, Managing Director, Birla Polymers)  
3. Tushar Gautam (Nameplate: Tushar Gautam, Managing Director, Sheetal Industries)  
4. Aman Chhipa (Nameplate: Aman Chhipa, Chairman, SPACK)  
5. Rajesh Nithin (Nameplate: Rajesh Nithin, EMLI President-Director, Aristo Applications)  
6. Anil Kumar (Nameplate: Anil Kumar, Director, Shapoorji Pallonji)

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### 6. Moderator Appointment and Briefing

Moderators were selected and thoroughly briefed to ensure a professional and consistent flow across sessions.

### 7. Program Promotion

The final program flyer was widely circulated via digital platforms, especially LinkedIn, to maximize reach and engagement.

### 8. Panel Discussion Planning

For the first time in PU Tech's history in India, panel discussions were introduced. The Technical Committee brainstormed and proposed strategic themes aligned with both Indian and global interests.

### 9. Panelist Selection

Topics were finalized internally, and relevant panelists were identified and invited to participate.

### 10. Stage and Infrastructure Coordination

A detailed charter was developed in partnership with our exhibition collaborators to ensure stage readiness and smooth execution.





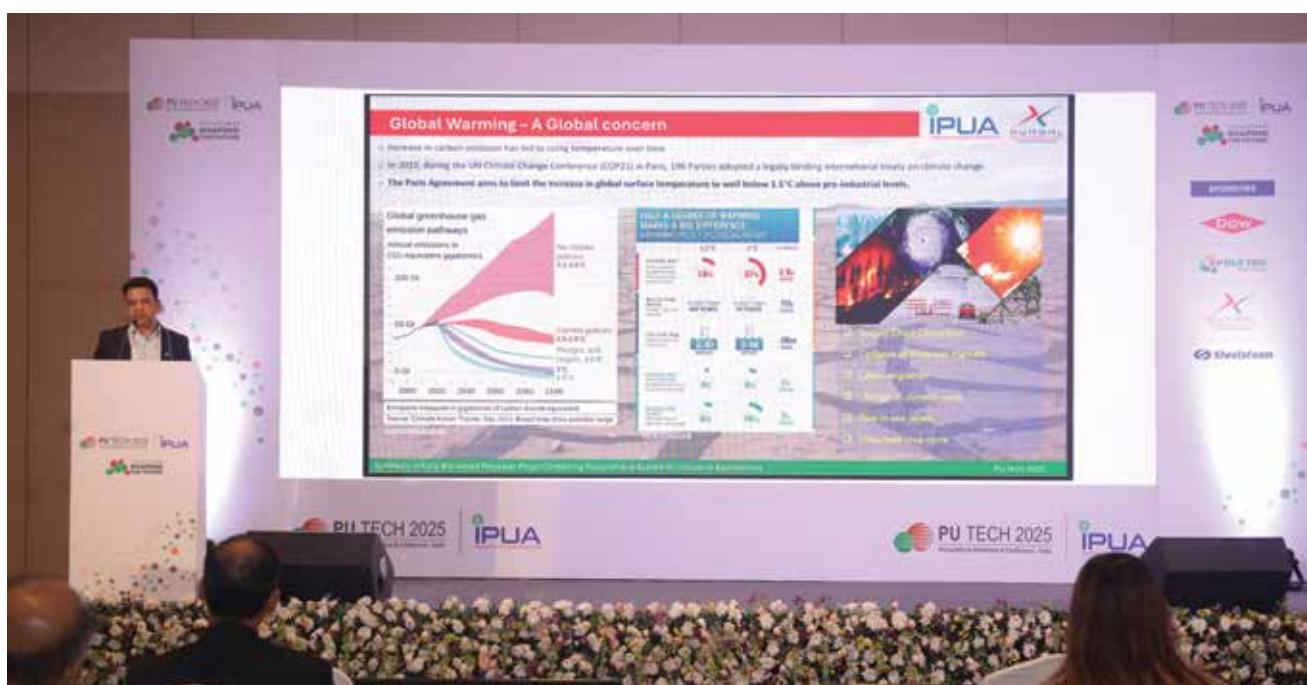
## Reflections

Leading PUTech2025 was both a challenging and deeply fulfilling experience. Coordinating numerous stakeholders, managing timelines, and delivering a world-class event required sustained effort, clear communication, and strong teamwork.

The lessons we've learned as a team will serve as valuable foundations for future conferences.

All conference presentations are available to IPUA members on the official website:

[www.IPUA.in](http://www.IPUA.in)



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We're honored to partner with leading global and national associations whose expertise, insight, and industry leadership shaped the event. Their involvement sparked meaningful dialogue, brought together key stakeholders and added significant value throughout.



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ISPF is an industry body promoting importance  
of sleep & role of mattress for Indian consumers



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## A NOTE FROM OUR VISIONARIES

The polyurethane industry in India is on a transformative journey, and events like PU TECH serve as catalysts for innovation, sustainability and partnership.



"PU TECH 2025 was not just an event - it was a reflection of the polyurethane industry's growing confidence, innovation capacity and unified vision for the future.

**MR. HARNEET KOCHAR**  
**IPUA Chairman**

As Chairman of the Indian Polyurethane Association, it gives me immense pride to witness the resounding success of PU TECH 2025. This edition not only surpassed expectations in scale and participation but also set a new benchmark in terms of industry collaboration, knowledge sharing and global engagement. The enthusiasm shown by exhibitors, speakers, delegates and sponsors alike is a testament to the strength and momentum of our community. From our dedicated Executive Committee and newly-formed sub-committees, to our global partners and IPUA members – your collective efforts have laid the foundation for a stronger, more connected future.



## MR. RISHI MADAN

**Events Committee**

As Head of the Event Committee, Rishi Madan played a key role in planning and executing PU TECH 2025. From early-stage preparations to final day wrap-ups, he remained deeply involved in every aspect — ensuring timelines, coordinating teams, and driving the overall experience forward.

*"PU TECH 2025 was a milestone for us. The energy, the engagement, the scale - it all came together beautifully and laid a foundation for a better tomorrow with PU!"*



## MR. SUNIL MINOCHA

**Secretary General, IPUA**

With his steady leadership and collaborative mindset, Sunil Minocha helped transform the blueprint of PU TECH 2025 into a memorable, high-impact platform. As General Secretary, his role bridged the gap between planning and execution, ensuring synergy across teams and partners.

*"Every person, every partner had a part to play – and seeing it all come together so seamlessly has been one of the most rewarding aspects of this journey."*

We extend our heartfelt gratitude to all of our sponsors, partners, committees, internal team and the attendees for making this event a great success.

## **OUR PU TECH 2025 EXCOM COMMITTEE**

The members of the Executive Committee, have been the strategic vision, subject-matter expertise, and unwavering dedication to the success of PU TECH 2025.

From defining the event's direction and selecting industry-relevant themes to enabling global collaborations and maintaining operational excellence, the committee played a central role throughout. Their contributions shaped every facet—content planning, speaker curation, partner engagement, and on-ground execution—ensuring PU TECH 2025 surpassed expectations in both scale and significance.



***We thank each member for their time, insight, expertise and passion in making PU TECH 2025 a resounding success***

## IPUA COMMITTEE

Under the leadership of IPUA, several specialized committees – covering Technical Innovations, Sustainability, Advocacy, Global Outreach and Events were formed to guide the industry's future. PU TECH 2025, driven by the Events Committee, is a flagship outcome of this structure, reflecting the collective efforts, strategic vision and deep industry collaboration fostered across these focused groups.



**MR. ARUN KUMAR**  
Technical Committee

The committee conducts Webinars, Training Seminars and Safety Trainings on key Polyurethane topics. It focuses on Rigid, Slabstock and Moulded PU Foam.



**MR. NEERAJ GARG**  
Sustainability Committee

The committee helps to raise awareness & guide member companies on their journey toward responsible growth through ESG frameworks.



**MR. B BALAJI**  
Advocacy Committee-  
Slabstock

The committee engages with policymakers, regulatory bodies, and stakeholders to promote favorable standards, address industry challenges, and ensure sustainable growth.



**MR. PRAVIN MAHAJAN**  
Advocacy Committee-  
Rigid

The committee works to highlight the benefits of rigid foam in areas like insulation, energy efficiency, and sustainability, while engaging with policymakers and industry bodies to support progressive regulations.

These committees bring together the subject matter experts, thought leaders and passionate professionals who collectively shape the content, direction and execution.

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For Inauguration  
Photos



## INAUGURATION

The inauguration of **PU TECH 2025** marked a powerful beginning to one of the most significant gatherings in the polyurethane industry. Graced by distinguished dignitaries, industry veterans, and global delegates, the ceremony set the stage for three impactful days of innovation, collaboration, and knowledge sharing. From the ceremonial lamp lighting to the keynote addresses, every moment reflected the industry's collective drive toward sustainable growth & global leadership. The event showcased India's strategic role in shaping the future of polyurethane technologies and applications worldwide.



 MARUTI SUZUKI

## MR. CV RAMAN CHIEF GUEST

We are deeply honored by the presence of Mr. CV Raman as our Chief Guest at the PU TECH 2025. His distinguished leadership and commitment to innovation set an inspiring tone for the event. His support symbolizes the growing recognition of polyurethane as a critical material in shaping India's industrial future. We thank him for lending his insight to our shared vision.





## MR. CHRISTOPHER METZ KEYNOTE SPEAKER

We extend our heartfelt gratitude to our keynote speaker Mr. Christopher Metz for joining us at PU TECH 2025 & sharing his global perspective on polyurethane innovation. His thoughtful address added immense value to the event and strengthened the bridge between Indian & international industry practices. His presence reaffirmed PU TECH's position as a truly global platform for collaboration and progress.



### A LANDMARK MOMENT

The formalization of a strategic collaboration between IPUA and EUROPUR, marked by the signing between Mr. Harneet Kochar, the Chairman of IPUA, and Mr. Bart J.ten Brink, President of EUROPUR. This partnership grants IPUA members access to CertiPUR - a globally recognized certification program that ensures polyurethane foam used in bedding and upholstered furniture meets the highest standards of health, safety and environmental responsibility.



For CertiPUR  
Collaboration  
Photos



**"The collaboration between EUROPUR and IPUA is a testament to the power of global partnerships in driving industry excellence. Together, we are building bridges that enable knowledge exchange, promote sustainability and accelerate innovation across continents"**



**IPUA**  
INDIAN POLYURETHANE ASSOCIATION

EUROPEAN DIISOCYANATE & POLYOL  
**ISOPA**  
PRODUCERS ASSOCIATION



**WE HAVE  
JOINED FORCES  
TO PROMOTE  
ISOCYANATES SAFETY**



# CONFERENCE

## TECHNICAL PAPER PRESENTATION

A diverse set of speakers from both Indian and international organizations presented technical papers. These sessions provided in-depth insights. The event featured 33 technical paper presentations and 2 panel discussions, focusing on topics such as market opportunities, sustainability, and the shift of manufacturing to Asia.

### DAY1 - CONFERENCE INTRODUCTION





CECILLIA GIROTTI &amp; THOMAS NESAMANI



High fire performance & enhanced thermal insulation for continuous panel production



STEFANO VERGA



Energy saving in insulation



SAGR SRIVASTAVA



PIR discontinuous line system developed for sophisticated panels



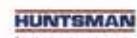
AMANULLAH AJ



Formulation with HFO 1233zd(E) improving shelf life of blended polyol



RANADIP SARKAR



Sustainable solutions for thermal & acoustic applications



ROBIN HEEDFELD



Silicone surfactants to enhance the performance of polyisocyanurate & polyurethane rigid foams



MARY BOGDAN



Hydrocarbon blends for appliance market



PARAG RAUT



Polyester polyols for rigid polyisocyanurate foam



KUMAR SUDAMANI



Enhancing energy efficiency in appliance industry



SAURABH BHAMANIA



Process development & optimisation through simulation



For Conference Photos

**NIRANJAN KARAK**  
RYMBAL  
Recycled polyols for the slabstock foam

**MICHAEL KREBS**  
EVONIK  
Leading Beyond Chemistry  
Improve production reduce waste

**TOMMY YUN**  
BASF  
We create chemistry.  
BASF Innovative solutions for e-mobility

**MICHAEL KREBS**  
EVONIK  
Leading Beyond Chemistry  
Reduce VOC in seats

**NEERAJ GARG**  
RYMBAL  
Synthesis of fully bio-based polyols for sustainable, industrial applications

**RAINER WENGER**  
BAUMER  
Market intelligence, supply chain & product management

**FRED WEI**  
WANHUA  
Wanhua Low Carbon PU Solutions Sustainable

**NINAD S. SAVE**  
EXPANDED POLYMER SYSTEMS PRIVATE LIMITED  
Novel bio-polyol for flexible foam industry

**BERNARD DHILIPRAJ**  
Tacing  
POLYTEK Asia Inventor  
Recycled and bio polyol for the slab industry





PRASANNA RAO &amp; LUCA GIANZINI



Sustainable solutions for the industry



SARAVANAN RAJAVEL &amp; SHANMUGANANDAM VAIRAN

Advancements in Polyurethane applications for high-performance coatings &amp; adhesives.



GOFFREDO TESCA



RIM coating



GAURAV SACHDEVA



Innovative additives solutions for polyurethane processing



SHOUHEI HAYASHI



Polyurethane dispersion adhesives innovation



SEIKI MURASE



Automotive NVH



FABRIZIO BADOLATO



Optimisation of shoe sole systems



For Conference Photos





**7000+**  
Attendees



**170 Exhibitors**  
Local & Global



**33 Technical Paper**  
Presentations



**2 Engrossing**  
Panel Discussions



**Global Association**  
Collaboration



**Award Night**  
Followed by Gala Dinner



For Exhibition  
Photos

# PANEL DISCUSSION

## PANEL DISCUSSION 1

**Topic:** Indian Polyurethane Markets – Opportunities, Challenges & Road Ahead

Industry leaders explored India's potential as a global PU hub, discussing market expansion, policy support, innovation, and sustainability. The session emphasized the need for local R&D, skilled workforce development, and regulatory alignment to unlock future growth and global competitiveness.



## PANEL DISCUSSION 2

**Topic:** Opportunities & Challenges With Manufacturing & Market Moving To Asia

The panel addressed Asia's rising role in global PU manufacturing. Key topics included supply chain shifts, infrastructure readiness, sustainability concerns and the need for international collaboration. India's strategic position and the importance of certifications like CertiPUR were highlighted as essential for global integration.







For Award  
Photos



### EXCELLENCE IN PU INNOVATION AWARD

Category- MSME



INDIA'S VKC

### SAFETY CHAMPION AWARD

Category- MSME

Congratulations



### SUSTAINABILITY PRACTICES AWARD

Category- MSME

Congratulations



### MAKING INDIA PROUD AWARD

Category- MSME

Congratulations



### MAKING INDIA PROUD AWARD

Category- Large Corporation

MOMENTIVE

### SAFETY CHAMPION AWARD

Category- Large Corporation

# PU TECH 2025 AWARDS

Industry leaders explored India's potential as a global PU hub, discussing market expansion, policy support, innovation, and sustainability. The session emphasized the need for local R&D, skilled workforce development, and regulatory alignment to unlock future growth and global competitiveness.

The collage consists of five distinct award ceremony scenes:

- BREAKTHROUGH IN PU AWARD**  
Category- MSME  
Sponsor: Galata Chemicals
- SUSTAINABILITY PRACTICES AWARD**  
Category- Large Corporation  
Sponsor: Dow
- WASTE TO WEALTH AWARD**  
Category- MSME  
Sponsor: RYMBAL
- EXCELLENCE IN PU INNOVATION AWARD**  
Category- Individual  
Sponsor: D-BaF
- START-UP AWARD**  
Category- MSME  
Sponsor: SHAYA

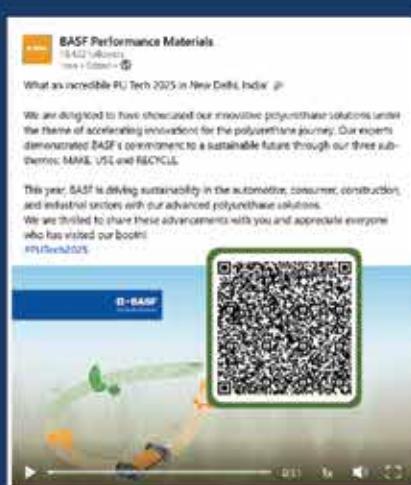


## GALA DINNER



For Gala Dinner  
Photos

# FEEDBACK ON DIGITAL PRESENCE



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IT WAS GREAT **SHAPING THE FUTURE** OF  
**POLYURETHANE** WITH YOU AT  
**PU TECH 2025**



SEE YOU NEXT IN  
**PU TECH 2027**

8<sup>th</sup>-10<sup>th</sup>  
FEBRUARY, 2027

INDIA EXPO CENTRE,  
GREATER NOIDA

EVENT ORGANISED BY



Indian Polyurethane Association

Prabhat Kiran Building, 205, Rajendra Place,  
New Delhi, Delhi 110008 - INDIA

Mail: [secretary@ipua.in](mailto:secretary@ipua.in)

Tel: +91-11-40520736

EVENT MANAGED BY



Unitech Exhibitions Pvt. Ltd.

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Uthandi, Chennai - 600119.

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to visit the Website

IPUA EXCOM AT WORK *IPUA Executive Committee Update*

The IPUA executive committee holds quarterly meetings. The most recent meeting was held on April 8, 2025, the day before PU Tech 2025, IPUA's biennial flagship event, which includes an exhibition, conference, and networking awards night.

During its April 8th meeting, the IPUA Executive Committee identified three key focus areas, reviewed progress, and determined next steps.

**1. IPUA Technical Committee:** The committee will raise awareness of safety and educate members on safe operational practices. To this end, the technical committee has developed a comprehensive one-day fire safety training program. These programs are planned nationwide, with the first two scheduled for May 23, 2025, in the NCR Region, and November 27, 2025, in Ahmedabad, Gujarat.

**2. To train industry employees in the safe handling of Isocyanate,** IPUA has partnered with ISOPA to provide access to their online

Isocyanate handling training program. All IPUA members can obtain login codes and complete the training. Upon successful completion of an online assessment, ISOPA will issue a certificate. This training is 100% subsidized and free for IPUA members.

### 3. Product Advocacy and Stewardship for Flexible Slab Stock and Rigid Polyurethane Foams:

- IPUA has signed an agreement with Europur, enabling IPUA members to register for the Certipur Label. This will help members standardize their products to global requirements and meet export market demands. The label usage fees will be the same as for Europur members, saving on initial registration costs.

- IPUA has engaged consultants to prepare documentation on relevant industry laws and regulations. This information will be shared with all members and explained through webinars, ensuring members are informed and compliant.

- An IPUA committee is reviewing existing standards and specifications for rigid foams. If adjustments are needed to enhance application safety and expand polyurethane use, the relevant authorities will be contacted. IPUA's advocacy committee may reach out to members for cooperation.

- 4. The IPUA Sustainability Committee is raising awareness of ESG concepts. A subject matter expert and trainer has been engaged, and webinars on awareness and preparedness were held on May 7th and 9th, 2025, with approximately 40 individuals from approximately 25 companies in attendance. Based on member feedback, the next steps are:

- Selected companies will participate in projects under the guidance of the IPUA-sponsored trainer.
- Results and benefits will be shared to encourage wider adoption of sustainable practices.

scan this QR Code  
to know more



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## PRODUCT RANGE

- PU Colorants • PU Liquid Colors • Release Agents • Lacquers
- IMC Binders • Mould Cleaners • Spray Equipments for Polyurethane

## PU COLOUR SPECIALISTS



### Upcoming Expo Participation



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**12+**  
Products

**400+**  
Clients

**10+**  
Applications

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APRIL 25, 2025

## IPUA Office Inauguration



IPUA relocated to its new office on April 25, 2025. The inauguration was conducted by IPUA Chairman Emeritus Dr Rahul Gautam and immediate past Chairman Shri Rohit Relan.

Established in 2008, IPUA now, after 17 years, occupies its own building. Strategically situated in Rajendra Place, New Delhi, the office enjoys proximity to the airport (15 km) and railway station (8 km).

Key stakeholders and decision-makers are also located within a 10 km radius.

The inauguration was a modest ceremony, commencing with a Puja attended by local executive committee members, including Chairman Mr. Harneet Kochar and Treasurer Mr. Lokesh Jain. This



was followed by a meeting of attendees.

The office includes a conference room and accommodates the accounting team and the Secretary General.



## ► IPUA VENTURES



### *GBU-IPUA-SVU Collaborative Activities*

**Dr. Snehalata & Prof Isaac Emmanuel**

IPUA's collaboration with the Gautam Buddha university (GBU), in its 5th year, saw the second semester students completing their two months industrial internships. Here they got hands-on working experience on short projects based on incremental product development quality optimization for a product OR technical support kind of projects. IPUA would like to thank Covestro India Pvt. Ltd., BASF India Ltd., Sheela Foam Ltd., PFEDA Synthetics Pvt.Ltd, IRS Polymers Pvt.Ltd and COIM India Pvt.Ltd. for providing paid internship opportunities to our students. The mid semester theory examination was conducted on 19th March and the mid semester project review was completed on 28th March. We thank Mr. Arun Kumar and Mr. Pravin Mahajan for their time for evaluating the project work for mid-Sem Project Review.

The final theory examination was completed on 13th May. The final project presentation of the students was conducted on 17th May 2025.

IPUA Chairman Mr. Kochar was invited as external examiner. All the students were allotted 10 min time to present their work which they carried out in their respective organizations-during the two months internship (15th February to 15th April 2025) in presence of the external examiner, the course coordinators Dr. Snehalata, Dr. Jaya Maitra and IPUA secretary general Mr. Minocha. On the basis of the subject of project, the work done by the student and their presentation, the evaluation was done by the external examiners. We thank Mr. Kochar and Mr. Minocha for taking out time for evaluation of the students. Glimpses of the final



project presentation activity are given below.

with the two last activities final theory exam and final project presentation we have successfully completed academic year 2024-25. The students are open to work for the PU industry now. If any of IPUA



IPUA VENTURES 

member organization is looking for recruiting trained resources- please contact Dr. Snehalata ([snehalata@ipuac.com](mailto:snehalata@ipuac.com)).

All the students attended the PU Tech 2025, Conference and exhibition where they got the opportunity to interact with different organizations who are PU processors, raw material suppliers and working in allied fields. They got to know the innovations and opportunities in different areas where the PU industry is making progress through attending the conference. **A big thanks to IPUA for efficiently organising PU Tech 2025**

And parallelly in Mumbai, the 2nd semester of the 1st batch of the 1-year PGDPU Course at the Somaiya Vidyavihar University is coming to a conclusion with the students currently in their 6-week industry internship. The challenging subjects of the 2nd semester had a strong external faculty flavour with inspiration being drawn from personalities like Satish Gokhale, an award-winning product designer and Shubham Singh, a successful social entrepreneur. They brought to life the topics of Product Design and Business & Strategy Skills with

ease and excitement, providing unforgettable hands-on learning for the eager students. The topic of Sustainability & Circular Economy was enriched by faculty from Sphera and Momentive.

Preparing the students for smooth industry uptake is a key objective of the course. Therefore, emphasis is laid on assignments which



## ► IPUA VENTURES

A special piece in the lab at SVU is the Cannon Indikos lab scale foaming machine donated by Expanded Polymer Systems. Here's a peek view.



Association (IPUA) gives utmost priority to the SAFETY. To inculcate safety culture, best practises, safe handling of chemicals and in general "safety first" attitude in the PU organizations, IPUA conducted Safety training- "Factory Safety and Risk Management" on 23rd May 2025 at Hotel Expo Inn Suits and Convention, Greater Noida. The main focus of the training was on Slabstock PU industry, therefore the subjects such as safe storage of foam blocks, Process control, exotherm control and formulations for Slabstock PU Foam , safe handling of chemicals were dealt in great details however other safety protocols such as emergency response and preparedness, continuous safety training of the manpower, cybersecurity- keeping your data safe, inculcating awareness of safety in every walk of life were also a part of the presentations. Subject matter experts from the industry having hands-on experience of over two decades, working in the area of EHS were invited as our eminent speakers.



### Factory Safety and Risk Management, 23 May 2025, Hotel Expo Inn Suits and Convention Greater Noida

bring the students' perception and understanding as they are exposed to manufacturing and industrial practices. We are much obliged to Covestro, BASF, Dow, Asawa, Expanded, Lloyd, Pidilite, Omkar & Jay Elastomers for their support in internships, as well as Expanded and Dow for the lab hours generously provided.

Preparations are on for the uptake of the next batch which will begin in July 2025. We are tuning the course for working professionals, making their in-person attendance flexible while focussing on online classes during the week. The state-of-the-art lab is also getting ready and will be inaugurated soon.

The Indian Polyurethane

86 participants from 37 organizations were present for the training. At the onset Secretary General Mr. Minocha welcomed the participants. IPUA Technical committee lead Mr. Arun Kumar gave the opening remarks. Various important topics such as 1) HAZOP studies and periodic audit Protocols 2) Fire protective equipment for Slab stock factories. 3) Safety drills and emergency response protocols 4) Optimizing risk management: Role of tailored insurance



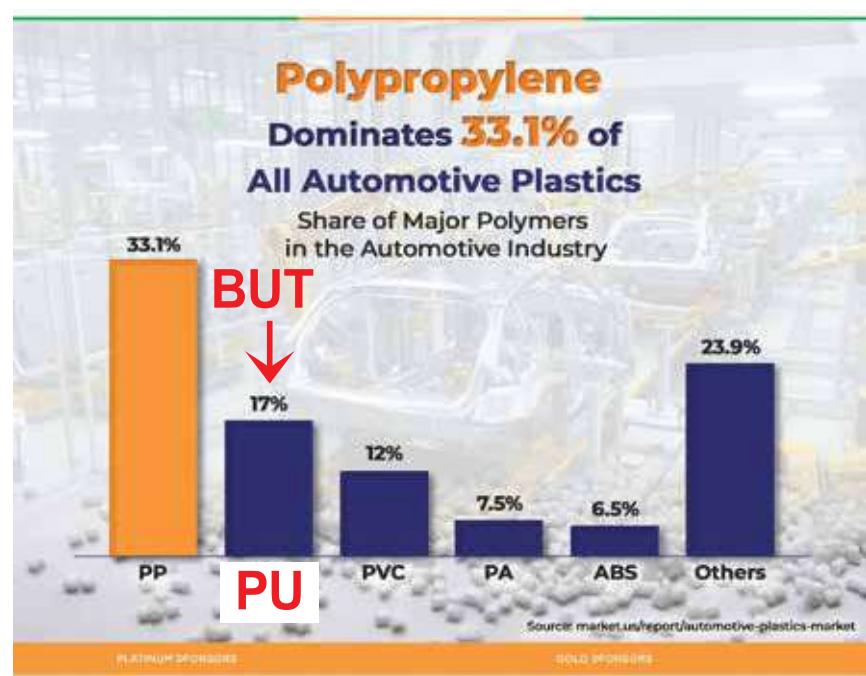
Trainees at Factory Safety & Risk Management of May 23rd

coverage 5) Cyber Security and many more, were dealt during the day. IPUA appreciates all the participants for their keen interest in attending the training, also we would like to thank all the speakers – 1) Ms. Trupti Sawant (Dow Chemicals Intnl) 2) Col. Anoopam Bharadwaj (ShreeMalani Foams Pvt.Ltd) 3) Mr. B K Jha (Bharat Seats Ltd.) 4) Mr. Hemant Patel (BASF India Ltd.) 5) Mr. Hemant Khadse (East Corp Group) 6) Mr. Sanjay Bandyopadhyay (WhizHack Technologies) 7) Mr. VinayagaSundaram (Covestro India Pvt Ltd.) 8) Mr. Mohit Darbari (AON) 9) Mr. C S Tiwari (Sheela Foam Ltd.) 10) Mr.Mithilesh Tiwari (Huntsman Technology Solutions(I) Pvt.Ltd) 11) Mr. Prathish H (Momentive performance materials) who took out time and travelled from different parts of the country for contributing to this training. As the token of our appreciation all the faculty members were honoured by offering mementoes.

For promoting the safe use of diisocyanates, as well as

the sustainable potential of polyurethane in building a better future, IPUA has collaborated with ISOPA during PUTECH 2025. ISOPA has offered the opportunity to avail free online-trainings regarding safe handling of diisocyanates. IPUA Secretary General Mr. Minocha distributed the free coupon codes to IPUA

member organizations for availing this training and lastly, he provided the closing remarks and vote of thanks to all the participants.



^  
Credit: Plastindia 2026

## ► IPUA VENTURES



**SOMAIYA**  
VIDYAVIHAR UNIVERSITY

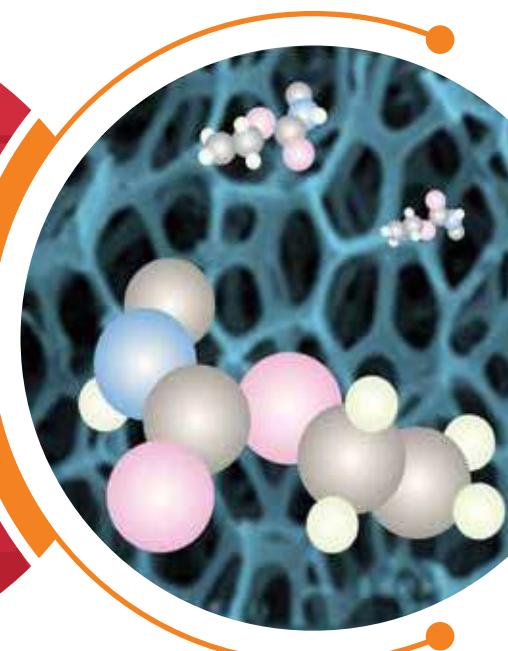
S K Somaiya College



Department of Polymer Science

# Work-integrated Post-graduate Diploma in **Polyurethane Technology** (PGD-PU Tech)

In collaboration with  
**The Indian Polyurethane Association  
(IPUA)**



- A Post-Graduate two-semester **industry-academia joint-taught programme**, conducted in a hybrid mode with evening and weekend classes for working professionals.
- The programme developed and taught in collaboration with the Indian Polyurethane Association (IPUA), aims to provide in-depth knowledge with hands-on practical training on specialised equipment, to pursue a career in the PU industries.

### Course Content:

#### Semester - I

- Basics of Polymer Science
- Polymer Characterisation and Analysis
- Polyurethane Chemistry
- Formulation and Product Development
- Polyurethane Technology

#### Semester - II

- Polyurethane Product Design, Applications & Testing
- Sustainability of Polyurethane
- Technology & Business Strategy
- Industrial Internship Facilitated by IPUA
- Projects / Seminars / Term Papers

#### Eligibility Criteria:

Bachelor of Science (BSc) or Bachelor of Technology / Engineering (BTech / BE), in any discipline with Chemistry as one of the subjects. Diploma holders in any technical discipline with at least 3 years of relevant experience in the field of polymers/plastics are also eligible for admission. Such candidates, however, will need to undergo a bridge course after admission in Basic Chemistry, Physics, and/or Mathematics relevant to Polymer Science, as determined by the faculty on a case-to-case basis.

#### Admission Procedure:

Admission is based on marks obtained in the qualifying examination. An interview may be conducted for Diploma holders to determine their level of proficiency and the relevance of the work experience.

### Fee Structure:

₹ 25,000/- per semester

Scholarships with industrial support are available to deserving candidates: (Details: <https://financialaid.somaiya.edu/en>)  
Hostel facilities are available.

**Contact:** Dr Vandana Jamdar  
Course Coordinator

+91 98691 69824

vandana.jamdar@somaiya.edu

### Key Features:

-  Innovative curriculum design and execution aim to make the participation of working professionals from the industry, easy and seamless.
-  Taught by highly qualified faculty members and industry experts.
-  Polyurethane, as a versatile polymer, offers a framework for holistic learning with a broad understanding of polymers in general.
-  Those completing the course can bank their credits and choose to continue to get a Master's Degree from Somaiya Vidyavihar University with another year of study.
-  Multiple scholarships / financial support are available to eligible candidates.
-  Financial support is available for attending conferences, workshops, and industrial expos.

### Career Options and Opportunities:

- Research and Development Experts
- Application Technologists
- Quality Assurance Analysts
- Sales Professionals
- Market / Business Development Specialists
- Self-employment and Entrepreneurship

### Star Alumni:



Rameez Ansari  
Asian Paints



Rahul Satyawan Zende  
Pidilite Industries Ltd



Irmam Parvez Shaikh  
Pidilite Industries Ltd



Manvendra Singh  
University of Tennessee

### To Know More:



S K Somaiya College  
Somaiya Vidyavihar University,  
Vidyavihar (E), Mumbai - 400 077, India

+91 98691 69824  [sksc.somaiya.edu](http://sksc.somaiya.edu) 

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EMISSIONSIMPROVES  
PRODUCTION  
EFFICIENCYLOW  
REJECTION  
RATESOPTIMIZED  
SURFACE FINISH.



**I**PUATC conducts webinars on different topics to keep the Indian PU industry well informed about the recent activities in technology, innovations taking place in PU industry around the globe. Two webinars have been conducted in the last quarter.



**1) Flame Retardants for Polyurethane Application by Mr. Munjal Patel (ICL Group)- 8th May 2025.**

This webinar explained about how flame retardants work specifically in polyurethane foams. It provided the regulatory update on current flame retardants used in Indian market and how these additives help, meet safety codes, and improve the overall fire resistance of common products we rely on every day. Indeed, it was an interactive session with **70 people attending the event**. We would like to thank the speaker Mr. Munjal Patel and the participants as well, for their interest to invest their time for this webinar.



**2) Advances in Foam Reaction Control for Flexible PU Foam by Dr. Sebastian Gisbertz (Momentive performance materials)-20th May 2025.**

Foam reaction control is one of the key parameters towards good quality flexible polyurethane foam. The webinar informed about the new catalysts and specially designed surfactants aiming to achieve the best foam properties on all kind of industrial flexible slabstock foaming machines, offering a wide processing latitude, excellent balance between foam stabilization, cell structure and openness. We

would like to thank the speaker Dr. Sebastian G. and the participants for attending the webinar. **64 participants joined in for the webinar.**

**Technical Training for Coatings, Adhesives and Elastomers on 24 July 2025**



**Technical Training for Coatings, Adhesives and Elastomers on 24 July 2025**

## ► ECONOMIC UPDATE

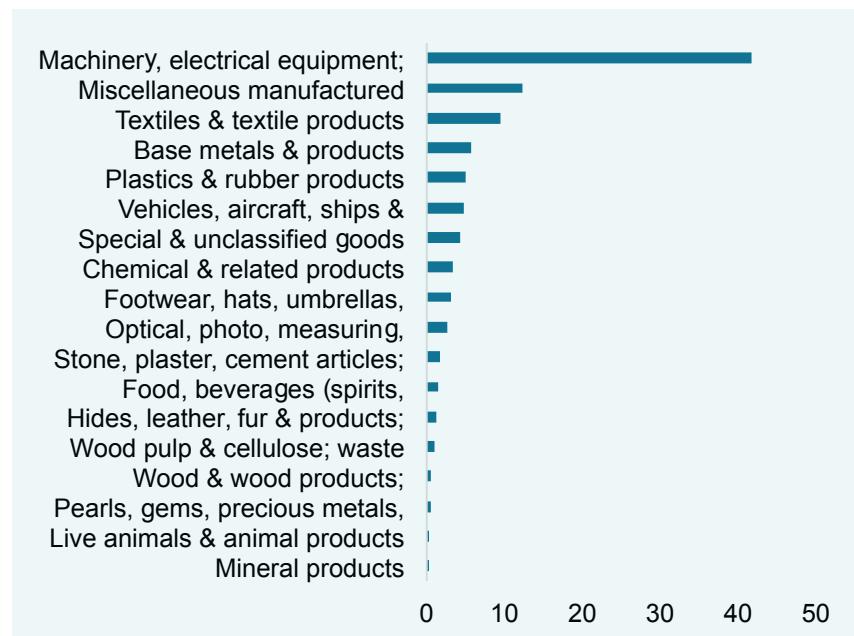
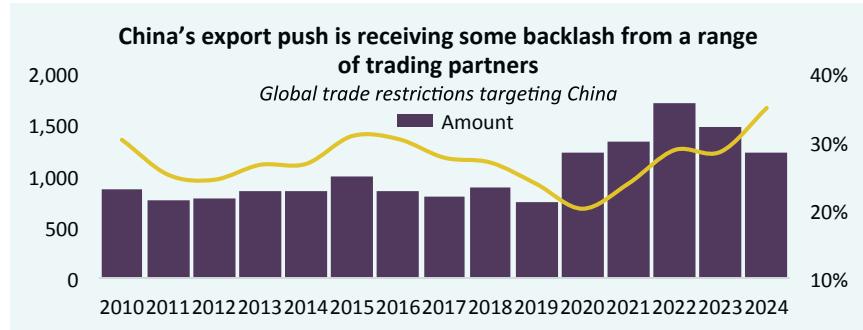
# Trump Tariffs and Turmoil in the Polyurethanes Market

By Arun Kumar, Technical Committee Head, IPUA



The ongoing tariff tensions between the U.S. and China have garnered global attention, particularly for their disruptive impact on global trade dynamics. As the world's leading manufacturing hub, China's export imbalances to a key market like the U.S. can have cascading effects on the global economy.

In 2024, China exported goods worth \$439 billion to the U.S., representing a significant portion of its \$3.6 trillion in total exports. The chart below outlines the major categories of Chinese exports to the U.S. by value share.



Industrial overcapacity in China has added to the urgency of maintaining high export volumes, as domestic demand remains insufficient to absorb its vast manufacturing output. This compulsion to export has raised concerns among many countries about the risk of market distortion and dumping practices. As a result, policymakers around the world tread cautiously in crafting trade policies with China.

A significant development came

\*Our proprietary "Overcapacity Index" is based on industrial capacity utilization rates, profit margins, PPI, and export prices. Sources: FrontierView analysis; Global Trade Alert; National Bureau of Statistics.

ECONOMIC UPDATE 

on May 12, 2025, with the release of the Joint Statement on the U.S.-China Economic and Trade Meeting in Geneva, marking a critical step toward de-escalating the trade war. As part of this temporary détente, tariff reductions between the two nations took effect from May 14, 2025, Beijing time.

The revised tariff structure is summarized below.

Product	From May 14, 2025
<b>Polymeric MDI</b>	$61.5\% = 6.5\% + 25\% \text{ (Section 301)} + 30\% \text{ (20\% fentanyl tariff} + 10\% \text{ reciprocal tariff)}$
<b>Polyether Polyol</b>	$51.5\% = 6.5\% + 25\% \text{ (Section 301)} + 20\% \text{ (fentanyl tariff)}$
<b>TDI</b>	$61.5\% = 6.5\% + 25\% \text{ (Section 301)} + 30\% \text{ (20\% fentanyl tariff} + 10\% \text{ reciprocal tariff)}$
<b>Monomeric MDI</b>	$36.5\% = 6.5\% + 30\% \text{ (20\% fentanyl tariff} + 10\% \text{ reciprocal tariff})$
	$36.5\% = 6.5\% + 30\% \text{ (20\% fentanyl tariff} + 10\% \text{ reciprocal tariff})$

(Tariffs include MFN duties, Section 301 tariffs, fentanyl-linked surcharges, and reciprocal duties). Source: PU Daily.

Despite the 90-day cooling-off period and partial relaxations, tariffs on polyurethane (PU) chemicals like polymeric MDI and polyols remain elevated. The compounded effect of high tariffs on both raw materials and finished goods is severely impacting Chinese business interests.

Unsurprisingly, Chinese exports to

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pressures, has witnessed multiple plant closures over the past year. Asia now accounts for over 50% of global PU chemical demand, with China alone contributing 80% of that production. The imbalance between oversupply and muted demand is pushing prices down, eroding margins and forcing some multinationals to exit the segment.

*Asian markets, including India, may benefit in the short term from more competitive pricing due to excess supply and sellers' urgency. However, the long-term trajectory will depend heavily on how the U.S.-China trade dynamics evolve.*

In conclusion, Asian markets, including India, may benefit in the short term from more competitive pricing due to excess supply and sellers' urgency. However, the long-term trajectory will depend heavily on how the U.S.-China trade dynamics evolve. The global PU industry must remain vigilant and responsive to these developments.

the U.S.—including PU chemicals and manufactured products—have already shown a downward trend. This creates spillover effects, as China redirects surplus goods to alternative markets such as Europe, the Middle East, Southeast Asia, and India.

Europe's PU manufacturing sector, already grappling with cost

## ► NEW MEMBERS OF IPUA

### PRIME SLEEP LLP



**Prime Sleep LLP** is a leading manufacturer of premium bonded foam, with their production facility located in the Pithampur Industrial Area, District Dhar, Madhya Pradesh, near Indore. They produce using only high-quality, dry, and unused premium foam, completely free from fabric, latex, visco materials, or any other foreign substances.

They specialize in delivering high-volume orders at competitive prices, offering consistent supply across a wide range of sizes and customizable densities tailored to client specifications. Their products are trusted by several well-known national and regional mattress brands across India.

### CLASSIC POLYMERS



Established in 1990, **Classic Polymers** is a leading manufacturer of high-performance polyurethane (PU) foams with a sharp focus on premium insole solutions for the footwear industry. With over three decades of technical and manufacturing expertise, CP offer insole materials that combine comfort, durability, and long-term performance—positioning themselves a preferred partner for footwear brands across segments.

Their insole portfolio includes a wide range of PU foams designed for sports, casual, formal, and industrial footwear, specializing in developing customized insole constructions using multi-density foam combinations, enabling brand partners to differentiate on the basis of comfort, resilience, and aesthetics.

Key offerings include:

- Airoflex: A high-resilience PU foam engineered for superior energy return and dynamic cushioning.
- Airolite: Lightweight, breathable foam with excellent compression-set resistance—ideal for lifestyle and comfort footwear.
- Shock-Absorbing Foams: Low-rebound PU systems for high-impact environments.

With an integrated production setup allowing them to deliver ready-to-use insoles tailored to brand specifications, whether it's a single-layer sheet or a fully constructed insole unit, their agile development and prototyping process ensures rapid turnaround and consistent quality.

With a strong R&D foundation, CP also collaborate with footwear designers and OEMs to co-develop next-generation insole materials that respond to evolving market needs—be it sustainability, enhanced rebound, or weight optimization.

Classic Polymers is committed to enabling footwear brands to elevate product experience through innovative insole technologies that deliver measurable value and consumer satisfaction.

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### SAVI PLOYMERS LLP



**Savi Polymers LLP** Established in 2015, is a partnership firm led by Mr. Pradeep Thapliyal and Mr. Deven Thapliyal, with Mr. Rakesh Bahuguna involved in its founding. The firm is an authorized distributor of M/s Xuchuan Chemical Co. Ltd., a prominent Chinese multinational corporation.

Savi Polymers LLP specializes in the import and distribution of Polyurethane (PU) chemicals primarily used in shoe sole systems. Its core product offerings include Polyester Polyol, Methyl Di-Isocyanate, and various catalysts and additives. These high-quality chemicals are imported directly from China and supplied to a wide network of clients across Delhi, Haryana, and other regions of India.

The company operates from a registered office in Dilshad Garden, Delhi, and maintains a strategically located warehouse in Kundli, Haryana, ensuring efficient distribution and timely delivery. Guided by a clear mission, Savi Polymers strives to become the leading supplier of PU chemicals in India, recognized for its commitment to service, quality, and ethical business practices.

### KANHA FOAMS INDUSTRIES



**Kanha Foams Industries**, a trusted leader in the manufacturing and supply of premium-quality PU foams, with over 30 years of experience in the industry. We offer a comprehensive range of polyurethane foam products—including flexible, rigid, high-resilience, memory, and catering to diverse sectors such as bedding, furniture, automotive, footwear, packaging, and healthcare across India.

Combining advanced technology with expert craftsmanship, we ensure every product meets the highest quality standards. Our client-centric approach, pan-India presence, and commitment to innovation and sustainability have earned us a reputation for reliability, consistency, and excellence. Backed by a skilled workforce and a dedicated R&D team, we deliver customized foam solutions that are both performance-driven and environmentally responsible.

Kanha Foam Industries is guided by the philosophy that comfort and quality go hand in hand.

### MODERN ENTERPRISES



Since our establishment in 2004, **Modern Enterprises** have been committed to delivering innovative and reliable solutions to the foam industry. Products range includes Rebonding Foam Plants, Batch foam plants, Vertical and Circular cutting machines, CNC contour cutting machines, Long Slitting Machines, Mattress Punching Machines, Horizontal Cutting Machines specially for Hard Foam Cutting, Dry Block Cutter Lines and Continuous foam plants—each designed to meet the unique needs of our clients. They serve both domestic and international markets, offering machinery that is cost-effective, user-friendly, and built to last. With a strong focus on research and development, Modern continuously strive to improve their technology to ensure top-tier performance and efficiency. Their state-of-the-art infrastructure allows us to handle manufacturing, quality control, and exports seamlessly under one roof. *Continued >>*



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>> They also provide complete support services, including layout planning, installation, operator training, and trial runs. Machines are customized to match the client's specific requirements. Led by Mr. Sanjeev Arora (CEO) and Mr. Sanjay Rana (Sales Manager), Mr Rajesh (Production Manager) their team is dedicated to customer satisfaction and long-term partnerships."

## REVATA ENGINEERING PRIVATE LIMITED



**Revata Engineering Private Limited** is an Elastomer Solutions Company. With over 15 years of distinguished experience, REPL has established itself as a premier provider of innovative elastomer solutions for critical engineering applications. With deep industry insight, coupled with continuous investment in research and development, REPL has cultivated a robust portfolio of advanced elastomeric components.

Their 25,000 sq. ft. state-of-the-art facility in Pune, India, boasts fully integrated in-house capabilities, encompassing every stage of elastomer development and manufacturing. Central to their operations is an advanced polymer laboratory, which conducts comprehensive testing to guarantee the real-world performance and reliability of our solutions. This commitment to innovation and precision ensures the delivery of high-performance, fully traceable elastomeric components meticulously tailored to meet diverse industry-specific demands.

## Core Expertise:

- Material Formulation and Customization: Developing bespoke elastomer compositions for optimal performance.
- Design and Engineering Solutions: Providing comprehensive design and engineering support from concept to production.
- Advanced Manufacturing Processes: Employing cutting-edge techniques for superior component.
- Quality Assurance and Testing: Implementing stringent quality controls and rigorous performance validation.
- ISO/IEC 17025 Accredited Testing Laboratory: Ensuring the highest standards of testing accuracy and reliability

## SRI RAMA TRADERS



**Sri Rama Traders** are a trading house supplying basic raw materials and have our headquarters in Hyderabad. They supply systems for the rigid foam processing industry. Their main customers include panel manufacturers having both discontinuous and continuous process.

They also supply PUF raw materials to support the deep freezers manufacturing companies. Product portfolio includes trading of PUF systems for the Rigid Foam Industry.

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### AARTEX GLOBAL



**Aartex Global:** Engineered Fabrics for Enduring Performance. Based in Bahadurgarh, Delhi NCR, India, Aartex Global is a leading manufacturer specializing in high-quality laminated fabrics, catering primarily to the Footwear, Automotive, and Mattress industries. Bahadurgarh is a prominent footwear manufacturing hub within the Delhi NCR, and hence Aartex are strategically positioned to serve customers efficiently and effectively.

Aartex Global boasts advanced in-house capabilities for both fabric manufacturing and lamination. State-of-the-art machinery enables Aartex to expertly bond fabrics to a variety of materials, including:

- **Fabric to EVA lamination:** Providing durable and cushioned solutions for footwear and other applications.
- **Fabric to Foam lamination:** Creating comfortable and supportive materials for the automotive and mattress sectors.

Furthermore, in-house fabric manufacturing ensures greater control over the quality and consistency of our base materials, allowing Aartex to meet the diverse needs of their clientele.

#### Advantage Aartex Global

- **Comprehensive Lamination Capabilities:** Expertise in fabric-to-EVA and fabric-to-foam bonding.
- **In-House Fabric Manufacturing:** Ensuring quality control and customization options.
- **Focus on Quality and Consistency:** Delivering reliable materials for demanding applications.
- **Timely Deliveries:** Understanding and meeting critical production timelines.
- **Collaborative Product Development:** Partnering with customers to create innovative solutions.
- **Strategic Location:** Situated in the heart of the footwear manufacturing industry.

### CHOUDHARY FOAM HOUSE



Founded by Mr. Vinod Dham, Choudhary Foam House has grown into a leading manufacturer of PU foam, rebonded foam, and premium mattresses. With a strong commitment to quality, comfort, and innovation, they strive to continuously expand product range to meet diverse customer needs. Their mission is to provide superior comfort through high-quality foam solutions while strengthening their presence in domestic markets. By embracing cutting-edge technology and customer-centric solutions, CFH aim to set new industry standards in durability, support, and relaxation. With a relentless pursuit of excellence, Choudhary Foam House is dedicated to redefining comfort and driving continuous growth in the industry.

### SHAKTI MINERALS & CHEMICALS



Established in 1982 by Lacman Dass Gupta, Shakti Minerals & Chemicals is a leading business house of minerals and chemicals based in Delhi. Over the years, the company has undergone sustained expansion, diversification, and growth, with its divisions consistently adding to its mineral and chemical quality assets, can be attributed to its philosophy and commitment to quality and value addition.

*Continued >>*

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>> The company's product offerings include Calcium Carbonate, Dolomite, Calcite, Calcite Granules, Barium Sulphate, Calcined Kaolin, Steatite, Talc, and many more in Super Snow White Grades up to 1 Microns.

The company's family is committed to multiplying the growth of the corporation with fulfillment. The company also has its own fleet of bulk loading trucks to cater to the immediate and continuous demands for its products. Overall, SHAKTI's commitment to quality, value addition, and growth makes it a reliable and trusted provider of minerals and chemicals in the industry.

Web: mineral4u.in; Contact: Ram Gupta +91 9818843364

Web: *mineral4u.in*; Contact: Ram Gupta +91 9818843364

### SURYA FOAMS



**Surya Foams** is a partnership firm established in 2005 by V Sivakumar and M Sureshbabu. They manufacture moulded PU foams, Memory foams of both moulded and batch block, slabstock foam (batch) and integral skin foam. With its production facility in Vellore, Tamil Nadu, Surya Foams supplies mattresses, pillows, and sofa sets to all major companies under the brand name of SleepEassy.

Surya manufactures cold cure moulded PU foam, i.e., cushions for office chair, bus seat, two-wheeler, sofa and so on. Also in the product range are arm pads and fire wall seal assembly using ISF.

### THAALCHEMISTRY INNOVATIONS



**ThaalChemistry Innovations** – Partnering For Sustainable Resources  
Transforming Waste into Strength

In the bustling innovation hub of Chennai, a new startup is poised to revolutionize the world of sustainable materials. Thaalchemistry Innovations, a pioneering company, is making waves with its groundbreaking approach to recycling polyurethane foam – a material notorious for its environmental persistence. At the helm is a distinguished doctoral graduate from IIT Madras, Dr. Devi Ramamoorthy, whose extensive research includes a unique additive capable of dramatically enhancing the mechanical strength and thermal conductivity of rigid polyurethane foam.

ThaalChemistry Innovations is not just about recycling; it's about re-engineering. By transforming a challenging waste product into a high-performance material, the company is not only addressing critical environmental concerns but also offering a superior solution for various industries. This innovative stride promises to unlock new possibilities for sustainable manufacturing, setting a powerful precedent for how we view and utilize waste in the 21st century.

Having established a Polyurethane (PU) recycling plant, Chennai-based Thaalchemistry Innovations is at  
*Continued >>*

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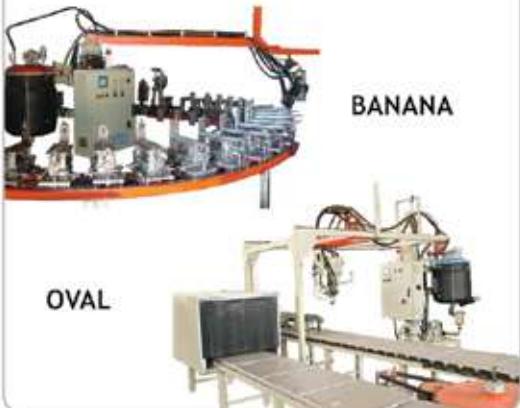
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the forefront of this effort. A key driver for the economic viability of this initiative, and the company's revenue generation, lies in the production and sale of recovered raw materials. This process yields several revenue streams, most notably through the extraction and sale of polyol. Polyol, a primary component in the production of new PU foam, is recovered from the waste material through advanced chemical recycling processes. This recovered polyol is then sold back to PU foam manufacturers, offering a sustainable and cost-effective alternative to virgin polyol derived from fossil fuels. This not only benefits the environment but also provides a significant economic advantage, as the demand for recycled materials grows.

ThaalChem Innovations's revenue generation strategy extends beyond PU foam recycling. By incorporating the extraction of nanocellulose from agricultural waste, such as rice straw and wheat straw, the company diversifies its product portfolio and taps into another growing market. Nanocellulose, a highly versatile material with applications in various industries, including packaging, composites, and biomedicine, can be obtained through the processing of agricultural byproducts. This addresses the critical issue of agricultural waste management, converting a problem into a valuable resource. The sale of these recovered raw materials, including polyol and nanocellulose, forms the core of ThaalChem Innovations's revenue model.

By offering high-quality, sustainable alternatives to traditional materials, the company is tapping into a growing market of environmentally conscious manufacturers. ThaalChem Innovations endeavours to be competitive, reflecting the cost savings achieved through recycling while also capturing the added value of the materials' enhanced sustainability. In addition to direct material sales, ThaalChem Innovations is also exploring revenue opportunities through partnerships with manufacturers, and consulting services related to sustainable materials management. This diversified approach ensures a robust and resilient revenue model, supporting the company's growth and its mission to promote a circular economy.



IPUA welcomes  
all new members  
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 GLOBAL NEWS

# Asia's Polyurethane Industry Faces Tariff Shocks and Trade Shifts

**A**s trade tensions escalate in 2025, the polyurethane (PU) industry, an essential contributor to Asia's industrial and consumer sectors, finds itself at the intersection of geopolitical turbulence and structural transformation. The sweeping U.S. tariff hikes and retaliatory duties from China, alongside sector-specific anti-dumping measures against Southeast Asian exporters, have sent ripples through the complex and regionally integrated PU supply chain. Yet, amid this disruption, new avenues are emerging, particularly for countries like India, whose positioning within global trade architecture is undergoing a recalibration.

## Regional Overview

The recent U.S. tariff measures, including a blanket 10% levy on all imports and additional punitive tariffs targeting countries with significant trade surpluses, have dealt a heavy blow to Southeast Asia. Vietnam, Thailand, Cambodia, and Indonesia were hit hardest, with added tariffs ranging from 32% to nearly 50%. These measures, compounded by pre-existing anti-dumping duties, such as those imposed in July 2024 on specific Thai refrigerator exports, particularly large top-mount combination refrigerator-freezers,

go beyond fiscal policy. They constitute structural disruptions to supply chains that have long relied on the efficiencies of frictionless global trade.

Polyurethane (PU), a key material in Southeast Asia's export economy, is essential for products such as footwear soles, upholstered furniture, and insulation panels used in refrigeration and construction. The sharp rise in tariffs has rapidly eroded export margins and disrupted order flows from the U.S., forcing downstream manufacturers to reevaluate their production strategies. In Vietnam, a leading exporter of athletic footwear and upholstered furniture, the 46% U.S. tariff triggered an abrupt slowdown in exports, significantly impacting local PU foam suppliers.

Indonesia's robust footwear sector, where polyurethane provides the material backbone for millions of shoe soles annually, now faces eroded profitability as U.S.-bound orders dry up. Meanwhile, Cambodia's heavy dependence on PU for footwear and textile applications exposes it acutely to shrinking U.S. demand. At the same time, Malaysia's PU sector is being squeezed by general tariff pressure despite escaping specific retaliatory duties, for now.

Beyond reduced demand, rising costs for imported raw materials such as isocyanates and polyols, many of which originate in China, South Korea, and the EU, are compounding margin compression. The doubling down of Chinese export duties and broader global supply chain strain have made sourcing less predictable and more expensive.

Yet, amid the dislocation, some adaptive strategies are emerging. Manufacturers in Vietnam and Thailand are exploring production realignment to service intra-Asian demand or alternative export destinations like the EU and the Middle East. Others are investing in automation and localizing parts of the supply chain to reduce dependency on cross-border flows. In this way, the tariff crisis is accelerating an overdue modernization in PU production and logistics in Southeast Asia.

## PU Export Decline Squeezes Margins in Downstream Industries

Downstream industries tell the story of PU's economic centrality and vulnerability. In refrigeration, polyurethane's role as an essential insulator means that anti-dumping duties on Thai refrigerators are not just trade skirmishes; they

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are existential threats to local PU demand. With the U.S. market effectively closed, the regional oversupply of PU insulation foam could spill into domestic markets, driving prices down and tightening margins for suppliers already contending with energy cost inflation.

In footwear, polyurethane elastomers used in midsoles and outsoles are facing a demand cliff in both Vietnam and Indonesia. Brand-linked contract manufacturers are at risk of relocating production to markets less exposed to tariffs, such as Bangladesh or India. This, in turn, affects not only PU processors but also chemical feedstock traders and logistics providers embedded in these supply chains.

Furniture, especially flexible foam-based sofas and bedding, is suffering similar distress. Vietnam's exports to the U.S., its top market for furniture, are slowing under the weight of tariffs, leading to order cuts and an oversupply of PU flexible foam in the region. Countries like Malaysia and Cambodia, while less exposed to retaliatory duties, are still facing demand-side fragility due to the 10% general tariff and U.S. buyers shifting to nearshoring or domestic suppliers.

Despite these headwinds, there are signs of recalibration rather than collapse. According to the IMF's April 2025 World Economic Outlook, emerging and developing Asia is still projected to grow at 4.5%, with Southeast Asia

benefiting from strong intra-regional trade, resilient domestic demand, and fiscal stimulus in countries like Thailand. Moreover, the IMF projects oil prices to decline by over 15%, which could reduce costs for petrochemical feedstocks, potentially offering some margin relief for PU processors. However, with natural gas prices expected to rise by 22.8%, energy-intensive segments of PU production may see cost pressures persist, especially in countries where gas dominates industrial energy mixes.

Inflation across Asia is also stabilizing. This, coupled with expectations of global interest rate cuts, may soften financial conditions and help revive downstream sectors like automotive and construction, which are sensitive to credit cycles and are major consumers of PU-based components, adhesives, and coatings.

### India Adapts to New Tariffs

As the global trade landscape undergoes profound structural shifts, spurred by geopolitical realignments, regional trade blocs, and protectionist revivals, India stands at a critical inflection point. Its burgeoning domestic market, rising geopolitical relevance, and deepening integration into global value chains position it as both a beneficiary and a bellwether of this new era. Yet, this rise is not without friction, as evidenced by the latest wave of trade tensions with the United States.

### Tariff Escalation and U.S. Trade Measures

On April 2, 2025, U.S. President Donald Trump signed an executive order imposing a universal 10% baseline tariff on imports from over 180 countries, including India. Additionally, an extra 26% tariff was specifically levied on Indian goods. Although these tariffs have been suspended until July 9, 2025, the 10% base tariff remains in effect, with steel and aluminium products from India also subject to a separate 25% duty.

India's exports to the U.S. stood at approximately USD 89.81 billion in 2024, underscoring the stakes involved. According to the think tank Global Trade Research Initiative (GTRI), the 26% India-specific tariff could trigger a USD 576 million reduction in exports in 2025, a 6.41% contraction.

### Sectoral Fallout and Strategic Response

The tariff blow is sectorally differentiated:

- **Automobiles and parts:** Predicted decline of 12.1%, particularly damaging for auto component exporters as 25% duties will now also apply to engines, transmissions, and electrical parts. ICRA estimates this could erode profit margins by 10–15%, potentially reshaping supplier bases.
- **Gems and jewellery:** A projected 15.3% decline, hitting one of India's high-value export

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- categories.
- Steel products: Estimated to contract by 18%, exacerbated by overlapping duties.
- Electronics and electricals: Anticipated to fall by 12%, with high-end appliances like refrigerators particularly exposed. Indian refrigerator production, which depends on rigid polyurethane foam for insulation, faces cascading cost pressures.

To counter these headwinds, Indian firms are recalibrating their export strategies. In electronics, this means accelerating innovation in energy efficiency and smart features while pursuing market diversification into Southeast Asia and the Middle East.

### Case in Point: U.S. Anti-Dumping Duties on Indian Mattresses

In September 2024, the U.S. Department of Commerce finalized an anti-dumping investigation against mattress imports from India, concluding that such imports

were being sold at prices below fair market value, thereby harming U.S. domestic manufacturers. This led to the imposition of punitive anti-dumping duties based on Less Than Fair Value (LTFV) margins:

These double-digit dumping margins have effectively undermined the competitiveness of Indian mattress exports to the U.S. In response, exporters are shifting focus to value-added products, such as high-end functional mattresses, and actively exploring alternative markets to insulate against U.S. exposure.

India's ascent in the global trade arena is not without turbulence. Tariff pressures from the U.S. and targeted trade remedies such as anti-dumping measures underscore the volatility of major bilateral relationships. However, India's adaptability, evidenced by rapid diversification efforts, sectoral innovation, and a pivot to new trade corridors, suggests that it is strategically reconfiguring itself to weather these disruptions and capitalize on the broader global realignment.

### What's Next for Polyurethane in Asia?

The polyurethane industry in Asia stands at a crossroads defined by turbulence and transformation. The intensifying global trade conflict, epitomized by sweeping U.S. tariff regimes, retaliatory actions, and escalating anti-dumping measures, has exposed the fragility of interlinked supply chains while simultaneously compelling a recalibration of regional trade dynamics. Southeast Asia's PU sector, once a bastion of cost-effective exports to the West, now faces structural headwinds that threaten its economic viability in the near term. Yet, out of disruption emerges dynamism: firms are reengineering production models, seeking new export corridors, and adopting automation to cushion the blow and adapt to a less predictable trade environment.

India's emergence as a strategic pivot in this reshaped global order underscores a broader trend: resilience built not on insulation

Exporter/Producer	Preliminary Dumping Margin (%)	Final Dumping Margin (%)
International Comfort Technologies Pvt. Ltd.; Sheela Foam Ltd.	42.76	42.76
Raj Mahal Fabrics	42.76	42.76
Varahamurti Flexirub Industries Pvt. Ltd.; Amore International; Durfi Retail Pvt. Ltd.; Springfit Marketing INC	14.05	13.35
All Others	14.05	13.35

GLOBAL NEWS 

*Which year was this car displayed in the stalls of PUTECH?*



from the global economy, but on deeper, more diversified integration into it. Confronted with punitive tariffs and anti-dumping duties from the United States, Indian manufacturers are rapidly repositioning, leveraging domestic innovation, market expansion into the Global South, and upstream

value chain consolidation to retain relevance and competitiveness. Ultimately, the trade escalations of 2025 are not merely punitive events but formative pressures. They are forging a new phase in Asia's industrial evolution, one that rewards agility, diversification, and strategic foresight. For the PU

industry, and indeed for broader industrial ecosystems across the region, the challenge now is to convert geopolitical adversity into an inflection point for long-term resilience, innovation, and rebalanced global trade participation.

*Credit: PU Daily*

*Which years were these cars displayed in PUTECH?*



## ► CORPORATE SOCIAL RESPONSIBILITY

# *Polyhose Inaugurates Immuno ICU and Lymphoma Ward at VHS to Support Critical Cancer Care*

**C**hennai, India – Polyhose, a global leader in manufacturing flexible hoses and fluid connectors, has furthered its commitment to community welfare by inaugurating a cutting-edge Immuno Intensive Care Unit (ICU) and Lymphoma Ward at Voluntary Health Services (VHS) Hospital, Chennai. This landmark initiative was launched in collaboration with the Cancare Foundation to enhance access to advanced cancer care for underserved communities.

The newly established facility is the first of its kind in the

region, focusing specifically on immunotherapy and intensive care for lymphoma patients. It aims to bridge the treatment gap for economically disadvantaged individuals, providing high-quality care at little or no cost.

The facility was formally inaugurated by Mr. Y. J. Shabbir, Managing Director of Polyhose Group, and will be operated by leading oncologists from the Cancare Foundation.

"Cancer care should be a right, not a privilege" said Mr. Shabbir. "With this initiative, we hope to ease

the burden of those undergoing complex treatment and reaffirm our belief in inclusive, affordable healthcare."

Headquartered in Chennai and operating across 9 countries, Polyhose has grown beyond its industrial roots into a purpose-driven enterprise. As part of its ongoing transformation, the company has recently entered a strategic collaboration with global specialty chemicals leader Lubrizol to establish a precision medical tubing facility in India. This initiative represents a critical step toward reducing the nation's

*The facility was formally inaugurated by Mr Y.J. Shabbir, Managing Director of Polyhose Group*



## CORPORATE SOCIAL RESPONSIBILITY



reliance on imported medical components. The high-quality medical tubing produced through this partnership will be utilized in neurovascular and cardiovascular applications, including balloon catheters and catheters used in minimally invasive procedures.

In addition to healthcare, Polyhose remains deeply committed to youth and sports development. The company supports Olympic-level sailors and has funded the development of sports infrastructure at New College, Chennai, including a new basketball court, sports room, and upgraded table tennis facilities to nurture young talent.

With its sustained investments

in health and sports, Polyhose continues to position itself not only as an industry leader, but

also as a catalyst for positive social change.  
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## Interview with Jason Sloan, CPI

**P**U Today: How is it like leading the CPI for the past year?

**Jason Sloan:** I have truly enjoyed my first year here at CPI and getting to know the polyurethanes industry and the issues important to our membership. Having an extensive background in member-focused associations, I really value the ability of organizations like the American Chemistry Council (ACC) and CPI to find solutions that are informed by expertise and on-the-ground experience. Whether the challenge is regulatory pressure or economic uncertainty, the industry provides important leadership with an innovative, informed approach.

More specifically, CPI looks to the expertise of our members and value chains to advocate effectively on legislation and regulations that could impact the North American polyurethanes industry. Oftentimes, this means helping decisionmakers understand the critical role that these chemistries play in American industry and competitiveness and that laws and policy must be based in sound and objective science.

CPI demonstrates how the polyurethanes industry contributes to the broader economy, provides versatile, sustainable solutions, and maintains a focus on responsible product stewardship. As I continue into my second year, I am confident that CPI and our members are prepared to navigate the current uncertainty and other challenges for the industry.

**PU Today:** The CPI has a rich heritage in polyurethanes. How has been

the sharing of these very important resources in the past and how do you see it happening in the future, specifically in the Asian super-growth context?

**Jason Sloan:** One of CPI's primary objectives is to share information about our industry with decisionmakers, stakeholders inside and outside of the value chain, and anyone interested in learning more about polyurethane chemistry and products. CPI's annual Polyurethanes Technical Conference is a great example of a regular convergence of technical and industry experts coming together to share their knowledge of challenges and opportunities for potential solutions.

We also seek to share our experience and knowledge of the North American market environment with other countries while simultaneously learning from them. For example, I recently attended PU TECH 2025 and saw firsthand the excitement and collective drive of the Indian polyurethanes market, which also included efforts to institute industry standards through learning from markets like the United States.

**PU Today:** Some years ago, we initiated the <https://sfaindia.net/> modelling it after the one being run in the US. Can you tell us some more about the spray foam market in the US?

**Jason Sloan:** The U.S. spray polyurethane foam (SPF) market was valued at \$1 billion in 2024 and continues to see strong market potential with consumer demands



**Mr. Jason Sloan,**  
CPI

around improving energy efficiency and environmental sustainability. CPI continues to serve an important role in product stewardship and occupational safety efforts around spray foam, including maintaining [www.spraypolyurethane.org](http://www.spraypolyurethane.org), a website with SPF information and safety guidelines for homeowners, do-it-yourselfers, and SPF contractors, builders, and weatherization professionals.

**PU Today:** How do you see the partnership with IPUA moving in the future?

**Jason Sloan:** CPI and its members benefit from global coordination and information-sharing with colleague associations like IPUA. I think there are additional opportunities for CPI and IPUA to share opportunities and forums for discussing advocacy, new technical approaches, and industry efforts around environmental stewardship and sustainability. Importantly, this collaboration can assist in filling potential knowledge gaps and keeping product stewardship as a central tenet.

## ▶ IPUA IN THE NEWS

 Stefan Hermes reposted this. ...

**APBA | Asian Polyurethane Business Association**  
 928 followers  
1mo • 

A heartfelt thank you to the Indian Polyurethane Association (IPUA) for hosting such a truly outstanding and flawlessly organized event. It was a great honor for the Asian Polyurethane Business Association (APBA) to be invited to participate and to experience the exceptional warmth and hospitality extended throughout our stay.

I was personally privileged to contribute to the panel discussion, where we explored key trends, challenges, and future opportunities for the polyurethane industry. The depth of dialogue, the quality of insights shared, and the spirit of collaboration were genuinely inspiring.

Beyond the formal sessions, it was a real pleasure to engage with so many members of the IPUA community. The open conversations, the exchange of ideas, and the connections made were a true highlight of the event. It reaffirmed the strength and vibrancy of the PU industry in India, and the immense potential that lies ahead when we work together across borders.

Our discussions on deepening cooperation between IPUA and APBA were particularly fruitful, and I am excited about the strong foundation we are building together. This growing partnership will undoubtedly bring great value to all our members and help drive continued progress, innovation, and professionalism in the PU industry across the region.

A very special thank you to **Sunil Minocha** and **Harneet Kochar** for their personal support, guidance, and tireless efforts in making everything run so smoothly and making us feel so welcome.

I am sincerely looking forward to the next steps together, and to many more shared successes in the future.

Thank you again to the IPUA leadership, organizers, members, and all participants for making this such a memorable and valuable experience.

 You and 16 others 2 reposts

**Reactions**

 +9

VKC Razak 1st  
Business  
2mo • Edited • ④

Three days of innovation, insights, and industry bonding at PU TECH INDIA | IPUA. Really an unforgettable experience for the polyurethane community. Many discussion around new innovations, sustainable solution, recycling, non conventional resources, end of life recycling and reuse etc etc. Definitely lot of follow up work to do in coming days to take the discussion points to next level. Thank you team IPUA and the entire team behind the show.

VKC Group, India  
#IndiaVCKC  
#VKC

**PU TECH INDIA | IPUA**  
2,407 followers  
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It's a Wrap at PU TECH 2025! Three days of innovation, insights, and industry bonding — and we're signing off with full hearts and inspired minds. ...more

Sundeep Maggu 1st  
Entrepreneur © Polytek Synergy Ltd |  
2mo • ④

We at Polytek Synergy Ltd are truly grateful to the IPUA team for hosting such a fantastic polyurethane event. It was an excellent platform to connect, collaborate and share innovative, sustainable solutions that are shaping the future of our industry. A heartfelt thank you to Rishi Madan ji and Sunil Minocha ji—your unwavering support and belief in our growth continues to inspire us. Kudos to every member of the PU TECH INDIA | IPUA Committee and IPUA for curating an event that drives meaningful dialogue and growth in the polyurethane space. We're proud to be part of this forward-thinking community.

#Polyurethane #Sustainability #Innovation #PUTech #IPUA #PolytekSynergy #Collaboration #Gratitude

## JUST A YEAR AGO!!

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Highlights from our successful Innovation Day!

On June 6th, 2024, industry experts gathered at Hotel Westin, Powai, Mumbai, for an incredible and successful event themed "Structuring Sustainable Innovation for Acceleration Growth with Polyurethane." The day was filled with insightful discussions on the latest trends and developments in Polyurethane Infrastructure, Mobility, Comfort, and the Circular Economy. Swipe through to see the innovations driving a sustainable future!

Special thanks to Rinac India Limited, BASF Chemical Catalysts and Adsorbents, Dow, Coim USA Inc., Pearl Group of Companies, Maruti Suzuki India Limited, Canon EMEA, Momentive, Milliken Chemical, Wanhua Chemical (America) Co., LTD, COIM Group, Mattress Recycling Council, Martin Kruczynna, Goffredo Tasca, Alberto Melo, Govind Gupta, Raman C V, Alberto Giovanni Mellie, Sunil Minocha, Rishi Madan and Brian Yang.

#innovationday #polyurethane #sustainablegrowth #industryexperts #circularconomy #innovation2024 #successfulevent

## ► SAFETY HEALTH & ENVIRONMENT

# *Summary of the “Incident [Accident] Investigations: A Guide for Employers” document by OSHA*

- **Introduction:** Emphasizes the importance of reacting quickly to incidents with a prescribed investigation procedure to find root causes and implement corrective actions. It underscores the employer's commitment to safety and health.

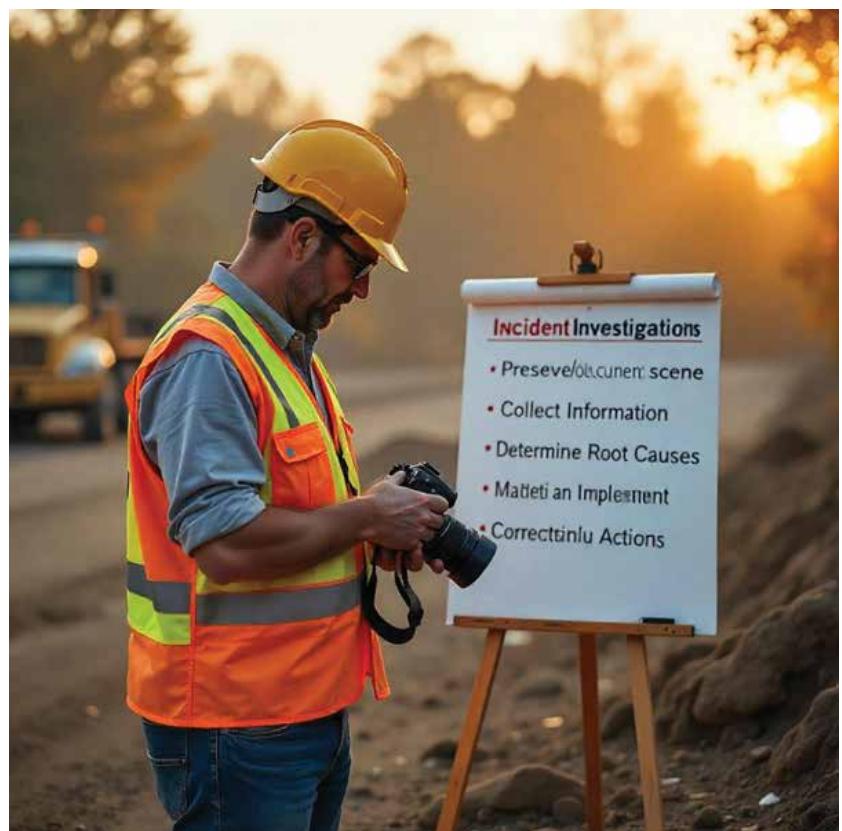
- **Purpose of the Guide:** The primary purpose is to provide employers with a systems approach to identify and control the underlying or root causes of all incidents to prevent their recurrence.

- **Statistics: High Numbers:** The ILO estimates that approximately 2.9 million workers die every year from occupational accidents and work-related diseases. Many more suffer non-fatal injuries.

- **Significant Economic Impact:** Work-related deaths and injuries result in significant economic losses, estimated to be around 4% of global GDP.

- **Why Investigate?** Introduces the reasons why incident investigations are crucial.

- Prevents injuries and illnesses.
  - Saves lives
  - Saves money



- Demonstrates commitment to health and safety
- Promotes positive workplace morale
- Improves management

preventable and not random occurrences.

- **Key Terms (Expanded):**

- **Incident:** (Reiterated) A work-related event in which an injury or ill-health (regardless of severity) or fatality occurred, or could have occurred.

- **Root Causes:** (Reiterated) The underlying reasons why

## Principles of Incident Investigations

- **Incident vs. Accident:** Explains the shift from using the term “accident” to “incident” to emphasize that most workplace events are

# SAFETY HEALTH & ENVIRONMENT

- unsafe conditions exist or a procedure or safety rule was not followed in a workplace. Root causes generally reflect management, design, planning, organizational or operational failings.
  - o **Close Call:** (Reiterated) An incident that could have caused serious injury or illness but did not; also called a "near miss."
  - **Focus on Prevention:** Highlights that incident investigations are incident-prevention tools and an integral part of an occupational safety and health management program. Effective incident investigations uncover root causes and can prevent future incidents if appropriate corrective actions are taken.
- Investigating Programs, Not Behaviors**
- **Systems Approach:** Emphasizes that incident investigations should follow a systems approach, focusing on failures of programs that manage safety and health, rather than solely on "human error" or "behavioral failures."
  - **Digging Deeper:** Underscores the importance of not stopping at immediate causes but exploring the underlying reasons why procedures were not followed or conditions were unsafe.
  - **Example Questions:** Provides examples of probing questions to identify root causes:
    - o If a procedure or safety rule was not followed, why was the procedure or rule not followed?
    - o Did production pressures play a role, and, if so, why were production pressures permitted to jeopardize safety?
    - o Was the procedure out-of-date or safety training inadequate? If so, why had the problem not been previously identified, or, if it had been identified, why had it not been addressed?
  - **Organizational Factors:** Emphasizes the need to consider organizational factors that create preconditions for errors.
- Focus on Root Causes, Not Blame, and Establishing an Investigation Program**
- **Focus on Root Causes:** Highlights that successful incident investigation must focus on discovering root causes and not finding fault or blame. Discovering and correcting the factors contributing to an incident always involve equipment, procedural, training, and other safety and health program deficiencies.
  - **Benefits of a No-Blame Approach:** Enhances worker participation and openness, leading to more effective corrective actions. It addresses underlying or root causes to understand why an incident occurred to develop effective corrective actions.
- **Establishing an Incident Investigation Program (Continued):**
- o How and when management is to be notified of the incident.
  - o Notifying OSHA, which must comply with reporting requirements:
    - All work-related fatalities within 8 hours.
    - All work-related inpatient hospitalizations, all amputations, and all losses of an eye within 24 hours.
- Elements of an Effective Incident Investigation Program**
- **Establishing an Incident Investigation Program (Continued):**
    - o Who is authorized to notify outside agencies (i.e., fire, police, etc.).
    - o Who will conduct investigations and what training they should have received.
    - o Timetables for completing



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# SAFETY HEALTH & ENVIRONMENT

- the investigation and developing/implementing recommendations.
- o Who will receive investigation recommendations.
- o Who will be responsible for implementing corrective actions.
- **Team Approach:** Promotes using a team approach involving managers and employees for more effective investigations.
- **Temporary Workers:** Addresses the specific considerations for incidents involving temporary workers, emphasizing the responsibility of both the staffing agency and the host employer.

## Conducting Incident Investigations – A Four-Step Systems Approach

- **Challenges for Investigators:** Determining what is relevant to what happened, how it happened, and why it happened.
- **Four-Step Approach (Reiterated):**
  1. Preserve/Document the Scene
  2. Collect Information
  3. Determine Root Causes
  4. Implement Corrective Actions
- **Appendices:** Lists the appendices included in the guide and their purpose:
  - o Appendix A: Incident Investigation Form

- o Appendix B: Incident Investigator's Kit
- o Appendix C: Tips for Video/Photo Documentation
- o Appendix D: Sketch the Scene Techniques
- o Appendix E: Collect Information Checklist
- o Appendix F: Sample Questions for Identifying Incident Root Causes
- **Safety First (Reiterated):** Before investigating, all emergency response needs must be completed and the incident site must be safe and secure for entry and investigation.

## Step 1 and Step 2: Preserving/Documenting the Scene and Collecting Information

- **Step 1: Preserve/Document the Scene (Detailed):**
  - o **Preserve the Scene:** To prevent material evidence from being removed or altered.
  - o **Document the Scene:** Capture incident facts such as date, investigators, injured employee information, and incident details.
- **Tools for Step 1:** Refers to Appendices A, B, C, and D for guidance.
- **Step 2: Collect Information (Detailed):**

- o Incident information is collected through interviews, document reviews, and other means (Appendix E).
- o Other sources of information include equipment manuals, industry guidance, company policies, maintenance records, training records, audit reports, and previous corrective actions.

### • **Interviews:**

- o Interviews can yield detailed, useful information about an incident.
- o Must be conducted promptly, while memories are fresh.
- o Involve possibly re-interviewing new witnesses as more information becomes available.

## Step 3 and Step 4: Determining Root Causes and Implementing Corrective Actions, Resources

- **Step 3: Determine Root Causes (Detailed):**
  - o Determining the root cause is the result of persistently asking "why?".
  - o Go beyond the obvious, immediate factors.
  - o Requires "digging" and persistent questioning.
- **Step 4: Implement Corrective**

## ► SAFETY HEALTH & ENVIRONMENT

### Actions (Detailed):

- o The investigation is not complete until corrective actions are implemented that address the root causes of the incident.
- o Implementation should entail program level improvements and should be supported by senior management.
- Note: Corrective actions may be of limited preventive value if they do not address the root causes of the incident.

### Resources

- o OSHA Training Institute Education Centers: OTI Education Centers deliver occupational safety and health training to public and private sector workers, supervisors and employers on behalf of OSHA. Relevant courses are #7500 and #7505.
- o OSHA Website: [www.osha.gov](http://www.osha.gov)
- o Incident Investigation Webpage: <http://www.osha.gov/dcsp/products/topics/incidentinvestigation/index.html>
- o Injury and Illness Prevention Programs Webpage: <http://www.osha.gov/dsg/topics/safetyhealth/index.html>
- o Other: UK Health and Safety Executive: <http://www.hse.gov.uk/pubns/hsg245.pdf>

### IPUA IN THE NEWS



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...

A Celebration of Teamwork & Success at PU Tech 2025!

A successful exhibition isn't just about great products—it's about great people coming together to make it happen! At PU Tech 2025, the incredible team at Expanded Polymer Systems worked tirelessly to create an immersive and engaging experience, showcasing innovation, expertise, and the future of polyurethane technology.

From setting up the booth to engaging with industry leaders, our team's dedication, energy, and commitment made this event truly memorable. Their enthusiasm turned every interaction into an opportunity to build connections, share knowledge, and strengthen relationships within the industry.

A huge THANK YOU to our brilliant team for making PU Tech 2025 a phenomenal success! Your efforts, teamwork, and passion continue to drive our vision forward. To everyone who visited us, connected with us, and contributed to insightful conversations—we appreciate you and look forward to future collaborations! Let's keep innovating, growing, and shaping the future together!

#PUTech2025 #ExpandedPolymerSystems #Teamwork #Success #Innovation #PolyurethaneIndustry #ExhibitionSuccess #IPUA



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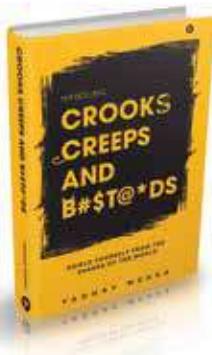
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BOOK REVIEW 

## Shield yourself from the sharks of the world

**About *Crooks, Creeps And B#\$t@\*ds***  
by Yadhav Mehra

Each of us encounters vicious or manipulative people who make it their mission to make our lives miserable. The unfortunate part is that this situation could begin in your early years and permeate your professional and personal lives. What is the tipping point that gives you the clarity and the inner strength to resolve the conflict,

especially if the perpetrator is a parent, sibling, spouse, or boss? Yadhav Mehra believes that giving in to maltreatment is not a sign of weakness, but a result of the misguided lessons and values inculcated since childhood. Concepts that he identifies as 'Misguided Virtuosity' and 'Pseudo Morality'. Mehra classifies the entire populace based on

two parameters - intention and intelligence. This creates CCBs (Crooks, Creeps and Bullies) and DGPs (Decent Good People), who are defined by their behavioural instinct, thought process, and mental texture. Traversing these ideas and concepts, this book explores the mental labyrinth of both these categories while offering an exit route.

The book offers practical frameworks and strategies to break free from the constraints of false morality, misplaced virtues, and prescriptive ways of living. It empowers readers to develop the skills necessary to navigate the manipulative influences

### SHIELD YOURSELF FROM THE SHARKS OF THE WORLD

Each of us encounters vicious or manipulative people, who make our lives miserable. The unfortunate part is that this situation could begin in your early years and permeate your professional and personal lives. What is the tipping point that gives you the clarity and the inner strength to resolve the conflict, especially if the perpetrator is a parent, sibling, spouse, or boss?

Yadhav Mehra believes that giving in to maltreatment is not a sign of weakness, but a result of the misguided lessons and values inculcated since childhood. Concepts that he identifies as 'Misguided Virtuosity' and 'Pseudo Morality', Mehra broadly classifies the entire populace basis two parameters – intention and intelligence. This creates CCBs (Creeps, Crooks, and Bullies) and DGPs (Decent Good People), who are defined by their behavioural instinct, thought process and mental texture. Traversing these ideas and concepts, this book explores the mental labyrinth of both these categories, while offering practical exit routes.

*"Yadhav Mehra's *Crooks, Creeps, and B#\$t@\*DS* is a bold, brilliant, and blisteringly insightful guide to navigating toxic terrains. Packed with witty wisdom, self-realization, and practical strategies. Buy this book and begin your journey to a confident, bold, empowered new you!"*

**Suvir Saran**  
MasterChef, Columnist, and Author of *Instomatic*



**Yadhav Mehra** is a leading Behavioural Skills Trainer and Coach who delivers high-energy Motivational and Keynote presentations, that focus on the often-unspoken matters in the corporate world and in life. His strategies are honest and practical and empower organisations to unleash the untapped potential of their employees, so that they can make an influential impact in the world.

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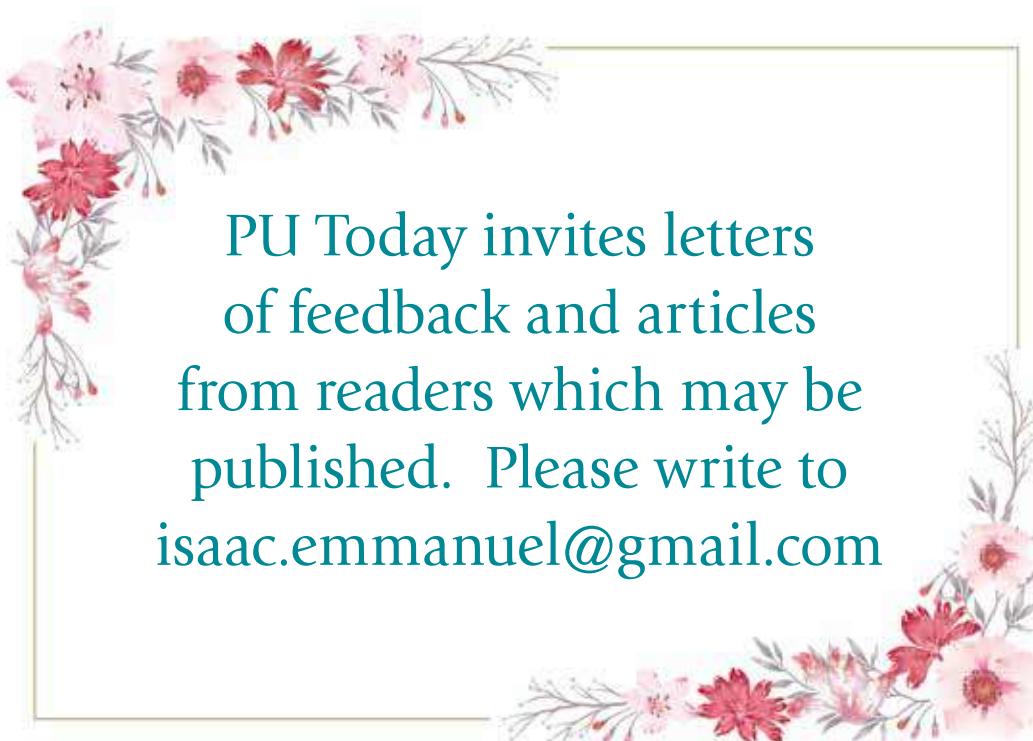
## ► BOOK REVIEW

of CCBs (Crooks, Creeps, and Bullies). By delving into the roots of these behavioral patterns—understanding why individuals behave as they do and what changes are possible—the book provides a pathway to reclaiming psychological freedom. It includes actionable models for dealing with challenging relationships, whether it's a difficult spouse, a demanding child, nagging in-laws, or a problematic boss or relative. Readers will gain insights into the origins of their own archetypes, reflecting on their childhood experiences that shaped them. Furthermore, the book sheds light on the traits of a Decent Good Person (DGP) alongside

the calculated nature of CCBs. Ultimately, it aims to empower individuals aged 18 to 80 to rescue themselves by fostering a clear and conviction-driven understanding of their goodness and its challenges.

An interesting review on Amazon summarizes the experiences of several other reviewers of this book. *I just finished reading an 'enlightening' book, 'Handling Crooks, Creeps and B#st@\*ds (CCB)' by Yadhav Mehra. 'Gyan chakshu khul gaye!', Mehra sahab! I sincerely wish you had written this a generation ago. Our parents would have raised us more practically! We would definitely have learnt to identify and tackle the CCBs from school to work life, even*

*among friends, foes, and families, a lot better. That one can identify and categorise one's oppressor; adopt a suitable strategy contextually; and take informed decisions and actions based on the nuances of the situations; this possibility itself is so exciting for us decent, good people (DGPs). Even if the strategies you have suggested fail in the beginning, we DGPs will have the satisfaction of following 'Swa-Dharma' by trying to take on the CCBs in their own game. I genuinely hope this book is promoted in our schools and colleges so that our children learn to identify CCB traits and suitable responses from a young age. It's a modern age 'Gita' for the oppressed and bullied amongst us. Let's make those crooks, creeps, and bullies squirm!*



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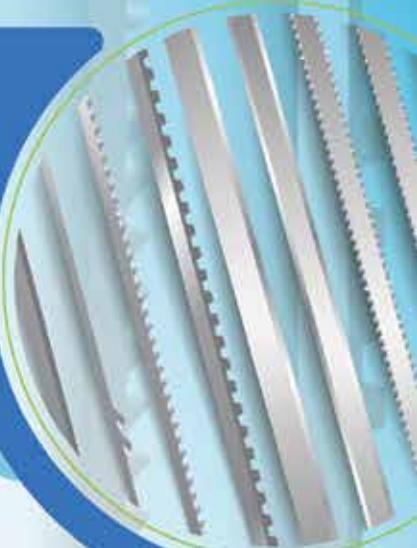
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**Pushing the possibilities:**  
9 Sustainable offerings from BASF



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fossil-free future



Mechanical recycling that  
improves feedstocks



Biomass Balance by BASF:  
Building a sustainable future



ChemCycling™, turning trash  
into treasure



Easily and accurately quantify  
your product carbon footprint



Improve energy efficiency with  
lightweight plastic solutions



Prolong your product  
lifecycles with sustainable  
materials