

EXPERIENCE THE **ART OF ZEN** IN ENERGY MANAGEMENT

With the all-new Ti Panel Solutions powered by

SMARTCOMM Digital Architecture



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LEGACY

Legacy of Awards, Innovation, and Creation.

For over 50 years, Lauritz Knudsen Electrical & Automation has led the way in power management solutions, delivering high-performance systems tailored to diverse industries. Our precision-engineered solutions adhere to the highest manufacturing, testing, and installation standards, ensuring unwavering reliability even in the most demanding environments. Our commitment to innovation and customer-centricity is not only reflected in our products but also in our investment in the next generation of power professionals.

This dedication to excellence earned us the prestigious Deming Prize in 2019, a testament to our world-class manufacturing practices. With a deep national presence and one of India's largest electrical distribution networks, we're committed to powering India's growth with secure, energy-efficient, and sustainable solutions.

We proudly operate six Switchgear Training Centers (STCs) across Pune, Lucknow, Coonoor, Vadodara, Delhi, and Kolkata. These centers offer tailor-made classroom courses and lab learning experiences for technicians, customers, engineers, professionals, and students empowering them with the skills and knowledge to excel in the evolving energy landscape.



Creating Legacy with Time

Ti Panel Solutions is a result of extensive R&D and deep market knowledge, earning the trust of customers, contractors, and consultants. This trust has propelled us to market leadership. Our nationwide franchise network guarantees stable delivery, comprehensive after-sales support, and extensive reach.

This broad reach ensures our presence in key segments such as Mobility, Infrastructure, Data Centers, Steel, Cement, Pharma, and Process Industries. We take pride in offering cutting-edge technologies designed in India, for India, and the world.

With a deep national presence and one of the largest electrical distribution networks, comprising over 1500 partners across the country, we are committed to driving excellence and delivering superior products and solutions that power India's growth journey.

Awarded ET Best Brand 2023 & 2024

Ti Panel Solutions has been consistently recognized for its commitment to quality, innovation, and excellence, securing the ET Best Brand Award in both 2023 and 2024.

Winning back-to-back awards reflects our relentless pursuit of technological advancements, superior craftsmanship, and unwavering focus on reliability and performance. This prestigious recognition highlights our industry leadership, customer trust, and dedication to setting new benchmarks in power management solutions for industries nationwide.



Mindful Engineering, Maximum Safety

Experience Zen-Like Safety with Ti Panel Solutions,
Your Ultimate Protection Companion.

Safety is of paramount importance in engineering Ti Panel Solutions, both to protect personnel working around the panels and to safeguard the panels themselves as valuable assets. Electrical faults—particularly arc faults—pose one of the greatest risks in electrical switchboards, making robust safety measures essential.

Arc faults are a severe type of short circuit, releasing immense energy—up to 20 MW per cycle—with temperatures soaring to 3000°C and pressure surges reaching 3 atm. These extreme conditions can cause extensive equipment damage and significant financial loss. More critically, personnel near the switchgear are at serious risk during an internal arc fault. To ensure operator safety, protection against hot gases, intense radiation, and enclosure fragmentation is essential. A carefully engineered enclosure system is vital to withstand and minimize the likelihood of internal arc incidents.

Ti Panel Solutions are designed with a true arc-resistant architecture, offering robust protection for both people and assets. Our dual-layer approach—Preventive and Responsive Arc Protection—ensures operational continuity by proactively reducing risks and effectively responding to arc events, safeguarding workplaces from potentially catastrophic disruption.



IEC 61641 Certified:
Arcing Class C Compliance -
Withstands 85kA in 0.5 sec



Short Circuit Withstand Capacity:
Rated 100kA 1sec, both Al and Cu



High Ingress Protection:
Up to IP55 rating



Operator Safety Maintained:
Minimum IP2X rating even
with doors open



Arc-Resistant Design:
Built-in technology for enhanced
arc flash protection



Preventive Protection

Ti Panel Solutions is crafted with all safety measures integrated into its design, ensuring that electrical faults are prevented. This mindful engineering not only prevents faults but also inhibits the propagation of arcs.



Increased Phase Separation:
Offers a **25mm gap (IEC 61439 recommends 14mm)**, minimizing Ph-Ph arcing faults.



Superior Insulation:
Busbar supports with CTI > 600V Qualifying for Material Group I Best electrical insulation.



Busbar sleeving:
Ensures spreading of Electrical arcing.



Forms of Separation:
Available up to **Form 4b** for added safety.



Responsive Protection

With all preventive measures in place, Ti Panel Solutions is tested in accordance with IEC 61641 for internal arc faults, ensuring safety even in the event of an arcing incident. The careful design ensures the safety of both the system and personnel, while also maintaining continuity of operation.



High Withstand Capacity:
Withstands up to 85kA for 0.5 seconds.



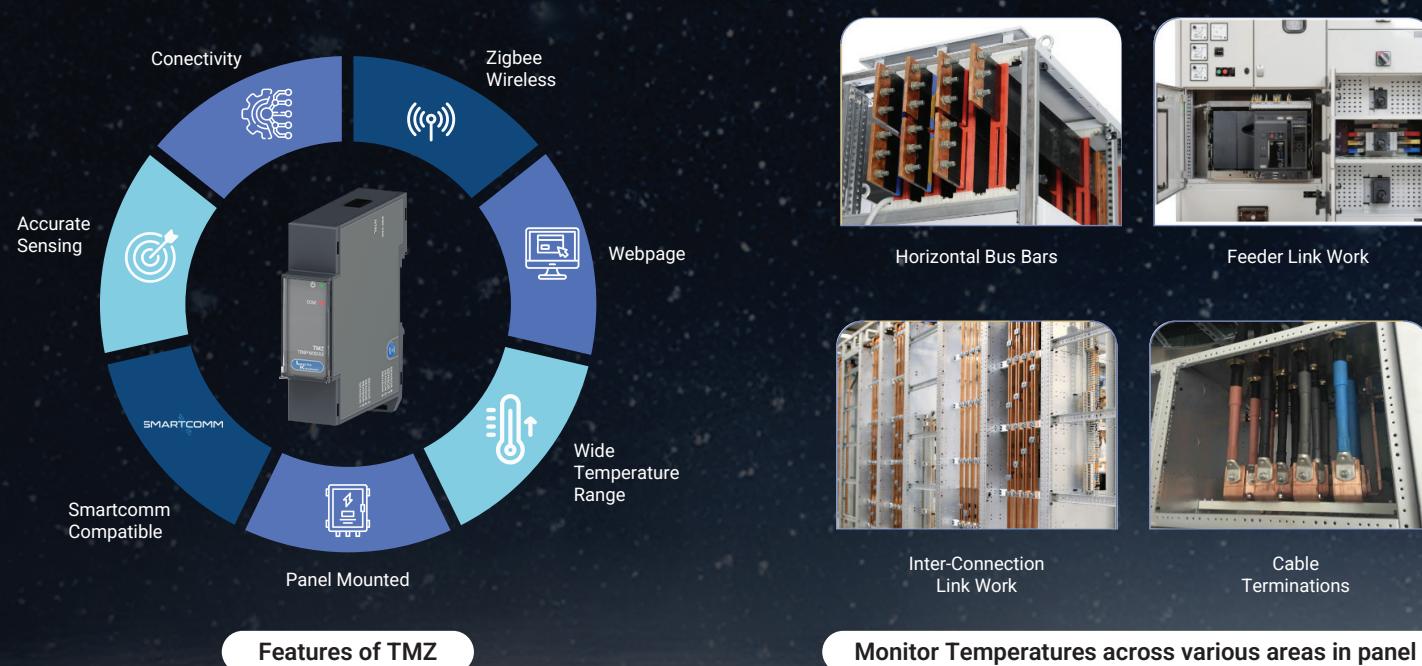
Highest Compliance:
Meets IEC 61641 standards for Arcing Class C.



Safety Assurance:
Ensures personal protection, equipment protection, and service continuity.

Thermal Management in Ti Panel Solutions

Abnormal temperature rise is a leading cause of electrical system failures. Lauritz Knudsen's Thermal Management Module (TMZ) offers a proactive solution. Equipped with contact sensors, TMZ delivers real-time temperature monitoring of critical points within the Panel. This preemptive approach allows for early intervention, preventing failures and extending the lifespan of your electrical systems, ensuring safer and more efficient operations.



TMZ integrates seamlessly with the built-in temperature monitoring modules of Lauritz Knudsen ACBs and Ti Panel Solutions, ensuring maximum reliability and reduced downtime. TMZ's thermistor-based wireless sensors enable precise temperature tracking within LV switchboards, communicating effortlessly with strategically placed transmitters located away from heat-intensive zones. Automated alerts for temperature spikes through SmartComm further enhance operational safety and extend system longevity.

Robustness Brings Zen

Enhanced Safety Through Electrical and Mechanical Strength

Ti Panel Solutions embody rigid structural performance thanks to its internal frame made of 2mm roll-formed closed loop channels, which offer high load-bearing capacity and help achieve uniform panel dimensions. This closed profile structure provides up to 3.5 times the strength compared to conventional structures.

Ti enclosures are made with powder-coated sheet steel, enhancing their durability. The doors are equipped with gaskets for safe operation and maintaining the panel's IP rating, and can be locked with special camlocks to prevent unauthorized access.

Additionally, the use of noble components enhances safety and performance. These components feature:

CTI > 600V:

Allowing them to withstand higher voltages without forming conductive paths.

FR V0 Rating:

Self-extinguish within 10 seconds and do not produce flaming drips.

SMC (Sheet Molding Compound) Material:

Known for excellent insulation and superior short-circuit performance.



Seismic Resistant Design

- **ZONE V**
As per IS 1893
- **IEC 60068-3**
Certified



Higher Impact Resistant

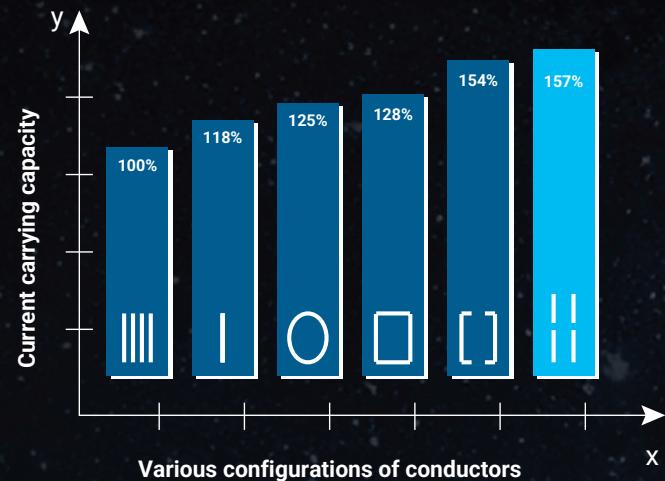
- **IK 10**
As per IEC 62262



Unique Roll Formed

- **Closed Profile**
- **High load Bearing capacity**

Reliable and Efficient Busbar System



Ti Double Deck Busbar System

Double-Deck Busbar System

The innovative vertical stacking of busbars offers superior performance and efficiency over traditional side-by-side designs, especially when paired with our low watt-loss ACBs.

Better Electrical Performance

The advanced design reduces skin and proximity effects, enabling the system to carry 1.5x more current. Specialized busbar supports enhance short circuit performance by minimizing electrodynamic forces during arcing.

Improved Thermal Performance

With a larger surface area for convection, this system improves thermal performance by up to 40%, ensuring optimal operation under heavy loads.

Reduced Electrodynamic Forces

By maintaining clearances that exceed standard requirements, the design significantly reduces the impact of electrodynamic forces on busbars, ensuring greater durability and reliability.

*Aluminum Busbar by A.G. Rata and P.J.H. Thomas

Sustainable

Ti Panels Solutions: Your Sustainable Choice

At Lauritz Knudsen, we believe that powering progress should go hand in hand with protecting our planet. Our Ti Panel Solutions are engineered with sustainability at their core, minimizing environmental impact throughout their lifecycle.

Regulation Compliance:

Our panels meet both RoHS and REACH standards, ensuring full adherence to regulations on hazardous substances and chemical components.

Environmental Certification:

Ti Panel Solutions: has a certified Product Environmental Profile (PEP) Report, a type III environmental declaration in accordance with ISO 14025. This profile provides detailed information about the product's environmental impact based on a Life Cycle Assessment (LCA) and follows specific Product Category Rules (PCR) for consistency and reliability.

High Recyclability:

With a recyclability score of higher than 90%, Ti significantly enhances product circularity, aligning with the 3R concept (Reduce, Reuse, Recycle).

Reduced Carbon Footprint:

Smart use of materials and space in Ti Panel Solutions helps decrease the carbon footprint.

Reduced Power Loss:

Achieved with Ti's Double Deck Busbar System and Lauritz Knudsen's OMEGA range of ACBs.

By choosing Lauritz Knudsen, you actively support eco-conscious innovation.

Ti Panel Solutions are designed with environmental responsibility at their core—delivering efficient, reliable power management while contributing to a cleaner, more sustainable future – for today and for generations to come.



Embrace digital for a Paper-Free future

QR Code Documentation – Go paper-free with instant digital access to panel information.

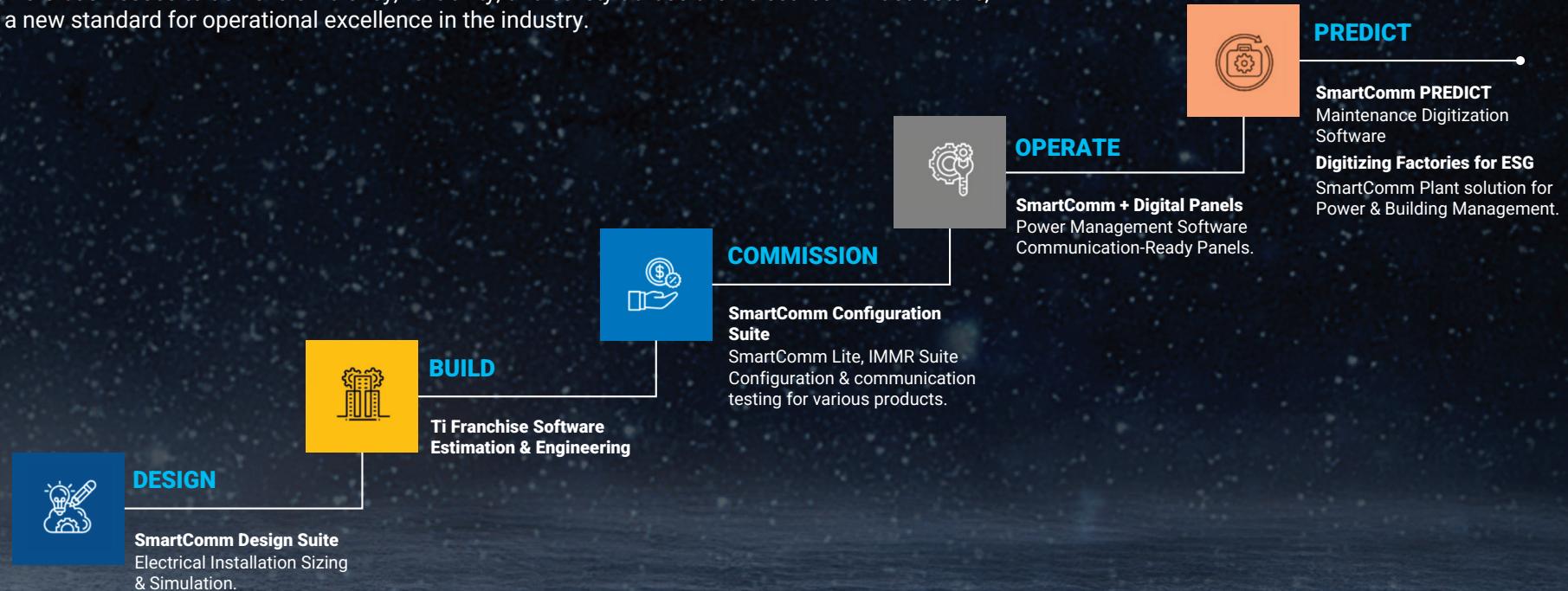
Each Ti Panel Solution includes a unique QR code, enabling quick retrieval of relevant documents while supporting our commitment to providing an eco friendly solution.



SMARTCOMM Digital Architecture

Revolutionizing Connectivity: Discover the Power of Next generation Technology with Innovative Ti Panel Solutions

SmartComm Digital Architecture is the ultimate end-to-end solution that redefines the management of electrical infrastructure, from design to maintenance, ensuring that every process is perfected. It empowers businesses to achieve efficiency, reliability, and safety across their electrical infrastructure, setting a new standard for operational excellence in the industry.



SMARTCOMM Design

Every project starts with the crucial design phase. SmartComm Design is a simple and intuitive software for electrical installation sizing and switchgear selection. It aids users in handling large networks with strict compliance in IEC standards. The software also equips the user to simulate the network model while conducting fault level calculation, load flow, selectivity analysis, voltage drop, and generates extensive reports for documentation.

Features



SMARTCOMM Build

A digital backbone for the Project life cycle.

SmartComm Build is a one-stop solution for LV switchboard configuration, quotation, and engineering software dedicated to Ti range of switchboards. It eases the LV switchboard configuration and bid and order execution processes.

SmartComm Build consists of two modules: Engineering and Estimation.

Using the Bid(Estimation) module, authorised users can configure the switchboard and create the offer with the appropriate components in accordance with the IEC61439-tested design.

The SmartComm Build program allows users to import SLD for fast switchboard configuration. Users can obtain drawings and the bill of materials (BOM) for the production and assembly process, and reuse project data from the estimating module. It also ensures that the right components are selected for a switchboard, which helps to increase hit rate, submit reports with greater accuracy and save time.

Features

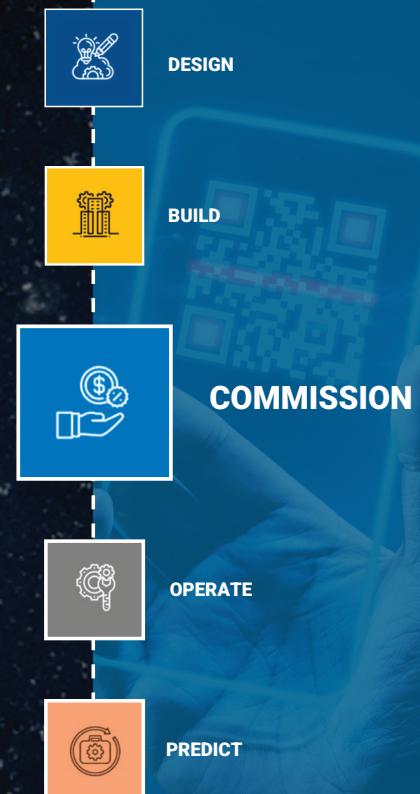


SMARTCOMM Commission

SmartComm Commission is a tool for device management, configuration, and upgrades. It enables the exchange of data between all compatible Lauritz Knudsen communicable devices. Additionally, we can use this tool to create communication architecture for projects with multiple switchboards and map multiple devices.

Features

- Seamless Configuration: Supports serial and ethernet device connections.
- Communication Overview: Provides a bird's-eye view of single or multi- switchboard setups.
- Project Database: Tracks serial numbers, hardware/firmware versions and device details for future reference.
- Device Health Checks: Tests communication status to ensure reliability.
- Detailed Reporting: Generates reports including communication tests, parameterizations, audit logs, protection curves, and architecture summaries
- Comprehensive project report consisting of a Communication Test Report, Parameterization Report, Audit Log, Protection Curve Testing Report, Communication Architecture Report and other in-depth data analysis.



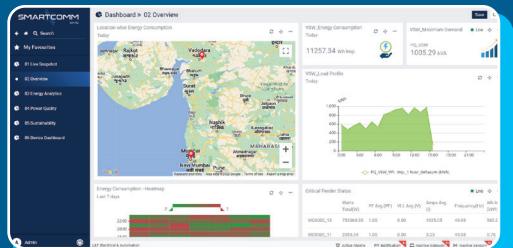
SMARTCOMM Operate

The operational phase is pivotal for ensuring seamless project execution and ongoing efficiency. Our suite of advanced tools equips customers to manage operations with precision, leveraging integrated data, real-time visualization, remote monitoring and control, energy management, compliance tracking, and detailed reporting.

SMARTCOMM EMS

SmartComm EMS is a **simple and powerful energy monitoring software** that helps customers track their energy consumption. It includes **real-time device dashboards, energy reports, trends, alarm notifications** via email and SMS, and a **billing module** for sub-tenant billing.

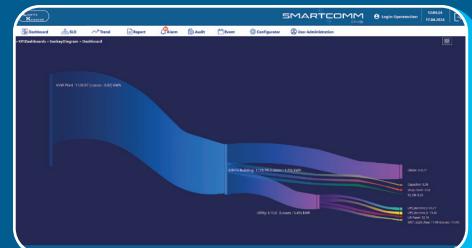
- SmartComm EMS (Energy Management Solutions): Tracks, analyzes, and optimizes energy consumption to improve efficiency and reduce costs.



SMARTCOMM PMS

SmartComm PMS is a **state-of-the-art SCADA-based software** for device communication, integration, data management, monitoring & control, and data analytics. It helps **reduce maintenance costs, increase system uptime, and optimize power consumption** through **energy management strategies**.

- SmartComm PMS (Power Management Solutions): Ensures safe, reliable power distribution and system stability across operations.



SMARTCOMM Predict

SmartComm Predict is an electrical asset performance management system with predictive capabilities designed to maximize returns from substation assets. It enhances reliability by optimizing maintenance cycles and ensuring asset availability. This enables install base tracking, condition monitoring, service level insights, document management, health and life prediction, preventive and predictive maintenance, and complaint management.

Key Features:

Process Digitization:

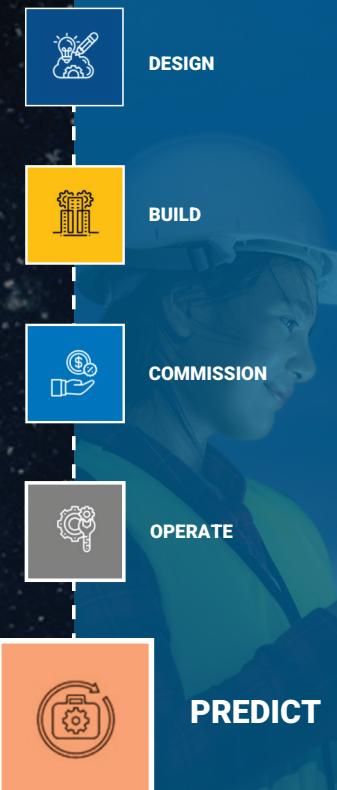
- **Asset Information:** View and maintain detailed asset and component-level information.
- **Digital Logbook:** Access up-to-date documentation, automated reports, and QR Code functionality.
- **Digital Maintenance Manager:** Digitally manage tasks, track maintenance history, and generate automated reports.

Conditional Monitoring:

- **Real-Time Monitoring:** Continuously monitor asset health parameters using sensors and relays, and analyse historical trends.
- **Conditional Alarms:** Receive alarms and corrective action recommendations when parameters exceed thresholds.

Asset Health Analysis and Prediction:

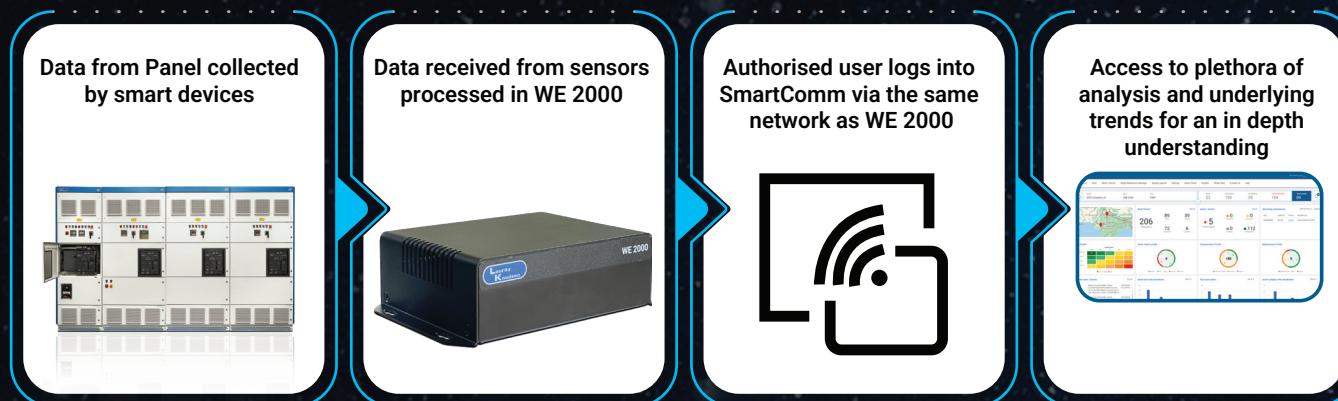
- **Asset KPI:** Assess assets using health, criticality, risk, and maintenance indices, with historical trend analysis.
- **Health Prediction:** Predict future health, provide remedial solutions, and assess remaining lifespan based on live data analysis.



SMARTCOMM in a Box | Smarten Up Your Panels

The SmartComm in a Box, also referred to as WE 2000, is a revolutionary device designed to transform your panel into a smart system. This mini compatible PC leverages all the advanced features embedded within the SMARTCOMM EMS. The WE 2000 is capable of receiving inputs from TMZ and metering devices, where it processes the data to provide valuable insights. These insights help in viewing and identifying underlying trends, making it an indispensable tool for efficient data management.

Furthermore, the WE 2000 supports various communication protocols, ensuring seamless integration with a private network or any existing network within the premises. This capability allows for remote monitoring by authorized users, enhancing the overall functionality and accessibility of the system. With the WE 2000, users can experience a significant upgrade in their panel's intelligence and operational efficiency, making it a smart choice for modern data management needs.



Ti Draw Out Module

Ti Panel Solutions present an advanced Motor Control Centre (MCC) featuring unique draw-out capabilities, engineered to meet the rigorous demands of modern industry and diverse site conditions. This MCC enhances safety, maintenance, and promotes operational flexibility.

Each draw out module is an independent unit with incoming and outgoing power jaw contacts and self-disconnecting control sliding contacts. These modules have five unique positions with clear indications making it easy for maintenance.

- 
- 1** **Service:** Power & Control Contacts fully engaged.
Unit operational.
 - 2** **Test:** Power contacts disengaged; Control contacts remain connected Allows for safe testing of control circuits.
 - 3** **Isolated:** Both Power & Control contacts disengaged.
Module remains securely inside the panel.
 - 4** **Draw out:** Module is projected outside the panel with doors open,
allowing clear access.
 - 5** **Maintenance:** Module can be tilted to a convenient angle, providing easy access
to rear-side jaw contacts for inspection and maintenance.

Ti Draw Out Module

Key Features & Specifications:

Compliance & Intelligence Ready	Enhanced Safety & Maintenance:	High Performance:
<ul style="list-style-type: none">➤ Fully conforms to IS/IEC 61439 Parts 1 & 2 standards.➤ Compatible with Intelligent Motor Control Systems.	<ul style="list-style-type: none">➤ Proprietary Telescopic Rail System: With a robust racking screw/handle, this system ensures true draw-out functionality, guarantees a high degree of alignment, and prioritizes operator safety during module movement.➤ First-In, Last-Out Earthing: Critical earthing connections on the moving part are made first and broken last, ensuring the module is always safely earthed during transitions.➤ Integrated Safety Mechanisms: Padlock facilities and door interlocks prevent unauthorized access and unsafe operations.➤ Dropper Bus Bars with Safety Shutters: Located securely behind the feeder unit, preventing accidental contact.➤ Spring-Loaded Safety Shutters: Automatically cover stationary power contacts when a module is withdrawn, protecting personnel from live parts.➤ Clear Position Markers: Visual indicators for module positions enhance operational clarity and safety.	<ul style="list-style-type: none">➤ Accommodates starters up to 200kW (DOL) and 300kW (Star-Delta).➤ Rated Service Voltage: 440V AC.➤ Rated Frequency: 50/60Hz.➤ Rated Current: Up to 5000A.➤ Busbar withstands up to 100kA.



iMCC - Smart Motion Starts Here

The iMCC (Intelligent Motor Control Center), part of the versatile Ti Panel Solutions range, is a modular and communicable Motor Control Center designed to provide comprehensive protection, monitoring, and smart control for electric motors. It enhances system reliability, boosts production efficiency, and seamlessly integrates with plant control systems, ensuring sustainable operations.

Advantages of iMCC

**Seamless Integration:**

Easily connects electrical panels with control rooms for smooth operations.

**Cost Savings:**

Reduces cabling, project costs, and maintenance expenses while extending motor life.

**Increased Efficiency:**

Enhances system performance and lowers energy consumption.

iMMR - Intelligent Motor Management Relay

At its core, iMCC features the **iMMR**, an intelligent motor management relay that provides real-time operational and diagnostic data. Its compact design, pre-programmed starter logic, and support for open communication protocols like **Modbus** and **Profibus** ensure seamless integration with **PLCs** and **DCSs**. Engineered to minimize downtime and commissioning time, the **iMMR** delivers exceptional performance.

Combined with Ti Panel Solutions robust and customizable solutions, the **iMCC** offers unmatched flexibility and reliability, empowering industries to optimize their operations effortlessly.



Ti Wide Range of Solutions

Ti Panel Solutions offers a comprehensive range of electrical solutions designed to meet diverse industrial needs. Each product is engineered to deliver exceptional performance, durability, and efficiency, making them ideal for a wide range of applications.

- APFC (Automatic Power Factor Correction): Optimizes energy consumption and maintains a stable power factor, enhancing operational efficiency. Communication Overview: Provides a bird's-eye view of single or multi-switchboard setups. Tested as per IEC 61921.
- HPFC (Hybrid Power Factor Correction): Minimizes harmonic distortions, ensuring smoother electrical performance and reduced energy losses. Device Health Checks: Tests communication status to ensure reliability.
- Wall-Mount DBs (Distribution Boards): Compact, robust, and versatile, suitable for various indoor and outdoor applications.
- VFD (Variable Frequency Drives): Offers precise motor speed control, improving energy efficiency and reducing wear and tear.
- IP55 Outdoor Panels: Weather-resistant and durable, built to withstand harsh outdoor conditions while maintaining reliable performance.
- Stainless Steel Panels: These panels offer superior strength and corrosion resistance for harsh environments. Fully IEC 61439 ASTA certified, they ensure safe, reliable performance across indoor and outdoor applications.

The Ti range reflects the commitment to innovation, quality, and sustainability, empowering businesses to optimize operations while meeting the highest safety and reliability standards.



Efficiency Meets Versatility

In urban environments, space equals money. Ti Panel Solutions are designed with flexibility and customization to maximize the value of your available space, delivering solutions that save both space and costs. All our switchgear assemblies are highly customizable, with each requirement tailored by our expert engineering teams. Ti Panel Solutions are built to perform in extreme conditions, backed by regionally located project teams to develop optimal solutions that give your business the winning edge.

Description	Options
Heights provided	1800, 2000, 2200, 2400 mm
Depth provided	440, 600, 1100 mm
Width options MCCB Chamber	250, 350, 500, 600 mm
Width options ACB Chamber	440, 600, 700, 800, 1000 mm
AOC Available in	300, 400, 500 mm (rear or side)
Cable or Duct entry	Top/Bottom
Busbar flexibility	Top/Bottom
Cable access	Front/Rear

Flexible in Configuration

Ti Panel Solutions offer various width options, allowing customers to choose the best fit for their space needs. As one of the most compact ranges available, the Ti Panel Solutions system provides exceptional flexibility, making it the top choice for achieving an optimal balance between space and performance.

Technical Specifications

Voltage rating	Rated operational voltage (U.)	415/440V/690V AC
	Rated insulation voltage (U)	1000V
Main Horizontal Busbars:		
Copper Busbar	Upto 8000A	
Aluminium Busbar	Upto 6300A	
In Panel Rating		
Current ratings	Cu Based Panels	Upto 6300A
	AL Based panels	Upto 5750A
Internal arc Rating:		
Seismic Rating		
Short Circuit Withstand (Icw)		
Ingress Protection (IP) as per IEC 60529		
Degree of protection	External	IP-43/IP-54/IP-55
	Internal	IP 2X
	Impact Resistant Protection	IK 10 (as per IEC 62262)
Forms of separation	As per IEC 61439-2	Upto Form 4B Type 6

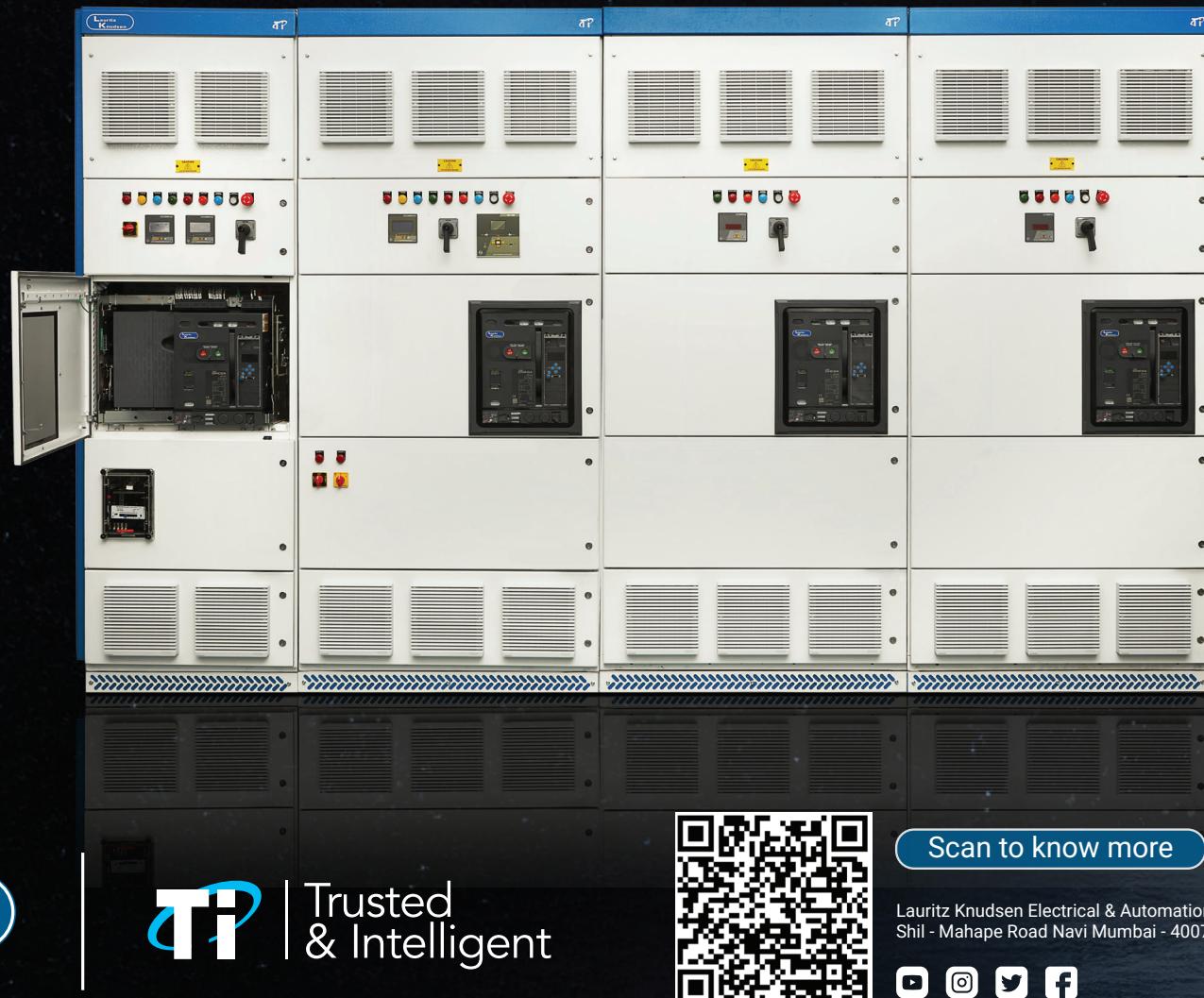
Ti Panel Solutions: All the way, Always

Ti Panel Solutions simplifies power management projects with a streamlined, customer-centric approach. From initial consultation to ongoing support, we collaborate closely with stakeholders to develop tailored solutions that precisely address your unique requirements and maximize efficiency. Our expertise ensures your Ti Panel Solutions system delivers optimal performance, reliability, and long-term value.

With Ti Panel Solutions and our innovative SmartComm ecosystem, you gain a seamless experience from project inception to completion and beyond. From the initial bidding process and detailed application engineering to efficient manufacturing, rigorous quality control, and comprehensive after-sales support, we handle every aspect of your power management project. This allows you to focus on your core business objectives, confident that your power infrastructure is in expert hands. Our commitment to transparency and open communication ensures you're informed and empowered throughout the entire project lifecycle.







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& Intelligent



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