

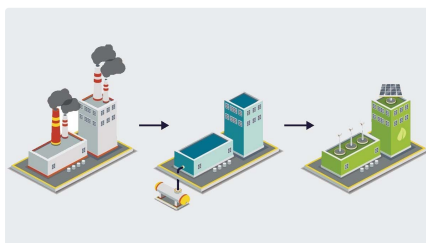
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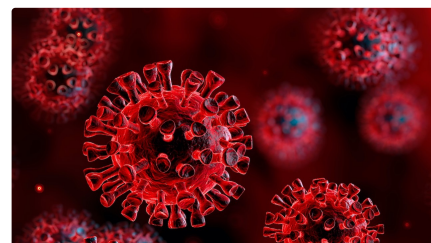
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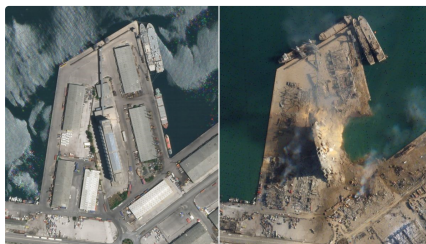
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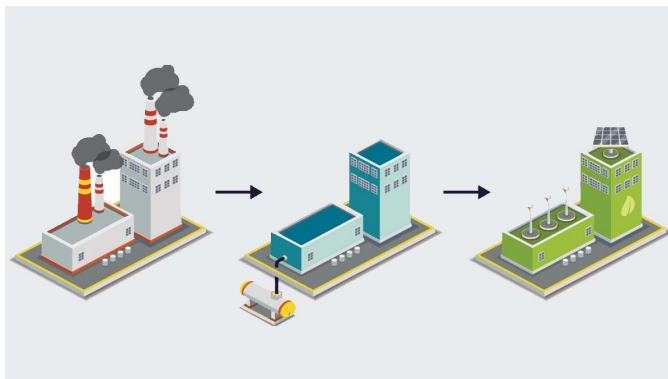
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CHEMICAL ENGINEERING

Published by Bhumika SharmaBharvi Patel , 07-11-2020

Upcoming trends in the chemical industry



A discussion by sophomores on upcoming fields in chemical engineering.

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The future of the chemical industry is going to transform and change drastically. Even the companies which are connected to chemical industries need to bring evolution. They need to maintain competitive behaviour in their work culture and take every challenge as an opportunity to grow in the new market.

Past decades have experienced great changes in chemical engineering, enhancing the capital market performance and outperforming at the overall market level.

Adding to this fundamental, there have been certain positive technological advancements that have profited this segment and aided their global capital-market performance. The most notable ones have been highlighted in this article, which is also proven to trend in the coming days.

Rapid prototyping

Rapid prototyping is used to create a three-dimensional model of a part or product. In addition to providing 3-D visualization for digitally rendered items, rapid prototyping can be used to test the efficiency of a part or product design before it is manufactured in larger quantities. Testing may have more to do with the shape or size of a design, rather than its strength or durability, because the prototype may not be made of the same material as the final product. Today, prototypes are often created with additive layer manufacturing technology, also known as 3-D printing.

Considering the current scenario, prototyping enables a chemical firm like Ineos to model various formulations of hand sanitizer and release the one that can effectively kill bacteria and viruses.



Automation

Technological advances in control systems drive the market. Besides, the rise in the demand for main automation contractors (MACs) is anticipated to boost the growth of the industrial automation market in the chemical and petrochemical industry.

The growing need for fast and accurate systems in the process and discrete industries has led to technological advancements in automation control systems. Factors such as advances in sensor technology and the reduction in the cost of sensors have led to the development of wireless sensors that offer installation flexibility. With the reduction in the size of circuit boards, controllers, and semiconductors, vendors are introducing miniature versions of automation control systems. Vendors are also incorporating advanced features such as faster processors, increased memory capacity, and new communication features to help the chemical and petrochemical industry operators handle complex operations. Many such technological advances in automation control systems are expected to have a positive impact on the growth of the market during the forecast period. Automation is also a key to post-pandemic production for industry.

Zero waste factor

The raw materials and chemical energy supplies are getting tighter every day, primarily because of the pandemic outbreak. This ever-increasing demand and the impact of waste disposal on surrounding have encouraged experts to set stringent regulations. Going zero waste is one such environmental step, which is extremely economical and a realistic business idea for 2020. With the right utilization of tools, it can cut costs and speed up production efficiency.

Global chemical companies are now ensuring sustainability, with less energy and resource consumption. The critical nodes of the sustainable ecosystem include chemical production, applications, raw materials, and end-users, along with the increased focus on maximizing the use of renewables, recycling, energy recovery, and re-use by end-users to achieve the circular economy.

For instance, Recycling of battery materials is expected to see massive growth in the future because of the increased adoption of electric vehicles and strict regulations for recycling.

Nanotechnology

Chemical industry and nanotechnology go hand in hand, as several areas of nanotechnology work because of the essential chemical that underlie its mechanisms and phenomena. Several polymers that are created within the chemical industry still fall under the dominion of this technology, especially when they are tweaked at the nanoscale, even if the material is not made out of it. Firms like DuPont have created many such polymers like Kevlar and Teflon, which are inspired by nanotechnology.

Nanotechnology continued to evolve in the current pandemic situation. The various approaches include, such as avoiding viral contamination and spray by:

- Design of infection-safe personal protective equipment (PPE) to enhance the safety of healthcare workers and the development of effective antiviral disinfectants and surface coatings, which are able to inactivate the virus and prevent its spread;

- Design of highly specific and sensitive nano-based sensors to quickly identify the infection or immunological response;

- Development of new drugs, with enhanced activity, decreased toxicity and sustained release, as well as tissue-target, for example, to the lungs;

- Development of a Nano-based vaccination to boost humoral and cellular immune responses.



Hence the convergence of the trends mentioned above will help the chemical industry in challenging strategies that they have relied upon for a generation. Chemical firms must adapt quickly to these changes if they wish to embrace new market opportunities, gain a competitive edge, and overcome challenges.

Citations

<https://chemical.mytechmag.com/chemical-industry-2020-top-5-trends-to-follow-1261.html>

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