

News Release

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BASF empowers SP Chemicals to be the first domestic styrene plant with Industry 4.0 solution applied

- **An interactive and easy-to-operate digital tool that capitalizes on big data analysis to maximize styrene catalyst productivity**

BASF's styrene catalyst Industry 4.0 solution, StyroSim™, is now smoothly working for SP Chemicals' styrene plant. Technologies include process modeling and optimization, big data analysis, and automated data transfer, the combination of which can effectively optimize plant operational efficiency and maximize production.

As the original inventor of industrial styrene production and styrene catalysts, BASF is committed to continuous innovation and product improvement. With rich operational experience over the past decades, the company began to explore the possibility of implementing an Industry 4.0 solution in the area of styrene catalysts since 2018. The team successfully identified the appropriate machine learning models and technologies to predict the required catalyst bed temperatures and the selectivity of styrene from ethylbenzene under various operating conditions to achieve target conversions. The solution will provide customers with more accurate guidance on operation adjustment and catalyst life prediction.

From February 2022, StyroSim™ officially went live with SP Chemicals. This marks the first successful application of Industry 4.0 solution on a domestic (Chinese) styrene plant. Users can autonomously use the simulator embedded to simulate the operating conditions for different production targets, which in return greatly reduces the probability of personal trial and error.

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In addition, StyroSim™ improves data timeliness by optimizing the traditional time and manpower consuming process. Through it, encrypted operation data is automatically pushed to the BASF server on a regular basis. This mechanism enables the monitoring of real-time catalyst performance whilst ensuring client data security. StyroSim™'s interactive platform also allows efficient communication between both parties.

SP Chemicals has chosen BASF's styrene catalysts since its plant was put into operation. Jian Li, Plant Manager of its styrene plant, noted: "This marks another great milestone in our collaboration with BASF. Since the use of StyroSim™, we have saved much manpower in operation whilst greatly improving operational accuracy. I believe its longer-term benefits will better prepare us for today's changing market environment."

Dr. Chris Wai, Vice President, BASF Global Chemical Catalysts, has pointed out, "BASF's styrene catalysts have been widely chosen by global chemical companies for its excellent quality and our dedicated service. The innovative solution, StyroSim™, will serve as a powerful addition to our technical expertise to help more local customers maximize their economic benefits. I also look forward to the possibility of applying this solution to the other products to create a higher value for customers."

About BASF's Catalysts Division

BASF's Catalysts division is the world's leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success. Further information on BASF's Catalysts division is available on the Internet at www.catalysts.basf.com.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. Around 111,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio comprises six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €78.6 billion in 2021. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at <http://www.basf.com>.