

Petrochemicals to see growth

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As domestic and global economies heal, the Thai petrochemicals industry will enjoy healthy demand growth for the next two years, but greater emphasis on productivity technologies is needed to seize this growth.

An expanding US economy and a recovering euro zone will propel the global economy to a 3% annual growth rate over the next three years, according to the International Monetary Fund.

The demand for petrochemicals is projected to grow faster than the global economy, as expanding populations in developing markets fuel a growing appetite for plastics.

With an annual output of 30 million tonnes, Thailand is the second largest producer of petrochemicals in Asean and the 16th largest in the world.

While demand increases, producers must take note of oil and natural gas prices, which can have an important effect on firms' operating costs. In Thailand, for example, "the reduced availability of domestic natural gas as a petrochemical feedstock will cause a major change for petrochemical producers", said Pramodkumar Lakhmapure, head of Southeast Asia sales at AspenTech, a Massachusetts-based asset optimisation software provider.

The accelerating growth rates will come coupled with increased volatility. In a volatile environment, producers must move quickly to stay ahead in this global marketplace. Companies need to focus on operational excellence and pursue long-term business sustainability, as well as technology that maximises the use of current assets, Mr Lakhmapure said.

Key across industries is the integration of software that improves the decision-making process, through accurate planning and advanced scheduling tools. The right technology can also help companies mitigate skills shortage risks.

Most refineries operate with thin margins, and slight errors can be detrimental to profitability. Risks can be mitigated to a certain extent through mathematical optimisers and by adopting industry best practices, Mr Lakhmapure said.

"Planners need to have sustained profitability in mind," he said. "This includes selecting the correct modelling parameters from hundreds of variables to create an ideal map. It is necessary to select the right parameters that considers factors such as yield, energy consumption and other economic drivers.

"Decision-makers also need to solve the optimisation problem reliably and analyse the solution for robustness. The biggest challenge is to ensure that production plans remain profitable within a range of operating conditions."

However, testing these conditions requires running a vast number of hypotheticals. Mr Lakhmapure said some companies are studying the use of cloud computing to reduce resolution time. Cloud computing would enable refineries to solve 800 routine cases in 90 minutes instead of 36 hours. The ability to plan reliably and quickly is essential to capturing the fleeting market opportunities and retaining a robust market position.

Implementing a plan may be even more problematic than solving routine cases, however, and companies must plan accordingly. Schedulers need to comply with strict product specifications, market and regulatory requirements that can impact profit margins. In the light of regulatory complexity, having a comprehensive, refinery-wide view of the schedule is vital.

Refineries looking to improve their productivity must bring scheduling activities under a single platform in order to streamline their workflow and achieve a greater view of the entire petroleum supply chain. Crude and product schedulers can be integrated into a single schedule through software solutions, Mr Lakhmapure said.

After schedules are synced, schedulers can more effectively optimise the process units and increase profitability by maximising operational constraints.

"For example, Petronas Melaka used a collaborative scheduling environment to minimise human error and increase profitability by US\$0.10 per barrel of crude processed," Mr Lakhmapure said.

"Digital solutions can also help refineries decide on the optimal proportions of product blends. Refineries need to refine crude into different blend stocks that are eventually blended into saleable products, such as distillates, gasoline or fuel oils.

"As blend complexity increases and additional constraints are introduced, a scheduler's responsiveness is crucial to creating an optimal blend recipe. With a blending solution, schedulers can accurately model the blending operation to maximise margins and reduce product quality giveaway."

Refiners need to protect themselves from volatility and take advantage of the growing industry by adopting the best tools in planning and scheduling.

Pramodkumar Lakhmapure is head of Southeast Asia sales and Patrick Garrett is senior product specialist at AspenTech.

About the author

Writer: Pramodkumar Lakhmapure & Patrick Garrett