

Getting the most from bulk chemical plants

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While some energy is used in the bulk chemical manufacturing process for heat and power, most energy in this industry is used as feedstocks or raw materials for the manufacture of chemicals. With high volume output and low margin return, operations are capital intensive and continuous processes. Companies continually strive to achieve high asset utilisation while staying on target for production goals or KPIs. The use of cutting-edge software technology can dramatically improve equipment performance, validate plant bottlenecks, push production constraints and ensure safe, reliable operations.

The industrial world is predicted to grow over the next decade and competition will intensify as global energy consumption increases to meet consumer demand across emerging regions. The bulk chemicals industry is expected to take a large portion of both consumption and growth, as well as capitalise on the increased supply of natural gas, hydrocarbon gas liquids and petrochemical feedstock. Whilst opportunities exist for companies in the market, many chemical manufacturers are focused on maximising yields, reducing energy costs and ensuring plants reliably perform to safety standards.

Answering the big questions

Identifying operational strategies to bypass bottlenecks and improve operating targets for key plant equipment is a crucial goal for chemical businesses today. Optimising trade-offs between production, yield and energy performance requires greater visibility of plant behaviour in order for stakeholders to make the necessary corrective actions to keep production on track and reach operational targets. Validating relief system design for new operating conditions and conducting operability analysis to address stability problems quickly will also mean that businesses can keep to schedule and deliver products on time.

Many leaders in the chemicals industry are constantly reviewing their strategies to keep their business lean and competitive. As part of the processes, key questions arise including 'How can we best utilise the capital we've invested and minimise operating costs?', 'Which pieces of equipment are preventing the smooth running of the plant and causing downtime?' and 'Is there a better way to speed up the production process whilst remaining safe?'

It is not easy to balance the trade-off between making the most products without using an enormous amount of energy. Processes are energy intensive and a small difference in operations can make a huge impact to the bottom line. The combination of embedded automation devices,

high-capacity networks and advanced software is now capable of capturing, collating and contextualising data into purposeful real-time information that improves day-to-day communications, supporting better operational decisions. Smart manufacturing is getting smarter and with the use of cloud computing, visual analytics and mobile platforms, technology can now intelligently aid an organisation's key stakeholders to better understand operational data from the plant. Today, responding quickly to operational issues can be performed anytime and anywhere with the right tools.

Addressing technology challenges

Companies seeking innovative ways to reduce capital and operating costs are turning to technology to help improve engineering efficiency, maximise plant performance and increase profitability. Successful manufacturers have implemented process simulation, optimisation and energy management systems to reduce energy usage. Cutting-edge tools help operators to continually monitor the dynamic behaviour of the operation and marketplace to determine the best operating policies that will allow them to control the facility and continually run their plants to the maximum capability whilst remaining within safety guidelines.

Operational excellence revolves around driving the optimum performance from all areas of the business on a second-by-second basis every day throughout the year. Organisational excellence leverages proven integrated technology that empowers staff and supports younger generations to make better decisions in order to collaborate more effectively and accelerate business performance.

Manufacturers must implement optimisation initiatives through the entire lifecycle of industry assets and

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