THE NEXT TOP MODEL MAXIMISES ASSETS

Higher performing assets deliver higher results in chemical processing, says Matt Holland, VP, Regional Sales, EMEA, AspenTech. Therefore, an efficient operating model can be the difference between razor sharp decision-making and blunt poor execution

To determine the appropriate strategy for optimising plant assets, it is essential to aim for full customer satisfaction and product differentiation and invest in proven cutting-edge technology. According to many industry analyst firms, including, McKinsey, Gartner, IHS and others, business leaders today see maximising asset utilisation as a primary objective. Reports show that without the right tools, processes and collaborative strategies in place, chemical firms will struggle to survive. The message is adapt or die!

The world's population is expected to rise from 7.2 billion to over 9 billion by 2050 and with an increasing number of people living in densely-populated urban areas, consumer demand for plastics and chemicals will rise markedly.

Chemical plants have for many years comfortably operated using proprietary methods and relied heavily on experienced operators with decades' worth of plant production knowledge. When an organisation loses this expertise and knowledge through retirement or workforce reduction, then the business faces serious challenges to maintain standards. In addition, departments that operate in silos limit communication, inhibiting collaborative work practices, and creating inefficiencies that affect overall plant performance.

Opportunities, however, do exist even in this turbulent market. Chemical manufacturers focused on improving operational excellence using scalable models will reduce costs and mitigate downtime. Being lean will ensure continuous process improvements across the organisation. Optimised assets increase yields, lower maintenance expenditures and drive greater energy efficiencies, which help protect product quality and boost profit margins.

So, what if there was a more effective, robust method of capturing knowledge, such as process simulation with plant data, to achieve consistent quality results?

Better process insights and integrated workflows deliver greater efficiency and reliability. Model-based decision-making brings together plant simulation with plant data, whereby engineers are able to make better informed decisions based upon accurate behaviour of the model.

Operators can still use their knowledge and skills, but are able to make corrective decisions to plant production idiosyncrasies based upon deeper process insights, as well as see the consequence of their actions. In addition, the knowledge gained can be captured in the model, which is accessible to all key stakeholders. Hence, this method of working is more transparent, investigative, reliable and sustainable.

If business investment plans represent the overall physical architecture of the asset, then the operating model represents how the plant assets function. All chemical assets operate under constraints. Rigorous software modelling capabilities help engineers understand how to operate optimally within asset limitations. When operational changes occur, engineers can use software models to quickly predict the impact of changes for an improved workflow.

Chemical manufacturers focused on improving operational excellence using scalable models will reduce costs

Maximising asset utilisation is the primary objective in the chemicals industry

Engineering simulators make it easier to monitor inferential variables to determine the optimal maintenance schedule based on cost and impact to plant performance. Furthermore, integrated support through the engineering lifecycle, allows the flexibility to complete all engineering needs, such as simulation, equipment design, conceptual and detailed economic analysis and safety analysis – all in one software suite, reducing total cost of ownership.

The aspenONE software suite addresses operational challenges by tackling inefficiencies end-to-end throughout engineering, planning and scheduling and plant operations processes. AspenTech's solutions bring benefits with respect to yield, quality, energy use, operational costs and process flexibility. This includes controlling the process with advanced process control, collecting and analysing data from the process with manufacturing executions systems, modelling the process with integrated simulators, improving the supply chain, inside and outside the plant, and improving the workflow process.

Typical benefits include:

· Quickly predict plant behaviour based upon reliable data to determine optimal production outcomes

· Reduce energy consumption by 5–20% by modelling the complex cost trade-offs that exist within a chemical plant to make operational decisions

· Increase yield by 1–5% and produce consistent quality products

· Ensure safe, consistent and efficient operations with continuous coordination of plant-wide changes

· Automatically detect, control and correct operating conditions that may lead to costly shutdowns

· Avoid ad-hoc manual support methods that cause inefficiencies and time-consuming tasks

· Improve overall plant profitability

A rigorous operating model forms the building blocks to a successful strategy. Successful chemicals companies are pursuing operational excellence, whilst considering safety, to strengthen their market presence. With the right operating model, firms will become more agile, better equipped to reach numerous types of customers with multiple and diversified products, as well as be able to successfully outpace competitors in a rapidly shifting marketplace.

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