

# Digital Solutions to Take Chemical Industry to the Next Level

The global chemical industry is witnessing rapid increase in demand and leveraging digitalization to improve its operational efficiency has now become a vital need for the industry. To achieve efficiency in the supply chain, companies need comprehensive and tightly integrated solutions that can combine demand management, planning and scheduling. This can easily integrate into manufacturing execution systems and enterprise resource planning systems. This kind of integration is critical for manufacturers to manage their assets effectively and truly optimize their production processes, especially when the processes are leaning more towards being sustainable.

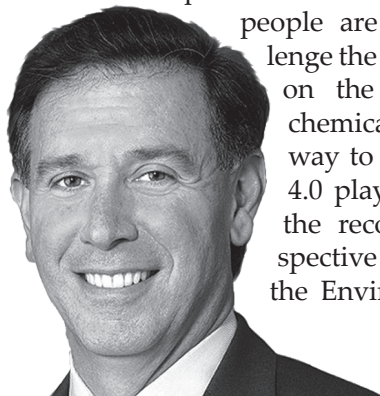
To understand the implications of digitization of the chemical industry in India, Chemical Industry Digest spoke to AspenTech, a leading name in digital solutions across various industries around the globe.

**Chemical Industry Digest (CID):** Industry 4.0 is expected to create a revolution in the chemical industry with tremendous benefits, opportunities as well as challenges. What motivations drive deployment of Industry 4.0 in the chemical industry?

**Antonio Pietri (AP):** There are multiple drivers of deployment in the chemical industry that are in place at the moment. Industry 4.0 is now seen by chemical companies as a must to remain competitive. These companies are also facing significant societal challenges like climate change, from mounting plastic wastes, the push towards a circular economy and recycling.

Industry 4.0 is a set of technologies that will help these companies accelerate the transition to newer business models in order to adapt their business to these challenges. Overcoming these challenges requires companies to rethink their businesses. These technologies help them accelerate and improve their competitiveness and sustainability as businesses.

**Sanjeev Mullick (SM):** The dichotomy facing Asia is that more and more people are moving to the middle class and that means there is a greater need for energy and greater demand for plastics that comes with the improvement of standard of living. But people are also starting to challenge the impact of plastic wastes on the environment; so the chemical industry has to find a way to reconcile this. Industry 4.0 plays an important role in the reconciliation of their respective business models with the Environment, Sustainability



Antonio Pietri, President and CEO, AspenTech

and Governance (ESG) requirements.

**CID:** Now with the advent of Industry 4.0, every upcoming plant across the globe will be digitally equipped. But how can existing plants be retrofitted digitally?

**AP:** There might be some old plants in India, which are 40-60 years old and also some new chemical plants e.g. Reliance's Jamnagar complex. In the process industry, plants are being built and continuously upgraded to new technologies. They have upgraded from analogue, pneumatic controls to digital control and the use of technology keeps advancing their operations. Over the last 10-15 years, an acceleration in the uptake of technology to drive the performance of these assets is seen to continually drive a greater return on the capital investment in India. AspenTech has been playing a role of helping these companies to adopt more of its technologies to improve their operations in increasing the efficiencies of older plants.

**CID:** What about the skills required for applying Industry 4.0 and the need for skilled personnel or reskilling existing manpower?

**AP:** There is a new generation of capabilities – AI, Deep Learning, cognitive capabilities in processing now, which allow us to automate the knowledge that is required to use our products. We are focused on upskilling through training, on making our products easier to use, and also on having a strong focus on how to automate knowledge. Here in India, just like



Sanjeev Mullick, VP-Asia Pacific-Japan, AspenTech

in other countries, we note a generational shift happening in the process industry including in the chemical industry. There is a new generation of industry professionals coming in with a background in years of exposure to computers, who expect a different user experience from newer generation software.

**SM:** A variety of classroom training programs are offered at AspenTech's Pune office. Along with that e-learning is offered, which is available from the comfort of the trainee's desk. Recently a certification program has also been introduced that benefitted many of AspenTech's Indian customers. We also increase the intuitiveness and the ease of use of our products by conducting usability studies during the product development phase.

**John Hague (JH):** Research and development is also important. Many AI based products are being developed in such a way that the operators and the engineers in the plants can actually operate them based on their normal work flows. They don't have to be data scientists to be able to use our machine learning tools. The user interface is integrated in the work flow itself and the system makes smart decisions internally.

**CID: What are AspenTech's growth plans in India?**

**AP:** We are very optimistic about our business in India. We see the opportunity to scale up our operations and take advantage of the local talent for implementation of our technology. India also offers great support for the sustaining the value that is created from our technologies. We are focusing on hiring locally as our business grows. India can be a platform for supporting our operations in the Middle East as well. We see an opportunity to establish India as a base from where we can then extend our support from here for the other parts of the world.

**CID: Would AspenTech consider setting up software development centre in India, given the capable and untapped research talent in India?**

**AP:** We currently have a set-up on a global basis where we do all of our R&D in the US, both in our headquarters in Bedford, Massachusetts and in Houston and then a lot of the quality testing is done in China. We don't have any plans at the moment for India because we like to keep our operations very lean. However, if there is an op-



John Hague, EVP,  
Operations, AspenTech

portunity in future, India would be our natural choice, considering the talent available here.

**CID: Considering AspenTech's software installation growth in large scale plants, how can small scale and medium scale industries that constitute the bulk of Indian manufacturing benefit from AspenTech's software?**

**AP:** Perhaps a number of years ago you could think of India with companies mainly small scale or medium scale but with the Jamnagar complex of Reliance Industries, one of the biggest complexes in the world and other such big plants, the situation has changed. Small and medium companies are gaining skills very fast. In our experience, the tier 2 and tier 3 companies tend to focus more on technology as a driver for operational excellence. We are starting to see this transition in India, where the small and medium scale industries are driving to compete with bigger companies, especially on a global basis by adopting new generation software, upgrading their facilities to achieve operational excellence.

**CID: In which areas- whether in engineering, manufacturing and/or supply chain optimization can Indian companies benefit from AspenTech's softwares?**

**AP:** Indian companies can benefit from across a range of our technologies. While conceptualizing a new plant, the basic designing of the plant starts with our engineering suite and then the detailed designs are undertaken by other companies. And as the plant is built then the optimization of operations is done with our technology. As more plants are put in place, the supply chain people can also use AspenTech's supply chain solutions and eventually our asset performance management, which is about predicting equipment failure, process accreditation using machine learning capabilities, can be used.

**Abhinav Chowdhary (AC):** To give one example, industries often grapple with downtime related issues. It affects their productivity and throughput directly. Downtime is the area where our customers are putting a lot of attention on, with respect to needing more digitization. Indian customers have to leapfrog in terms of the maturity of the digital data in terms of real time availability. Indian companies are trying to incorporate the needed digital framework for this. Once that is done, leveraging this to make sure that all the predictive and prescriptive analytics help both safety and the uptime of the processes is important. This is something that customers in the chemical industry or in refineries and adjacent industries, are open to.

**SM:** It also justifies investments in some of the sensors because some of these assets were very basic,



Abhinav Chowdhary, Country Manager-India, AspenTech

and didn't have proper instrumentation and sensors. Now we have an application that delivers significant value and that justifies the sensorization of some of those assets. There

are a couple of cases where this project using our machine learning prescriptive analytics is justifying these instrumentations.

**CID: The newly launched product Aspen Enterprise Insights seems very promising due to its unique feature of information aggregation. How do you see it being applied in the Indian Chemical Industry?**

**AP:** Aspen Enterprise Insights is a product acquired from a startup Sabisu in the UK, which focused on enterprise solicitation and workflow management. In the last 5 years, with the expansion of data and assets around the world, customers need aggregation of information from their plants in the country or from around the world. Aspen Enterprise Insights satisfies this requirement with its ability to aggregate information and also develop applications that can be used to create collaboration in the organization. In India, there are many customers who are interested in this application. Since the product is released in the market just a couple of months ago, we are hopeful that more Indian companies adopt this technology and leverage from it.

**CID: Are there AspenTech offerings that help in proactive safety management of chemical plant operations? Can these latest digital technologies make chemical plants totally safe?**

**SM:** As has been described, we have a variety of tools that help to design, operate and maintain chemical plants for our customers. During design our tools can make sure that the designs are inherently safer. Plant personnel can carry out "What-If Analysis" to make sure these designs are safer. Before plant start up, they can also use our tools to carry out operator training. When it comes to operations, there are tools to keep the plant operating at optimum safety. This is often achieved through computational control. When it comes to maintenance, by using predictive and prescriptive analysis, our softwares generate alerts for customers that a certain signature pattern is developing which might lead to shutting down of their system.

**JH:** Our software, such as our asset performance management suite helps managing unplanned downtimes that often occur at industrial facilities. Since unexpected shutdowns can be avoided using technologies

such as ours, we are able to help reduce safety related incidences to upto 12 times than normal. Operations can be controlled as the operator is aware in advance when an equipment is going to have a problem, and thus discontinuation of the process is avoided by taking proactive measures to keep the equipment running – by executing maintenance in advance.

**CID: With the world now seriously concerned our climate change and the environmental issues could you elaborate on how AspenTech's products and services address issues of sustainability. What is your role in renewables-based production?**

**AP:** We are involved across a range of sustainable solutions, for example, our software is being successfully used in the designing of carbon capturing systems in Australia.

**SM:** In all those areas we described before- Design, Operation and Maintenance- we offer a full range of solutions to industries, including companies producing biofuels for example. We have customers that are using our tools in the research of hydrogen fuel cells and batteries, especially in Japan and Korea, which are the leading examples of countries that are investing in these technologies.

**CID: Speaking of sustainability, an alternative to the fuel-based automobiles is the paradigm shift of innovation towards E-mobility. So with the expected rise in the usage of electric cars, does the company see a decline in oil and gas/ refinery projects?**

**AP:** There is no doubt that over time there will be a bigger shift into other forms of energy, renewables including EVs, and there is a likelihood that oil and gas companies will face a plateau in growth due to declining demands over the next 20-30 years. But in a way that is also an opportunity for us. As these companies face a constrained demand environment, values to the shareholders can be created by improving the company's operations by using cutting edge technologies, such as ours.

**CID: AspenTech has acquired companies like Mtell, would your future growth plans include more of such acquisitions?**

**AP:** Certainly, AspenTech throughout its history has been a very acquisitive company and the way we think about mergers and acquisitions is a 'buy versus make' model. We can develop technology internally and spend efforts on hardening the technology in the marketplace or alternatively, find companies that have already been through the journey, the desired technology is ready and we can acquire it. So our focus is certainly to run the company in a way that generates efficient cash flow so then we have the flexibility to make acquisitions and accelerate innovation in the company.

