**COMPLEXITY BREEDS RISK**

While many countries question their use of nuclear power for safety or environmental reasons, Assystem, an international independent engineering group with 2,500 experts in the nuclear field, has made the maintenance of highest level of safety in the nuclear industry a priority. “Building and operating a nuclear plant entails satisfying more and more requirements imposed by safety authorities and public opinion as well as integrating increasingly sophisticated technologies,” said Christian Jeanneau, senior vice president Nuclear at Assystem. “This introduces a high level of complexity during the engineering and construction project phases. Because of their massive size and cost, plants have to be built right the first time. Physical prototypes are simply not an option.”

**IMPROVING PERFORMANCE, SAFETY AND COST**

Digitalization is, therefore, an objective Assystem is pursuing for itself and when interacting with its clients. “There will be tremendous opportunities for improvement when we complete our digital transformation,” Jeanneau said. “We chose Dassault Systèmes’ 3DEXPERIENCE® platform to accelerate our digitalization. We decided to implement these technologies after considerable benchmarking and analysis, and believe they will help us manage our projects in a way that will bring the most value to our clients. Our strengths are in managing large and complex physical power plant projects with special emphasis on performance, safety and cost.”

Large energy projects are complex to manage – managing the configuration, managing terabytes of data, managing requirements, all while meeting cost and scheduling targets. “We believe digitalization and modern tools give us a huge advantage in terms of cost and efficiency because they will allow us to manage complex information much more easily and efficiently and with greater accuracy,” added John Clark, chief technical officer, Assystem UK. “For example, instead of using expensive physical prototypes, we rely on digital modeling and simulation to test the movement of a robot with many degrees of freedom when maneuvering a large piece of equipment in a reactor vessel, to make sure it can be pulled in and out of a very tightly constrained space.”

Large and complex projects also require that all project stakeholders collaborate like a well-tuned orchestra. “Everyone must have access to large amounts of accurate and up-to-date data,” Jeanneau said. “The 3DEXPERIENCE platform offers a common language and methodologies that can be shared inside a company and with external partners and contractors. It improves our efficiency because sharing ideas and expertise in real time allows us to reduce the number of hours we spend on a project.”

Another challenge is to manage information continuity from early requirements to design, construction, commissioning, handover and operations. “For example, to prove that a plant’s life can be extended after 40 or 50 years in operation, we have to be able to demonstrate that the equipment and facility itself have been operated in compliance with the initial design and construction specifications,” Jeanneau explained. “Therefore, we need to record the data. We need traceability. Using a digital model to record the operating data during commissioning and during operations is the best way to capitalize information to present to certification agencies, and to implement a predictive maintenance strategy that improves our clients’ competitiveness.”

Working with the 3DEXPERIENCE platform will influence the types of projects Assystem accepts. “The platform delivers key capabilities for us, which include requirements, bill of materials, and change management,” John Clark said. “Increasing...”

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**Challenge:**
Assystem, an independent engineering group supporting the nuclear industry, needs to continuously improve their competitiveness, especially in new build programs.

**Solution:**
The company chose Dassault Systèmes’ 3DEXPERIENCE platform and the Capital Facilities Information Excellence industry solution experience to increase the value of its solutions through digitalization.

**Benefits:**
A single integrated platform of information with improved bill of materials, requirement and document management, along with digital modeling and simulation of the construction sequence and planning, leads to higher productivity, less modifications and reworks, and facilities that are safer to operate.

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“The 3DEXPERIENCE platform helps ensure the competitiveness and quality of the services we deliver to our clients.”

— Christian Jeanneau  
Senior Vice President Nuclear, Assystem
complexity generates more risk and this solution enables us to manage this complexity and, hence, risk. For example, through better change management, we have a more current, unified view of the plant’s status and performance. This single source of the truth helps us make more accurate risk assessments. Other benefits include less scrap and rework because our designs are more precise and of better quality. We are able to spot deviations earlier and make adjustments before releasing the design for construction when corrections would be too expensive to implement.

FROM PILOT PROJECT TO WIDE-SCALE DEPLOYMENT

Assystem began by deploying the 3DEXPERIENCE platform on a few small projects involving ten people in a production setting in 2016. In their pre- and post-assessment, they noticed people spent 20% less time performing certain tasks. The successful outcome of these projects encouraged management to roll out the platform to the rest of its business and to begin managing projects that are more ambitious. “We’re looking to capitalize on these good experiences and extend implementation of the 3DEXPERIENCE platform to all our mechanical and systems engineers,” Clark said.

Implementation services and support are managed by Majenta Solutions. “The system was tailored to fit our company methods and procedures such as managing standard part libraries and auto numbering documents according to Assystem’s quality control processes,” Clark said. Majenta engineers reviewed Assystem’s existing processes such as Documentation Control, Inquiry, Contract Start-up, Contract Variation, Design, and Purchasing, performed offsite analysis and mapped these processes to the latest version of the 3DEXPERIENCE platform, built test environments, sifted through end-user experience and feedback, all the way through to full deployment of the solution. They also provided first-level training to Assystem ‘subject matter experts’ who formalized and deployed company best practices to additional users. “Majenta did a fantastic job representing us to Dassault Systèmes and managing the day-to-day operations, making sure we got answers in a timely manner,” Clark said. “I look forward to working with Majenta to continue building our experience with the system and to bring more people up to speed so they can become happy users. It is one of our goals.”

One of these users is Tom Goulding, a mechanical engineer who uses the 3DEXPERIENCE platform to manage customer changes. “My job is to make sure that changes are reflected in all necessary documents and that project information such as designs, methods statements, and calculations are updated...
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Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

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