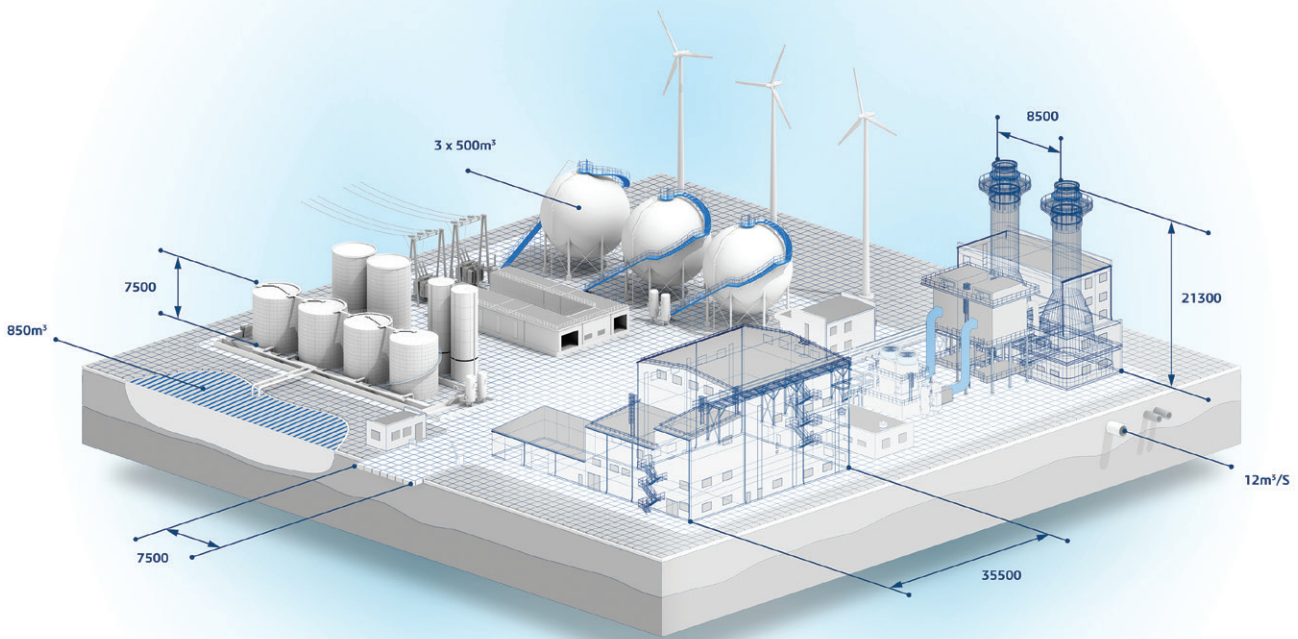




**3DEXPERIENCE®**

## ENERGY, PROCESS & UTILITIES **ENGINEERING EXCELLENCE**

Achieve zero-defect engineering



### **ACHIEVING SAFETY, COMPLIANCE AND PERFORMANCE WITH ZERO-DEFECT ENGINEERING**

Capital facilities engineering in the Energy, Process and Utilities industry involves many stakeholders from various disciplines working in silos with heterogeneous tools. This leads to a lack of consistency and efficiency during projects and throughout an asset's lifecycle.

Based on the 3DEXPERIENCE® platform, Engineering Excellence provides Engineering/Procurement/Construction companies and Owner/Operators with a unified environment to efficiently achieve 'zero-defect' engineering that supports design and construction of new capital facilities, as well as modernization and life extension of existing ones.

#### **INTRODUCING ENGINEERING EXCELLENCE**

Engineering Excellence combined with Capital Facilities Information Excellence delivers one source of information for every stage of the plant lifecycle, from engineering to construction. Together they provide secured information access for robust business process control and continuous improvement of operations.

#### **Model-based systems engineering to optimize complex systems**

Engineering Excellence, both independently and in combination with Capital Facilities Information Excellence, helps companies negotiate the digital transformation of their engineering and design processes by promoting cross-disciplinary collaboration and robust integration of information. Throughout the project

## LIFECYCLE STAGES



lifecycle project requirements are decomposed into actionable tasks, traceable design basis, as well as Key Performance Indicators (KPI).

A model-based approach to systems engineering, promotes efficient access to and management of all requirements, designs and functions on a single platform. Consequently, project errors and costly reworks are greatly reduced. Complex systems can be rapidly improved through traceability and re-use of information. Moreover, capital projects can transform their raw data into useful information for effective strategic and tactical decision-making.

The plant architecture is defined and analyzed to enable a holistic view of the project. Modularity is introduced in the design process, facilitating reuse in future projects. Requirements are used to specify systems and major components, which in turn serve as reusable sources for basic and detail design. **This supports engineering integrity as reported by one company that achieved a 25% reduction in the number of drawing revisions during a capital project.**

### Multi-disciplinary engineering in a unified environment to achieve first-time-right design

To achieve zero-defect engineering, the physical design must produce a fail-safe protocol to effectively install, erect, and construct or modify the actual components, systems, and structures that comprise a plant.

On the **3DEXPERIENCE** platform, designers can concurrently manage 2D and 3D designs for all disciplines, providing full visibility of the plant's overall layout. Interfaces can be thoroughly analyzed to reduce the impact of design changes and mitigate rework. **Companies reportedly reduced by 60% the number of field design error discoveries.**

### Enable in-context decisions with a virtual plant model

When designing systems, siloed teams and disparate tools lead to interface issues that can result in costly consequences during construction and operational phases. Reconciliation of all disciplines in a single model is necessary for a complete and accurate view of the entire project.

Engineering Excellence offers ISO15926-based integration and interoperability capabilities to gather designs from different sources and build a comprehensive virtual plant model. Companies can perform design validations, clash detection, and safety analyses. The virtual plant can be reused for 4D construction simulation, and to help optimize maintenance activities, greatly reducing downtime and QHSE issues.

### Simulate to optimize design at every stage of the project

Simulation not only validates designs, it also influences these designs from the start. Through simulation, companies can accurately model complex real-world behaviors, for structures and equipment, as well as flow systems.

Engineering Excellence supports the generation and management of multiple complex operational and accidental scenarios to achieve rigorous virtual testing of all construction, operational, and maintenance activities. Simulation helps deliver construction and operations-ready designs without compromising margins. **Companies have reported spending 30% less time controlling the quality of each engineering deliverable.** Moreover, safety requirements are verified and an asset's life and performance are enhanced.

#### KEY BENEFITS

- Multi-disciplinary collaboration enhances output quality
- Single source of information increases knowledge reuse
- Digital continuity streamlines handover process
- Early use of simulation reduces late engineering design rework and cost overruns

## Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit [www.3ds.com](http://www.3ds.com).



**Americas**  
Dassault Systèmes  
175 Wyman Street  
Waltham, Massachusetts  
02451-1223  
USA

**Europe/Middle East/Africa**  
Dassault Systèmes  
10, rue Marcel Dassault  
CS 40501  
78946 Vélizy-Villacoublay Cedex  
France

**Asia-Pacific**  
Dassault Systèmes K.K.  
ThinkPark Tower  
2-1-1 Osaki, Shinagawa-ku,  
Tokyo 141-6020  
Japan

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