SIEMENS

Teamcenter

Cofely Energy & Infra

Cofely Energy & Infra improves results and reduces risks in design and build projects with systems engineering

Industry

Transportation

Business challenges

Multidisciplinary design-build projects

Increasingly receiving functional versus technical project specifications from customers

Need to demonstrate how technical solutions satisfy functional requirements, including traceability, verification and validation; attain quick customer project acceptance/approval

Overall project control

Keys to success

Define a comprehensive and integrated systems engineering approach

Secure best-practice process/software from an experienced PLM supplier

Tightly manage functional and technical project specifications and validation criteria

Company impresses clients with consistent project documentation and traceability using the advanced systems engineering capabilities of Teamcenter

Projects increasingly defined by functional requirements

Infrastructure projects are increasingly specified in a functional way by infrastructure planners, while the technical solutions for these projects are typically provided by expert suppliers. It must be clear at all times how a technical solution satisfies a functional specification. This requires a systems engineering process, where requirements are registered and translated into functions and systems that must be validated – from quotation to project delivery and maintenance. This calls for the right software to enable an integrated approach to the management of this process. To harness this capability, Cofely Energy & Infra BV (Cofely Energy & Infra) licensed Siemens PLM Software's Teamcenter® software, specifically leveraging the solution's systems engineering capabilities.

Results

Unambiguous and consistent reports

Improved quotations

Clearly defined verification and validation

Improved impact analysis

Faster acceptance of delivered work

"Across projects, we experienced a vast improvement in information quality and especially consistency. That is reflected in discussions with the customer. Our questions and proposals help make the quotation process more transparent. That also means fast and realistic quotes."

Rico Verhage
Systems Engineer and Consultant
Cofely Energy & Infra

Broad infrastructure expertise

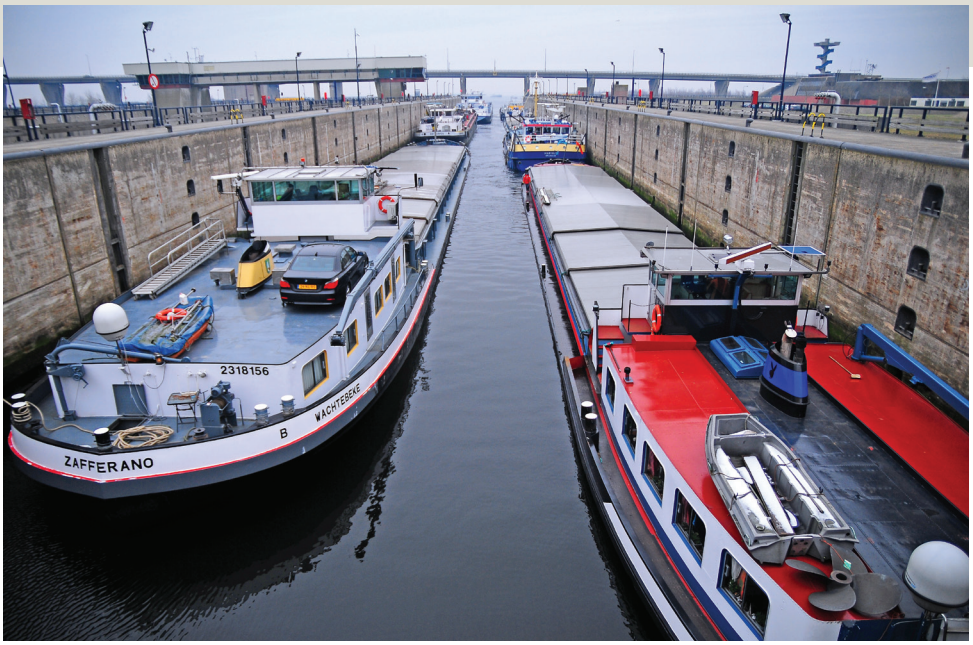
Cofely Energy & Infra is part of the French GDF-SUEZ, one of the world's largest energy groups. The company's activities in The Netherlands include the design, construction and maintenance of installations and control systems in various industry sectors, such as pharmaceutical, nutrition, marine and offshore, construction and chemical. In the infrastructure sector, the company's activities are focused on the transportation of energy, data, goods and people. Employing more than 400 people, Cofely Energy & Infra develops electrotechnical and mechanical installations for both water and road infrastructures. Examples include systems for road management, technical installations in tunnels and viaducts, and automation of locks and bridges, mostly connecting to traffic control centers.

The energy activities of Cofely Energy & Infra are focused on distribution networks for electrical energy that require changing due to new methods of energy generation. The company owns and manages two windmill parks, supplying electrical energy to surrounding industrial areas.

Clients in the infrastructure market are usually governments and governmental organizations. Today, client proposals are increasingly based on functional specifications. To successfully bid and win such proposals, effective systems engineering capabilities must be in place.

Advanced systems engineering

Systems engineering is a process focused on the complete "system" across its entire lifecycle. The development and realization of systems are based on the specification of requirements and functionality by the customer, for which verification and validation criteria need to be defined. Solutions and alternatives are developed during a project. These are verified and



validated using the previously defined criteria in order to prove that they satisfy the requirements. The relationship between requirements, functions, solutions and tests enables the kind of intelligent impact analyses that are almost impossible without advanced product lifecycle management (PLM) technology in place, such as Teamcenter.

Criticality of integration

"Functional specifications have the advantage for clients that the advanced technology of their supplier can be used," says Rico Verhage, systems engineer and consultant at Cofely Energy and Infra. Being a systems engineer, Verhage is closely involved in infrastructure projects, the support of systems engineering processes and the use of Teamcenter. Verhage notes, "Design-build projects are the main reason that the company supports its systems engineering processes with a software tool. In design-build projects, the supplier is responsible for the design based on the functional specifications. It is important that choices can be justified and the impact of changes analyzed. Completeness and consistency of the data are paramount."

According to Verhage, completeness of data can only be assured when the systems engineering process has been effectively implemented in the organization. He notes that an effective process demands a central repository from which all data can be pulled and that secure, relational data is only feasible using an integrated tool, not with standalone applications.

Realistic quotes = improved performance

Cofely Energy & Infra implemented Teamcenter in 2009. "The decision to go with Teamcenter was based both on the functionality of the software and the track record of Siemens PLM Software in the infrastructure market," says Verhage. "We use the systems engineering capabilities of Teamcenter predominantly for requirements management, systems definition, analysis, and design management. Next on our list are risk management and version management."

The use of Teamcenter starts early in the quotation process. System requirements and functionality are fed into Teamcenter. The result: "A detailed information analysis and functional requirements breakdown provide a clear picture of the customer's wishes," explains Verhage. "Across projects, we experienced a vast improvement in information quality and especially consistency. That is reflected in discussions

"These relationships (between functional requirements, validation criteria and technical realization) are very important to us. The extra effort in the engineering phase saves time later in the process. Impact analyses show the largest benefit. When the customer changes requirements, we now have the ability to say where to expect the impact of these changes. This allows us change the quotation accordingly. This removes an important part of the risk for both our clients and us."

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Solutions/Services

Teamcenter
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Customer's primary business

Cofely Energy & Infra operates across the entire spectrum of transportation and traffic: engineering and automation, consultancy and project management, telecommunications and security, maintenance and management, assembly, and operation start-up. The company focuses on road and water transportation projects; seaport and airport developments; the design, maintenance and management of infrastructure installations; the distribution of electrical energy; and the design and realization of information and telecommunications systems.

Customer location

Heinenoord
Netherlands

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There has been significantly positive customer feedback since Cofely Energy & Infra started using Teamcenter. Verhage notes that with Teamcenter, the company is on a particularly productive track: "Customers are pleased with our process. We intend to standardize this process, leveraging data re-use in every contract. This will further improve our performance and reduce costs."

Ensuring traceability

During the design of a technical installation, relationships are created with the previously recorded functional requirements and the corresponding validation. At the same time, tests are defined at a technical level. "These relationships are very important to us," says Verhage. "The extra effort in the engineering phase saves time later in the process. Impact analyses show the largest benefit. When the customer changes requirements, we now have the ability to say where to expect the impact of these changes. This allows us to change the quotation accordingly. This removes an important part of the risk for both our clients and us."

Another advantage is readily identified in situations where a system fails validation. A quick analysis of the cause is necessary. "Traceability is assured with Teamcenter," says Verhage. "All data is available in one single source, allowing us fast retrieval of relevant data. This saves time and money."

Cofely Energy & Infra uses Teamcenter in all new design-build projects. "Systems engineering based on Teamcenter has full management support," says Verhage. He notes that compared to the prior approach, "the quality of the process and value of the information have increased notably. This reduces technical issues and thus financial risks. Teamcenter is currently being utilized in several projects and tenders. Practically, this means the use of 25 seats, which we expect to increase by 10 seats per year."

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