Customer Story

Cerrey

Flourishing in energy markets with SIMULIA

Through the use of simulation technology, Cerrey has perfected its business processes and improved product quality.

Dr. Isaías Hernández
Technology Coordinator
Cerrey S.A. de C.V.

Challenge

Rather than subcontract parts of its design process to specialists, Cerrey wanted to bring its full design process in-house.

Solution

The company chose Abaqus Finite Element Analysis (FEA) solution from SIMULIA to analyze the structures of industrial boilers and heat recovery equipment and prevent product design mistakes prior to manufacturing.

Benefits

Cerrey improved design times by 12% and product production by 10% and it doubled capacity to address client needs making the company one of the most competitive in its field worldwide.

DASSAULT SYSTEMES

Manufacturer of steam generators

Mexico-based Cerrey provides capital goods to the energy industry worldwide. It designs and manufactures steam generators used in petrochemical and production processes to generate electricity for a variety of sectors including industrial, energy and consumer goods. With annual sales of US$300 million and 1,350 employees, the company is a leader in Latin America, with clients in Asia, Africa and the Middle East. In Mexico, it counts an impressive list of national clients including Compañía Federal de Electricidad (CFE) and Petróleos Mexicanos (PEMEX), Mexico's national hydro-electric and petroleum companies. Cerrey also works with other key energy clients such as Saudi Aramco in Saudi Arabia and ABENER, also a PEMEX supplier.

Founded in 1961, Cerrey belongs to manufacturing conglomerate Grupo Hermes. In the service area, Cerrey offers system installation, setup, on-site operation, maintenance and training. It is a strong player in the energy market as a result of its competitive pricing, customer service and industry expertise.

Seeking technology to analyze thermal phenomena

For over 40 years, Cerrey's engineers had been designing the company's products (industrial boilers and heat recovery units) using hand calculations and in-house programs from third-party software providers. Calculating heat and fluid flow for such industrial heat and steam products requires technology that is proven and sophisticated. Manual calculations were outdated and slow and Cerrey needed real time feedback on the phenomena impacting its products' structure and thermal efficiency.

The industrial boilers have different applications such as electricity generation for thermo electric plants. The boilers heat water to produce steam, which in turn produces motorized power for an electric generator through a steam turbine. Another application is used in oil refining processes in petrochemical plants where thermal energy can be also used and transmitted through the plants.

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In 2007, Cerrey evaluated various finite element analysis applications that could be integrated with its existing technology. The company chose Abaqus Finite Element Analysis (FEA) from SIMULIA as the software solution for modeling, visualization, and best-in-class implicit and explicit dynamics FEA. Cerrey realized it could train employees in a few weeks and deploy the solution in hours.

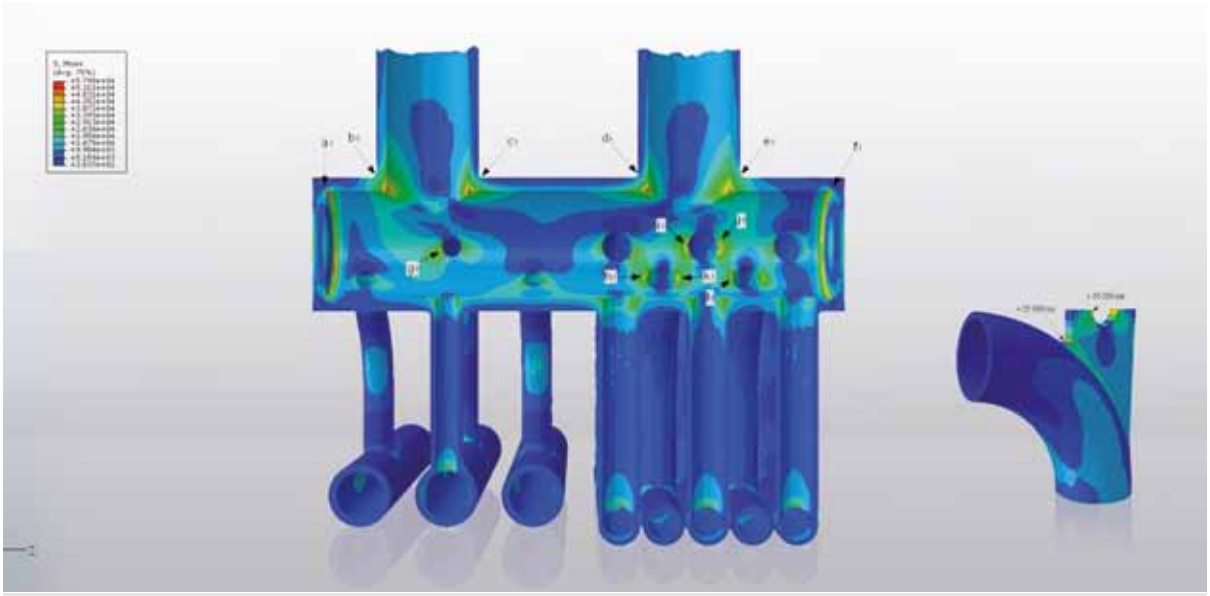
3D simulation to detect defects

Using 3D simulations, the team was able to test product behavior and performance through key heating stages using virtual product prototypes. SIMULIA software helped engineers at Cerrey's Technology Center better understand structural behavior during the operation of boilers and heat recovery systems. It also helped them understand how a certain temperature impacts the structure of boilers and heat recovery systems and how performance is compromised under normal or abnormal operations. The discoveries were key in preventing mistakes in the field and optimizing physical and thermal product design. "By performing increasingly precise calculations with our technology on clients' projects, we can help anticipate and prevent costly product mistakes," said Dr. Isaías Hernández, Technology Coordinator, Cerrey S.A. de C.V.

Savings and improved product quality

Over a period of three years, Cerrey has achieved major benefits from SIMULIA Abaqus FEA, including $300,000 in savings for time employees did not have to spend on checking new products and services. Today, with the use of 3D simulations, Cerrey is handling more complex projects and has doubled the number of cases its handles from 6 to 12.

In addition, Cerrey has improved its product design time by 12% and sharpened the quality of its products by minimizing the weight of its structures, a recommendation they are also sharing with clients. For example, a energy generation company was experiencing problems with fractures in certain parts of one of its burners, so Cerrey did a transient heat transfer simulation to determine the origin of the defect. In four weeks, Cerrey then found the cause of the



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problem, quickly discovering the issue and identifying it as inefficiency in the company's operational procedures.

With Dassault Systèmes PLM, Cerrey now has a testing laboratory facility to comply with safety guidelines and codes that ensure the delivery of exceptional and high quality products. "Through our use of technology such as SIMULIA Abaqus, Cerrey has perfected its business processes and improved product quality," said Hernández, "Through the use of 3D PLM technology, we're in a unique position to win new customers by focusing on providing constant excellence in service to the marketplace."

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Images courtesy of Cerrey.

For more information
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