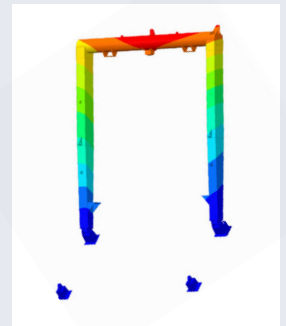


PRACTICAL ENGINEERING SOLUTIONS LLC WORKING ON MORE COMPLEX PROJECTS FASTER WITH 3DEXPERIENCE WORKS ROLES

Case Study



By adding 3DEXPERIENCE Works roles, including the Structural Performance Engineer and Durability Performance Engineer simulation roles from SIMULIA, to its SOLIDWORKS installation, PES has cost-effectively capitalized on substantial new business opportunities, such as development of the stern-mounted A-frame on a large ship shown here.

Challenge:

Conduct larger, nonlinear, and more advanced analyses and simulations to complete projects more quickly and open up new business opportunities while avoiding the cost of acquiring additional hardware to boost computing capabilities.

Solution:

Add the Structural Performance Engineer and Durability Performance Engineer roles from the SIMULIA brand of simulation solutions within the **3DEXPERIENCE** Works portfolio to its existing SOLIDWORKS installation—comprising SOLIDWORKS CAD, SOLIDWORKS Premium design and analysis, and SOLIDWORKS PDM product data management solutions—as well as **3DEXPERIENCE** Works collaboration, communication, and data management solutions—including Collaborative Designer for SOLIDWORKS, Collaborative Industry Innovator, and 3DSwymer roles—to solve simulations in the cloud by leveraging the cloud-based **3DEXPERIENCE** platform.

Results:

- Conducted advanced simulations more quickly and affordably
- Completed several rush projects on time
- Grew revenue more than 30 percent in first year
- Increased simulation capabilities and computing power without investments in hardware

Until early 2022, PES designers and engineers relied on SOLIDWORKS® design and engineering tools—including SOLIDWORKS CAD modeling, SOLIDWORKS Premium design and analysis, and SOLIDWORKS PDM product data management solutions—to complete client projects. However, as demand for larger and more complex simulations grew, company management realized that PES would need to expand its simulation and analysis capabilities beyond the linear static stress analysis tools of SOLIDWORKS Premium software, according to Operations Manager Tyler Cook.

"In late 2021, we had the opportunity to work on a 40-foot by 100-foot stern mounted ramp in a marine application that would be used to load and offload cargo stored in 40-foot containers," Cook explains. "The ramp alone weighs about 350,000 pounds and is broken into three main weldments. The problem was too big for our existing simulation tools. Complicating matters further was the fact that the customer needed the project to be completed in six weeks.



"The main reasons that we added the Structural Performance Engineer and Durability Performance Engineer roles are that they are more efficient, are more affordable due to cloud computing, and utilize the highly respected Abaqus solver ... And because **3DEXPERIENCE** Works simulation solutions utilize the Abaqus solver, we have no hesitation in taking on challenging and difficult projects because if we can't solve it with the Abaqus solver, no one can."

— Tyler Cook Operations Manager

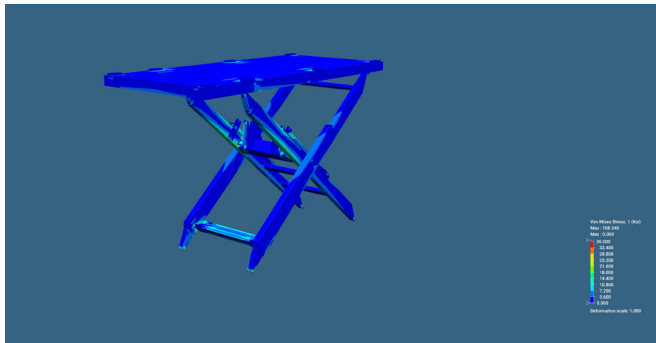
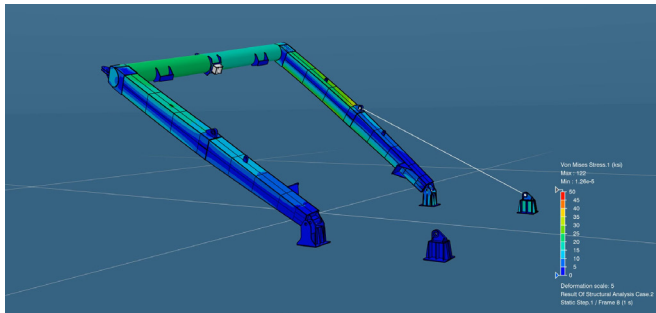
"With the clock ticking, we were really stuck because acquiring Ansys® simulation software, which we had some experience with, as well as a server to provide the computing power that this problem required, would take additional time to set up," Cook continues. "That's when MLC CAD Systems, our SOLIDWORKS reseller, told us about **3DEXPERIENCE**® Works simulation solutions from SIMULIA®. The analysis tools leverage Abaqus® technology and take advantage of cloud computing resources on the **3DEXPERIENCE** platform."

PES acquired the Structural Performance Engineer and Durability Performance Engineer roles from SIMULIA—along with Collaborative Designer for SOLIDWORKS, Collaborative Industry Innovator, and 3DSwymer roles for collaboration, communication, and data management capabilities—within the **3DEXPERIENCE** Works portfolio. The innovation portfolio leverages the **3DEXPERIENCE** cloud platform to give customers access to the power of industry-leading tools from Dassault Systèmes for design, simulation, manufacturing, and marketing.

PES chose **3DEXPERIENCE** Works simulation solutions because they are integrated with SOLIDWORKS tools; could be utilized more quickly; did not require additional investments in computing power because the solver runs in the cloud; leverage the accurate and powerful Abaqus solver; and provide the large structure, nonlinear analysis, and fatigue simulation tools that the firm needed. "The main reasons that we added the Structural Performance Engineer and Durability Performance Engineer roles are that they are more efficient, are more affordable due to cloud computing, and utilize the highly respected Abaqus solver," Cook says.

RUNNING MORE PROJECT SIMULATIONS IN CLOUD

Since adding **3DEXPERIENCE** Works simulation solutions to its SOLIDWORKS installation, PES not only completed the stern ramp project within the ambitious six-week schedule, but has also executed several additional projects that required advanced, more complex simulations. "We've executed more projects that require analysis power with **3DEXPERIENCE** Works simulation solutions,



Leveraging the Structural Performance Engineer and Durability Performance Engineer simulation roles from SIMULIA and the **3DEXPERIENCE** Works portfolio, PES realized approximately \$450,000 in new business the first year, which it would have had to turn down without the addition of these powerful simulation capabilities.

including a scissor lift rated for 30,000 pounds, a stern-mounted A-frame, and optimization of a coil tubing injector design for a large oil and gas client," Cook notes.

"In each case, we were able to affirm our reputation for fast turnarounds because having simulations solve in the cloud is faster and more efficient," Cook adds. "And because **3DEXPERIENCE** Works simulation solutions utilize the Abaqus solver, we have no hesitation in taking on challenging and difficult projects because if we can't solve it with the Abaqus solver, no one can."

SOLVING COMPLEX SIMULATIONS MORE QUICKLY AND EFFICIENTLY

PES is able to solve complex simulations in the cloud more quickly and efficiently with **3DEXPERIENCE** Works simulation solutions because of the convenient, flexible, and time-saving apps included with both roles. In addition to tapping cloud resources for solving simulations, Cook says the Assembly of

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Mesher, Configurations, and Simulation Manager apps help PES engineers run complex problems more efficiently.

"When I mesh a model and push it to the cloud, the configurations data comes with it," Cook points out. "This way, I only mesh the model once and don't have to re-mesh for each configuration to solve, which saves a lot of time. Also, high mesh density on nonlinear problems can take a while to solve, and I usually run those over the weekend. With the Simulation Manager app, I can check on the solver's progress, and if it crashes, I can restart it without having to wait the entire weekend, which also saves time."

GREATER SIMULATION CAPABILITIES SPARK MORE BUSINESS

With the additional analysis power afforded by **3DEXPERIENCE** Works simulation solutions, PES is able to take on bigger, more complex projects, which has resulted in business opportunities that previously couldn't be undertaken. "In 2022, our goal was to increase our revenue by at least 15 percent by winning new business, and the addition of SIMULIA simulation solutions and the ability to solve simulations in the cloud on the **3DEXPERIENCE** Platform helped us to not only achieve our goal but also realize an additional 16 percent of revenue growth—more than 30 percent total—that is solely attributable to being able to handle larger, more complex projects using advanced simulation tools in the cloud," Cook stresses.

"Solving simulations in the cloud has been critically important for winning this business because we can't run these types of large, computationally intensive analyses on our computers," Cook continues. "We're known for being fast and accurate, so having **3DEXPERIENCE** Works simulation solutions and the Abaqus solver in the cloud is helping us extend that reputation to more challenging projects and grow our customer base."

Our **3DEXPERIENCE**® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

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