

Ansys + Trotech

“Manual calculations from first principles often require many assumptions and simplifications to solve the problem. Issues arise when the problem is complex and cannot be simplified without heavily impacting the validity of the results. This is where an efficient and user-friendly FEA software becomes important. Ansys Mechanical software provided the best overall experience out of all the FEA software we have used and enabled us to solve these complex problems with confidence.”

Uri Naidoo

Junior Mechanical Engineer / Trotech

Trotech Improves Storage Tank Platform Design With Efficient and Interoperable FEA Software

Real-world loading scenarios can be difficult to simulate. Trotech strives to maintain the highest standards of quality and safety throughout the engineering, procurement, and construction (EPC) of above-ground bulk storage tanks and associated supportive equipment, including platforms.

With support from [Qfinsoft \(Pty\) Ltd](#), an Ansys Channel Partner, Trotech integrated efficient finite element analysis (FEA) using multiphysics simulation solutions from Ansys, part of Synopsys.

These solutions revealed stress and deflection problems, clarified load paths, and informed platform design upgrades. In addition, the software integrated seamlessly with Trotech's existing computer-aided design (CAD) software.

/ CHALLENGES

Designing a storage tank platform with structural components that influence and rely on one another presents significant challenges. Analyzing each component separately under specific load conditions doesn't accurately represent its behavior in practical use. For this reason, Trotech required an intuitive and adaptive FEA tool that could integrate imported CAD models to visualize and verify the platform's overall structural stability.

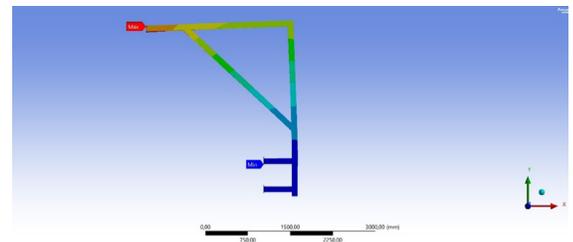
/ TECHNOLOGY USED

- Ansys Mechanical™ structural finite element analysis (FEA) software

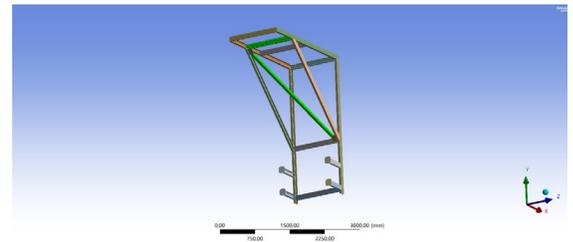
/ ENGINEERING SOLUTIONS

Managing structural behavior and performance under high-load conditions presents distinctive challenges that require thoughtful analysis and specialized tools. To address these issues, Trotech used Ansys Mechanical software to perform detailed FEA simulations while integrating CAD imports, focusing on deflections, von Mises stresses — which show yield or deformation — and overall structural stability. As a result, Trotech identified critical areas for improvement, ensuring its storage tank platform design meets safety requirements and customer satisfaction.

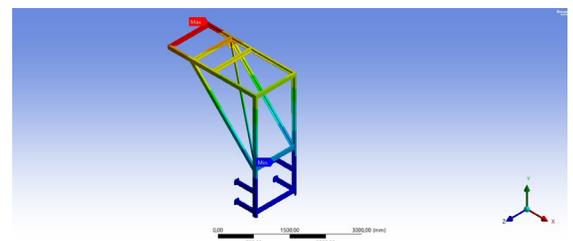
- Ansys Mechanical software's intuitive interface and mesh options made FEA faster and more efficient.
- The software's interoperability supported easy integration with Trotech's existing CAD software.
- Simulation results highlighted weaknesses in design, including stress and deflection.
- Visualizing the platform's movement under load clarified how forces traveled through it.
- Guided by insights from FEA and simulation, Trotech reinforced the platform with additional structural components.



Ansys Mechanical structural analysis showed excessive deflection and stress when loading the platform to simulate the effect of a person standing on the outermost point of the cantilever.



Trotech engineers used Mechanical software to simulate the structure's path of motion during loading and placed additional structural components as needed.



Trotech engineers tested the new gauge platform design under the same conditions as the previous version and confirmed that the deflection and stress results met the acceptable range.



For over 30 years, Trotech has specialized in the engineering, procurement, and construction (EPC) of bulk storage tank solutions for the petrochemical, liquefied natural gas (LNG), ammonia, and sustainable fuel sectors.



Trotech integrates finite element analysis (FEA) and simulation solutions from Ansys, part of Synopsys, to optimize storage tank platform design, ensuring compliance with safety requirements and customer satisfaction.

/ COMPANY DESCRIPTION

Since 1993, Trotech has specialized in the design, engineering, manufacture, and installation of bulk storage tank solutions for the petrochemical, liquefied natural gas (LNG), ammonia, and sustainable fuel sectors.

With over 30 years of experience, Trotech supports a wide range of industries, including oil and gas, metal, mining, and heavy equipment.



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