Finite Element Analysis Made Easy

Automated FEA at Your Fingertips!

Integrating finite element analysis (FEA) into a fitness-for-service (FFS) assessment doesn't need to be expensive or time-consuming.

Equity Software® is changing asset integrity with automated, cloud-native FEA webtools that deliver efficient, comprehensive, and more cost-effective solutions for modern asset management. These webtools build upon our extensive FFS knowledge to help you seamlessly implement Level 3 analysis at your facility. You will extend equipment life, reduce downtime, and confidently justify continued safe operations.

FASTER FEA ASSESSMENTS

- Complete weeks of engineering work in less than an hour
- Build a detailed 3D finite element model in minutes
- Use automated post-processing and integrated 3D visualization

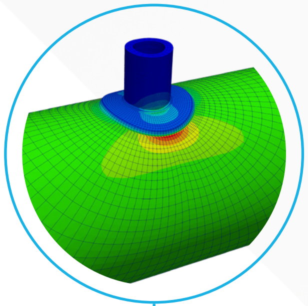
NO EXPERTISE REQUIRED

- No FEA knowledge required!
- Enter geometry, data, or dimensions to get started
- Conduct Level 3 FFS assessments with the ease of Level 2

FLEXIBLE & SCALABLE LICENSES

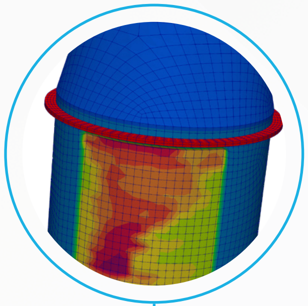
- Always have access to the latest features & functionality
- Add new licenses or modules as needed
- Get started without lengthy IT set-up

Automated FEA Tools



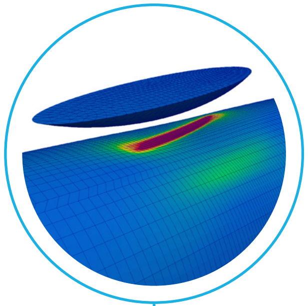
NOZZLES

Evaluate the structural integrity of nozzle connections



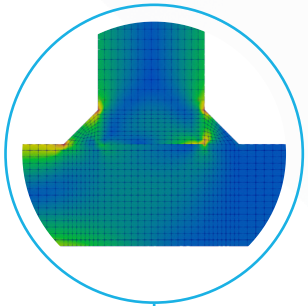
LOCAL THIN AREAS

Analyze general and local thinning



DENTS

Assess local damage & fatigue life



TANKS

Calculate stresses and strains due to settlement

VISIT SOFTWARE.E2G.COM

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TURN INPUTS INTO INSIGHTS

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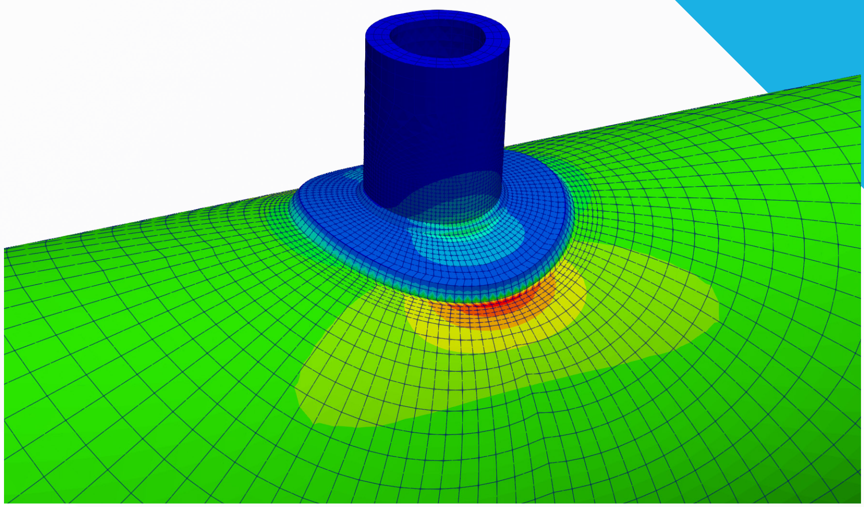
EQUITY SOFTWARE

Modernize Nozzle Designs

Fast, Accessible, and Accurate: Nozzle FEA

Nozzle connections often handle a complex combination of loads, including internal pressure, external piping forces, thermal expansion, and equipment weight.

Nozzle FEA webtool provides **fast**, **accurate**, and **code-compliant** stress analysis for nozzle-to-shell connections in pressure vessels. Using Equity's extensive knowledge in FFS and nozzle design, the webtool automates model (mesh) generation, analysis, and post-processing - ensuring compliance with ASME standards.



I

Automate model creation of complex nozzle-to-shell junctions, including cylindrical shells, heads, and conical transitions.

II

Automatically perform detailed stress analysis accounting for membrane, bending, and peak stresses (Pm, Pl, Q, F) to identify critical stress concentrations.

III

Design code-compliant nozzles to avoid plastic collapse, fatigue, or brittle fracture.

BENEFITS

SAVE TIME & MONEY

Automated model building and cloud-based analysis reduce engineering hours and eliminate the need for local FEA resources.

ENHANCE DECISION-MAKING

Perform robust high-fidelity analysis of stresses at nozzle-to-shell junctions with minimal effort.

COMPLY WITH REGULATIONS

Purpose-built and tailored for nozzle design, local stress analysis, and FFS assessments per API/ASME standards.

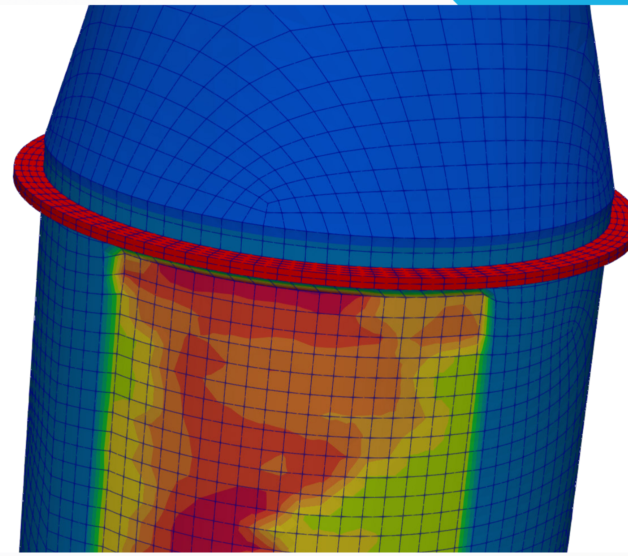
EQUITY SOFTWARE

Simplify Corrosion Analysis

Fast, Versatile, and Precise: Local Thin Area FEA

The structural integrity of pipelines and pressure vessels is often affected by local corrosion damage. By only relying on Level 1 or Level 2 FFS assessment, you may conduct unnecessary and costly repairs or maintenance.

The local thin area (LTA) webtool delivers the accuracy of FEA to help you avoid expensive repairs by automating everything from model generation to stress assessments. The webtool evaluates FFS by focusing on structural weaknesses caused by general and local thinning, ensuring **operational reliability** and **regulatory compliance**. You can confidently determine whether thin areas are fit for continued service under all operating conditions.



I

Analyze the general and local corrosion of cylinders, elbows, cones, and heads with minimal input.

II

Automatically generate FEA models with specified geometry, measured thickness readings mapped onto the geometry, and appropriate boundary conditions.

III

Perform and analyze fully non-linear FEA according to API 579 and ASME BPVC VIII-2 to ensure compliance.

BENEFITS

SAVE TIME & MONEY

Execute tedious tasks in seconds and avoid expensive equipment repairs.

ENHANCE DECISION-MAKING

Assess LTAs with a solver benchmarked and verified against Abaqus.

COMPLY WITH REGULATIONS

Perform internal and external pressure assessments according to API 579 and ASME BPVC VIII-2.

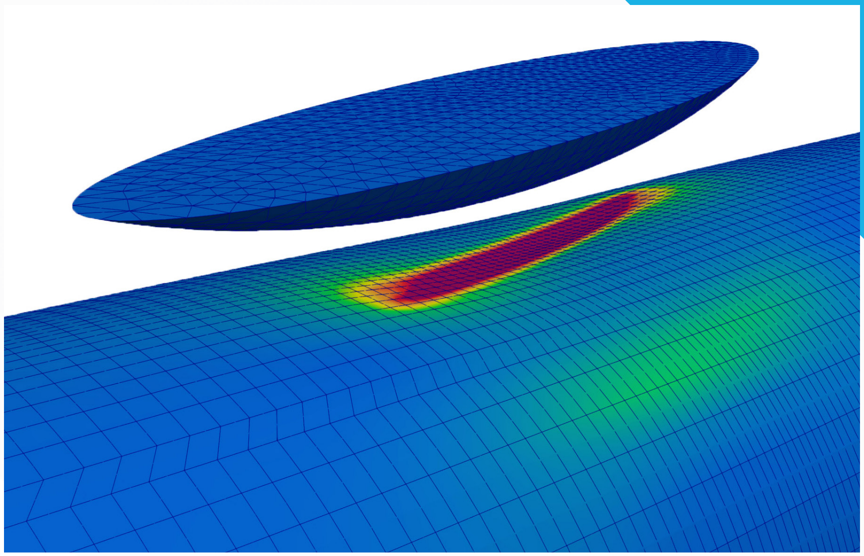
EQUITY SOFTWARE

Transform Pipeline Dent Analysis

Fast, Easy, & Precise: Dent FEA

Dents in pipelines, caused by external impacts or natural forces, can compromise the structural integrity of these assets. Assessing these dents accurately and efficiently is essential for maintaining safety and compliance.

Dent FEA is a cutting-edge, cloud-native webtool specifically designed to tackle one of the pipeline industry's most challenging issues: evaluating the residual plastic strain and damage in dented pipelines and estimating remaining life. Use Dent FEA to improve **operational efficiency**, **reduce downtime**, and **prevent costly failures**.



I

Analyze both plain dents and dents with gouges, providing detailed results while estimating fatigue life based on the full operating history.

II

Quantify damage using strain limit damage (SLD), ductile failure damage indicator (DFDI), and Bao-Wierzbicki damage parameters.

III

Automatically iterates to match the measured dent depth, delivering results equivalent to a Level 3 engineering assessment.

BENEFITS

SAVE TIME & MONEY

Conduct automated iterative assessment and cut analysis time from a week to under an hour.

ENHANCE DECISION-MAKING

Obtain more accurate results for better maintenance planning and prioritization.

COMPLY WITH REGULATIONS

Meet 49 CFR 192.712(c) requirements with Level 3 FEA assessments according to API RP 1183 and API 579.

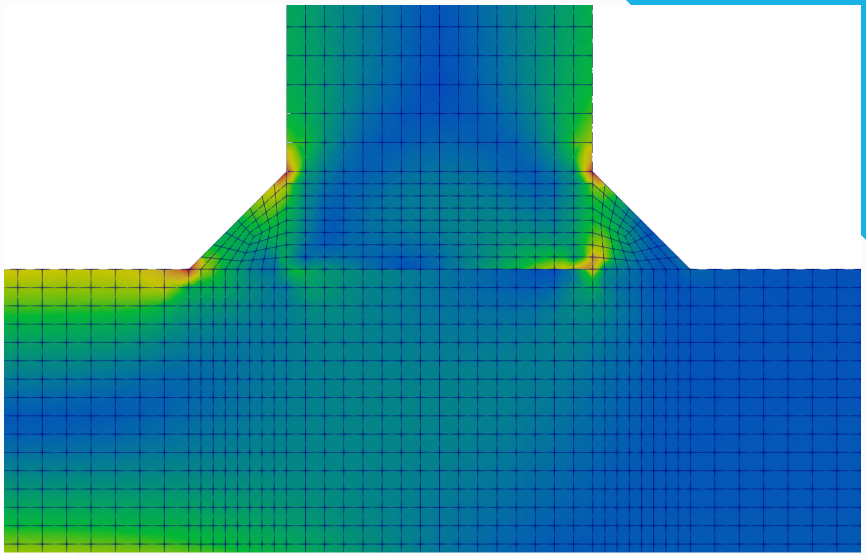
EQUITY SOFTWARE

Protect Aboveground Tank Safety

Fast, Effective, & Accurate: Tank FEA

It is critical to promptly assess the bottom settlement in an aboveground storage tank and determine structural integrity and operational safety.

The tank FEA webtool is a fast, reliable, and systematic way to assess edge-settlement issues and ensure the longevity and safety of storage tanks. This easy-to-use webtool delivers advanced stress assessments through automated axisymmetric FEA, ensuring compliance with API 653, while also addressing the safety-critical issues of plastic collapse and local damage. Use Tank FEA to help you **reduce downtime** and **preserve tank safety**.



I

Apply a systematic approach to assess arbitrary or edge-settlement issues in aboveground storage tanks.

II

Perform advanced stress analysis to assess critical welds and structural integrity under different loading conditions.

III

Automatically generate FEA models of storage tanks according to the latest API 653, API 579, and ASME BPVC VIII-2 criteria.

BENEFITS

SAVE TIME & MONEY

Reduce stress analysis time and decrease costs related to unnecessary tank repairs or maintenance.

ENHANCE DECISION-MAKING

Evaluate global and local failure criteria for more accurate maintenance decisions.

COMPLY WITH REGULATIONS

Perform stress analysis, critical flaw screening, and local strain checks according to API 579, ASME BPVC VIII-2, and API 653.

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