

## PRESSURE EQUIPMENT DESIGN

PROVIDING EXTENSIVE EXPERIENCE  
IN THE DESIGN, SPECIFICATION, AND  
OPTIMIZATION OF PRESSURIZED  
EQUIPMENT



[www.EquityEng.com](http://www.EquityEng.com)

### INDUSTRY LEADERSHIP

E<sup>2</sup>G|The Equity Engineering Group, Inc. has extensive experience in the design, specification, and optimization of pressurized equipment, including pressure vessels, piping, heat exchangers, furnaces, and storage tanks. E<sup>2</sup>G provides guidance regarding solutions to complex problems in order to maximize reliability and profitability, considering all

aspects of the overall equipment life-cycle. E<sup>2</sup>G engineers hold membership on numerous Code committees and task groups within ASME and API. We continually strive to develop and implement the latest advancements in technology in order to maximize equipment reliability and control costs for owner-users.

### NEW EQUIPMENT DESIGN

Whether it requires closed form Design-By-Rule (DBR) methods (such as ASME Section VIII Division 1), or advanced FEA and Design-By-Analysis (DBA) procedures (such as ASME Section VIII Division 2), E<sup>2</sup>G is fully skilled, experienced, and capable of supporting our clients' needs.

### PRESSURE VESSELS

As an internationally recognized leader in the development of standards, E<sup>2</sup>G was selected as the lead investigator to ASME for the new ASME Boiler and Pressure Vessel Code, Section VIII Rules for Construction of Pressure Vessels, Division 2 Alternative Rules. E<sup>2</sup>G was responsible for introducing the latest developments in materials, design, fabrication, and inspection technologies. These technologies

include new brittle fracture evaluation methods, new fatigue design methods, and a complete re-write and update of both the DBR and DBA procedures. We have the knowledge and experience to implement and leverage the latest advancements in technology in order to maximize the value to our clients.

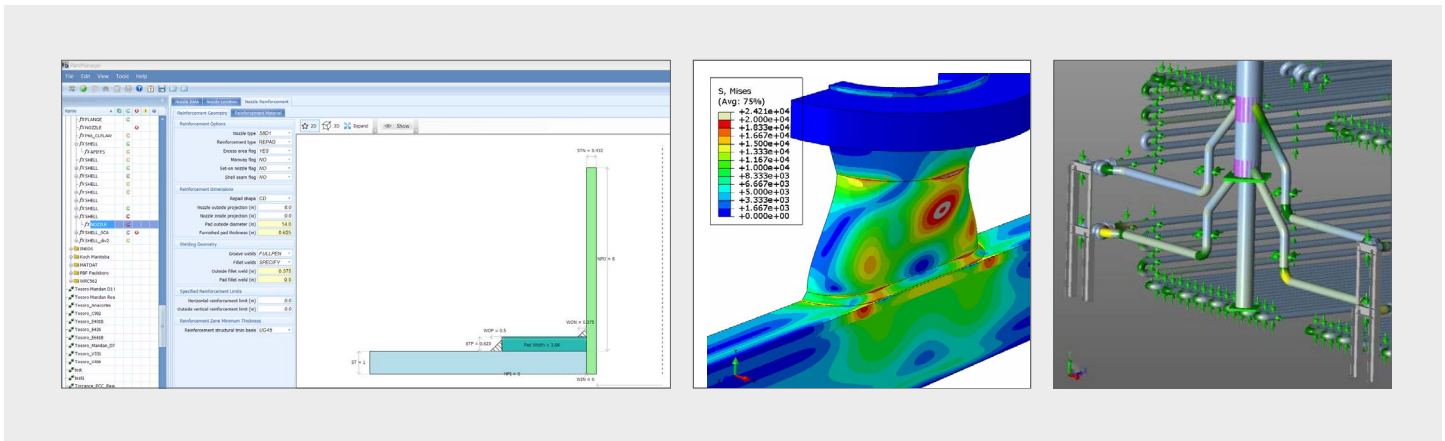
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### PROCESS PIPING

E<sup>2</sup>G routinely performs detailed piping flexibility analyses to support FFS evaluations or Code compliance checks in order to qualify sustained and thermal expansion loading conditions. When needed, we complete field walk-downs and generate isometric layout sketches of systems. We have extensive experience with aboveground and underground piping design Codes, such as *ASME B31.1 Power Piping*, *ASME B31.3 Process Piping*, *ASME B31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids*, and *ASME B31.8 Gas Transmission and Distribution Piping Systems*. In the event a piping system does not meet Code requirements with

its existing configuration, detailed plans can be provided to guide support or layout modifications, as appropriate, in order to ensure adequate support and flexibility while preventing excess reaction loads on equipment or restraints.

### NUCLEAR DESIGN

E<sup>2</sup>G performs nuclear design reports for new equipment designed to ASME Section VIII and Section III. Our nuclear quality assurance program meets all applicable ASME NQA-1 and 10 CFR 50 Appendix B requirements

## DESIGN VALIDATION OF EXISTING EQUIPMENT

The process safety management (PSM) requirements in the Occupational Safety and Health Administration (OSHA) 1910 standards mandate that owner-users maintain essential documentation authenticating adequate design and maintenance of pressure vessels and storage tanks. Unfortunately, it is not uncommon to find equipment operating in industry with minimal or no documentation. This has become even more common in recent years with the re-purposing of assets for use in new facilities or services. E<sup>2</sup>G is fully qualified and experienced in completing “reverse engineering” or Suitability-For-Service (SFS) evaluations in the fastest and most cost-effective manner in order to achieve OSHA compliance for equipment lacking documentation.

### CAPITAL PROJECT SUPPORT

E<sup>2</sup>G’s team of subject matter experts (SMEs) can provide third-party engineering reviews of project documents to ensure compliance with:

- Mandatory industry codes and standards
- Recognized and Generally Accepted Good Engineering Practices (RAGAGEP)
- Corporate best practices
- Industry experience and best practices

Utilizing industry experts who author, support, and develop RAGAGEP and corporate best practices, E<sup>2</sup>G SMEs will review project details such as:

- Design details and calculations
- Equipment data sheets
- Fabrication details and materials of construction
- General consulting on project related issues