# Process Technology Services

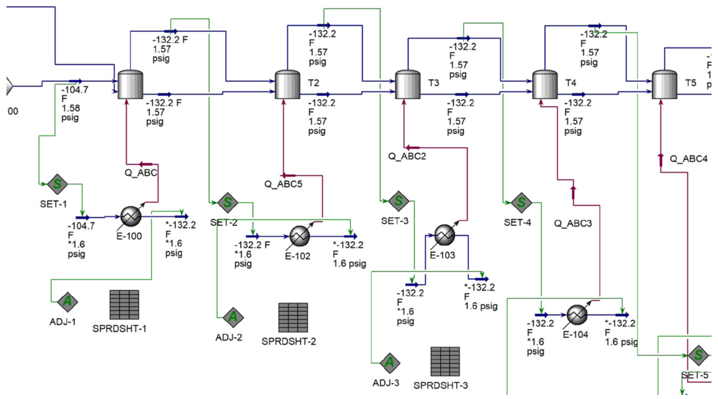
## Process Engineering Support Focusing on Pressure Relief

### Do Your Pressure Relief System Installations Meet PSM Requirements?

Equity Engineering's Process Technology team can provide process engineering support using process simulation tools, particularly as it relates to pressure relief system (PRS) design.

For mechanical integrity programs, pressure relief valves (PRVs) should be inspected upon installation and at frequencies sufficient to maintain reliability. By maintaining safety critical pressure relieving systems and developing practical mitigation solutions, you will meet risk management targets, compliance requirements, and business objectives.

Our team of internationally recognized experts in pressure relief system design, optimization, and installation will assess and evaluate new or existing systems to provide practical recommendations to maximize reliability and profitability.



### PRESSURE RELIEF SYSTEM REVALIDATION

Our team will review pressure relieving system (PRS) documentation to objectively remove unnecessary conservativism to save money on large capital projects or equipment repairs. Revalidating and auditing PRS documentation ensures no systemic issues exist. This step is instrumental in meeting or exceeding the latest Codes and Standards requirements.

### PRS GAP ASSESSMENT & QA/QC AUDITS

Equity Engineering SMEs have been involved in the development of the API Standards on PRS for over 35 years. A gap assessment of your relief system documentation may identify improvement areas to meet PSM regulations. Our knowledge of the application of these API standards can benefit Owner-Users by eliminating unnecessary and costly field modifications to address identified deficiencies.

### PROCESS SIMULATION

Understand how modifications to operations can change downstream processes. Our team uses process simulation to model changes to process or operations, troubleshoot issues in a process, model pressure relieving systems, or create heat and material balances. These process simulations help clients ensure that changes are cost-effective, safe, and reliable.

### PSV INSPECTION INTERVAL ASSESSMENT

Reduce the number of relief valves due for inspection at your next turnaround. Equity Engineering has developed a quantitative 2-phase work process of relief valve interval analysis. This analysis allows for reduced costs by prioritizing inspection resources for higher risk relief valves. It culminates with an API 581 compliant analysis of the highest risk relief valves to improve safety and reliability.

### TUBE RUPTURE CREDIBILITY ASSESSMENT (TRCA)

Equity Engineering has successfully executed a multitude of comprehensive TRCA analyses in accordance with API STD 521 guidelines. TRCAs are a cost-effective method for verifying that a full-bore tube rupture is unlikely to occur and that the heat exchanger relief system does not need to be designed to handle subsequent flow rates. TRCAs provide insights about the conditions that could lead to a full-bore tube rupture within shell-tube-heat exchangers.

### SOFTWARE: TBREAK

The API STD 521 provides guidance when a full-bore tube rupture overpressure scenario cannot be negated within a shell-and-tube heat exchanger and when a transient pressure analysis is required. This is particularly crucial in high-differential pressure applications, especially where the low-pressure side of the exchanger is liquid-filled and the high-pressure side contains gas or a fluid that could flash across the rupture. We leverage our cutting-edge proprietary technology to conduct comprehensive TBREAK transient analysis, providing our clients with the necessary insights and mitigation actions to safeguard the integrity of their heat exchangers.

### HEAT EXCHANGER THREAT ASSESSMENT (HETA)

Our team has a proven methodology to help you proactively develop short- and long-term maintenance strategies to provide practical, actionable, and cost-effective recommendations for maintaining the effectiveness of offshore and onshore PRVs and heat exchangers.

EQUITY TECHNICAL INSTITUTE

### PRESSURE RELIEF TRAINING COURSE

Increase your productivity and gain a strong foundation of industry knowledge, Codes and Standards, processes, and best practices with the practical and relevant course on PRS. The API-U Pressure Relieving Systems training course covers API 520/521, API 2000 Standards, and ASME Boiler & Pressure Vessel Code, Sections VIII and XIII.

EQUITY ENGINEERING PRACTICES

### EQUITY ENGINEERING PRACTICES (EEPS)

Improve capital project safety and compliance by combining our equipment design and optimization services with the EEPs. These Best Practices help you make informed design and maintenance decisions, minimize deviations, and promote safety, reliability, and consistency. The EEPs related to PRS design philosophy are intended to fill in the blanks where current API PRS standards are silent.

### ADDITIONAL CONSULTING SERVICES

- Fired heater mechanical integrity
- Consequence analysis
- Atmospheric storage tank venting requirements
- Heat exchanger thermal rating and troubleshooting using HTRI

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THE TEAM DID A GREAT JOB ANSWERING ALL OF MY QUESTIONS AND COMPLETING THE PROJECT IN A TIMELY MANNER. I WAS IMPRESSED BY THE GROUP'S KNOWLEDGE ON PRVS. **IT WAS A PLEASURE WORKING WITH EQUITY.**

*PRS Consulting Project*



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