

# Equipment Design Basis and Documentation

## Problem Statement

Process safety standards require companies that handle hazardous materials to verify and document that their covered systems are designed in compliance with recognized and generally accepted good engineering practices. Federal regulations requiring process safety documentation include:

- OSHA 29 CFR 1910.119 (PSM)
- EPA 40 CFR Part 68 (RMP)

Numerous states also require similar programs.

Developing and maintaining adequate process safety information is a significant issue requiring substantial resources. Aging process equipment in existing facilities throughout the U.S. complicates the task. Frequently, documentation has been misplaced, lost, or destroyed over time. The ability to control and maintain documentation is complicated by the need to provide employee access to the information.

## The GP Solution

For over 35 years, GP has been a leading provider of Engineering, Workforce Development, and Technical Training services to U.S. process companies. Our background includes long-term involvement with regulated facilities in the chemical, food and beverage, pharmaceutical, nuclear power, metals, refining, and defense industries. Since the inception of the Process Safety Management (PSM and Risk Management Program (RMP) regulations, GP has provided Process Safety Services at more than 100 client sites. GP offers a proven, systematic, value-added approach to regulatory compliance. Our approach is based on maximizing performance and achieving compliance by leveraging existing resources to minimize implementation costs.

## GP Services:

**Equipment Design Basis Reconstruction**  
**Field and As-Built Verification**  
**Equipment Library Development**  
**Computerized Maintenance Management System (CMMS) Support**  
**Process Hazards Documentation and Training**  
**Relief System Evaluation**



GP offers a full range of Process Safety Documentation Services. The following are representative of GP's capabilities.

### Equipment Design Basis Reconstruction

- Equipment Sizing
- Design Code Review
- Engineering Analyses
- Fitness-for-Service

GP offers services to document the sizing and design basis of new and existing equipment. Our engineers can determine the applicable design standards and perform analyses to verify and document equipment design basis. Older equipment can be evaluated using good engineering practice when the original codes are no longer in use. GP also performs fitness-for-service analyses and estimates remaining life based on the current condition of equipment.

### Field and As-Built Verification

- Equipment Walkdowns
- P&ID Development
- As-Built Drawings
- Documentation Update

GP's engineering technicians conduct field walkdowns to collect nameplate data, verify the accuracy of documentation, and redline P&IDs and engineering drawings. The field data is used to update process safety documentation and record as-found conditions. Our graphic designers also develop P&IDs and engineering drawings using the latest software.

### Equipment Library Development

- Equipment Files
- Specification Sheets
- OEM Manuals
- Documentation Control

GP develops equipment libraries to serve as repositories for required documentation. We develop equipment file checklists and then compile the necessary documentation, populate specification sheets, and retrieve OEM manuals. GP also develops procedures and controls for the use and tracking of documentation.

### Computerized Maintenance Management System (CMMS) Support

- Data Validation
- Database Population
- System Implementation
- PM Development

GP provides extensive CMMS support. This support includes selecting and implementing a system, populating the system with equipment information, validating this information, and developing and populating preventive maintenance (PM) tasks.

### Process Hazards Documentation and Training

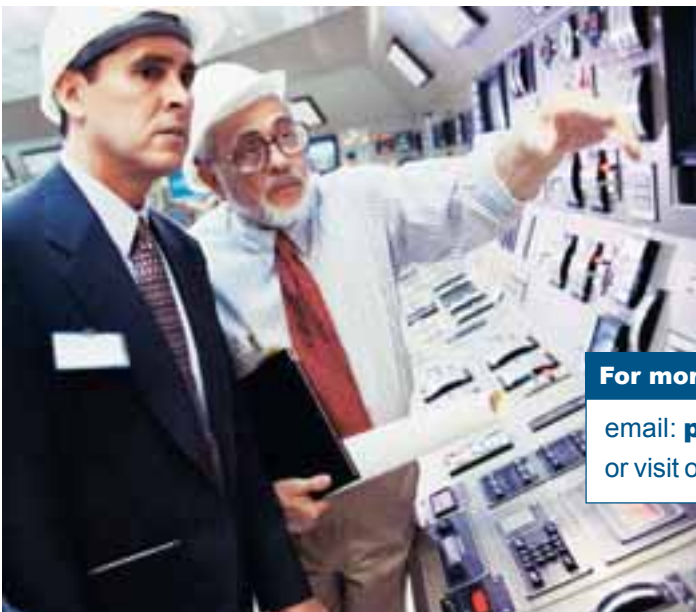
- Process Chemistry
- Safety Requirements
- Reactive Hazards
- Awareness Training

GP develops documentation on plant-specific process chemistry and related safety requirements. We evaluate and document reactive hazards and hazards of inadvertent mixing. Our process safety professionals develop reference guides and safety awareness training in classroom, web-based, and computer-based formats. GP also delivers training to plant personnel.

### Relief System Evaluation

- Pressure Relief Sizing
- Tank Venting Analysis
- Relief System Design
- Reactive Systems Evaluation

GP performs relief system evaluation and documentation services for a range of operating conditions: atmospheric tank venting, high pressure and reactive systems, and two-phase flow. Our engineers perform analyses in accordance with API, ASME, NFPA, and CGA standards, as well as CCPS guidelines. We also analyze and design relief system piping configurations following industry best practices.



Leading the World to Better Performance

For more information,

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