

**CURTISS -
WRIGHT**

Valve Group



Solutions for Pressure Relief System Management

Farris Engineering Services

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Farris Engineering Services has the experience and capabilities to make the complex task of meeting Process Safety Management (PSM) compliance easier, faster, and more reliable.

Combined with the worldwide resources of Curtiss-Wright, Farris Engineering Services can provide proven, cost-effective solutions for the validation and management of pressure relief systems.



Pressure Relief System Management Solutions

Providing a safe and hazard-free work environment is just one of the many complex challenges facing modern process facilities. For those facilities who fall under the jurisdiction of OSHA 29 CFR 1910.119, creating an effective PSM program is not only sound engineering practice, it's the law. Whatever stage of your facility's life cycle, Farris Engineering Services (FES) offers comprehensive

pressure relief system management solutions to help you achieve PSM compliance.

We deliver pressure relief system design and audit services via an experienced team of engineers and iPRSM®, a patented, web-based software package. With these combined resources, FES provides the most comprehensive relief system audit available in industry today.

Our Software

iPRSM®, our patented, innovative software program is the foundation for a comprehensive pressure relief management system. iPRSM is an engineering calculation tool which identifies, reduces and manages overpressure risk to equipment and devices. iPRSM is a highly adaptable, web-based software platform that offers:



- Flexible, company-wide implementation
- Centralized project management, allowing for multiple users and locations
- Customization to the customer's engineering standard

- Modeling of process changes related to code and/or production flow rates
- Evergreen recording and tracking of plant data eliminates redundancies
- Active enhancement of the management of change (MOC) evaluation process

Using iPRSM in your PSM program will produce the necessary documents required for regulatory purposes, including OSHA 29 CFR 1910.119. The net results are clear: iPRSM technology will provide you with a safer facility.

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Audit Services

FES practices comprehensive pressure relief system audit methodology. Calculations undergo a rigorous QA protocol, minimizing the likelihood of error.

Our audit services include:

- Complete pressure relief system evaluation
- Validation and updates to material balances and P&ID's
- Process Hazard Analysis (PHA)
- Layers of Protection Analysis (LOPA)
- Define Safety Integrity Levels (SIL)
- Flare Header Analysis
- Determination of the correct sizing and flow rates to meet ASME, API, ANSI, NFPA including other applicable standards
- Distillation column unsteady state system relief analysis to minimize reduced calculated relief loads versus steady state models
- Recommendation to optimize process operations while minimizing costly hardware changes

FES ensures a more robust safety audit tailored to meet your unique safety standard requirements.

Design Services

Farris Engineering Services has a comprehensive understanding of overpressure scenarios. We know how to correctly identify the appropriate relief protection for any application. Use our expertise to help you design your pressure relief system right from the start. Our services will provide design options which maximize process production while minimizing unnecessary costs.

Training

FES can provide your team with comprehensive training in all aspects of safety system operation and design, including:

- General safety system methodology
- Pressure relief scenario analysis
- Equipment relief contingency calculation methodology
- Distillation column evaluation
- Relief system audit techniques
- Flare header audit and design
- Pressure relief valve design, principals of operation, sizing and selection

Our Team

FES's team of engineers has years of experience in many process facilities including power, nuclear, petrochemical and pharmaceutical industries. We bring a breadth of knowledge based on our customer's perspective. Our staff are:

- Experts in safety system audit and design with extensive experience in PSM project management
- Members of API, ASME and DIERS

Complete Solution Provider

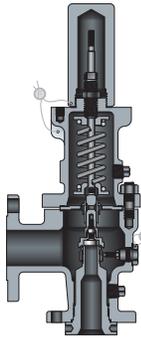
FES and Farris Engineering have created a complete, turn-key, pressure relief management solution package.

In addition to comprehensive pressure relief audit and design services, Farris Engineering manufactures a full line of pressure relief valves. For over 70 years, we have been 'the First Line of Safety' in processing plants around the world. FES can identify and provide the correct equipment to address safety system mitigation items in cases where hardware solutions are required.

For ongoing asset management requirements, Farris has a global network of independently owned, FAST (Farris Authorized Service Team) Centers, available to test, repair or replace your existing equipment with OEM parts or new valves, 24/7.

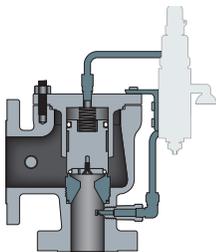
Farris Engineering Products

Process Pressure Relief Valves



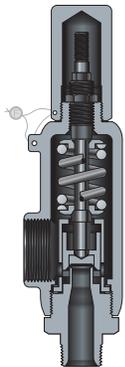
SERIES 2600/2600L

- ASME NB Certified: Air, Steam & Water
- Sizes: 1" x 2" to 20" x 24"
- Pressure Range: 15 psig to 6000 psig
- Temperature Range: -450°F to +1500°F
- Materials: Carbon Steel, Stainless, Monel & Hastelloy C
- Options: Balanced Bellows, O-Ring Seat, Open Bonnet



SERIES 3800 Pilot Operated

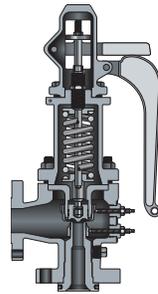
- ASME NB Certified: Air, Steam & Water
- Sizes: 1" x 2" to 12" x 16"
- Pressure Range: 15 psig to 6170 psig
- Temperature Range: -450°F to +500°F
- Materials: Steel Body & Stainless Steel Trim
- Options: Snap & Modulating Pilot Control, Complete 316 Stainless Steel Construction



SERIES 2700

- ASME NB Certified: Air, Steam & Water
- Sizes: ½" x 1" to 1½" x 2½"
- Pressure Range: 15 psig to 6500 psig
- Temperature Range: -450°F to +750°F
- Materials: Stainless Steel Body & Trim, Carbon Steel Bonnet
- Options: Stainless Steel, Monel & Hastelloy Materials, O-Ring Seats, Flanged, Socket Weld, Welding Nipple, & Sanitary Connections

Steam Safety Valves



SERIES 4200

- ASME NB Section I & VIII Certified: Steam & Air
- Sizes 1¼" x 1½" to 6" x 8"
- Pressure Range: 15 psig to 1000 psig
- Temperature Range: -20°F to +1000°F
- Materials: Carbon Steel, Chrome Moly & Stainless Steel



SERIES 6400/6600

- ASME NB Section I & VIII Certified: Steam & Air
- Sizes: 1" x 2" to 4" x 6"
- Pressure Range: 15 psig to 1500 psig
- Temperature Range: -20°F to +1000°F
- Materials: Carbon and Stainless Steel
- Options: Exposed Spring & Closed Bonnet

The following is a list of Farris approvals currently on record:

- ASME "V", "UV", "NV", and "NPT"
- National Board "NB" approval
- ISO 9001-2008
- US Coast Guard
- PED 97/23/EC (European Pressure Equipment Directive)
- ATEX 94/9/EC (European Potentially Explosive Atmospheres)
- CSA B51 (Canadian Registration)
- CSQL (China Safety Quality License)
- Russian GOST-R Certification and RTN Permit
- First Point Assessment Limited
- Nuclear – 10 CFR 50 Appendix B, NCA-4000, NQA-1, N285.0

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Farris Engineering Services Main Office: 711 W. Bay Area Blvd., Suite 610, Webster, TX 77598 USA • Telephone: 281-724-2222 • Fax: 281-724-2226
www.cw-valvegroup.com/FES

Farris Engineering Main Office: 10195 Brecksville Rd., Brecksville, OH 44141 USA • Telephone: 440-838-7690 • Fax: 440-838-7699 • www.cw-valvegroup.com/farris
Offices Worldwide: For a listing of our global sales network, visit our website at www.cw-valvegroup.com/farrisdistributors.

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