

Protection Against Overpressurization

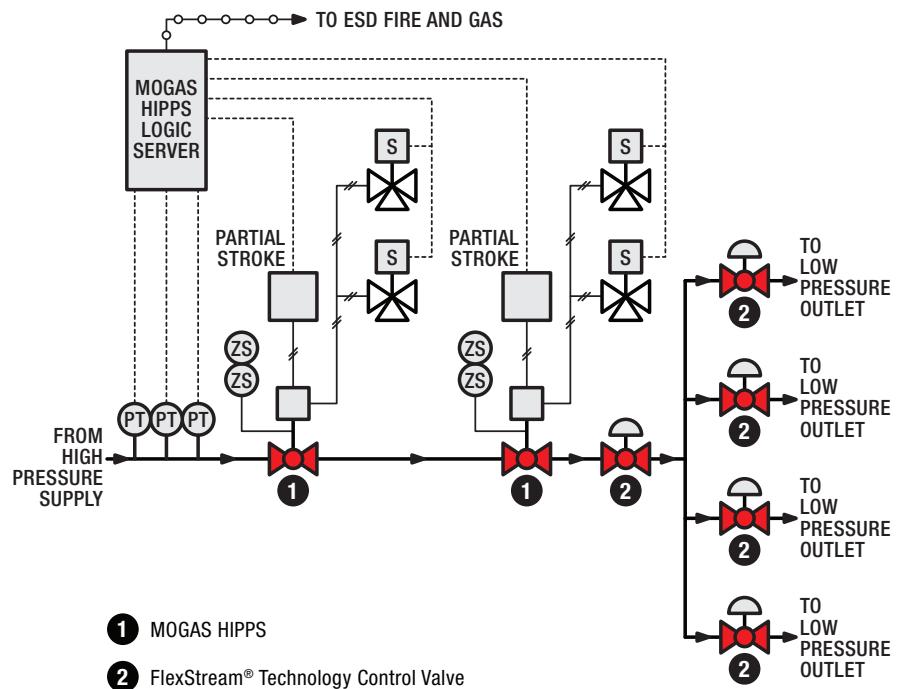
MOGAS Industries engineers its valves to meet or exceed the industry's highest standards. So when it comes to High Integrity Pressure Protection Systems (HIPPS), meeting the required standards and levels of certainty is not a stretch. MOGAS manufactures valves and solutions that are designed and built to handle the toughest pressures of many critical processes.

MOGAS' technology is ideally suited for HIPPS applications because it provides the most advanced technology and greatest quality of any isolation valve on the market.

HIPPS are designed to reduce the risk that can arise if the pressure of a system exceeds its design pressure. A need for HIPPS packages can be found in many industries. As an example, these safety systems are used in the Oil & Gas Industry to ensure safety of the pipelines, piping, vessels and process packages. They are also used in LNG facilities, Transport & Storage facilities and Refineries.

Whether the application is located in a refinery or a chemical processing facility, the containment loss due to overpressurization is a critical issue. Too much pressure on a vessel or pipeline can cause flammable, explosive, hazardous or toxic chemicals to be released into the atmosphere – threatening lives and endangering the environment. This can also ultimately cause a severe impact to a business' bottom line with the loss of production while the equipment is being replaced or repaired.

Typical HIPPS Installation



HIPPS systems provide protection against overpressurization in situations when the actual pressure could exceed the design pressure.

Critical Pressures Require Serious Solutions

Until the development of HIPPS, relief valve configurations were used to provide that protection involving large flow rates and high pressures. Something more robust was needed due to:

- Increased design pressures and flow rates
- Environmental concerns
- Constraints
- The overall risk factors associated with modern-day plants and processes

HIPPS provides this critical assurance in a safe and environmentally friendly manner. These safety systems are also used when applications involve extremely high pressure and/or flow rates. Chemical reactions, multiphase fluids or plugging make it difficult to properly size a relief device. Additionally, HIPPS are needed in order to avoid the replacement of a flare system when new units are added.

HIPPS ensure that a continuous measure of safety is deployed to reduce the operational risk associated with the probability of a hazardous event. This is handled by examining the probability of failure on demand (PFD), using Safety Instrumented System (SIS) to calculate the SIL (Safety Integrity Level). The SILs correspond to a certain tolerable PFD.

While that is a handful of acronyms – PFD, SIS and SIL – it is important to realize that what they represent is a safety assurance system that will enable a company to maintain operation of its facilities while minimizing the risk of overpressurizing the facility.

Dependable Isolation is a Must

These systems provide protection against overpressurization in situations when the actual pressure could exceed the design pressure.

There are three main components of a HIPPS safety system are:

1. The sensors that are used to detect high pressure – a hazardous situation
2. The logic solver, which determines the proper steps to take to alter the final element, and
3. The final element, which performs the necessary steps to bring the process back to a safe state of being. The final element involves the valve, actuator and solenoids.

A typical MOGAS HIPPS package includes the following:

- Full-port emergency shutdown valves
- Two-out-of-two (2oo2) or two-out-of-three (2oo3) voting sensors
- A reduced I/O – PLC
- SIL 3 FM certified IEC 61508
- Class 1 Zone 2 IIC T4
- Fail-safe actuator
- Skid-mounted system can be provided, if desired

Operating Conditions – HIPPS

Pressure Range	1480 to 15,000 psi
Temperature	Ambient
Valve Sizes	2 – 36 inches

Isolation Valve Features

MOGAS isolation valves have a quick quarter-turn on/off ability. These valves also feature metal to metal sealing, blow-out proof stems with radial operation. Additionally, these valves possess:

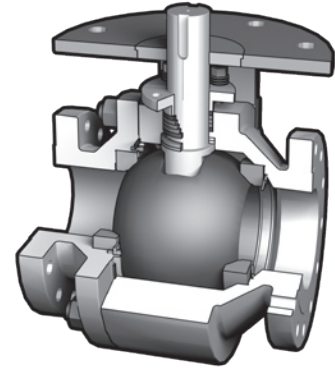
- Matched ball and seat sets
- Oversized stems
- Standard live-loaded packing
- Pressure-energized inner stem seal
- Stem support bushing
- Sturdy mounting bracket
- Body gaskets
- Reliable coating
- Rugged application-specific materials
- Ability to withstand thermal shock
- Repairability

FlexStream® Technology Features

In addition to providing the safety assurance of a pressure-sensitive environment, MOGAS' FlexStream Technology solution provides:

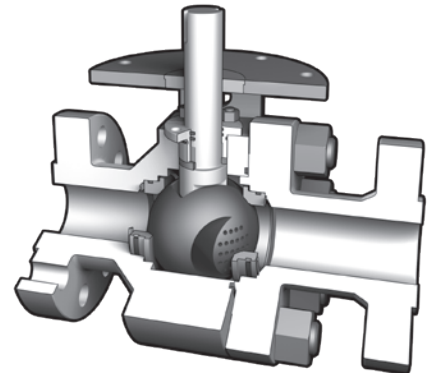
- Noise reduction
- Cavitation control
- Velocity management
- Rangeability: 500:1

MOGAS C-Series Valve



MOGAS' C-Series valve is ideal for isolation applications, such as the High Integrity pressure Protection System.

MOGAS FlexStream® Technology



Control valves using MOGAS' FlexStream Technology use a quarter-turn motion to turn on or off the valve and the pressure letdown ability of the valves using this technology is unsurpassed.