

MECHANICAL HIPPS

Safety Instrumented Systems

Technical Brochure



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Description

QUAM mechanical HIPPS system is a **SIL 3** capable self-contained system, designed according to IEC 61508 and IEC 61511 standards, used to protect downstream equipment against overpressure or upset conditions coming from the upstream.

General Application

QUAM mechanical High Integrity Pressure Protection System is a **self-contained** equipment suitable for applications where no external power sources are available.

Key Features

- ▶ **No need to install a by-pass line**
QUAM valve is designed to be opened against full differential pressure
- ▶ **Independent certification**
3rd party SIL3 certificate
- ▶ **Tight Shut-off**
Leakage requirements as per Class VI of ANSI/ FCI 70-2
- ▶ **Fugitive Emission**
In accordance with ISO 15848.
- ▶ **Fire Safe Design**
Gate valve are tested to API 6FA.
- ▶ **Fast Action**
Valve stroking time for safe action: less than 2 sec.
- ▶ **Integrated Design**
Any part of the safety system is internally designed and manufactured.
- ▶ **No external power requirements**
QUAM HIPPS system is a self contained unit.

Benefits

- ▶ **Single Source**
For Valve, Actuator & Control System
- ▶ **Better Sealing Feature**
Of Slab Gates against Ball or Axial Flow
- ▶ **Overall Dimensions**
Smaller than other valve types
- ▶ **Heavy Duty Design**
For long life service
- ▶ **Easy & Safe Maintenance**
- ▶ **100% ITALIAN MANUFACTURING**



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System Architecture

QUAM mechanical HIPPS system is typically composed of:

- Hydraulic Logic Solver

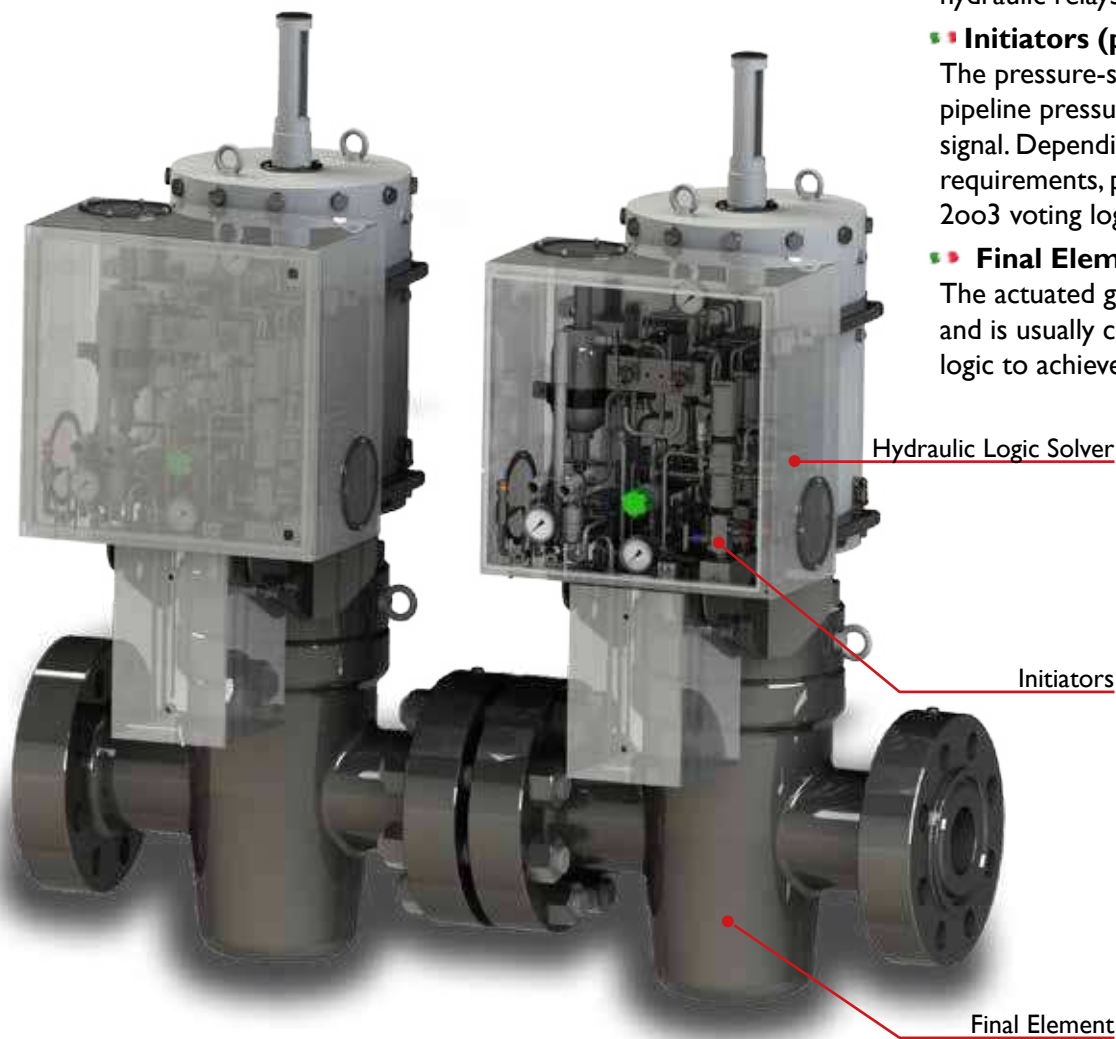
The Logic Solver processes signals from the sensors and closes the final element by removing the hydraulic pilot from the hydraulic relays.

- Initiators (pressure pilots)

The pressure-sensing device detects the pipeline pressure and reacts to a high-level signal. Depending on customer's/end user's requirements, pressure pilots are configured 2oo3 voting logic or 1oo2 voting logic.

- Final Element (actuated gate valve)

The actuated gate valve closes the pipeline and is usually configured in 1oo2 voting logic to achieve SIL3 requirement.



SAFETY INTEGRITY LEVEL Guide

According to IEC 61508, in order to meet the SIL 3 requirements, the system must comply with both probabilistic requirements and architectural constraints.

Safety Integrity Level	PFD (Avg. Probability of Dangerous Failure on Low Demand Mode)	PFH (Avg. Probability of Dangerous Failure on High Demand Mode)
SIL 1	$\geq 10E-02$ to $< 10E-01$	$\geq 10E-06$ to $< 10E-05$
SIL 2	$\geq 10E-03$ to $< 10E-02$	$\geq 10E-07$ to $< 10E-06$
SIL 3	$\geq 10E-04$ to $< 10E-03$	$\geq 10E-08$ to $< 10E-07$
SIL 4	$\geq 10E-05$ to $< 10E-04$	$\geq 10E-09$ to $< 10E-08$





Italian Design, QUAM efficiency



6A - 0982



6D - 1276



Azienda certificata secondo
UNI EN ISO 9001

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