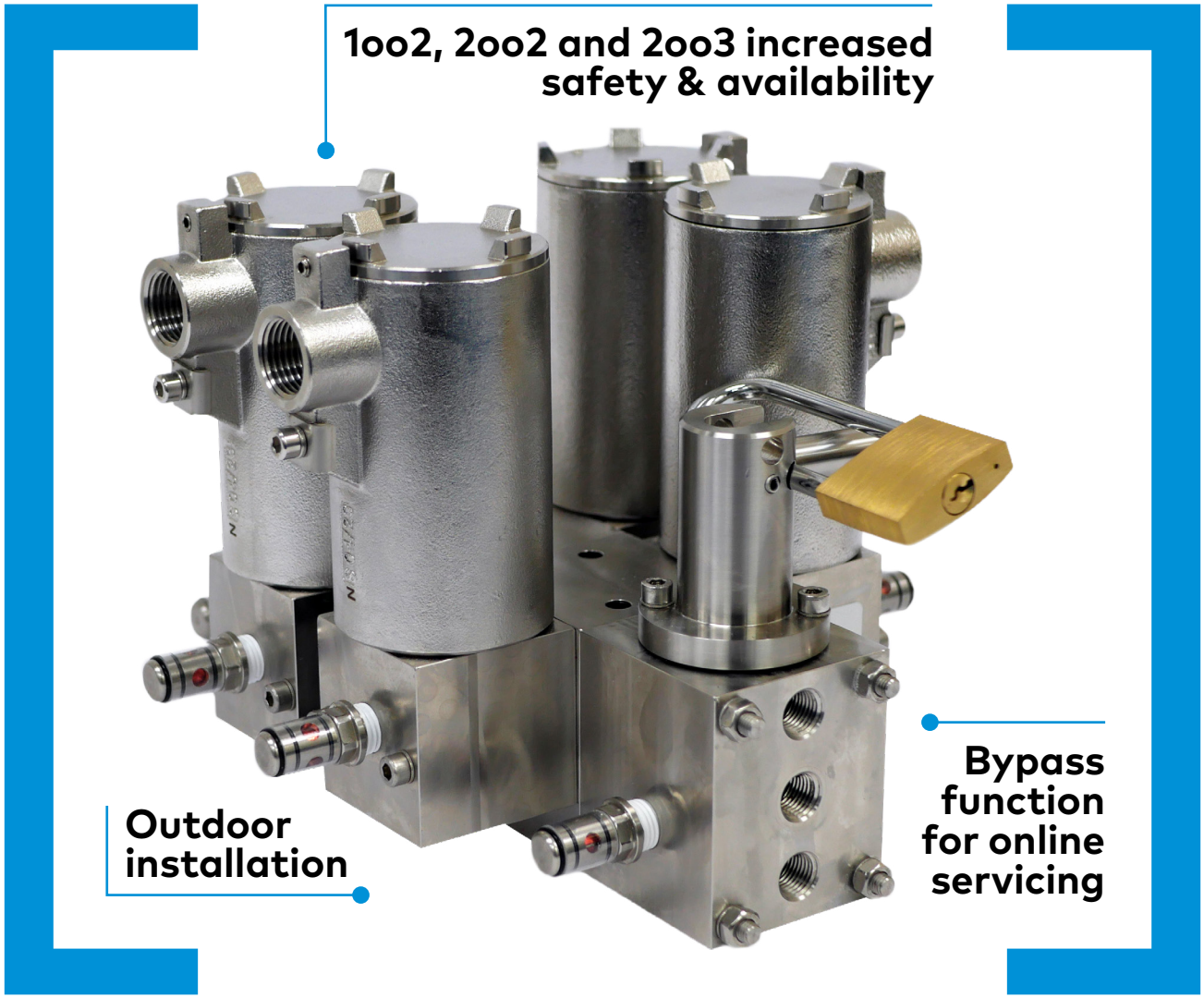
Product Brochure

HERION® MAXSEAL®

Redundant Valve Manifold (RVM)
for Reliability and Safety



IMI Critical Engineering

Breakthrough Engineering

Breakthrough Engineering

IMI Critical Engineering's family of specialist companies design, manufacture and service custom-designed valves, actuators, and high integrity solenoid valves that precisely control the flow of steam, gas and liquids under extremes of pressure and temperature, as well as intensely abrasive or corrosive operating conditions.

Oil, Gas and Chemical Brands

IMI Critical Engineering

MAXSEAL®
Stainless steel high integrity solenoid valves

IMI ORTON™
Triple offset metal seated butterfly valves

NORGREN®
Proportional valves and regulators

IMI STI™
Pneumatic and hydraulic actuation

IMI TRUFLO RONA™
Critical application ball valves

HERION®
Pneumatic and hydraulic SOVs for downstream applications

IMI CCI™
Control, HIPPS, and on/off valves

IMI THOMPSON VALVES™
High integrity valves and regulators

BUSCHJOST®
SOVs, angle seat valves, and motorised valves

With world-class product ranges including Norgren, Buschjost, Herion and Maxseal, IMI's products are designed to work effectively in aggressive environments and extreme temperatures and meet international standards such as:

- ATEX > KOSHA
- TÜV > DVGW
- TRCU > FM and UL
- INMETRO > NEMA
- CSA > ITRI

Upstream Solutions

MAXSEAL®

Maxseal has over 70 years' experience in providing oil, gas and chemical solutions with proven safety, reliability, and durability in the most extreme environmental and operating conditions around the globe. Maxseal valves are in operation at all the big international oil companies, and most of the significant nationals.

- Global certifications including SIL, ATEX, IECEx, TR-CU, CSA, CCOE, FM & Inmetro
- Suitable for SIL / Safety Instrumented Systems
- Reliable & resilient in hazardous environments
- Low power options
- Pneumatic & hydraulic options

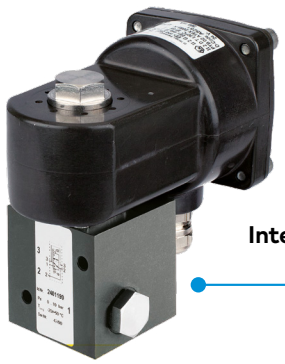


Downstream Solutions

HERION®

Safe and reliable operation in chemical and petrochemical applications is increasingly vital to plant operations. Our extensive range of high performance products includes the world-leading Herion pilot and control valves, created specifically for the chemical and process industries.

- Global certifications including SIL, ATEX, IECEx, TR-CU, CSA, CCOE, FM, Inmetro & ITRI
- High functionality
- Energy saving modular solenoid systems
- Compact design
- Resilient in hazardous environments





Production



LNG



FPSO



Refining



Chemical

Redundant Valve Manifold (RVM) Systems

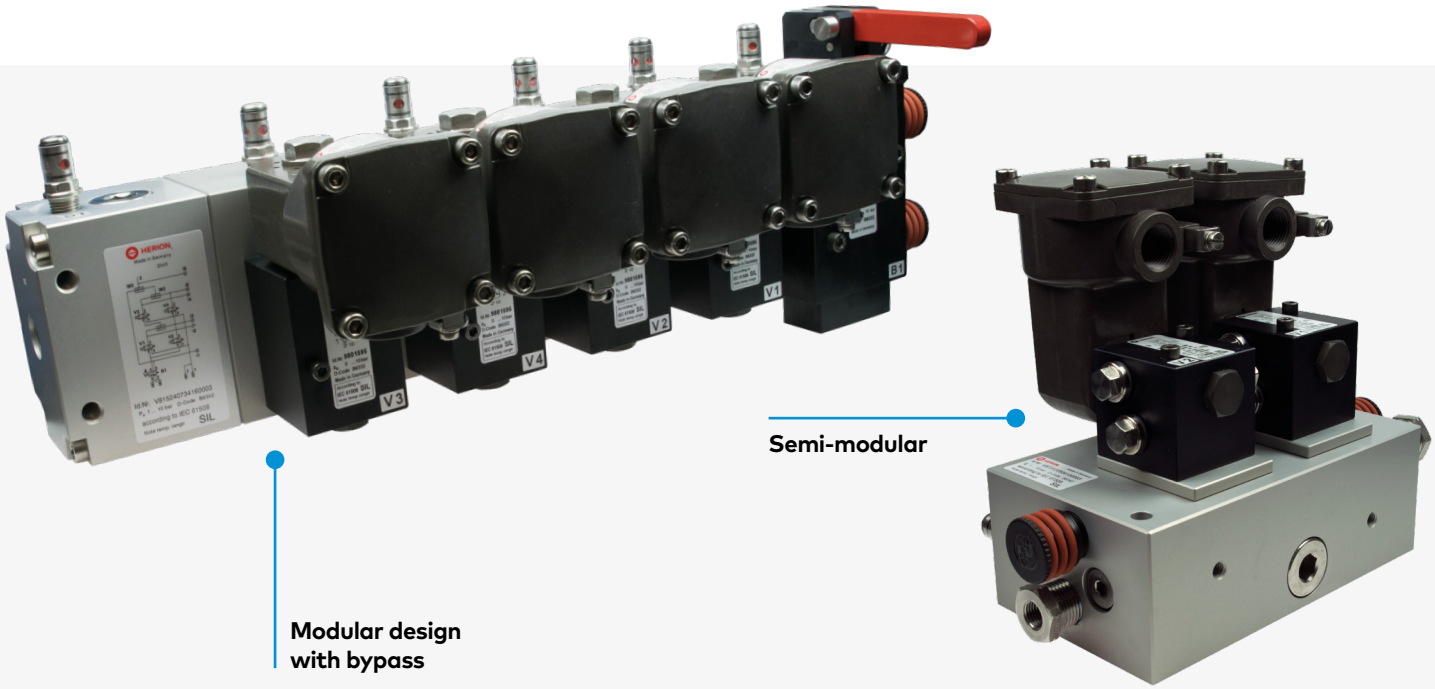
Redundant systems are required to increase uptime by ensuring the process continues to run in the event of a valve failure; or to increase safety by ensuring the process can be shut down in the event of a failure - or both.

The Issues with Existing Solutions

- Current systems are hard piped systems, components bolted together on a back plate, or tie-rodded together
- The complete systems are not SIL certified
- Difficult to service and maintain
- Incorrect configuration can be dangerous
- Number of potential leaks
- No failure indication for valves and outputs

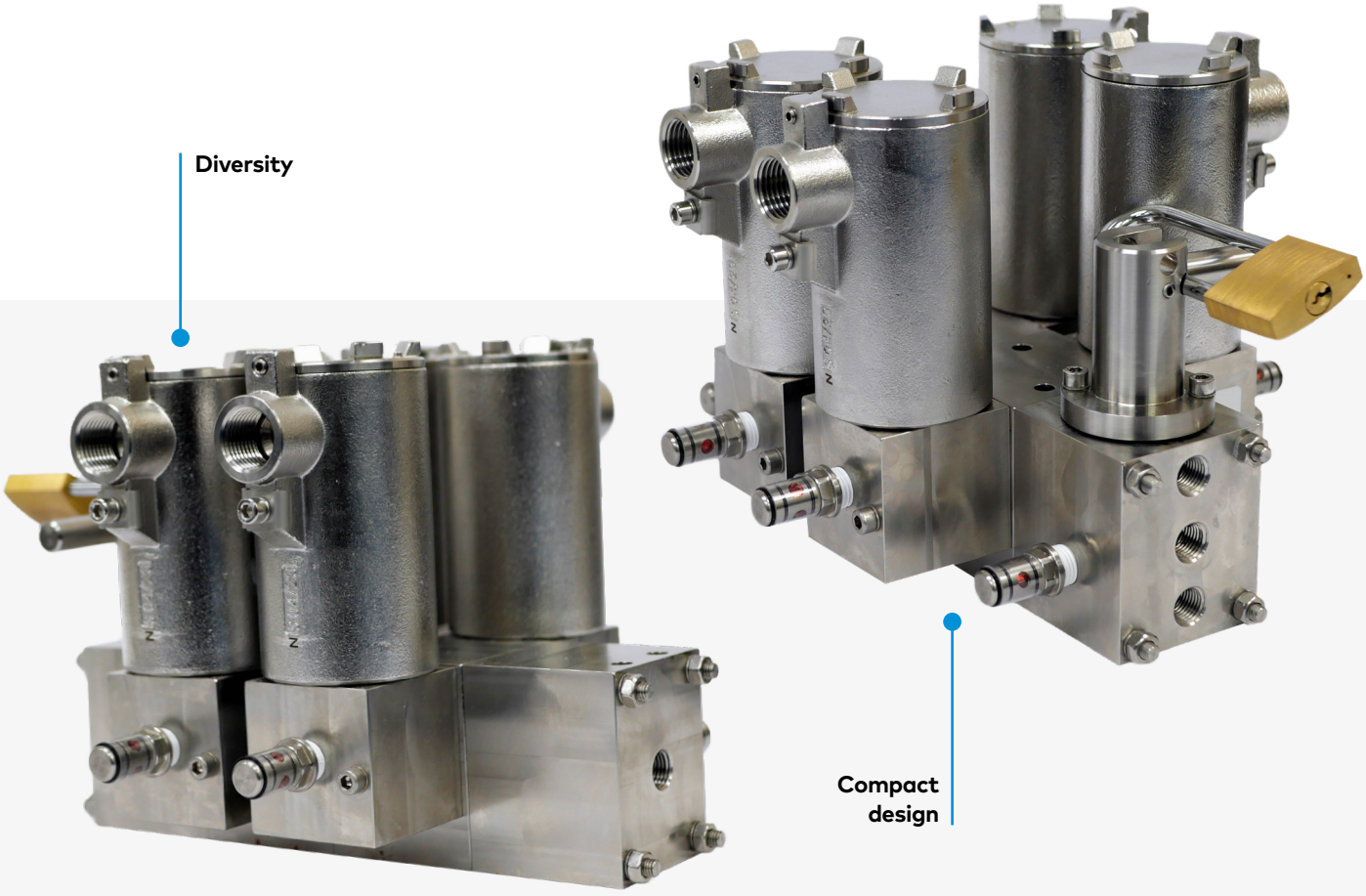
The RVM system solves these problems. Combining safety and availability in a single convenient package. Our RVM system offers simpler installation, helps eliminate unplanned shutdowns and is available in either aluminium or stainless steel to suit both upstream and downstream applications.

- System replaces components, panels and pipe work
- Available in aluminium or stainless steel construction
- Utilising industry proven products and technology





- **Three design options** - compact, semi-modular and modular – Reduces potential leak paths and installation time. Mounted at the point of use next to the process valve.
- **Compact design** - Space saving with the smallest overall footprint
- **Semi-modular design** - Visual pressure indicators showing valve position status
- **Modular design** - added benefit of a bypass function enabling valve removal online, plus visual pressure indicators showing valve position status
- **Valve position sensors** - provide electrical feedback on the valve position status





RVM Systems for Chemical and Petrochemical Applications

The natural choice for Safety Instrumented Systems in downstream applications, the Herion 2401x or 980xx series solenoid valves have been successfully used in the Chemical and Petrochemical industries for over 40 years, gaining a reputation for reliability and safety. Available in aluminium or stainless steel, key features include an interchangeable coil system and optional valve position feedback sensors.

Benefits

Compact or Modular Manifold Designs	Interchangeable solenoid coils
Reduced Potential Leak Paths	Integrated outlet filter to protect against particle ingress
Modular Construction Enabling Standard and Customised Solutions	Fast, simple removal of individual components
Bypass Function for Online Valve Replacement	Up to 12 years SIL maintenance service intervals 12 year 24011 series,6+2 year 24010 series, 6+2 year 980xx series
Large Reduction in Installation Time	Cable terminations inside coil housing negating the need for additional ex certified termination enclosures
Standard and High Flow Options	Integrated exhaust guards preventing moisture ingress

Specifications

Aluminium, or Stainless Steel Construction	IEC 61508 SIL based on field reliability data
Din En 161/3394 Dvgw Type Examination; Automatic Shut Off / Control Valves	1oo2, 2oo2 and 2oo3 options providing "safety", "availability" or "safety & availability" functionality
Inductive Proximity Sensing of Valve Poppet Position	1/4 and 1/2 porting options
Temp. Range: 24011: -40°C to +110°C (-40°F to +230°F) (Depending on Sealing Material) Temp. Range: 24010: -25°C to +80°C (-13°F to +176°F)	Reliable direct acting poppet valve operating from 0 to 10 bar (0 to 145 PSI)
Temp. Range: 980xx: -40°C to +60°C (-40°F to +140°F) Sil Version: -25°C to +60°C (-13°F to 140°F)	10 times factor of safety, on solenoid de-energising return force

Approvals

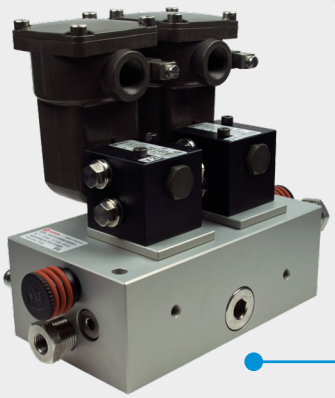
IECEx, INMETRO, FM, CSA, NEPSI, TR-CU, CCOE & SIL



V82 - Compact RVM



V81 - Modular RVM with bypass



V87 - Semi-modular RVM without bypass



RVM Systems for Oil and Gas Applications

With no reported 'coil burn outs' in over 20 year's service, the Maxseal ICO3 series valves have proved their reliability and value in upstream applications. Featuring a very high 5 kg valve return spring and a unique, thermally efficient coil manufactured in stainless steel.

Benefits

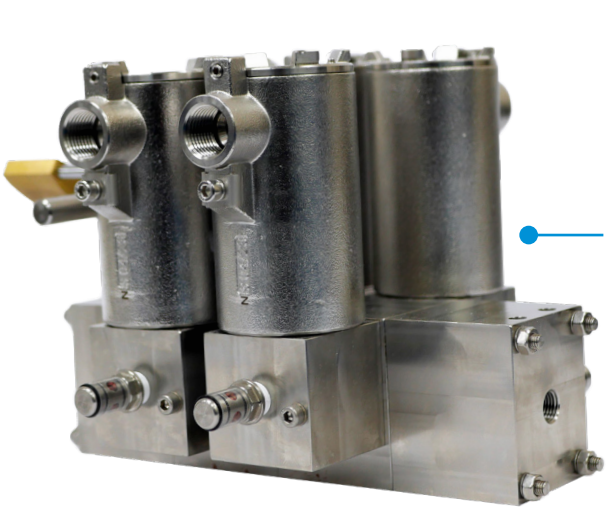
Compact or Modular Manifold Designs	Coil thermally and magnetically engineered for performance
Integrated Outlet Filter to Protect Against Particle Ingress	Standard and high flow options
Reduced Potential Leak Paths	Large reduction in installation time
Modular Construction Enabling Standard and Customisable Solutions	Fast, simple removal of individual components
Bypass Function for Online Valve Replacement	Cable terminations inside coil housing negating the need for additional ex certified termination enclosures
Integrated Exhaust Guards Preventing Moisture Ingress	Up to 10 years maintenance service intervals (6 years to maintain SIL)

Specifications

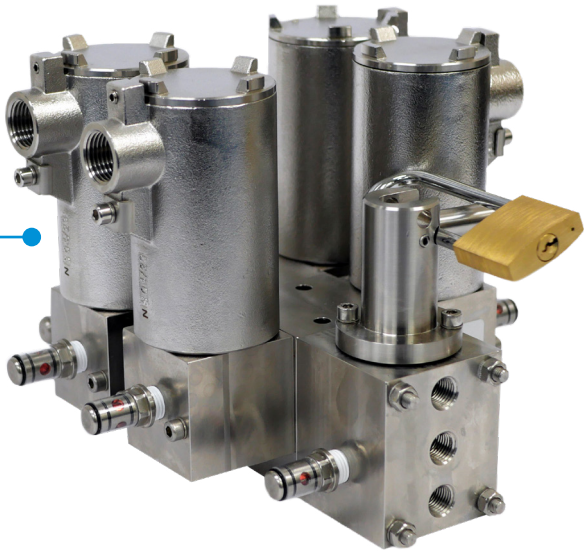
All 316l Stainless Steel Construction	1oo2, 2oo2 and 2oo3 options providing "safety", "availability" or "safety & availability" functionality
5 Kg (10 Times Factor of Safety) Return Spring (4 Kg Exia Solenoid)	Temp. Range: -55°C to +90°C (-67°F to 194°F), bypass valve -40°C to +80°C (-40°F to +176°F)
1/4 and 1/2 Porting Options	Reliable direct acting valve operating from 0 to 12 bar (0 to 174 PSI), bypass valve 0 to 10 bar (0 to 145 PSI)

Approvals

IECEx, INMETRO, FM, CSA, NEPSI, TR-CU, CCOE & SIL



2oo3 - Modular RVM with Bypass



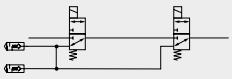
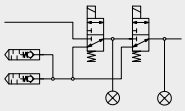
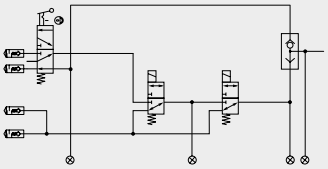
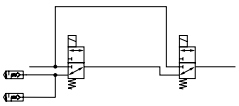
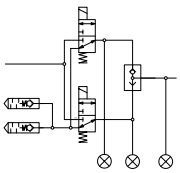
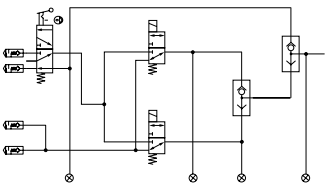
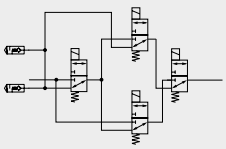
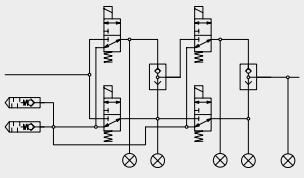
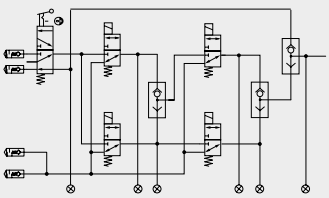

A4

Redundant Valve Manifold

Functionality Options

The RVM System is available in three functionality options, the selection of which will be dependent on the Safety Instrumented Function (SIF) that it is to be used within.

1oo2, 2oo2 double channel and uniquely 2oo3 triple channel systems are available.

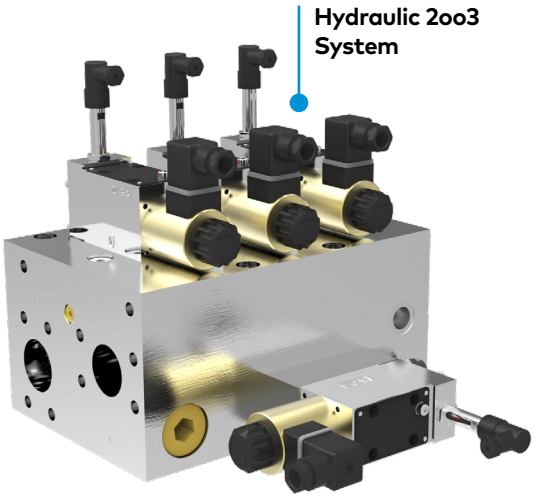
Compact 1oo2 	**Semi modular 1oo2** 	**Modular 1oo2 (with bypass)** 	1oo2 "Safety" Double channel redundant system Redundancy for the process valve closure. Any one out of two solenoid valves needs to de-energise to ensure safety.
Compact 2oo2 	**Semi modular 2oo2** 	**Modular 2oo2 (with bypass)** 	2oo2 "Availability" Double channel redundant system Redundancy for the process valve to remain open. Any one out of two solenoid valves needs to remain energised to ensure availability.
Compact 2oo3 	**Semi modular 2oo3** 	**Modular 2oo3 (with bypass)** 	2oo3 "Safety and Availability" Triple channel redundant system Any two channels out of three need to operate to provide safety (process valve closure) and availability (process valve remain open). The RVM system combines the strength of "1oo2" and "2oo2" thus increasing both safety and availability functions.

Hydraulic RVM Systems

Hydraulic 2oo3 Fail Safe Trip System for Gas and Steam Turbines

The Herion Hydraulic 2oo3 system provides safety and availability for main shut off emergency process valves with hydraulic actuators.

Using three identical solenoid valves to create a flexible 2oo3 voting logic for unequalled failure tolerance, the system uses redundant cartridges which allow high flow rate and a quick response time.



- Available for low and high operational pressure 5 – 320 bar
- Different sizes provide high flow availability 200 – 4000 l/min
- Cartridges sizes DN 16; 25; 32; 40; 50 and 63
- Fast reaction time
- Safety Control – direct monitoring of solenoid valves position closed open (proximity switches)
- SIL 3 approval
- IP 65
- Certification to ATEX, GOST
- Redundant cartridges
- Partial Stroke Testing Option
- Maintaining Safety 2oo3 during operation (redundant 2oo3 system)
- Prepared outlets for pressure transducers



Contact us to learn more about Redundant Valve Manifolds

IMI Thompson Valves
17 Balena Close
Creekmoor, Poole
BH17 7EF
United Kingdom
imithompson.sales@imi-critical.com

imi-critical.com

IMI Critical Engineering

Authorised Distributor:

AMPMECH
46, Jalan SS 22/21, Damansara Jaya,
47400 Petaling Jaya,
Selangor Darul Ehsan, Malaysia.
Email: ampmech@ampmech.com
Website: www.ampmech.com

Breakthrough Engineering