

Well Flow Management

Well Testing | Safety system

Emergency Shutdown System - Pneumatic

The Emergency Shutdown (ESD) system is designed to safely shut in the well in the event of an upset condition arising during well testing operations.

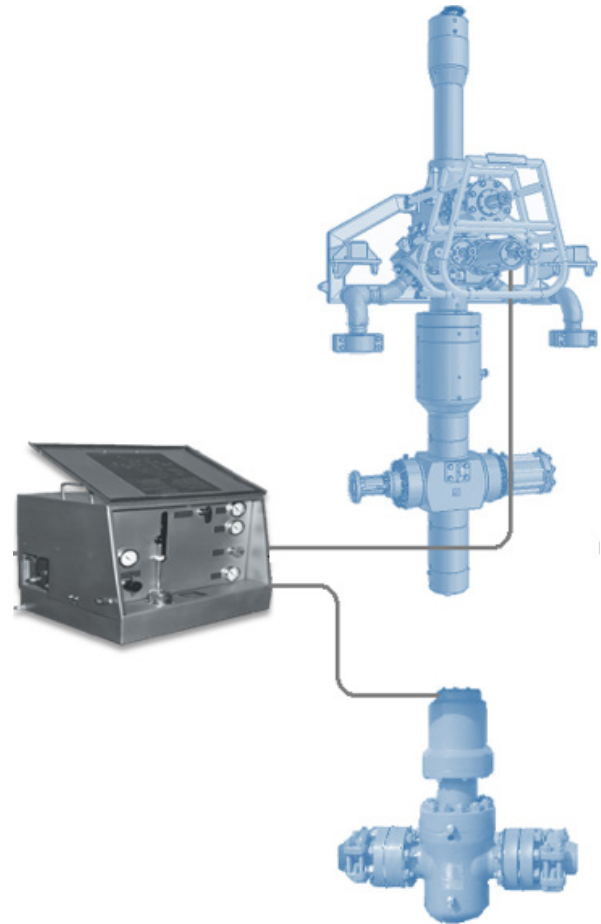
The ESD Panel controls hydraulic pressure to the actuated flow-line safety valve on the surface test tree and/or an additional surface safety valve upstream of the choke manifold.

An ESD is triggered by manual initiation of a remote ESD Station or automatically by sensors that are linked through a low pressure pneumatic circuit on the Well Test Package.

These sensors will initiate well closure when the process pressure either rises above a high level (blockage) or falls below a low level (flow-line rupture/leak). The levels are pre-set prior to operations depending on known or anticipated well parameters. The change in system process pressure activates a pressure pilot and the air pressure in the ESD pneumatic circuit is bled off.

ESD stations are typically located at the separator, the steam heat exchanger and the gauge/surge tank. High or Low pressure pilots can be provided with the ESD system, these pilots are installed on the flow-line to automatically close the actuated flow-line valve in the flow head or the surface safety valve. Pilots are designed to protect equipment and installations against abnormal pressures.

Available in pressure ranges to 15,000 psi, they can operate as a normally open block and bleed device for sensing high or low pressure conditions and are applicable for both pneumatic and hydraulic service. High-Low Pressure pilots are set to activate Safety shutdown systems for flow-lines and/or vessels.



Applications

- Onshore and offshore oil and gas well testing and clean-up operations
- Flow back after stimulation operations and work-overs
- High pressure, high temperature operations

Features and benefits

- Single action fail safe system
- Protect personal and equipment
- Visual indicators on the supply return signals from the field pilots to indicate loss of control pressure
- Check valves prevent common mode failures of the system, actuated valves will close only on a command and not by loss of pressure upstream of the interface valves
- Ports for optional pilots
- Hydraulic reservoir
- Pump can be operated manually or with air supply

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Technical specifications - panel				
Working pressure psi (bar)	Maximum pneumatic supply pressure (Air) psi (bar)	Normal operating supply pressure (Air) psi (bar)	Number of controlled valves	Reservoir capacity galls US (litres)
10,000 (690)	125 (8.62)	90 (6.21)	Up to 5 valves	7 (30)

Technical specifications - Hi-Lo Pilots	
Max. working pressure psi (bar)	Pressure ranges psi (bar)
500 (35)	5-50 (0.34-3.4)
	30-115 (2.0-7.9)
10,000 (690)	100-1,000 (6.8-68)
	1,000-5,000 (68-340)
15,000 (1,034)	500-1,500 (34-102)
	1,500-3,500 (102-238)
	3,000-6,000 (204-408)
	5,000-10,000 (340-680)
	7,500-15,000 (510-1,020)
Maximum supply pressure - psi (bar)	125 (8.5)
Operating temperature - °F (°C)	-20 to 210
Test pressure	1.5 x working pressure
Repeatability of set point	1% of set pressure maximum
Hysteresis of dead band	10% of full range maximum

Note: Designed and manufactured to NACE MR-01-75 for H2S Service

Other sizes, configurations and pressure ratings are available to meet most applications, for more information contact your local Expro representative or email welltesting@expro.com