

Electrical Emergency Shutdown System

Fast and reliable well control with well closure

Applications

Electrical emergency systems are necessary to quickly secure wells with greater safety in an emergency.

Features

- Cause-and-effect diagram adaptable to any rig configuration
- Solenoid valves that may be opened or closed via electric commands
- High-pressure solenoid valve to control hydraulic lines
- Low-pressure solenoid valve to connect with pneumatic emergency shutdown (ESD)
- Control panel with indicators and switches to provide a convenient visual check of the emergency sensor status
- Capability to individually bypass each line
- Horn alarm that sounds when the ESD mode is activated
- Master lock on the bypass switch of each active line that alerts when the electrical ESD (EESD) is armed to prevent mistakes and unexpected actions on the front panel

Options

- SIL2 rating
- Air-driven hydraulic pump to control the hydraulic system
- Two communication channels, an Ethernet (two links) with WiFi access
- Status and event logs to monitor remotely from a service computer, ATEX tablet, or any computer through a web server

Works by dramatically reducing response time

The EESD achieves fast and reliable well control, mitigating risks associated with well testing operations. It secures the process in case of emergency, and it integrates with additional safety devices, reducing crew exposure to highly pressurized equipment.

The EESD system dramatically reduces the response time between the appearance of a hazardous situation and effective



Front panel



Rear panel

EESD-BAD model general view.

valve closure. To achieve improvement and reduce the command delay, pneumatic lines are replaced with electric lines between emergency buttons or sensors and the ESD console.

An EESD provides better global well monitoring because it contains more sensors and responds in less time. An internal programmable logic controller (PLC) checks the status of all ESD buttons and sensors, making the system more flexible. The PLC can handle decisions at several levels, in real time, based on the well's current situation. The PLC can be adapted to the rig configuration and the cause-and-effect diagram based on actual well safety rules.

Safety valves are hydraulically activated. When the EESD closes, it activates the relevant hydraulic solenoid valves. This allows the pressure to drop faster so the valves close faster. Models

without a hydraulic pump must be used in conjunction with a conventional ESD system. The ESD supports the main unit by acting as a hydraulically powered generator, providing the energy needed to keep the safety valve open during normal operations.

Model EESD-C consists of a primary and secondary skid. The secondary skid comes with its own independent PLC that can be connected to the primary skid, making it possible for each skid to communicate with the other through the Ethernet link.

Working with a logic system rather than a total valve shutdown, the EESD becomes a significant part of the ESD package and optimizes safety for high-pressure and high-flow rate projects.

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Model Specifications				
	EESD-BA	EESD-BAB/BAC	EESD-BAD	EESD-C
Height, ft [m]	6.9 [2.1]	6.9 [2.1]	6.9 [2.1]	6.6 [2]
Footprint, ft [m]	3.9 × 2.6 [1.2 × 0.8]	3.9 × 2.6 [1.2 × 0.8]	3.9 × 2.6 [1.2 × 0.8]	6.6 × 3.3 [2 × 1] primary skid 3.9 × 2.6 [1.2 × 0.8] secondary skid
Weight, lbm [kg]	795 [360]	795 [360]	1,874 [850]	3,858 [1,750] primary skid 2,205 [1,000] secondary skid
Power supply	110–240 V AC, 45–65 Hz			
Solenoid valve pressure rating				
Hydraulic circuit, psi [MPa]	Optional	3,625 [25]	3,000 [21]	3,625 [25]
Pneumatic circuit, psi [MPa]	145 [1]	145 [1]	130 [0.9]	145 [1]
Inputs EESD commands	20 lines	20 lines	20 lines	60 lines
Outputs EESD commands	4 lines	4 lines	4 lines	22 lines
Hydraulic line	No	2 lines	2 lines	5 lines
Pneumatic line	1 line	1 line	1 line	2 lines
Hydraulic pump	No	Yes	Yes	Yes
Remote monitoring	No	Optional	Yes	Yes
Ethernet connection	No	Yes	Yes	Yes
Manufacturing	Certificate of conformity	Certificate of conformity	Certificate of conformity	Certificate of conformity
Documentation	Quality file and load test			
Applicable codes	CE, NACE MR0175	CE, NACE MR0175	CE, NACE MR0175, SIL 2	CE, NACE MR0175

All specifications are subject to change without notice.

EESD-B models may differentiate from each other by accessories and are available for upgrade with any new accessory.

slb.com/well-testing-control-equipment

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