Emergency Shutdown System

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Preferred Systems Integrator

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Emergency Shutdown System

In today's environment it is just as important to design a critical control or Emergency Shutdown Systems (ESD) for reliability and availability as well as safety. Safety or environmental control is important but so is the economic impact of a spurious or nuisance trip of an ESD.

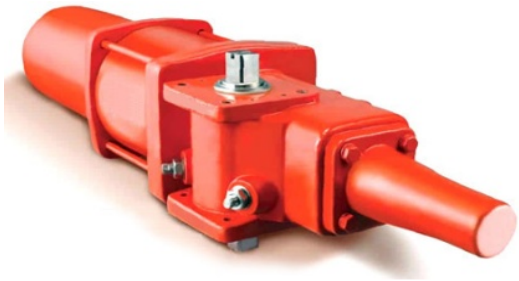
Typically design and install systems that are both safe and reliable by following corporate safety design standards. There are however, hardware vendors, engineering contractors, and owner's engineers that sell and design systems that may meet a safety classification without adequately considering and often ignoring system spurious failures.

Reliability or availability means that a system can remain on-line, tolerating one or more failures, and still be capable of producing the appropriate outputs for a safe shut down until the failures are detected and repaired.

Well designed instrumented systems used for safety or critical control applications seek the balance of safety and reliability by considering appropriate voting, high self diagnostic
coverage in field sensors, logic solvers, and final elements.

Design Criteria

- Simple and not easy to understand is one of the most important design considerations
- Ease of reach and easily available during an emergency
- Works hand in hand with a proper Fire and Gas detection System
- Use redundancy (sensors and final elements) to improve safety and/or reliability
- Use analog devices rather than discrete devices whenever possible
- Understand Human Errors
- Utilize a high integrity (safe) AND reliable (available) logic solver
- Eliminate or minimize common mode failures
- Verify and document interlock functionality
- Design effective alarm systems
- Use known and open technology
- Test safety systems periodically
- Ensure management control of changes and system bypasses



Norr works hand in hand with ESD and package designers to produce a desired ESD system safe and practical for operator's usage. System can be operated in Hydraulics or Pneumatics depending on construction and design.

System will able to detect lost of instrument air, hydraulic power or failures in key components during self check modes and even routine checks.

The system will be interfaced with Fire and Gas Detection Systems and relevant process systems for complete system control, monitoring and shut down during an emergency.

ESD systems are typically SIL 3 (Safety Integrity Level 3) and therefore of high importance. Norr works with key partners like SIEMENs to deliver a high integrity safety system for our customers.

Key important approvals from TUV and other renowned bodies are required in this system.