Fluidsentry™

Specialists in Fluid Power Safety

APPLICATION CASE STUDY – PRESSURE MONITORING

Making fluid power loads safe for operator access can be challenging. Today a diverse range of products & methods can assist us with our goal. Some of these include full current isolation, trapped key ball valve interlocks, monitored rod locking devices, monitored safety valves & of course ensuring safe & standards compliant design of circuits.

An Australian company recently faced such a challenge. Their application required infrequent access to a large aluminium extrusion press, but most available safety solutions involved practicability problems. Their final solution made use of a new fluid power safety product that could be of benefit to many.

The press had six hydraulic pumps along with a high pressure & low-pressure set of accumulators. The frequency of access was only several times a day, so having to stop & start pumps was not an issue, but reliably ensuring the accumulators had been relieved of stored pressure was of real concern. The hydraulic systems were located within guarding at an awkward height preventing easy isolation & flow rates were too great for available monitored safety valving.

The Hazard Identification & subsequent risk assessment was then reviewed to indicate which Risk Category of AS4024.1 Safeguarding of Machinery the safety related parts of the control system would need to meet. Risk Category 3 was concluded.

As Risk Category 3 calls for no single fault to lead to the loss of the safety function, dual safety contactors were used for each pump. A heavy-duty trapped key gate interlock with solenoid release was used to control operator access. The pressure monitoring of the accumulators was then resolved with the use of a new product, four Fluidsentry Safety Pressure Switches. Two were used to monitor the high-pressure accumulator & two for the low-pressure accumulators.

These safety pressure switches provide a positive opening safety contact output which does not return to the closed state until a fixed low 4 psi is reached on depressurisation. Being designed specifically for safety application they enable single faults to be detected through correct circuit configuration & safety monitoring. If a general-purpose pressure switch was selected with unknown failure modes, a false sense of safety may have been the result. The advantage of the safety pressure switch is that being a safety device it is tested to be compliant with relevant safety standards, making it fit for purpose for safety applications.

Use of the safety pressure switches meant that standard control valves could be used to relieve stored pressure from the accumulators. Operator access through the gate interlock was then denied until the safety monitoring system confirmed all pumps stopped by the safety contactors, & all safety pressure switches indicated it was safe to enter. Upon allowing access the trapped key is released to the operator. By taking the key into the cell with them systems re-start is prevented until the key is returned & gate locked.

The end result being a safe, practical & cost-effective system solution.

Fluidsentry Pty Ltd
ACN 109 094 975

PO Box 8135 Carrum Downs Vic 3201
Telephone: 03 9776 4352 Fax: 03 9776 4372

www.fluidsentry.com