

Pneumatic control options for hydraulic systems

SUN HYDRAULICS OFFERS AIR CONTROLLED HYDRAULIC PRESSURE CONTROL VALVES AS AN ALTERNATIVE TO HYDRO-MECHANICAL OR ELECTRO-HYDRAULIC PRESSURE CONTROL CARTRIDGES.

These use an external pneumatic pressure signal to proportionally and/or remotely control hydraulic pressure. Air controlled pressure controls provide the same function and performance as hydro-mechanical or electro-mechanical controls, but are adjusted by a control air pressure rather than a mechanical screw or electrical current. Direct acting valves are available for pilot flows up to 7,5 l/min and pilot operated valves for flows up to 760 l/min.

The maximum control air pressure for all air controlled pressure controls is limited to 10 bar to prevent damage to seals. Sun's air controlled, pilot capacity direct acting relief valve (Series P, T-8A cavity), can be installed into the body of any suitable Sun main stage cartridge containing an integral T-8A cavity. These combinations create air controlled versions of the main stage function, whether it be relief, sequence, reducing, or reducing/relieving, with flow ratings up to 760 l/min.

EXPLOSION PROOF

Many hydraulic equipment applications are in fire-prone, hazardous areas involving combustible or explosive materials, and require electrical devices to meet Intrinsically Safe or Explosion Proof standards. Standard electrical wires and connections would violate safety requirements in these situations. Examples include oil drilling platforms, oil and gas handling equipment, chemical industry equipment, dust-laden atmospheres such as grain elevators, vehicular lifts and sawmills.

Explosion proof equipment such as electro-hydraulic solenoids and associated wiring can be costly. However, pneumatic lines can often be used at a much lower cost. Air controlled pressure controls can be used to proportionally and/or remotely control hydraulic system pressure in these difficult environments.

INTERFERENCE FREE

Electro-hydraulic devices operating in environments with very strong electromagnetic fields can suffer

from stray induced currents. Strong electromagnetic fields are often present in manufacturing environments. These processes can create very strong magnetic fields, and can often induce large currents or noise into low level electrical control wires. This noise can send false signals to sensitive electro-hydraulic devices such as proportional pressure controls. The use of air-controlled proportional hydraulic pressure controls with pneumatic control lines instead of electrical control wires completely eliminates this interference problem.

ELECTRICAL INSULATOR

For safety reasons, devices requiring variable hydraulic pressure as well as complete electrical isolation from another part of a machine may find proportional pneumatic controlled a practical solution. The pneumatic control lines can be rubber or elastomeric tubes and thus act as an electrical insulator. With voltage potentials below that where ionisation of air occurs, there is no direct electrical connection present.

ECONOMICAL

Pneumatic proportional controllers and air-controlled hydraulic pressure controls can provide a more economical solution in facilities where a pneumatic supply is readily available. Air-controlled hydraulic pressure controls can be used without the proportional hydraulic amplifiers, electrical wiring and power supplies necessary for electro-hydraulic systems.

RESPONSE TIME

The only caution is that pneumatically controlled hydraulic pressure control systems typically have a much slower dynamic response time than their electro-hydraulic counterparts. ⚡

For more information contact Fritz Kern, Axiom Hydraulics, +27 (0)11 334 3068, axiomjhb@mweb.co.za, www.axiom.org.za