FLUID HANDLING AND FLUID POWER

Reducing Process Spills

As environmental regulations tighten, the chemical-processing industry must find ways to prevent spills of a growing number of liquids, particularly in the process facility itself and during transfer to and from trucks and tank cars. The Epsilon chemical-transfer coupling developed by Aeroquip Corp. in Maumee, Ohio, allows less than 1 milliliter of spillage when disconnected, enhancing safety and reducing operating costs.

An convex/concave ball valve is incorporated into the Epsilon, with redundant mechanical interlocking systems on both halves of the coupling. The coupling’s ball valve shuts off fluid pressure, facilitating connection and disconnection. The interlocking system locks the two coupling halves together when fluid is flowing. The new coupling, made of stainless steel, is equipped with polytetrafluoroethylene seals to provide chemical resistance.

By reducing spills to under 1 milliliter, the Epsilon coupling lessens the risk of exposing workers to dangerous process fluids. The new coupling, made of stainless steel, is equipped with polytetrafluoroethylene seals to provide chemical resistance.

Making Refrigeration Valves Tougher

Hansen Technologies Corp. in Burr Ridge, Ill., designed its HS4A solenoid valves and HA4A modular pressure regulators to be stronger and longer-lasting in rugged industrial refrigeration applications than their predecessors.

Engineers replaced the cast-iron body of the previous generation of regulators with one of ductile iron, which can withstand severe conditions. Stainless-steel springs and stainless-steel/Teflon seating also help prolong valve life.

In addition, because modern refrigeration systems use less oil, they provided the HS4A and HA4A with a self-lubricating Teflon piston ring seal. This disk-type seal permits greater clearance between the piston and bore, making the valve more dirt-resistant than the previous design, which relied on a long skirt and tight tolerances.

The modular design of the HS4A and HA4A enable original equipment manufacturers to convert them to solenoid valves by adding a pilot. Both valves share their main body piston and port. This commonality of parts, combined with their modular design, reduces maintenance downtime and costs incurred by the valves. The valves can operate at temperatures ranging from -60°F to 240°F, at 400-pounds-per-square-inch-gauge safe working pressures.

Both the HS4A and HA4A are incorporated in industrial refrigeration packaged systems and installed in cold-storage warehouses; food-processing plants; beverage plants; and dairies owned and operated by companies such as Anheuser-Busch, Ben & Jerry’s Ice Cream, Kraft Foods, and Oscar Mayer.

Analyzing Fluid Contamination

Eight out of 10 hydraulic-system problems are related to fluid contamination by particles including rust, fibers, and sand, according to researchers at Vickers Inc., a manufacturer of hydraulic products based in Maumee, Ohio. The sources of contamination vary, but a prominent one is new oil, which serves as a conduit for particulate and dirt from storage containers and transfer lines.

Contaminants also enter via air passing through vent breathers, which should be filtered, a Vickers representative said. Other prime sources are

This section was written by Michael Valenti, Associate Editor.