There are many opportunities for engineers and fluid power specialists to specify pneumatic directional valves for various applications to control cylinders, motors, and actuators. For example, we provide such valve solutions to many different industries including primary metals, pulp and paper, food and packaging, automotive, semiconductor, and many more.

An important thing to be considered in pneumatic directional valve selection is environmental condition. The various industries offer a unique set of environmental circumstances to consider. As a distributor for pneumatic valve components, we have many options available to provide the proper solution to many of these different conditions. I would like to describe a few solutions that I have applied over the years that have proven very effective.

Primary metals, paper, and aggregate industries can provide some unique challenges for directional valves. These environments can include contaminants that collect on the valves themselves and work their way into air lines, which will ultimately find their way through the valve. A good maintenance program that includes proper main line and point-of-use filtration will certainly help, but in reality, there are environments that need additional solutions.

Spool type and poppet type 3-way and 4-way directional valves are the most commonly sold for dirty and harsh environments. Instead of a spool or poppet, this valve uses two sliding ceramic plates that form a near-perfect seal. The ceramic plates are near diamond hardness and can be individually mounted or assembled into a manifold with several sections. I have seen compressed air contaminated with fine foundry sand blasted through these valves. I usually say to the end user, “give me your dirtiest application.” Motion Industries also offers these valves in several applications with a lot of success and end user satisfaction.

To this point, my focus has been on valve series used in harsh environments or washdown applications. However, I would also like to mention a relatively new product in the market (Image 3). This valve package has many general industry uses including packaging, robotics, medical and semiconductor applications. This wireless field bus system utilizes a base/remote concept: The base valve manifold is connected to the PLC fieldbus and contains a wireless unit that can communicate with many other Ethernet IP and PROFINET remote valve manifolds. This eliminates the communication cable between manifolds and reduces installation costs associated with cables. This manifold system is built around the company’s standard spool valve series which includes SY, SV and VQC spool valves. Pneumatic manifold technology has developed from individually wired valves, to fieldbus systems using a single communication cable connecting manifolds together, to now elimination of the communication cable between manifolds. It is exciting to have this product available for future solution opportunities.

The latest in pneumatic valves could be the perfect solution for your facility’s applications. A good first step would be to ask your in-house engineer, or contact Motion Industries for a qualified fluid power specialist near you, for assistance in determining if this newest technology in pneumatic valves could be the best way to go.

**Image 1.** Emerson/Aventics’ Ceram valve uses two sliding ceramic plates that form a near perfect seal, appropriate for keeping out contaminants in harsh environments. Photo: Emerson/Aventics

**Image 2.** The Emerson/Aventics CL03 series spool valve offers an IP69K rating without being mounted in an enclosure. Photo: Emerson/Aventics

**Image 3.** The base/remote concept of SMC’s EX600-W wireless field bus system eliminates the communication cable between manifolds and reduces installation costs associated with cables. Photo: SMC Corporation