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Boiler manufacturer's adoption of PMA[®] conduit is sign of North American growth

Long a staple in Europe, North American equipment manufacturers are also discovering the benefits of flexible nylon conduit for tight fits in tough places

The world inhabited by industrial boilers can be nasty.

Heat, steam, dust, solvents and grime – all are constant companions of the machines that heat buildings and provide the flames for industrial cookers of all sorts.

Aside from the conditions, boilers and their electrical supplies often have to withstand all of the abuses that industrial spaces can throw at them, from installation in tight spaces to strikes and tugs from fork lifts, carts and people.

Is that any place for non-metallic conduit?

As it turns out, yes.

A year or so ago, CSI Services, a York, PA, manufacturer and installer of industrial boilers, faced two persistent problems with the plastic-coated flexible metal conduit it used to install its boilers: the metal conduit would not bend tightly enough to suit some situations and its PVC plastic coating tended to melt in high heat.

CSI's specifications engineer found a solution— PMA[®], the tough, flexible conduit and fitting system ABB Installation Products makes with nylon 6 and nylon 12.

Unlike the PVC coating on metal conduit, nylon PMA[®] and PMAFIX[®] fittings can take sustained heat exposure up to 250 degrees F (121 degrees C) without deformation or off-gassing, a factor that is crucial for electrical connections that run near the hot metal surfaces of a metal boiler or, in some cases, even inside one. PMA[®] conduit can make bends of varying degrees without pinching the electrical wires inside. It can sustain significant impacts without splitting or breaking. And there's an added bonus for a company that installs a lot of conduit — PMAFIX[®] fittings are much easier and faster to install than most flexible metal conduit fittings.

"In one case, PMA[®] cut our conduit installation time in half, from two days to one," CSI Specifications Engineer John Foller said. "The ability to cut the conduit with a simple blade and then just snap it into a fitting is invaluable, compared to the multi-step process of cutting flexible metal conduit and assembling its fittings. PMA[®] is not the solution to all of our wiring needs, but it certainly has become an advantage for us when we can add it to our assemblies along with flexible metal and rigid metal options. I'm certainly happy we were able to add it to our spec list."

Long a standard fixture in European cable installations, particularly in rail transportation, PMA® and other brands of nylon conduit have traditionally not gained as broad a market in North America, ABB Product Manager Michael Mooneyham said. As with the CSI Services example, though, that is beginning to change as OEMs in various industries discover the advantages of adding nylon-based conduit systems to their mix of engineering options.

Flexible metal conduit 12-inch runs can require up to 10 minutes to install, while PMA® 12-inch runs install in about 3 minutes, Mooneyham said. PMA® conduit is designed to be used with PMA® fittings but can also be mated with backshells and other connectors from multiple manufacturers providing varying degrees of protection and strain relief. All PMA® systems are rigorously tested for compliance with relevant international standards, including UL®. All are free from halogens and are REACH and RoHS compliant. They are also compliant with EN 61386 non-flame propagating standards and meet the requirements for UL 94 flame testing.

Foller was aware of PMA® conduit's characteristics because he came to CSI from a custom metal fabricator that used flexible nylon conduit for its ability to withstand the constant bending and twisting of computerized metal cutting equipment. Realizing the products' potential advantages to boiler installation, he worked with local distributor Schaedler Yesco to gain certification to stock the product, a process that requires a short training session in the product's proper use and characteristics by ABB experts.

"We believe that PMA® systems are poised for considerably more growth in the North American markets as more users discover the benefits," Mooneyham said. "It's just a matter of time and education."