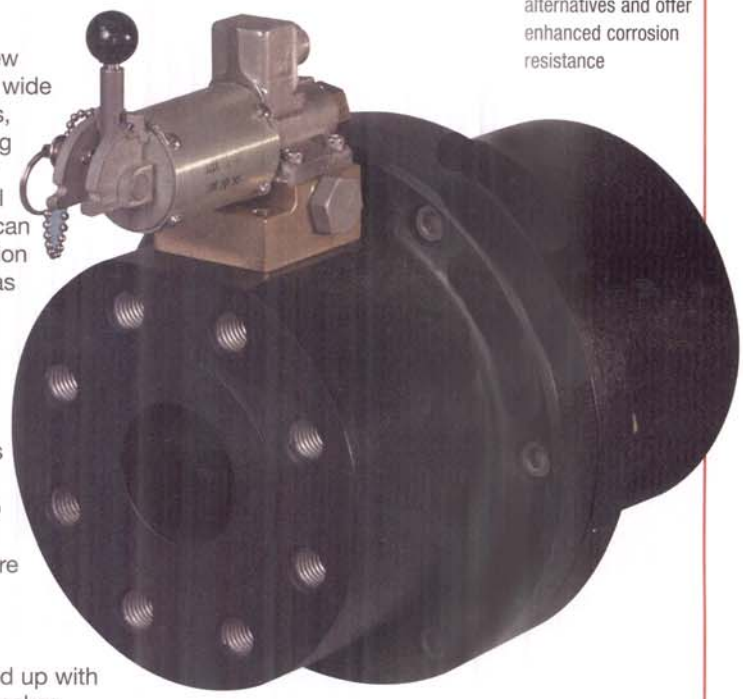
Composite valves cut weight and costs

Tom Shelley reports on the advantages of switching from brass to advanced composites in marine valves, resulting in a reduction in lifecycle costs



The valves (pictured) are half the weight of traditional alternatives and offer enhanced corrosion resistance

Making valves for offshore and marine applications from composites not only ensures corrosion resistance, but achieves weight savings of as much as two thirds relative to their metallic counterparts and is expected to reduce costs to end users by 15 to 20 per cent.

Such are the views of Thomas Marotta, chairman and chief executive officer of Marotta Controls based in New Jersey.

He says his company started out "seven or eight years ago" with a polypropylene plunger. The firm subsequently moved onto machining glass-filled epoxy valve bodies, working with another New Jersey company.

Marotta Controls then came across a small British firm, Advanced Valve Technologies (AVT) based in Broadstairs, which also makes special purpose valves and had a technology for moulding glass-filled epoxy valve components.

Balls and butterflies

Marotta has been working with AVT on ball valves and butterfly valves. Apart from reduced fabrication costs, parts made from the mouldable glass-filled epoxy are able to withstand higher working pressures than the machined material – up to 500 psi (34 bar). The new valves can operate in a wide variety of naval systems, from a ship's fire-fighting and damage control to chilled water and vessel fuel supply lines. They can withstand shock, vibration and heavy use as well as their metallic counterparts. And with superior corrosion resistance, the valves are also fire retardant and meet the standards of API 607.

Service lives are said to be nearly as long as those of the ships they're installed in.

Reduced life costs

Marotta has also teamed up with another company that makes composite pipes, with the result that it is now able to offer a range of products from 12.5mm to 203mm nominal sizes. The drastic reduction in weight relative to traditional marine brass and bronze should give a significant advantage in the construction of high speed craft, both naval and civilian, and the increase in longevity and reduced life cycle costs should be of interest to all. The new valves are expected to be installed on some US naval vessels during 2006.

Marotta Controls also makes 'in-line' poppet valves, whose flow is enhanced by moving valve seats as opposed to moving poppets off seats, as well as high pressure solenoid valves, pressure reducers and regulators, pressure reducing manifolds, relief valves, check valves and a a wide range of other fluid control products.

AVT has also developed valves suitable for use with sulphuric acid from 1% to 99% concentration, as well as concentrated hydrochloric acid. The company has approvals from Lloyds Register, ABS (American Bureau of Shipping), UKAS, Zurich and TUV. □

Enter 450 for Marotta Controls and Advanced Valve Technologies at www.eurekamagazine.co.uk/enquiry

Pointers

- The composite valves enhance corrosion resistance
- They are one third to one half the weight of valves made using traditional materials
- Life costs are likely to be 15% to 20% less than those associated with valves made from traditional materials