



Enhanced valve performance

By Z Fredericks, Tyco Valves & Controls Distribution SA

Over the past years traditional construction materials such as iron, stainless steels and metal alloys have become more and more expensive. In addition the involved labour costs to machine these materials into useable, for example, valve components, have risen as well.

At the same time the developments of composite materials has taken an enormous leap forward. Just think about the use of such composites in aerospace technology, Formula 1 applications and many other industrial components.

Anticipating these global trends the company which the author represents has developed and launched the successful Brewseal and OptiSeal with a one piece composite disc stem. Keystone is able to integrate the composite disc stem in the BrewSeal and OptiSeal based on their proven one piece disc stem. Due to this well engineered design it maintains its simplicity with respect to maintenance, overhaul and repair resulting in a reduced cost of ownership.

Besides mentioned aspects the use of advanced composite materials results in substantial additional advantages such as drastic weight saving, excellent corrosion resistance, high kV value and all against an attractive price advantage compared to Stainless Steel. The engineered grade composite we use for the disc stem is WRAS, KTW as well as ACS approved.

In addition we are now able to complete the BrewSeal and OptiSeal with a new ISO hand lever Fig 419 made from a high strength composite material. The handle is not mounted to the shaft as many traditional designs, instead of that it is directly mounted on the valve top plate. The innovative connection has been achieved by using a bayonet connection between the handle and throttling plate. When the handle is mounted to the valve the bayonet connection is secured by the mounting bolts. Furthermore this new composite handle incorporates the following features:

- **Corrosion resistant material**

As mentioned the new handle is made from a composite material, which is relatively new in the valve industry, however well respected in, for example, the automotive industry where it is used for construction components. The material itself is chemical resistant against aggressive environments.

- **High strength material and design**

Do not confuse this material with ordinary plastics... composite is a light weight and high strength material! To optimise the material properties in combination with the unique production methods the handle is designed with a mosaic of reinforcement bridges which are visible from the bottom side.

By using the excellent mechanical properties in combination with

ACS - American Chemical Society
KTW - Certification services for German marketing
WRAS - Water Regulations Advisory Scheme (EU approval)

Abbreviations

the before mentioned reinforcements we have created a handle with at least the same strength and durability as our current aluminum handle.

- **Reliable operation**

The handle has a 10 position locking plate. Since the material cannot be affected by corrosion it is in principle impossible that the handle could stick by malfunction in an unlocked position.

- **Lockable**

The handle has been provided with a hole in the operation lever, which can be used in combination with a padlock as the locking device.

- **Comfortable grip**

The handle feels comfortable and due to its design it eliminates the possibility that your fingers could jam between the handle and the operation lever. Even with elevated or low temperature fluids the handle remains comfortable and eliminates the need for dew point barriers.

Conclusion

Due to the elevated mechanical properties of the engineered composite materials used these valves deliver comparable performances in corrosion resistance and mechanical strength as their traditional valves with a ductile Iron or even a Stainless Steel disc-stem.



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