

CASE STUDY

Application-specific design and proven customer service in seawater service

Not all end users understand what defines a 'severe service' valve. And not all valve companies have the experience to truly understand the severity of an end user's process.

Challenge

A South American mining operation was commissioned, with commercial production to start the following year. The mine operated with the use of seawater transported through a pipeline from the cooling systems of a power plant 90 miles away. Fouling occurs in seawater and damages equipment through:

- crystallisation (from calcium carbonate, calcium sulphate and other salts)
- corrosion from oxidation
- biological growths from bacteria and organisms
- the settling of particulates, such as silt, mud and sand

These fouling factors, coupled with galvanic corrosion and debris-packed coil springs behind the seat, compromised the seal of the thermoplastic polymer seat. The valve began to leak past the O-ring at the end connection and body. Because the valve was located near the sea, corrosion to all external ferrous materials escalated.

Three repair attempts at significant costs were made by the original valve manufacturer to replace the sealing components with metal seats. Each repair survived for one day, and the OEM's customer support waned after each attempt.

Solution

Ultimately, the solution came from industry and field knowledge, valve expertise, insanely customer-centric service and innovative valve designs. MOGAS design standards are ideal for corrosive environments, and has experience with seawater applications. Replacement valves were provided with a nickel-based super alloy inlays on all sealing surfaces and through the bore. These valves also used a metal-seated ball valve (not soft seating), supported by a live-loaded disc spring to maintain a tight seal. All external components were painted with an improved paint specification above industry standards to insulate from the salty humidity.

Results

The single biggest reason the end user chose MOGAS was because of their proven customer service. Recognized industry-wide as experts in severe service technology, MOGAS service personnel local to the area were quickly on site to identify the problem and offer a lasting solution.

Conditions

Application:	Seawater transport
Temperature:	85° F (30° C)
Pressure:	2,220 psig (153 bar g)
Valve Model:	T-Series (Trunnion)
Valve Size:	36 inch (900 dn)
No. of Valves:	1



Material loss in the seat pocket was caused by galvanic corrosion, allowing leakage around the valve seats.



Fine silt packed the coiled spring pockets preventing free motion and an effective seal.