



Ultra-Hard Tungsten Carbide Based Coatings



# Flowserve

## Case Study

### ► Profile

Flowserve is one of the world's largest manufacturers of valves, pumps, seals and components to the process industries. The company produces metal seated ball valves for use in severe service applications, including cyclic temperatures, highly abrasive and slurry environments.

### ► Challenge

Flowserve McCANNA was using Stellite, a cobalt based nickel alloy, for its highly abrasive applications. But the solution was expensive and, as a relatively soft material, had performance issues. Flowserve wanted to find a cost effective alternative to solid metal alloy that would prevent galling (the primary concern with metal to metal contact) as well as increase wear and corrosion resistance.

### ► Solution

Flowserve McCANNA and Hardide Coatings worked together to design, engineer and test the Hardide tungsten carbide-based CVD (chemical vapour deposition) coating as an alternative to metal alloys in severe applications.

In the qualification process, Hardide coated balls and seats were still operational after more than 70,000 cycles in slurry, where Stellite failed in 29,000 cycles. The Hardide coating, due to its hard non-porous composition, was proven to offer improved erosion and wear resistance over Stellite at a lower cost in slurries and other metal seat applications.

Hardide is now the standard metal seated option on the Flowserve McCANNA seal top entry ball valve on ½" to 4" ANSI 150-1500 and cryogenic to 800°F applications. Leakage rates per MSS-SP-61 equal between class IV and class V performance.

Hardide has enabled Flowserve McCANNA to offer its customers a lower cost, better performing alternative to Stellite for highly abrasive metal seated ball valve applications.

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### ► Further information

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