

EFFECTIVE LUBRICATION FOR OIL & GAS WELL VALVES

Dicronite® reduces valve torque and extends valve seat life.



SITUATION

One of the world's largest suppliers of products and services to the oil and gas industry designed a valve used in well completion. In an effort to provide wear resistance, the ball and seat surfaces were coated with boron nitride (BN). Wear resistance improved somewhat, but friction with the ball still caused it to wear faster than desired. In addition, valve torque was unacceptably high.

KEY SOLUTION REQUIREMENTS

Candidate coatings and/or alternative materials had to:

- Significantly reduce the valve torque and seat wear
- Operate across a very wide temperature range
- Not create an explosion risk with potentially explosive gases encountered in the design usage scenario
- Not interfere with sealing of the valve surfaces
- Be compatible with, and adhere to, the boron nitride.

The ideal solution would not require redesign or re-specification of the existing valve.

SOLUTION

The manufacturer tested a variety of potential coating solutions against the requirements. Dicronite dry lubrication was found to meet the requirements, resulting in:

- Significantly reduced seat wear and valve torque due to its ultra-low coefficient of friction
- Excellent valve sealing
- No increased explosion risk to its compatibility with liquid and gaseous oxygen
- Excellent adhesion to the boron nitride substrate

No redesign of the valve was required due to Dicronite® dry lubrication's 0.5 micron thickness.

RESULTS

Adding Dicronite® dry lubrication to the BN coated ball and seat surfaces significantly extended the life of the valve and is now a requirement in the well valve design.



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