

Coating Service Solutions Metco SOL

Coating systems for applications under starved lubrication

The situation

Pumps with media-lubricated bearings offer the advantage of lower costs, a more compact design, higher operating efficiencies and reduced maintenance requirements. When pumping water-based products, the lubricating film in the bearing elements is up to ten times thinner than that of oil lubrication. Under these conditions, starved lubrication and direct contact between the sliding elements is more likely to occur. Hence, surfaces exhibiting low frictional characteristics and minimal wear between the bearing surfaces are necessary.

Over the past decade, sintered silicon carbide (SiC) has been the material of choice for such media lubricated bearings. However, in addition to being very brittle, the material is difficult to machine. Further, because of its distinctly different thermal expansion coefficient, assembly on steel shafts is complex and sometimes problematic. Therefore the use of an appropriate coating on a simple metallic bearing sleeve would offer significant advantages.

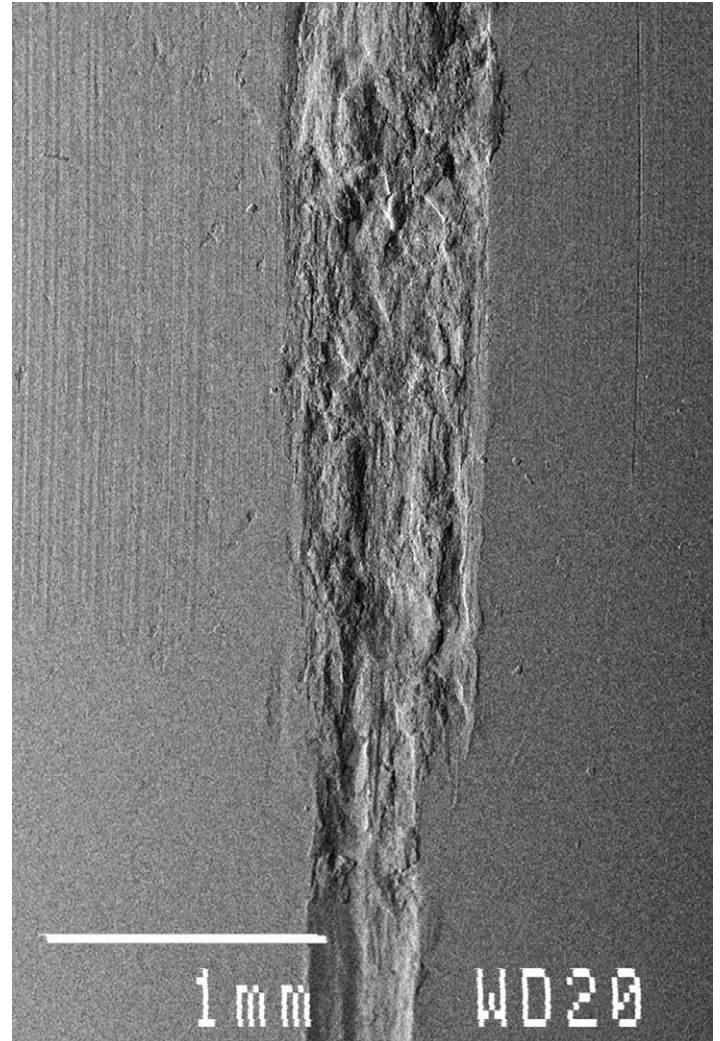
Our solution

The Metco™ SOL coating system has been specifically developed for application on sliding surfaces under starved lubrication.

This patented thermal spray coating consists predominantly of wear-resistant hard phases, such as carbides and nitrides, embedded in a tough metallic matrix. The special properties of Metco SOL coatings are derived from a controlled distribution of solid lubricant phases.

This composite microstructure not only reduces friction and wear under starved lubrication, but also improves the response of the bearing surfaces to short intervals of emergency dry running conditions.

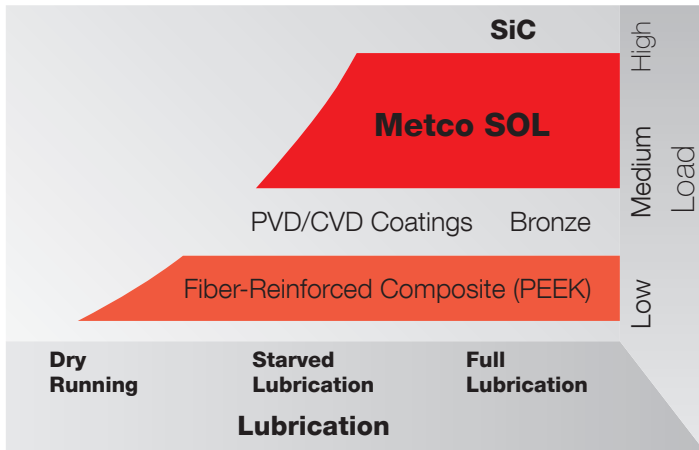
Metco SOL coatings are suitable for a wide range of applications where rotating or reciprocating surfaces operate under extreme conditions of high loads and marginal lubrication.



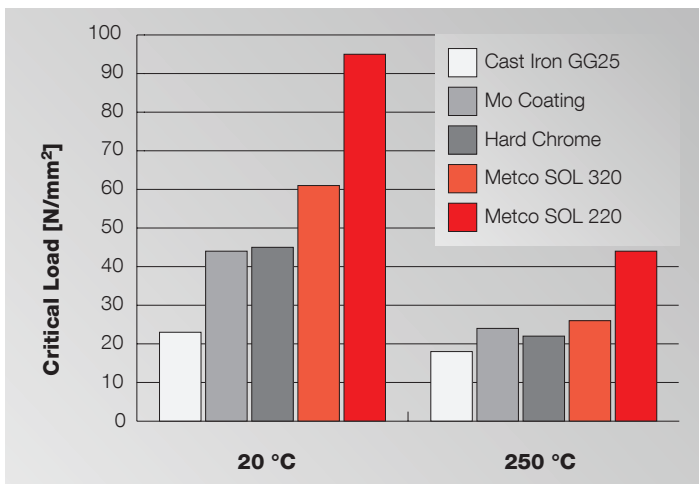
Local surface damage resulting from starved lubrication

For example:

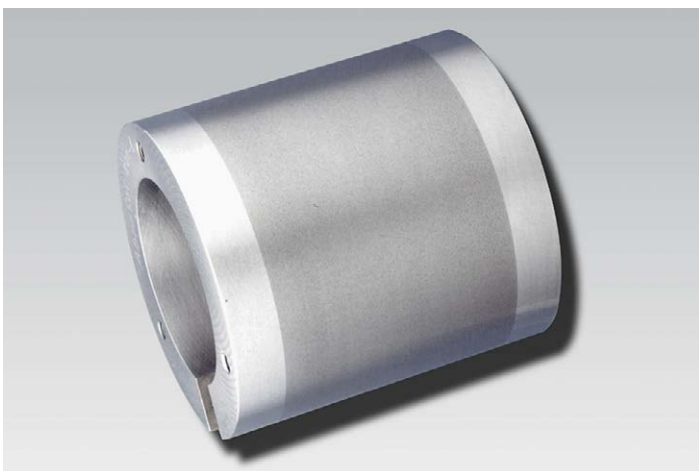
- Engine and compressor piston rings and rods
- Crankshaft and cam follower surfaces
- Hard mating faces for various bearing and sealing assemblies.



Application range for Metco SOL in media-lubricated bearings



Critical loads for the transition from mild wear to scuffing in a pin-on-disc test (GG25, 1 m/sec)



Bearing sleeve with a Metco SOL coating

Customer benefits using Metco SOL coatings for media lubricated bearings:

- Simpler, less costly design and assembly compared to SiC-bearing elements.
- Coatings can be applied directly to rotors and stators. Alternatively, easily replaceable steel bearing sleeves can be coated.
- Worn bearing elements are quickly repaired by recoating.
- More forgiving design and materials minimize the risk of catastrophic failure during assembly and operation.
- Our facilities are ISO 9001 certified. A consistently high standard of workmanship is therefore guaranteed.

Metco SOL

The wear-resistant coating for sliding surfaces under high loads and starved lubrication.

Metco SOL 220

- maximum sliding wear-resistance
- highest load-bearing capacity
- solid lubricant dispersion to promote lubrication under extreme conditions
- service up to 400 °C (750 °F)

Metco SOL 320

- resistance to seawater
- coating corrosion resistance is comparable to austenitic stainless steel (AISI 316L). To prevent substrate corrosion, the base material should be selected accordingly.
- solid lubricant dispersion to promote lubrication under extreme conditions
- service up to 500 °C (930 °F)



Information is subject to change without prior notice.