

CASE STUDY

PUMP REPAIR AND UPGRADE DELIVERS LONGTERM OPERATIONAL BENEFITS

- Pump wear rate significantly reduced, extending service life
- Overhaul intervals extended from 6 months to 2 years
- 10 years with no unplanned stoppages due to pump failure

CHALLENGE

A rolling mill in France was looking to repair and improve the reliability of their Flowserve DVMX pumps within the framework of a maintenance contract. The factory has three DVMX 6.8.11 packaged pumps that are used to remove the scale on steel sheets during the manufacturing process.

The function of the pumps is to water blast the scale off processed metal passing through the rolling mill. The water containing the pulverised scale goes to retention and decantation pools, then passes through a system of filters before being reused. Despite filtration, the recycled water still contains small particles of scale, which cause considerable damage to the inside of the pumps.



CLYDEUNION®
PUMPS

Industry: Steel making
Region: Europe
Territory: France
Category: 3rd party pump overhaul
API Type: BB3



Erosion/scaling of pump parts

SOLUTION

Regular, planned maintenance of the pumps is necessary to repair erosion caused by the scale. To check the balancing, functional dimensions and tolerances our aftermarket team undertook a series of planned maintenance visits leading to successive design modifications.

Repair procedures included:

- Strip down and full dimensional inspection of parts
- Refurbishment of parts by weld deposition
- Reconditioning of threaded holes
- Heat treatment and re-machining of weld-repaired parts, including gasket faces
- Planing and re-boring of pump cases
- Cleaning of pipes and channels
- Re-assembly and hydrostatic test
- Clean down and paint

The aftermarket team also identified several design upgrades that could be made to reduce erosion on some sensitive areas of the pumps (gasket face) and wear parts in order to improve service life. These included:

- Modifications to accommodate changes in clearances, redesign of parts and additional gasket
- Hard tungsten-chromium carbide coatings on central bearing bush, sleeve, piston and wear rings
- Hard tungsten carbide coatings on impeller necks and hubs.

OUTCOMES

Since the first repairs were made, the Mean Time Between Overhauls (MTBO) has been significantly increased from approximately 6 months to more than 24 months: bringing it in line with the maintenance schedule of the steel factory.

The successive upgrades have eliminated the wear to the pump casing and increased the mean time between repair for the wear parts. Consequently, there have been no unplanned stops of the rolling mills due to pump failure for more than 10 years.



Damage to the back shrouds of impellers

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