

CASE STUDY

ENGINEERED SOLUTION SIGNIFICANTLY EXTENDS MTBF

- 50% extension of operational life of pump
- Causes of premature erosion resolved
- Reliability increased using advanced coatings

CHALLENGE

Excessive erosion on a KSMK pump in an oil extraction plant was having a negative impact on Mean Time Between Failures (MTBF). The pump had been in operation for less than 4 years but was demonstrating signs of excessive wear. Celeros Flow Technology was called in to investigate and propose a solution.



CLYDEUNION®
PUMPS

Industry: Oil extraction
Region: Middle East
Category: Material upgrade
API Type: BB2



Weight = 1500kg

Casing cover with erosion resistant coating

Casing cover with erosion resistant coating



Area for hard coating

8 anti-vortex ribs

KSMK casing cover



Area for hard coating

8 anti-vortex ribs

SOLUTION

Erosion of pumps in oil applications is to be expected over time. Hydrocarbons are aggressive substances in themselves, but erosion is also caused by the presence of solid particles within the product flow. Celeros FT discovered that, in this case, the erosion effects were being accentuated by a swirl effect created between the impeller, pump casing and casing cover.

Pump replacement was an expensive option, so we proposed a triple solution to upgrade the existing BB2 pump. Firstly, the damaged surfaces of the pump casing were weld repaired. Secondly, anti-vortex ribs were welded on the pump casing and cover to mitigate scouring. Finally, a tungsten carbide hard coating was applied to the inside surfaces of the pump and cover to protect them from further wear.

OUTCOMES

Following the modifications and reinstatement, the pump operated without an operational failure for more than six years and at the rated flow of 1,950 m³/hr. Upgrading the pump rather than replacing it delivered cost savings for the customer, and the increase in reliability means that maintenance costs and downtime have also reduced.

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