#IS13020

Ammonia Circulation pumps

The Challenge

In this steel mill located in Eastern Europe, CHESTERTON was requested to solve issues relative to the Ammonia Recovery in the Coke oven Process. The pumps were equipped with packings and different mechanical seals. The problem was very short lifetime due to low NPSH (net positive suction head) conditions and subsequent leakage plus baseplate degradation.

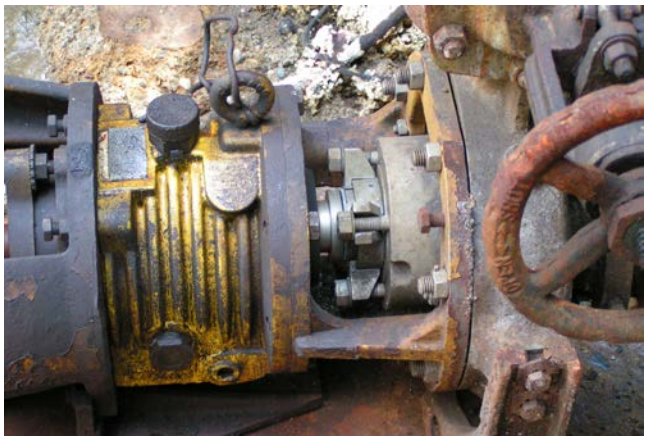
Application Details

Equipment	Solo Pump System-One	Qt: 5
Medium	~10% Sulfuric acid + salt of ammonia sulphate ~ 20%	Q: 50l/s
Pressure	2 bar g Temperature	80ºC
Application 1	155 1 7/8" Alloy20 TC/TC	
Application 2	155 1 7/8" Alloy20 TC/TC SpiralTrac: Version C, Type I, Material – Alloy20	

The Chesterton Solution

Two solutions have been proposed, both based on installing a stationary cartridge seal of type 155 on a System-One pump with heavy duty power end. There are 5 circulating pumps under 5 ammonia saturators. In total 4 pumps are running. On 3 of them System-One pumps were installed.

On every pump there is a 155 mechanical seal installed, on one pump including a SpiralTrac in Alloy-20.



ROI

The result of pump failure was usually a shutdown of the whole saturator with loss of production, labor, energy and chemicals. In addition, 8 shutdowns with an average cost per shutdown of € 8 000, therefore the annual costs were € 64 000

With the Chesterton Solution:
Reduction to 4 shutdowns costing € 36 000.
Total savings: € 28 000

Why Use This Solution?

- Extend equipment life time: The pump lifetime increased from 1 year to 4 years and seal lifetime increased from 2 months to 1 year
- Overall cost reduction 50% per year

Products used in this solution

155
SpiralTrac

#IS13023

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