



Impeller material upgrade

Industry:	Industrial - water
Region:	Americas
Territory:	Venezuela
Category:	Site performance testing
API Type:	BB1

ClydeUnion Pumps Aftermarket Technical Services team has experience across a range of services on critical rotating and reciprocating equipment to improve operational safety, reliability and efficiency. The impeller material upgrade for the industrial market is one of our success stories documented in our library of case studies. These case studies highlight the requirement from the customer, how we achieved the goal and the process we followed to deliver the improvements.

Image left: Upgraded impeller at final inspection

Situation

The objective of this project was to attend site to determine pump performance of four Uniglide pumps. The customer was concerned about the reduced performance as the pumps had not had any major maintenance since they were installed seven years previous.

During the testing it was apparent the performance was significantly down on original design. The top half casing was removed and it was discovered the impellers were badly damaged and the wear rings were severely worn.

Upon investigating the root cause of the damage it was determined the supply tank often dropped to a low level and cavitation occurs, therefore this had caused holes in the impellers.



Hole in impeller blade

Challenge

Wear rings and impellers needed to be replaced to return the pumps to original design performance. The client confirmed the low tank levels could not be prevented and the impellers would have to be replaced every 6 years. Therefore to prolong impeller life a material upgrade was suggested. To improve the life of the impeller the material BS 1400 AB2 was proposed as this material is more resistant to cavitation damage.

Solution

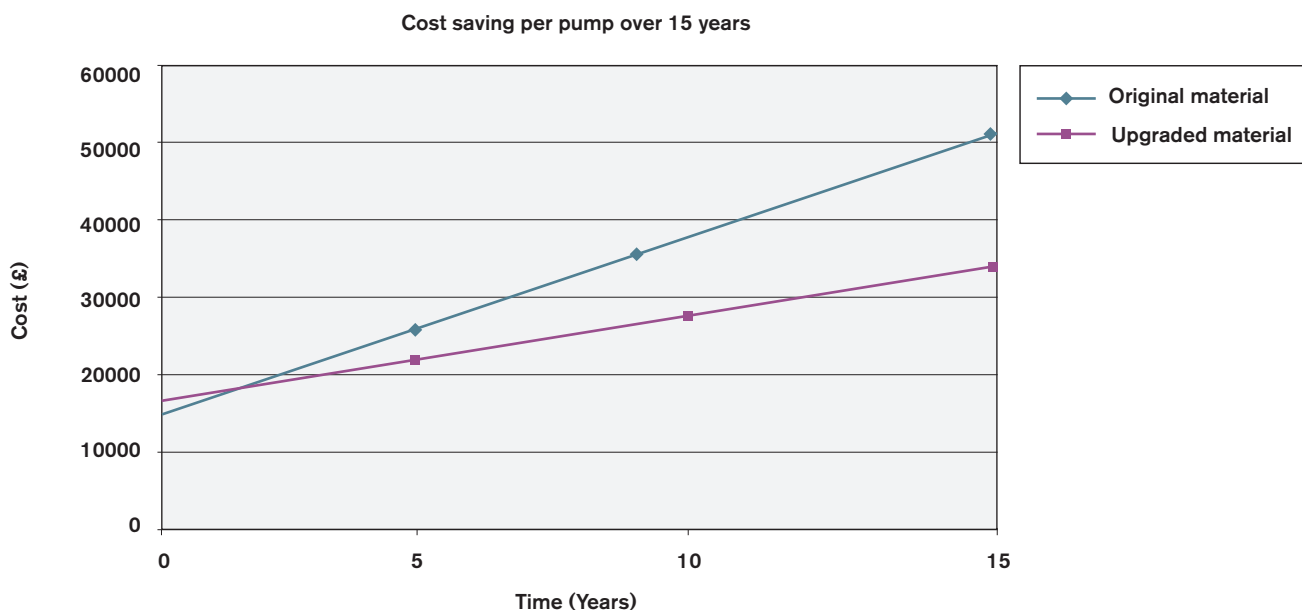
The wear rings were replaced on the units and immediately a 6% increase in performance was achieved. The new impellers will ensure a design life of more than 15 years.

Financial illustration

- The cost of the impeller in original material: - £10,734
- The cost of the upgraded impeller: - £12,962
- % increase in cost: - 20.7%
- Increase in life: - 9 years
- Cost of changing impellers: - £4,000

Therefore over 15 years the cost saving per pump would be £17,645 and over £75,500 for all four pumps not including the efficiency and down time costs.

The upgraded design would pay for itself in approximately 2 years.



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