CASE STUDY

IMPELLER UPGRADE EXTENDS OPERATIONAL LIFE OF WATER PUMPS

- 50% increase in pump operational life
- 6% increase in performance
- ROI of 2 years

CHALLENGE
The customer was concerned about reduced performance on four Uniglide pumps that had not received any major maintenance since they were installed seven years previously. ClydeUnion Pumps, a Celeros Flow Technology brand, was the original pump manufacturer. We sent our Aftermarket Services team to the site to conduct a comprehensive health check of the pumps.

Hole in impeller blade
SOLUTION
During testing, it became apparent that the performance of the Uniglide pumps was significantly down on original design parameters. The top half casing was removed and it was discovered that the impellers were badly damaged and the wear rings were severely worn. Upon investigating the root cause of the damage, we determined that the supply tank often dropped to a low level and cavitation occurred. This had caused holes to develop in the impeller’s inlet vanes over time. The client advised that the low tank levels could not be prevented and therefore the impellers would have to be replaced every 6 years.

In order to prolong impeller life and reduce maintenance frequency, we proposed a material upgrade from cast iron to aluminium bronze (material BS 1400 AB2), which is more resistant to cavitation damage. The client accepted this recommendation. We manufactured new impellers, complete with new wear rings, for the four pumps.

OUTCOMES
Replacing the impellers complete with new wear rings on the Uniglide pumps achieved an immediate 6% increase in performance. The new aluminium bronze impellers have a design life in excess of 15 years, more than doubling the Mean Time Between Failures (MTBF). Return on investment for this project was calculated to be 2 years.

Cost saving per pump over 15 years

<table>
<thead>
<tr>
<th>Time (Years)</th>
<th>Cost (£)</th>
</tr>
</thead>
<tbody>
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<td>0</td>
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<tr>
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<tr>
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<td>50000</td>
</tr>
<tr>
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<td>60000</td>
</tr>
</tbody>
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Cost saving per pump over 15 years

- Original material
- Upgraded material

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