



Identifying Unidentified Repeated Failures

Root cause analysis through digital reliability services

Failures can be presented from a variety of scenarios - incorrect maintenance activities, lack of regular maintenance schedules, improper installation, or the common issues regarding ageing and obsolete components.

But what we can tell you is, no matter how small the problem, the longer it remains unidentified, the more catastrophic it will become. And in the case of one large water treatment works, a set of problematic low lift pumps were causing costs to rise, production to halt, and local environment agencies to intervene.

Challenge

Over the past five years, millions of pounds had been invested fighting repeated failures of its critical low lift pumps used for sewage and wastewater processing. Each repair was severely draining capital, and the true root cause had never been identified. The customer was stuck in a vicious, never ending cycle, and needed a resolution before the problem became catastrophic, effecting the local community and environment.

Solution

ERIKS Digital Reliability Services installed 12 wireless Bluetooth sensors on the three problematic machines, enabling them to monitor the condition of the pumps. After only a few weeks of testing, the condition of one of the assets was deemed critical, with automated analysis identifying the root cause of this recurring problem – looseness within the machine structure due to improper installation. Shockingly, the simplicity of a loose flange mounting bolt was causing excessive vibration, leading the asset down a path of certain failure.

What should be pointed out is that due to the variable speed nature of the asset, vibration was not present at all times, making it highly doubtful that a portable online monitoring strategy would have identified the root cause, therefore only through the installation of ERIKS online monitoring capabilities was the true issue established.

Best case scenario would have landed the customer with a bill of £80k for removal and overhaul, while if left unattended, costs would of hit a staggering £240k with serious damage to the civil infrastructure, motor, commutator, seals, pump and internals, with many of the components requiring reverse engineering due to obsolescence.

With the problem highlighted, the customer was able to recitify the issue, simply by tightening the rear bolts by half a turn and the front bolts by two full rotations.

Industry sector:
Water & Utilities



Application:
Low Lift Pump

Actual saving:
£238,388.93

Payback period:
Immediate

Product/Service:

- Digital Reliability Services
- Online Vibration Monitoring

Customer Benefits:

- Increased uptime
- Improved production
- Future insight and foresight
- Significant cost savings
- Reduced maintenance



Vibration analysis undertaken to identify root cause of recurring problem



Excessive vibration due to loose flange bolt. 1/2 turn achieved on rear bolts, 2 full turns on front bolts