

FIREWATER PUMP PERFORMANCE RESTORED THROUGH TARGETED TESTING AND OPTIMISATION

Performance testing identified a minor speed deficiency that was preventing a critical firewater pump from meeting operational requirements, allowing corrective action to be implemented immediately.

Ensuring critical fire protection systems meet performance standards by accurately assessing firewater pump capability and identifying opportunities to improve operational reliability.



OUR APPROACH

Upon arrival offshore, AVT engineers installed ultrasonic flow measurement equipment on the main discharge and cooling flow pipework to accurately measure flow rates throughout the test.

A digital pressure gauge was fitted to the pump discharge pipework, while reflective tape and a digital tachometer were used to record pump speed with a high degree of accuracy.

A series of performance tests was then conducted across a range of operating pressures between 7.2 and 10 bar, enabling a complete assessment of pump performance against the required operating duty.

THE CHALLENGE

Annual firewater pump performance testing is a critical requirement across the offshore oil and gas industry, ensuring installations can deliver sufficient firewater capacity in the event of an emergency.

An offshore operator in the North Sea relied on two diesel engine-driven firewater pumps, each required to provide 100% of the platform's firewater demand while maintaining full redundancy. The platform's performance standard specified a required flow rate of 1,268 m³/h at a discharge pressure of 7.7 bar.

One of the pumps had recently failed a performance assessment, raising concerns about its ability to meet the required duty. If either pump became unavailable, the platform could potentially be forced to operate at reduced capacity until the issue was resolved.

AVT Reliability® was engaged to conduct further performance testing and determine the cause of the shortfall.

OUR FINDINGS

Six performance measurements were collected at approximately 0.5 bar intervals across the operating range.

Analysis of the data confirmed that the pump was underperforming and was unable to achieve the required flow rate at the specified duty point of 7.7 bar. At this pressure, the measured flow rate was approximately 1,260 m³/h, falling short of the required 1,268 m³/h and resulting in a failed performance test.

Further investigation revealed that the pump speed was operating below the value specified within the OEM design data. While the shortfall was relatively small, it was sufficient to prevent the pump from meeting the platform's performance standard.



THE SOLUTION

Based on the test results, AVT Reliability® recommended increasing the diesel engine speed before carrying out a second performance assessment.

Following a review of the recommendation, the operator agreed to increase engine speed by 25 rpm. The adjustment was determined to be within acceptable operating limits for both the engine and pump.

A second performance test was then completed. The revised operating speed increased the pump output to 1,277.64 m³/h at 7.7 bar, exceeding the required minimum duty and successfully restoring compliance with the platform's performance standard.

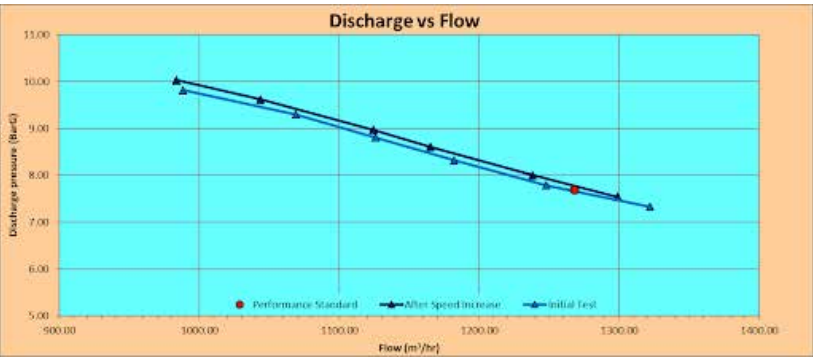
Although the speed increase was modest, it delivered an immediate improvement in pump performance and provided the operator with confidence that firewater demand requirements could be met.

FOLLOW UP

Following completion of the testing programme, AVT Reliability® delivered a detailed performance report outlining the test results, the operational adjustments implemented and recommendations for future maintenance activities.

The investigation enabled the customer to quickly restore pump performance without major intervention, while providing a clear plan for maintaining reliability ahead of future annual performance testing.

By combining accurate measurement, analysis and practical recommendations, AVT helped ensure a critical safety system remained fully capable of protecting personnel, assets and production.



SERVICE MATTERS

AT A GLANCE

Industry: Oil & Gas Production

Process: Seawater Fire Suppression

Equipment: Diesel Engine-Driven Firewater Pump

Services: Firewater Pump Performance Testing and Analysis

Outcome: Pump performance restored to exceed required duty of 1,268 m³/h at 7.7 bar

“Displacement monitoring provides confidence that excessive pipework movement will not occur during critical maintenance operations, helping operators make informed decisions while maintaining safe and reliable performance.”

CONTACT

If your plant is facing similar issues, reach out to AVT Reliability for expert support in condition monitoring, pipework vibration and lubrication management.

We're here to keep your operations running smoothly.

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