

Paks NPP Implements Industry-Proven Equipment Reliability Processes for More Efficient Long-Term Plant Operations



Paks NPP leadership introduced a new operating model to address environmental, organizational, and technological challenges at its MVM Paks Nuclear Power Plant, improving the efficiency and reliability of long-term operations. Since 2022, EPRI has supported Paks NPP in implementing critical component scoping, single point vulnerability (SPV) identification, knowledge transfer, and process development. Through this work, the equipment reliability process classified approximately 450,000 components by criticality, enabling targeted preventive maintenance, monitoring, and more effective decision-making.

Benefits

Paks NPP achieved significant cost savings by implementing new maintenance programs and removing unnecessary tasks—saving an estimated \$230,000 USD per fuel cycle for motor-operated valves and \$720,000 USD per fuel cycle for horizontal centrifugal pumps. An additional \$180,000 USD per fuel cycle is expected to be saved through the planned deletion of roughly 1,600 cyclical activities.

Beyond cost savings, the project improved equipment reliability, regulatory compliance, and operational efficiency, while fostering a cultural shift toward proactive maintenance and alignment with industry best practices. EPRI’s support and expertise were key in enabling these outcomes.

Application

Paks NPP developed core maintenance foundations and programs in a first-of-a-kind application for the utility. Using EPRI’s guidelines for system monitoring, SPV processes, and the Preventive Maintenance Basis Database (PMBD), Paks NPP established the basis for its future reliability strategy. The team has completed 147 of 162 maintenance foundations, implemented 113 of 153 maintenance programs, reduced unnecessary cyclical tasks, and improved condition monitoring and integration of 422 critical valves into preventive maintenance.

The plant also streamlined health reporting and monitoring and accelerated issue identification through reliability and cost data analysis. Leadership commitment, supported by EPRI’s technical expertise, training, and knowledge-sharing, ensured successful implementation and is helping advance equipment reliability practices in regions where they have not previously been adopted.

Key EPRI resources involved in this project include:

- Guideline for Expert Elicitation of Equipment Reliability Experiences, 1023073
- Guideline for System Monitoring by System Engineers, 3002026348
- Single Point Vulnerability (SPV) Process Guide Revision, 3002023784
- Preventive Maintenance Basis Database (PMBD): Quick Reference Guide, 3002007394

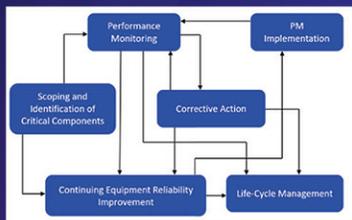


Figure 1
Equipment Reliability process.

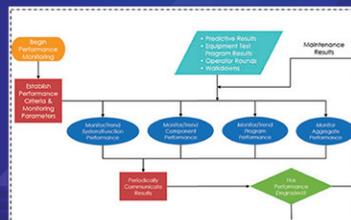


Figure 2
Performance monitoring.

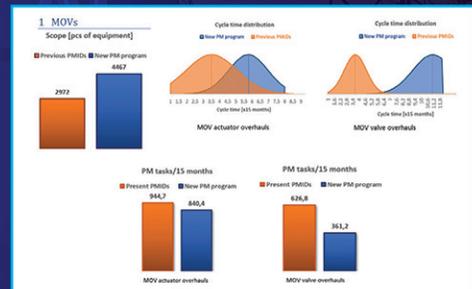


Figure 3
Preventative maintenance activities for motor operated valves (MOVs).

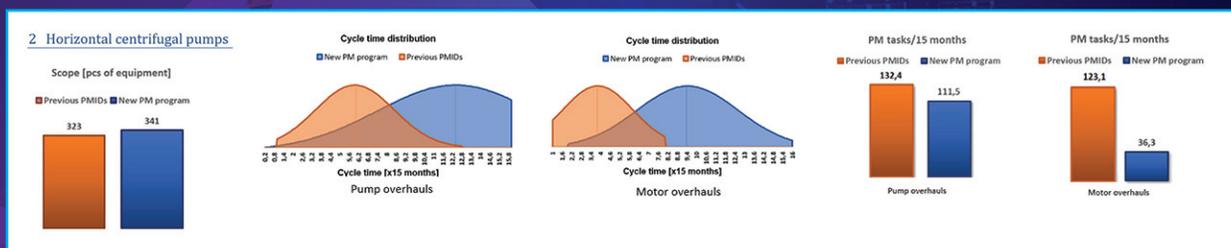


Figure 4
Preventative maintenance activities for horizontal centrifugal pumps.