

# Test Plan Development

## Validated Suppliers & Equipment

A power generation company was experiencing sporadic field failures of gas flow-rate valves in their turbines. Upon reporting on the valves' failures, they also discovered that their supplier had marked the current model for obsolescence, so a new flow-rate valve would need to be implemented. Unfortunately, they did not have the flexibility of disrupting their energy operations to explore new technologies and evaluate suppliers. They provide energy to their clients on an on-demand basis; having to deny their customers could severely damage their relationships. A new flow-rate valve would need to be implemented immediately, but validation against field failure modes was crucial.

The power generator enlisted Ansys Reliability Engineering Services (RES) to implement a thorough and accurate method for validating the reliability and robustness of a new flow-rate valve as quickly as possible.

### / Approach

Ansys RES performed a teardown and construction analysis along with a design review, identifying high-risk components and areas of concern to long-term performance. The risk assessment focused on the higher risk and priority items, providing recommendations for improvement to mitigate potential failures.

### / Supplier Assessment

As the client sought a new supplier for their flow-rate valve, Ansys RES provided a risk assessment and recommendations for mitigation improvements.

### / Test Plan Development

Ansys RES developed a customized life test plan to verify the desired reliability and confidence levels for these prospective replacement valves. This included gathering information about the operating environment of the flow-rate valves in order to subject potential valves to accelerated life testing that replicates the devices' operating environment. The results from the accelerated life testing performed on-site at Ansys-RES laboratory identified which valve models would perform sufficiently in the field environment for the desired lifetime.

### / Key Recommendation

- Implement personalized test development plan, including accelerated life tests to physically validate prospective flow-rate valves.
- Perform thorough supplier assessments according to a universal checklist based on the client's performance needs.

### / Results

Data gathered from accelerated life tests performed by Ansys RES provided the client with invaluable information to support the critical process of replacing equipment while maintaining operations and ensuring the long-term deployment of field equipment. The client now employs the personalized test plan developed by Ansys RES, enabling them to expediently validate suppliers and the robustness of new equipment.

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