



Consequences of Postulated Pipe Hanger Failure

Case study

EASL are experts at conducting and assessing what we refer to as 'hanger' surveys. Since their inception to the Advanced Gas-cooled Reactors (AGRs) that make up British Energy's (now EDF) second generation fleet of Nuclear power stations, EASL have played an integral part in conducting the structural integrity assessment of hanging pipelines across the UK's stations.

Working in Partnership

This type of analysis began as part of our partnership with British Energy's (now EDF) Structural Analysis Group.

This saw EASL integrate within the British Energy organisation to provide additional specialist expertise following from a successful tender process.

An aspect of this saw us investigate the effects of postulated pipe hanger failure.

Within the AGR power stations, the steam pipes are subject to creep and fatigue risk, due to the frequent changes in temperature. Not only is there a risk of pipe damage, but the 'hangers' that support the pipelines must be inspected to ensure that they are able to successfully hold the pipeline in place.

Given the different load capacities of these hangers, there was a cause for concern over the potential consequence of an individual hanger failure.

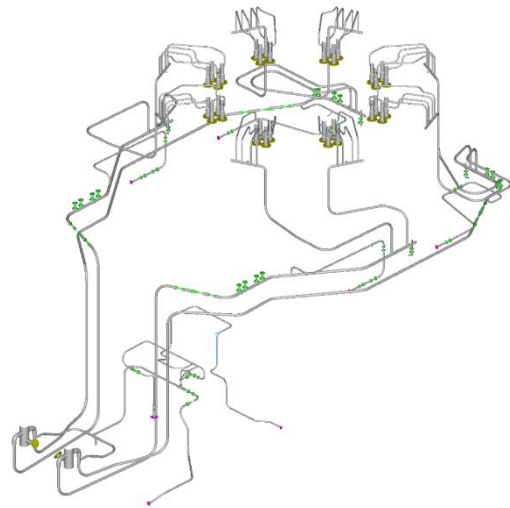
EASL evaluated the effects of a postulated failure in an individual pipe hanger on the creep lives of welds and other components in a complex high-temperature piping system.

The results of this assessment enabled the client to target inter-outage inspections on those hangers whose failure was shown to cause potentially unacceptable increases in predicted creep damage.

KEY STAGES IN THIS ASSESSMENT WERE:

- Flexibility analysis of the system in normal operation with all hangers intact; and
- The selection of hangers whose failure was assessed to lead to the most adverse consequences for adjacent regions.

In the unlikely event of such a failure, increased forces and moments may adversely affect pipework and there is a requirement to show that the consequences are acceptable if failure should occur and remain undetected between reactor outages.



The project

Following our analysis, this information was presented to the client, with a clear, honest insight into the potential risks of pipe hangers, allowing cost effective and efficient decision making.

This has led to greater insight into the decision making of hanger surveys, a service we regularly undertake given our knowledge base and historic relationship with the Nuclear power stations.



Other applications

EASL always work with clients to identify cost effective solutions to operational challenges, and hanger surveys is just one of the examples.

If you would like to discuss how EASL can help your business, please get in touch.



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