

Power Generation

PF Pipework and Hanger Fatigue Analysis

Since its inception Bennett Associates has been involved in the Power Generation Industry using its expertise in many and varied ways.

As early as 1984 Bennett Associates carried out an investigation for the then CEGB into the failure of a number of pipe hangers on the PF (Pulverised Fuel) pipework system at Drax Power Station.

A full report was prepared which highlighted that PF systems can operate as a mechanism due to the inclusion of Viking Johnson joints which affect the true distribution of the load to the hangers.

Fatigue failure of detail components was also investigated. As a result of the report Bennett Associates were commissioned to carry out a research project to investigate the characteristics of Viking Johnson joints under all possible combinations of angular and axial movement, loading and temperature.

Data sets were developed for the hysteresis characteristics of the joint under all operating conditions.

The results obtained have been used by Bennett Associates in PF pipework dynamic mechanism analysis using AMP2D, a software program developed by Nuclear Electric which can be used to accurately predict hanger loads and pipe deflection.

The work carried out on the research led to the full or partial re-design of PF pipehanger systems at Drax, Ferrybridge C, Thorpe Marsh and Ratcliffe on Soar Power Stations.

On some of the projects Bennett Associates was employed to act as the inspection authority and to produce individual hanger data sheets of the 'as built' record to be used by station maintenance staff for recording future action.

Amongst its many other activities Bennett Associates has been involved in the Power Generation Industry in the design and installation of Material Handling Systems, Stress and Fatigue Analysis of the bolted connections for the crossarm of the, 500 kW VAWT vertical axis wind turbine and Seismic and dynamic analysis at nuclear power installations.

Bennett Associates (originally founded in 1984) was acquired in 2008 by Atkins; bringing their proven technical expertise to the UK's leading engineering consultancy.

