



Didcot A Power Station

Strainstall mobilised within less than 24 hours to help investigate the cause of bearing or casing movements of the Set 1 HP Turbine at Didcot A Power Station. Innogy, the station operator, wished to measure and eliminate any forces which might have been introduced into the pipes during operation. Long term effects of temperature on the steam pipes and their supports were thought to be causing distortion of the turbine casing.

Initially the work involved installation of a number of strain gauge rosettes to the eight main steam and reheater pipes. Static strain readings were taken from these gauges before and after separation of the pipe connections, the results were then processed into maximum and minimum principle stresses. Analysis showed that at the majority of locations the stresses were of a low order, below 10N/mm². The principle stresses were consistent with bending and shear stresses being applied to the pipes.

Following the turbine remedial works the gauges were used again to take measurements before and after reconnection to check mechanical assembly was also not introducing stresses.

Finally, to obtain a full historical record of the strain response during start-up of the turbine the main steam pipes were fitted with 25 no. High Temperature gauges capable of operation at temperatures up to 550°C.

Strainstall used a 12 channel DT800 data acquisition system to monitor the strain gauges at frequent regular intervals during the start-up of the plant. The stresses recorded were significant but not of concern.

This important project for Innogy at Didcot A Power Station is a good example of the specialised support which Strainstall provides to all Energy providers. We have a team of experienced Field Engineers who can mobilise quickly to investigate stress, temperature, pressure, vibration, deformation on power station plant/structures.

Strainstall's team of experienced engineers operate from offices in Cowes, Bath and Aberdeen (UK), Norway, Belgium, USA and Dubai.



The World of Load
Measurement and
Stress Analysis

- 550°C High Temperature Strain Gauges
- Turbine Main Steam Pipes
- Max and Min Principle Stress Determination
- Microdot Weldable Strain Gauges
- Specialised High Temperature Thermocouple Probes
- 25 Channel Data Acquisition System

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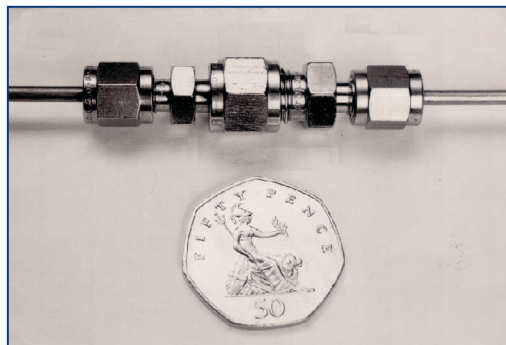
Application Note: FO123

Other high temperature projects that Strainstall are involved with include:

HINKLEY B, Somerset and HUNTERSTON B, West Kilbride, Power Stations

REHEATER THERMOCOUPLE SLEEVE PROBES

Strainstall U.K. supply precision engineered thermocouple sleeve probes for installation inside annulus of Reactor Pressure Vessels steam pipe penetrations. These probes are an essential piece of maintenance equipment for an important area of the structure where access is difficult. The design incorporates extension tubes to enable the probes to be installed some 7 metres inside the penetration, at locations which are normally beyond the reach of every thing except Remotely Operated Equipment. In the last 15 years Strainstall U.K. have supplied more than 50 of these probes to British Energy's Nuclear Power Stations at Hinkley B and Hunterston B.



Please contact us for further details of other size and lengths of probes which may be adapted to suit almost any sizes of steam pipe penetration. The probe sleeve, which is wrapped around the pipe, contains up to 10 MI type high temperature thermocouples, it is slid into correct location along the pipe and expanded using a draw-rod until in contact with the annulus.

Thermocouple Jointing Service

Mineral Insulated thermocouples are frequently installed in hostile environments where replacement can involve costly and time consuming down time. Strainstall have developed a technique to make in-line joints in 3mm stainless cable that can with stand the extremely hostile environment of a Nuclear reactor.



Our engineers provide a thermocouple repair service to the majority of the U.K's nuclear power plants, the repair tool is a single self-contained device

Which holds and prepares the stripped M.I cable whilst a swage lock compression fitting is located to join the two ends together. More than 500 of these joints have been made during Pressure Vessel outage periods.

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