

Furmanite Trevitest on-line valve testing under pressure

Hydraulic Actuator



Case Study

Furmanite Secures Ten Year Testing Contract

The challenge was straightforward. The testing of eight, 6" x 10" Farris Relief Valves located on vessels containing 202 tonnes of liquid petroleum gas (propane) at the British gas Llandarcy plant in South Wales. In the past the testing of each valve would take 3-4 days. With Trevitest all eight were fully tested in just 16 hours without any interruption to the plant.

Testing Times

The success of this initial project has convinced British Gas to adopt the Trevitest System as part of its ten-year workshop and overhaul procedure. A "fingerprint" will be taken of each valve in the workshop and this will then be tested in situ to assess the need for valve overhaul.

Worldwide Approvals

Trevitest is widely accepted by safety authorities and industrial insurance companies in all the key areas of operation including ASME and National Board in the USA, the HSE and Lloyds Industrial Services in the UK and the TUV in Germany. In addition approvals for the Trevitest have been given by many well known companies in the oil, petrochemical, fertilizer, power generation and other process industries.



Cost effective safety and relief valve testing eliminates the need for shutdown

Hot Testing of valves while operations continue. Cold Testing of valves on-site and in the workshop. Trevitest will increase efficiency and save your organisation money from day one.

In the past, valve testing revolved around, workshops and most importantly shutting down the line. The whole process was both time consuming and costly - but there is an alternative.

With Trevitest you can carry out accurate assessments of safety and relief valves in situ and under pressure - Hot Testing. There's also the option of Cold Testing to assess the performance of new and existing valves.

Developed and patented world-wide by Furmanite, Trevitest is fast, safe and efficient. Operated in accordance with strict control procedures centred on ISO 9001, Trevitest can be used with most safety and relief valves manufactured for use in steam, air, gas process and water systems. These include conventional spring type valves, torsion bar valves and pilot operated valves.

How does Trevitest work?

Here's the basic principle. A force is applied to the valve spindle to overcome the spring tension of the valve. This is achieved using a hydraulic power jack linked to an electronic force transducer. A computer is then used to measure the force applied. By combining this data with information on the valve seat and line pressure of the valve it is possible to assess the set pressure.

Serving every sector

- Fossil, hydro and nuclear power generation
- Offshore oil and gas production
- Refineries and petrochemical plants
- Fertiliser plants
- Food Processing plants
- Pulp and paper plants

FURMANITE™

MAXIMISING ASSET UPTIME

Case Study

Pre-commissioning Assistance for Sizewell "B" Nuclear Power Station

Following an extensive series of trials, the outstanding performance of Trevitest convinced Nuclear Electric to use the system in the Pre-commissioning of Sizewell "B". The tests on both pressuriser safety valves and main steam safety valves produced results that were always better than +/- 1%.

Testing Timescales

The Furmanite team, working closely with Nuclear Electric, had a tight timeframe to test the first twenty main steam safety valves. Two teams working twelve-hour shifts back to back commenced testing on Thursday afternoon and had completed the whole job by Friday.

Trevitest Equipment



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Hot Testing – measured under pressure

With Trevitest Hot Testing you get a date marked certified print out of valve set pressure and the line pressure at the valve. From this information the set pressure, spring adjustment and displacement of the valve can be determined. Trevitest also gives an indication of the effect of the nozzle ring, guide ring and reseal pressure.

Major applications include:

- Steam Service Valves: Test safety and reheater valves at normal operating pressure without the need for increased boiler pressure
- Clean Process Valves: Diagnose safety and relief valves that require maintenance while the plant is running normally prior to scheduled shutdowns.
- Nuclear Valves: Test safety valves on the secondary side, main steam safety valves and safety valves on the primary side plus CO₂ valves and pressuriser valves.

The advantages of Hot Testing

- No interruption to plant production during testing
- Reduced time needed to commission the plant after shutdown
- Reduced fuel costs with no need to raise system pressure.
- Only valves that require an overhaul need to be removed from the line
- Welded-in valves can be adjusted without costly removal from the line
- Multiple tests and resettings of valves within a short timescale
- No need for temperature compensation to set pressure.



Testing a Torsion Bar Relief Valve

Cold Testing – a cool assessment

With Trevitest Cold Testing you can determine the set pressure, spring rate and valve displacement.

Major applications include:

- Pre-commissioning safety and relief valves on new plant.
- Workshop testing following the conventional bench test to give the valve a "fingerprint". This can be verified once the valve is on-site

The advantages of Cold Testing

- Eliminate the cost of removing valves from their location prior to commissioning new plant
- Only valves requiring overhaul are removed from the line - reducing plant downtime.
- Correct spline alignment of torsion bar safety valves saves unplanned shutdown.

Furmanite East Asia Ltd.

Units A & B, 18/F, Nathan Tower,
518-520 Nathan Road, Kowloon, Hong Kong
Tel: +852 2388 3366
Fax: +852 2388 5023
E-mail: sales@furmanite.com.hk

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MAXIMISING ASSET UPTIME

www.furmanitehk.com