

StressProbe

Non-contacting Cyclic Stress measurement

StressProbe is an electromagnetic **non-contacting stress measurement system** given Millennium Product status. In the latest version it has been developed for the measurement of cyclic stress and is available for purchase. *StressProbe* can measure cyclic loads without the complication of high level surface cleaning and the adhesives needed for say strain gauges. *StressProbe* is capable of measuring the peak stresses during cycling as well as changes in the principal stress direction. *StressProbe* can sense the stress through coatings up to 5mm thick.

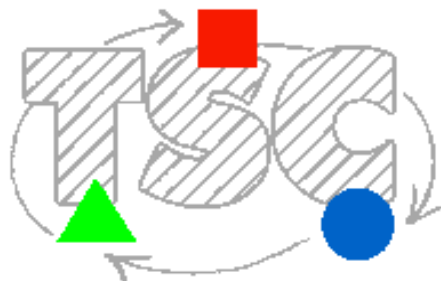
StressProbe is suitable for cyclic stress measurement in transport vehicles (axles, wheels, suspension), environmental loading situations (wave or wind loading on offshore structures, ships, risers, mooring lines), on bridges and masts, for plant situations where the operating pressures are varying (pressure vessels, piping) and for monitoring long range residual stresses during welding.

Description:

The *StressProbe* equipment consists of a probe, an instrument and a laptop computer. The whole system is easily portable.

The probes can be adapted to the customer requirement, though a standard probe is available. The probes are small and easily attached to the test surface. The instrument is housed in a robust case containing all the necessary electronic hardware.

The laptops used are toughbook style, chosen for their water-resistance and sturdy nature. The stress measurement is controlled by the TSC *StressProbe* software, which is user-friendly and gives immediate solutions.



Applications:

Measurement of cyclic stress in service is important as it can confirm service loading for comparison with theoretical loading predictions. Measurement of cyclic stresses can allow the estimation of fatigue life and be used to organise repair and maintenance schedules.

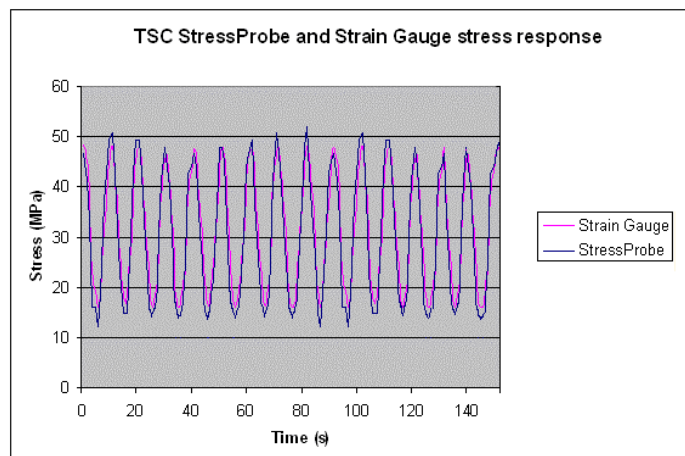
StressProbe can be used to measure principal stress direction during cyclic loading, enabling the determination of force paths. This provides useful insight into the stress distribution in a component or structure

StressProbe can be used to measure cyclic stresses in structures of any age. It does not need surface contact, being capable of measuring through surface coatings up to 5mm. *StressProbe* can measure at frequencies up to 3Hz, and can measure stress changes as small as 1MPa depending on the steel type used. *StressProbe* can only be used on ferro-magnetic materials.

StressProbe comes in a range of configurations suitable for different applications. For stress distribution measurement, for example, an encoder can be fitted to give position and stress at each location. Probes can be adapted to the customer requirement, though a standard probe is available.

Why use *StressProbe*?

- Non Contacting, no adhesives necessary
- Requires minimal surface cleaning – no need to remove coatings or to clean to bare metal finish
- Easy to set up and portable.
- Instant data logging, retrieval and analysis



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