Restan - MTS3000

Automatic System for Measuring Residual Stresses by the Hole Drilling Strain Gage Method

What is

Restan (Residual Stress Analyzer) - MTS3000 is an automatic system to measure residual stresses on different kinds of materials, both in the lab and on site. It’s composed by a mechanical-optical device and an electronic system with calculation software.

The instrument is used to perform simple and precise tests by the hole-drilling strain-gage method with an high-speed air turbine (400,000 rpm), in compliance with the ASTM E837 standard for residual stress measurements.

How it works

Restan - MTS3000 is completely automatic, fast to use and suitable for both laboratory and field applications.

The hole is made in step by step mode, with choice among several test configurations. At the end of each step, the deformation values of the strain gages are recorded and then used for the residual stress calculation.

The tests can be made in accordance with the ASTM E837 standard for uniform and non-uniform stress distributions, up to a maximum depth of 2 mm.

With a suitable acquisition strategy (fine hole drilling) and an appropriate calculation method (Integral, Schwarz-Kockelmann, HDM), it is also possible to get the residual stress variation in the depth just some microns below the surface.

Short overview about the system on mts3000.com/video_mts.asp or on SINT Technology YouTube channel
Advantages

A residual stress usually facilitates crack propagation and therefore reduces the fatigue life of a mechanical component.

The Restan - MTS3000 is a valid help to prevent similar failures, allowing accurate residual stress analyses at moderate costs.

Further advantages of the system are:

- Fully automatic test, from the set-up to the back-calculation
- Automatic and precise determination of the starting point by electric contact
- **High speed** drilling by air turbine or electric motor - no stress added during the test
- Possibility to test metallic, plastic and composite materials
- Completely compliant to ASTM E837, the only complete standard on residual stress measurements available in the world
- Suitable for both lab and field tests
- **Personalization** / custom versions available
- Possibility to measure near corners and walls
- Plasticity correction and uncertainty analysis available
- Live technical support and web seminars on request

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