



SINT
Technology

MTS3000 – RINGCORE

***Automatic System for Residual Stress
Measurement by Ring-Core***

Main features

- Automatic control of the feed motion of the drilling tool by stepper motor
- Automatic control of the drilling
- USB webcam and micrometric slideways for positioning at the center of the strain gage
- Measurement of residual stress variation with depth
- Choice of stress profile calculation methods
- Choice of residual stress calculation methods
- Automatic zero-depth detection
- High measuring accuracy
- Dedicated software for control of the measurement (RSM-RC) and back-calculation of residual stress (EVAL-RC)



Residual stresses and measurement by the hole-drilling method

The ring-core method is a partially-destructive test method for measuring the residual stresses present in a mechanical component and consists in machining an annular groove around a special strain gage rosette.

It can be used for determining uniform and non-uniform residual stresses in depth, mainly on large-size forgings or castings.

Compared with all other methods for residual stress measurements, **the ring-core method has some distinctive features: it enables the profile of residual stresses in a material up to a depth of about 5 mm.**

One of the main advantages of the ring-core method is also the **high sensitivity** (3 to 4 times higher than hole drilling), which reduces the influence of the error in the acquisition process.

The influence of core-rosette eccentricity error is also lower than hole-drilling as the eccentricity errors compensate each other. Lastly, the ring-core method allows the stress profile to be reconstructed up to higher depth, even exceeding 4mm.

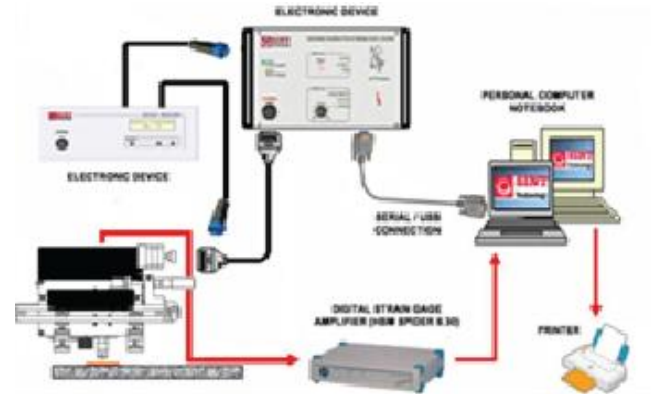
The MTS3000 – RingCore automatic system facilitates the measurement procedure and allows to obtain more accurate results than with manual systems.



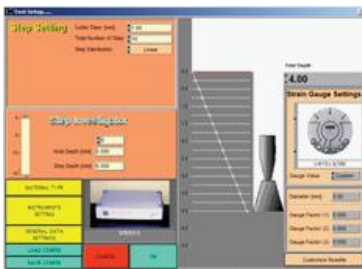
The MTS3000-RingCore system for measuring residual stresses

The MTS3000-RingCore system is composed by:

- Mechanical device (drilling unit for hollow milling cutter, camera for centering)
- Electronic devices (control of the advancing and drilling, zero setting surface)
- Dedicated software (software for the automatic control and the back-calculation of residual stress)
- Digital strain gage amplifier (automatic acquisition of the strain gage rosette data)



MTS3000-RingCore: drilling control and data acquisition software (RSM-RC)



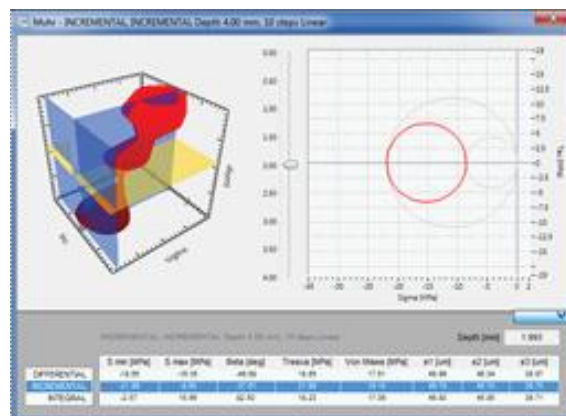
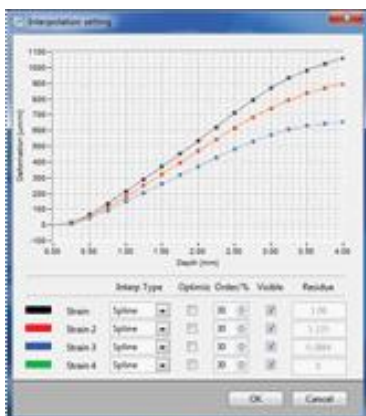
The MTS3000-RingCore system is automatically controlled by the RSM-RC software: this software allows the control of the drilling unit, the setting of the measurement (strain gage selection, amplifier) and allows also the automatic acquisition of the strain values from the rosette during the measurement.

The software allows also the acquisition of the digital camera installed inside the instrument; this camera is used for the centering between the strain gage and the drilling axis.

MTS3000-RingCore: residual stress evaluation software (EVAL-RC)

Acquired data can be processed using the SINT EVAL-RC analysis software.

The EVAL-RC software allows the calculation of residual stress using the Differential method, the Incremental method and the Integral method. Moreover, the EVAL-RC software gives the possibility to make graphs of residual stress in the depth, calculating the stress in a custom direction or plotting a Mohr circle of residual stress.





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Recognitions

SINT Technology's test laboratory is accredited to standard ISO/IEC 17025:2005 by the Italian accreditation body **ACCREDIA** with **certificate no. 0910**



LAB N° 0910

Certification of conformity to the requirements of standard

UNI EN ISO 9001

