MRX RAYS

X-RAYBOT

X-ray diffractometer specially designed
for residual stress analysis

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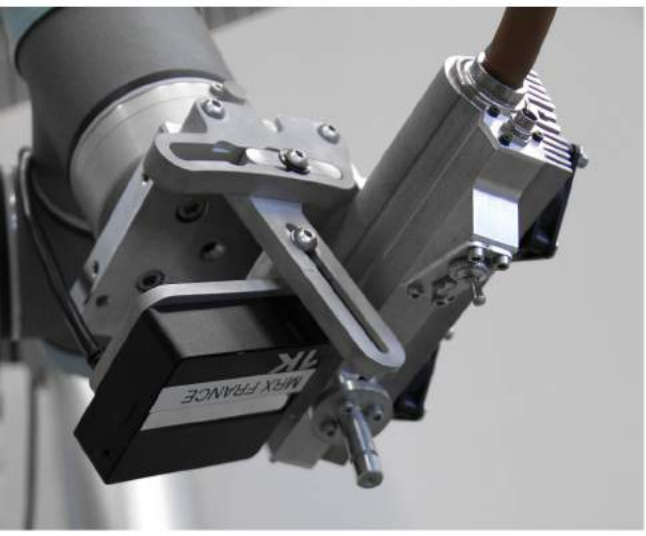
Robot for residual stress evaluation

The X-Raybot is a robot equipped with a goniometer dedicated to the residual stress determination by X-ray diffraction.

This new diffractometer is furnished with the latest technologies of X-Ray tube and detector bandwith positioning system by laser triangulation for rapid characterization of residual stress within the precision proposed into the EN 15305 standard. The system is fully portable and can be used both on-site and in the laboratory. It is also possible to carry out automatic multipoint on one or more parts such as for example, a filiation on a welded joint. This collaborative robot is designed to work within all safety standards used in business (robotics and radiation protection). His intuitive and ease of use make it an indispensable asset for the residual stress determination.



Goniometer

The goniometer is equipped with a pure Si solid state detector with an angular range of 20° to 35° as a function of its distance from the sample and a sensitivity up to 7 times higher than a gas detector.

The X-ray tube with an air cooling overcomes the constraints related to liquid cooling and cables.

Positioning

A positioning system by laser triangulation allow to move the robot with remarkable precision and very quickly.

This system allows recording the coordinates of the desired points for the completion of automatic multipoint.

For geometrically complex parts, it is possible to manually learn the way to the robot from one point to another to avoid any impact with the part.

Transport

A light and easily transportable unit is considered to accomodate different sizes and geometries of parts.

X-RAYBOT

Technical specifications

-Red safety light: generator on
-Orange safety light: shutter open
-Size (L x W x H cm)
Controller :
79.4 x 61.5 x 44.4
Carrying case:
80 x 58.1 x 48.2
-Weight
Controller: 25kg
Transport case: 25kg
(including the entire system)
-Windows PC with specific software

Control unit

- Power supply (220V, 16A, 50-60Hz)
- 35W hight voltage generator
- X-Ray tube voltage: 25kV, tube current: 1-2 mA)
- Robot control bay
- Emergency stop
- Ethernet connection to the PC

Goniometer

-6 axes robot with carrying case
-Cables:
  ¤ High voltage
  ¤ Detector
  ¤ Robot
-Rotary shutter
-Miniature heat exchanger tube with air cooling
-Tubes available: Cr, Mn, Cu
-Sensor pure Si ultra-sensitive with a detection range of 20 to 35°
-2 lasers and one camera for positioning by triangulation
-angle adjustable detector (12° to 20°) with 3 predefined positions (12°, 14° and 20°)
-Automatic calibration of the detector depending on the source height
-Collimators: 0.5, 1, 2 & 4mm

RobotAcq software

-Robot control
-Steering generator
-Peak acquisition
-full safety shutter control

StressDiff software

-Laser triangulation for quick and accurate positioning (angle and height)
- Ψ or Ω analyses
-Multiples $\varnothing$ directions
-Multipoint measurement.
-4 peak treatment modes:
  ¤ centroid
  ¤ Fitting (6modes)
  ¤ Middle point
  ¤ Peak maximum
-User defined database
-Retained austenite evaluation

Options:

-Vacuum system for on-site analysis (pump and suction cup)
-Optional tube: Cu and Mn

Contact us

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