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In the News

• **ULTRASONIC NEEDLE PEENING - WHITE PAPER UPDATE**

[Fraunhofer IWM and SONATS have shown an improvement of fatigue strength to 83% compared to...](#)

• **NEW PROJECT ON UNP CAPABILITIES - APPLICATION ON BRIDGES**

[Steel welded bridges are subject to fatigue failure, Ultrasonic Needle Peening is probably the...](#)

• **FABTECH 2016 - SONATS TAKES PART IN THE EVENT!**

[Empowering Technologies is the affiliate company of SONATS in the USA \(Birmingham, AL\). In...](#)

Residual stresses measurement and analyzes

Methods: X-ray diffraction, hole drilling and other destructive and non-destructive methods.

- [X-ray diffraction](#) according to EN 15305 and ASTM E2860, non-destructive superficial or semi-destructive in-depth measurement, laboratory-based or portable system.
- [Incremental hole-drilling strain-gage method](#) according to ASTM E837, semi-destructive measurement, laboratory-based or portable system.
- Mechanical destructive methods based on stress relaxation: slitting, curvature and layer removal methods.
- Access to large scale facilities for specific applications requiring non-destructive in-depth measurement (synchrotron X-ray, neutron).

Your needs: product quality and process optimization

SONATS provides a high quality package of services for residual stresses and materials analyzes.

Residual stresses cause detrimental distortion during component manufacturing. They also influence material cracking resistance and component lifetime: fatigue, stress corrosion, tenacity. Besides metallurgical and dimensional aspects, knowledge and control of residual stresses is decisive for product quality assurance and process optimization.

Laboratory's strengths:

- 25 years of experience in international engineering services and residual stress measurement, more than 100,000 measured components,
- Highly qualified and experienced engineers and researchers,
- Effective support for results contextualization and valorization,

Typical applications:

SONATS methods are applicable to any type of component and material, regardless of the expected residual stresses distribution :

- Compressive residual stresses after shot peening on steel, aluminum, titanium and Inconel (also for rolling, blasting, burnishing, carburizing, nitriding, thin layer or thermal spraying, etc.) **Download our brochure for Shot Peened surface characterization:**



1_Shot_Peened_surface_characterization (1794 Ko - PDF)

- Residual stress and surface integrity after machining (cutting, grinding, polishing),
- Correlation between distortion and residual stresses,
- Residual stresses in additive layer manufacturing,
- Residual stresses in welding and influence of post-weld treatment,
- Effect of temperature in stress relieving treatment.

Cases studies: *depth inspection of compressive residual stresses after shot peening, control of fatigue test specimen preparation, prediction of part distortion in machining, qualification of a new manufacturing process, distortions due to heat treatment, raw material receipt quality control, influence of the filler metal on a MIG-MAG welding process, residual stresses after friction stir welding, residual stresses after laser welding, residual stresses after needle penning and high-frequency mechanical impact (HFMI), effect of stress relieving treatment, residual stresses onto HVOF deposit, residual stress on silicon wafers. Effect of substrate quality on residual stress in deposit, etc.*

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Stressonic®

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Peening Solutions and accessories

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	<ul style="list-style-type: none">• Training Services• Peening Accessories•
Applications by sectors	<ul style="list-style-type: none">• FABTECH 2016 - The affiliate company of SONATS takes part in the event!• Energy• Naval / Heavy Industry• Rail / Infrastructures• Automotive / Medical / Tooling• ECRS9 - we are exhibiting !
Residual Stress Measurement	<ul style="list-style-type: none">• Residual stresses measurement and analyzes• Residual stresses measurement by X-Ray diffraction (XRD)• Hole-drilling strain-gage method• Material analyzes and inspection• Surface and dimensional metrology• Trust us•
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Contact	<ul style="list-style-type: none">• Contactez-nous• Réseau International

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