



# SONATS

Europe Technologies group

## ULTRASONIC SHOT PEENING (USP)



**For your metallic part's reliability and increased fatigue lifetime.**

With over 20 years of experience in Material Health Analysis and metallic components Fatigue Performance Optimization, SONATS offers its expertise and its study, design and surface treatment process equipment to provide optimized answers to your industrial needs.

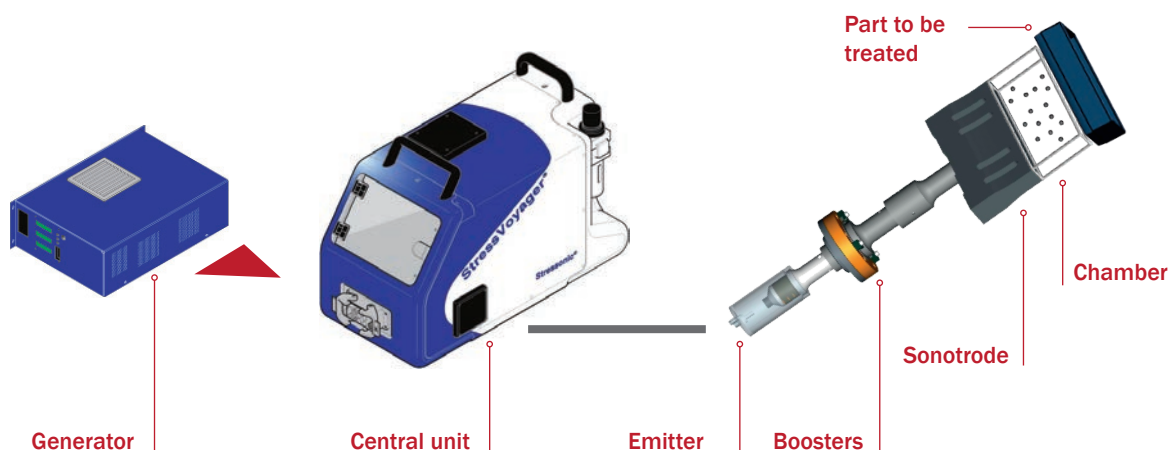
As a development of our patented technology STRESSONIC® (ultrasonically activated), **we are offering cold working impact treatment solutions for enhancing fatigue and resistance to Stress Corrosion Cracking (SCC)** by high quality processes.

### STRESSONIC® TECHNOLOGY PRINCIPLE

Ultrasonic Shot Peening (STRESSONIC®) USP process differs from Conventional Shot Peening by the way the kinetic energy is given to the media.

Instead of using a constant air flow, gravity or a high-speed rotation of a turbine, USP is using the acceleration of a vibrating surface.

Frequency of vibration is within the Ultrasonic Wave range, which explains the name of the technique.



The generator inside the central unit digitally generates an electrical sine wave with an ultrasound frequency.

Piezo-electrical emitter converts this signal into a mechanical displacement which is then amplified by a series of boosters and the sonotrode.

Media are gaining their kinetic energy from the sonotrode vibration, and are thrown to the part to be treated inside an hermetic chamber.

The random displacement of the media inside the volume of the chamber and the treated part ensures a uniform peening of the part.



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### COMPLETE AND CUSTOMIZED SET OF SOLUTIONS

- **Material Characterization expertise** (X-Ray Diffraction, Roughness, Hardness & Micro-Hardness)
- **Engineering studies** (Feasibility, Material, STRESSONIC® process)
- Design and manufacturing of **specific tooling, portative machines and customizes floor machines** (from semi-automatized to fully robotized systems)
- **Subcontracting** : Workshop Services at SONATS, or Worldwide In-situ Services
- **Distribution of consumables and control accessories** for Shot Peening operations
- **Specific training sessions and workshops**: Shot Peening & Flapper Peening (FAA material)

### Portative system, customized machine and robotized equipment



**Handheld equipment for localized Shot Peening with STRESSONIC® Technology.**  
On-site & Workshop services - Equipment sale



**Customized machine on customer's requirements**  
Small footprint, Highly controlled & clean process



**Example of Fully Automated System for aerospace components' treatment (here : blisks)**

### EXAMPLES OF TREATED PARTS



**Prosthesis**



**Compressor wheel**



**Blade**



**Impeller**



**Bearing**



**Shaft**