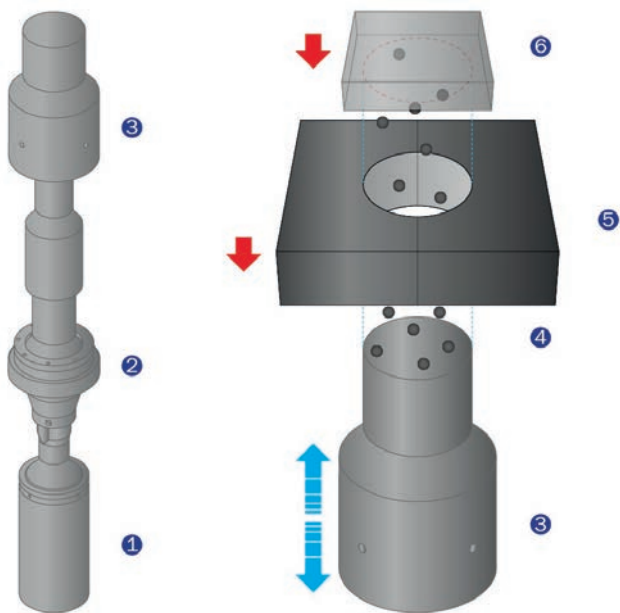




ULTRASONIC SHOT PEENING (USP)

Ultrasonic Shot Peening process (USP - using STRESSONIC® technology) 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.

STRESSONIC® TECHNOLOGY PRINCIPLE APPLIED TO USP



1. Emitter

2. Boosters

3. Sonotrode

Coming from our 20kHz ultrasonic generator, piezo-electrical emitter converts the electrical sine wave signal (ultrasonic frequency) into a mechanical displacement which is then amplified by a series of boosters and the sonotrode (Amplitude vibration from 20 et 120µm).

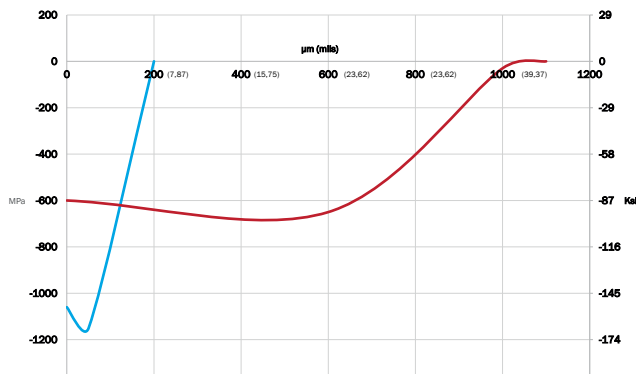
4. Media

Only few grams of media are needed. These high grade materials and FOD free and available in a wide range of size and material.

5. Enclosure

The enclosure is manufactured regarding the part geometry and its dedicated area to be treated. Media are confined in it.

6. Shot peened part



Residual Stress Profile

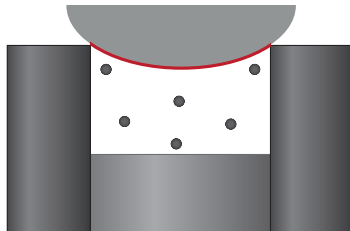
Large media at high amplitude
→ HIGH INTENSITY PEENING creating deep compression

Small media at medium amplitude
→ LOW INTENSITY PEENING producing HIGH compressive residual stresses at the surface



PERFORMANCE - CUSTOMIZED RESIDUAL STRESS DISTRIBUTION

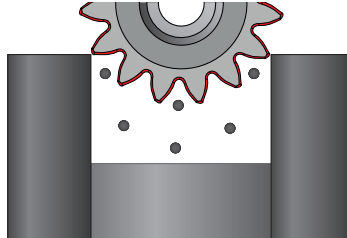
Localized peening



No media loss
No masking
No part dismantling

On Site Peening
Peening in hazardous site

Complex geometry peening

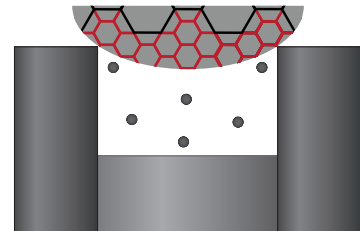


Uniform coverage and intensity
No distortion on thin part

Examples of applications

Gear / Shaft
Blade / Compressor / Wheel
Blisks

Nanocrystallization peening



Grain size reduction
Diffusion effect
Wear resistance

Medical prosthesis

Comparison example on Aluminum S7000



Roughness comparison between conventional shot peening (left) and ultrasonic shot peening (right).

COMPLETE & CUSTOMIZED SET OF SOLUTIONS

Manual



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

Customized machine



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

Robot assisted - Operator free



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