



**EUROPE
TECHNOLOGIES**
SONATS

MAINTENANCE, REPAIR AND OVERHAUL SOLUTIONS (MRO)



CRITICAL SAFETY ITEMS REPAIR USING ULTRASONIC SHOT PEENING SOLUTION

Many flight critical aircraft components are sensitive to fatigue damage and require a surface enhancement, called Shot Peening, to provide increased fatigue strength. To date, the repair of these components are significantly limited to the Original Equipment Manufacturers (OEM) and approved shot peening vendors who can duplicate the complex processes required to maintain airworthiness.

The Ultrasonic Shot Peening provides the ability to re-establish the beneficial compressive residual stress to the surface of critical aircraft components in a field or depot environment, rather than at the OEM's location.

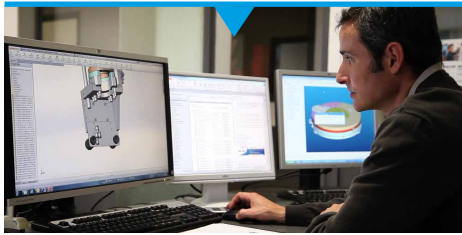
Our technology also provides the capability to peen aircraft components while in an assembly or sub-assembly arrangement. USP provides the capability to complete repairs located in areas with complex geometry or on parts too large to fit into a Conventional Shot Peening (CSP) booth. Since our technology is portable, localized in-situ repairs, such as repairs inside of the wing, can be conducted without disturbing surrounding components since there is no risk of ball loss, and there is no need of masking or bagging the environment.



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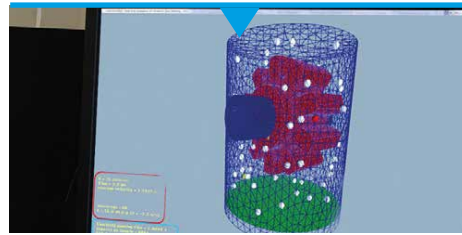
OUR APPROACH

1. Design



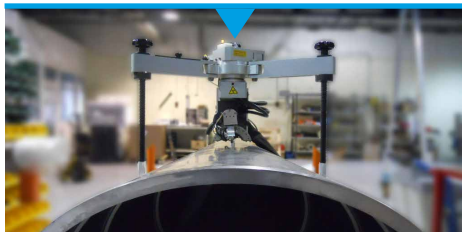
Parts, subassemblies and enclosure 3D design

2. Engineering



Feasibility study, process definition and implementation (treated area accessibility and analysis of customer's specifications)

3. Testing



Surface characterization, test and process industrialization

4. Application



Solutions to implement ultrasonic shot peening process with STRESSONIC® technology

OUR SOLUTIONS

- In-situ services without parts or subassembly parts dismantling by SONATS' technicians
- Standard equipment sales and leasing
- Subcontracting in our workshop

If needed we provide shot peening training level 1 and 2 and rotary flapper peening accredited FAA.

OUR STANDARDS

SAE/AMS - AMS2430
SAE/AMS - AMS2432
SAE/AMS - AMS 2580-2585
BNAE - NF L 06-833

«Shot Peening, Automatic»
«Shot peening, Computer Monitored»
«Ultrasonically activated shot peening»
«Aerospace series -Ultrasonic shot peening for inducement of compressive surface stresses for metallic parts »

Certifications

ISO9001
EN9100



THEY TRUST US

AIRBUS, CAC, DASSAULT, AIRBUS HELICOPTER, LATECOERE, SAFRAN, MITSUBISHI HEAVY INDUSTRIES, MTU AERO, SALJUT, SKF AERO, UTC (RATIER FIGEAC), PRATT&WHITNEY, US ARMY, XAC...

OUR CAPACITIES

Ultrasonic Shot Peening systems

STRESSVOYAGER® USP



Portable and compact shot peening system - STRESSONIC® technology

Ruggedized STRESSVOYAGER® USP



Machine equipped with built-in damping allowing transportation and exterior intensive use - STRESSONIC® technology

PRODUCT AND PROCESS CHARACTERIZATION

Product Features

- Portable
- Low media consumption (less than 10 grams)
- Various size repair

Process Features

- Customized tooling to avoid media loss
- No part masking
- Process real time monitoring and recording
- High repeatability

Fully Qualified Material

- 7075 Aluminium
- 6Al-4V Titanium
- 3440 Steel
- In718 Inconel

System Requirements

- 115/220V (400 Watts)
- 14 cfm (at 90 Psi /6 bars)



Blade spare repair using ruggedized STRESSVOYAGER® USP



PROCESS BENEFITS

Ultrasonic Shot Peening provides an economical shot peening solution to FAA Part 145 Repair Stations including Maintenance, Repair, and Overhaul facilities. This technology brings shot peening repairs to the shop floor, which eliminates the need to ship components to approved Conventional Shot Peening vendors, reducing shipping cost and turnaround time for a repair, as well as reducing the likelihood of damaged components due to shipping.

EXAMPLES OF APPLICATIONS

Helicopter Rotor Blade Repair

Issue: Mechanical and/or corrosion damage on Critical Safety Items of dynamic helicopter components.

Service: On-site repair worldwide.

Solution: Development of a reliable, computer controlled, field portable device to restore beneficial compressive residual stresses on Main Rotor Blades previously considered non-repairable.

Benefits: ROI of over \$27 Millions (cost avoidance for the replacement of 160 new Main Rotor Blades).

Results: SONATS developed numerous solutions on repair operation for US-army.



Fan Hub Disk Repair

Issue: Mechanical damage on fan disk.

Service: MRO facilities worldwide.

Solution: Development of a very innovative solution for local surface impact treatment w/o engine dismantling (no risk to loose media).

Benefits: High ROI and savings for the customer.



Spool Repair

Issue: Mechanical and/or corrosion damage on sensitive aero-engine components.

Service: MRO facilities worldwide.

Solution: Development of a solution reliable, computer controlled, suitable for field work to restore beneficial compressive residual stresses.

Benefits: High ROI for the customer. The Ultrasonic Shot Peening treatment lasts 3 days on this part in opposition to Conventional Peening treatment which would last about one month.

Results: An operator can complete the setup and validation process in a few minutes and perform repairs immediately afterwards.

