StressVoyager® - USP
Portable Ultrasonic Shot Peening

❖ The ONLY USP Process Approved for the U.S. Army ❖
❖ U.S. Army Endorsed and Approved for Critical Safety Items ❖

By
❖ Army Aviation and Missile Research Development and Engineering Center ❖
❖ Program Executive Office for Aviation ❖

CH-47

Apache Components:
Main Rotor Blade Root End Fitting

AH-64

Chinook Components:
Pitch Varying Housing
Landing Gear Spindle

UH-60

Black Hawk Components:
Main Rotor Blade Spar
Tail Rotor Blade Pitch Horn
Wide Chord Blade Cuff

Features:
Portable
Clean Technology
Small, Localized Repairs
Easy to Relocate

System Requirements:
115/220 V AC
90 PSI/15 CFM
Clean, Dry Shop Air

Complies With:
AMS 2430
AMS 2432
AMS 2580
AMS 2585

Fully Qualified Materials:
7075 Aluminum
6Al-4V Titanium
4340 Steel
Applicable on Most Metallic Components

Intensities Currently Qualified:
6N-12N
8A-12A

For More Detailed Data, Contact:
Avion Solutions, Inc.
(256) 721-7006

ShotPeening@AvionInc.com
WWW.AvionSolutions.com

StressVoyager is a registered trademark of SONATS. Aircraft images courtesy of U.S. Department of Defense. Use of military imagery does not imply or constitute endorsement of Avion Solutions, its products, or its services by the U.S. Department of Defense.
QUALIFICATION PROCESS

- Small Business Innovative Research (SBIR) Project granted by the U.S. Army in 2007
- Compared USP to Conventional Shot Peening (CSP)
- Saturation Curves
- Coverage Charts

Fatigue Testing
Notched and Un-notched

- Two stress concentration dog bone samples used
- Sinusoidal Tension-Tension loading
- Provided substantiation for authorization to use on critical safety items (CSI)

Residual Stress Measurements by X-Ray Diffraction (RSM by XRD)

- Verifies the same beneficial compressive residual stress induced by USP as OEM
- Similar profiles for USP and CSP
  - Maximum Residual Stress
  - Surface Residual Stress
  - Depth of compression

Surface Roughness

- USP provides a smoother surface finish due to:
  - High quality of media (Tungsten Carbide, Ceramic, Steel)
  - Almost perfectly spherical media
  - Size of media (0.6 mm - 5.0 mm)
  - Omni-directional flow of media
  - Reduction of cold-working

For More Detailed Data, Contact:
Avion Solutions, Inc.
ShotPeening@AvionInc.com
www.AvionSolutions.com
(256) 721-7006

StressVoyager® - USP

StressVoyager is a registered trademark of SONATS