

Areas of UP application - Aerospace

The **Ultrasonic Peening (UP)** is the most efficient and economical improvement treatment as compared with traditional techniques such as grinding, TIG-dressing, heat treatment, hammer peening, shot peening and could be applied successfully for:

A) Different applications such as:

- Increasing of the fatigue life of materials, parts and welded elements
- Forming and straightening metal parts without inducing surface tensile stresses
- Residual stress relieving
- Increasing of the hardness of materials
- Surface nanocrystallization etc.

Aerospace materials and parts improved by Ultrasonic Peening



B) Different metals, such as:

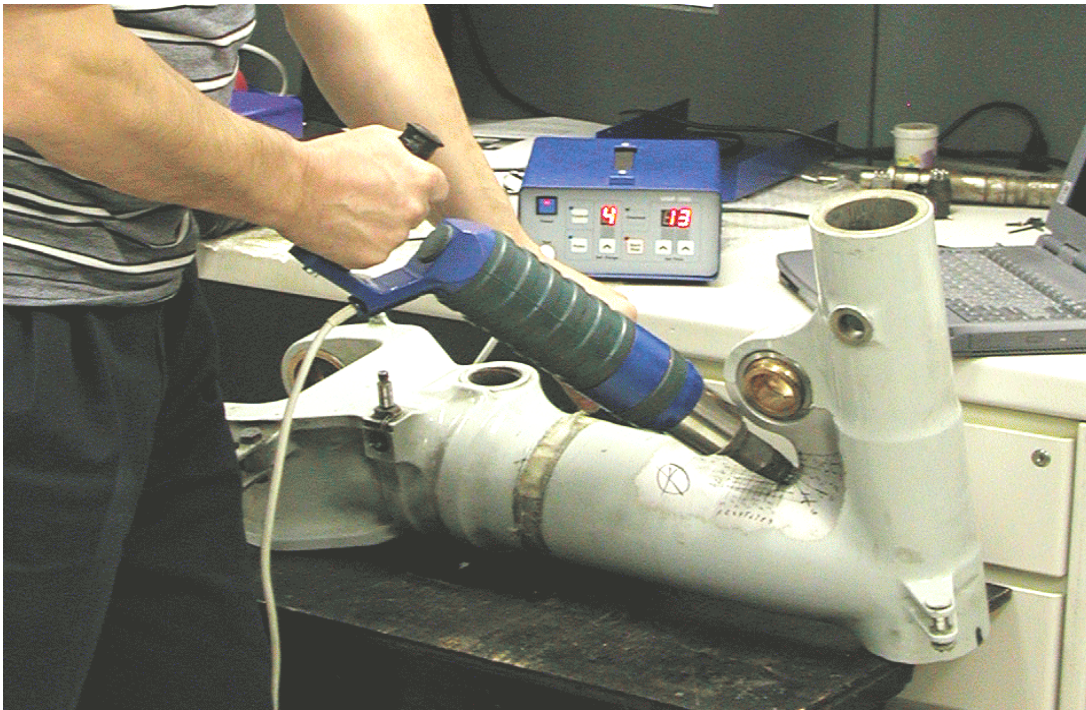
- Aluminum Alloys
- Manganese Steel
- Titanium Alloys

- Carbon Steel
- High Strength Steel
- Stainless Steel
- Cast Iron
- Nickel Alloys
- Copper Alloys
- Cobalt Alloys etc.

Examples/parts where UP could be applied in Aerospace Industry:

- Welded plates/parts
- Landing Gears
- Corroded panels
- Skin of fuselage and wings
- Turbine blades
- Stator rings
- Shrouds
- Frames
- Shafts

Ultrasonic Peening of Fatigue Critical Zone of Landing Gear



UP Treatment of Corroded Panels



The procedure and equipment for the treatment of corrosion damage on aircraft panels and other parts were developed based on **UP** technology.

The **UP** can eliminate the problems of grinding out corrosion damage due to complex geometries or uncertainties over the depth of corrosion.

The developed technology is based on inducing of compressive residual stresses and recrystallisation of both corrosion products and base metal.

In case of **UP** application the thickness of the component remains practically the same with the fatigue strength and corrosion resistance even higher than those of the un-corroded parts.

The **UP** could be applied in manual and robotized modes.

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