

# Surface Technologies for Aerospace

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The aerospace industry demands high performance from lightweight materials which are capable of withstanding extreme loads, often operating in an aggressive environment.

Curtiss-Wright Surface Technologies (CWST) has a wide range of surface treatments that can meet these challenging performance requirements and reduce costs by extending life and protecting critical components from damage or failure.

The services we provide are backed up through our global network of over 75 worldwide operating Business Units and on-site teams, offering a single source for all your surface treatments needs whatever the size and complexity of your components. Many of our services are transferable from one location or country to another.

With a proud history going back to the Wright Brothers and Glenn Curtiss, we continue to evolve today through listening to our customer's needs, innovation and experience.

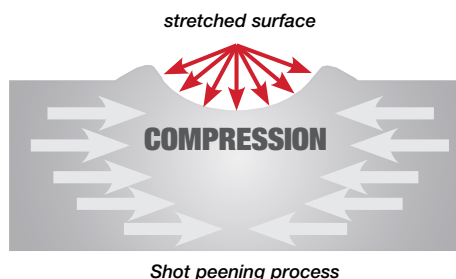
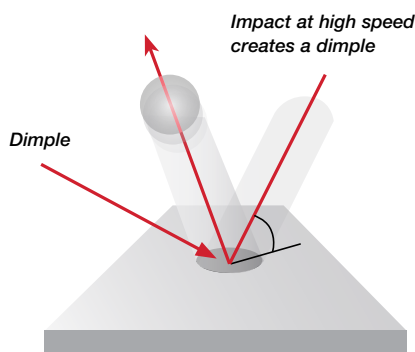
Quality approvals include FAA, AS9100 Rev C, NADCAP, ISO 9001:2008 plus other specific OEM, company and industry standard specifications and approvals as required.

## Services we offer

- Controlled shot peening
- On-site processing
- Shot peen forming
- C.A.S.E.™ isotropic finishing
- Laser peening
- Thermal spray
- Engineered coatings
- Material testing services

## Controlled shot peening

**Protecting components from cracking and fatigue.** Component failure is often related to residual tensile stress created during the manufacturing process. Controlled shot peening is a highly controlled, cold working method of inducing beneficial residual compressive stresses into the surface and subsurface of the component. The process also reduces the effect of any applied load, increasing the capability of the component to achieve longer life at higher loads.



## On-site processing

During the lifetime of a component/structure it might be necessary to re-introduce beneficial residual compressive stresses lost through operating conditions, corrosion, erosion, wear and thermal or stress overload. Where the component/structure cannot be peened at one of our own processing sites CWST has specialist field crews who are able to perform on-site work worldwide to the same high quality standards as in-house processing.

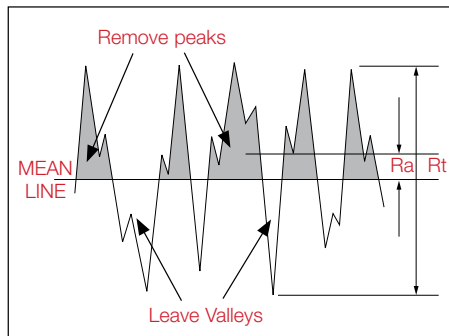
## Shot peen forming

**Shot peen forming is a preferred method of forming complex aerodynamic contours in wing skins and empennage panels.** The effect of pressure from the controlled peening process causes local plastic deformation that manifests itself as a residual compressive stress. This combined with localised stretching causes the material to develop a compound convex curvature on the peened side. This process can also be used to correct complex parts distorted during machining and/or heat treatment.



## C.A.S.E™ (isotropic finishing)

**Improved performance and lubrication, reducing critical factors such as wear, micro and macro pitting, noise and operating temperatures.** C.A.S.E.™ super finishing of components is critical in applications of metal to metal contact such as gears and bearings. This technique has been developed for surfaces that require both excellent bending and contact fatigue strength with enhanced surface properties to resist high loading. The process is generally applied after controlled shot peening to remove surface asperities.



## Laser peening

### Next generation peening process.

Introduces residual compressive stresses in all metallic materials up to 10 times deeper than other cold working techniques with virtually no surface disruption. This process has the ability to surgically place beneficial residual compressive stress into key areas of components to retard crack initiation and growth, enabling increased fatigue strength.

## Thermal spray

**Protecting components from high temperatures, oxidation and corrosion and as a replacement for hard chrome plating.** Our range of thermal spray processes includes HVOF (High Velocity Oxy Fuel), Plasma, Arc Wire and Flame Spray. These processes can be used to apply thermal barrier, abrasion, environmental and hard faced coatings either for new manufacture or component repair. Components such as turbine blades can be brought back to OEM specification.

## Engineered coatings

**Improving part life and reducing maintenance costs.** We have been providing the aerospace and defence industry with a comprehensive range of coatings to enhance performance and extend the life of components. Many of our coatings are qualified to aerospace and defence specifications.

### Our range of coatings, including Everlube® Dry Film Lubricants and Parylene provide:

- Resistance to corrosion, chemical and environmental attack, erosion and galling
- High lubricity/low friction/high release/anti-stick/low noise/anti squeak
- Shielding to EM/RF radiation
- Aerospace aluminized coatings
- Pre-treatments including Ti anodising, phosphate conversion coating and chilled iron blasting, aluminium oxide blasting and vapour degreasing
- Ultra thin bio compatible conformal protection
- REACH compliant, chrome free aerospace coating

In addition to our range of standard coatings, we have the in-house ability to design and develop our own coatings tailored to individual requirements.

## Material testing services

IMR Test Labs, a Business Unit of Curtiss-Wright, offer the latest in independent mechanical and metallurgical testing services including fatigue testing, thermal spray coating analysis, metallurgical and failure analysis using the latest technology and methodology to produce detailed and user friendly reports.

## Confidence and quality

Our customers operate in a wide range of markets including aerospace, automotive, oil & gas, energy, power generation, medical and other general industries. We would be happy to discuss your requirements with you without obligation.

### Typical applications:

- Airframe
- Aero engine
- Undercarriage
- Wings
- Actuator systems
- Transmission components
- Fasteners
- Valves
- Bearings
- Hydraulic fittings
- Seat belt mechanisms
- Electronic circuit boards

