

Surface treatments to improve the fatigue life of critical components

The technique of controlled shot peening followed by isotropic C.A.S.E. super finishing is suited to components where surface contact loading and wear problems may occur.



Transmission gears and shafts have shown successful results where the treated components are expected to perform for many years, even under high root bending loads and tooth flank contact loads.

The first phase of the technique is Shot Peening where the component's surface is impacted to a tightly controlled and predetermined specification by media known as shot. As each piece of shot impacts the surface it causes an indentation in the material causing it to stretch or yield but at the same time the substrate tries to retain its shape and this conflict induces a beneficial compressive stress. Compressive stress has a proven reputation to solve the problems of fatigue and macro and micro pitting typically found in gears and transmissions parts.

The second phase is a chemical process where the surface of the component is

engineered to remove the peaks and surface asperities whilst leaving beneficial valleys for lubricant retention. This produces a mirror like finish to reduce contact/surface fatigue, increase lubrication retention and heat transfer with a reduction in transmission temperature and noise.



This process is ideally suited for industries such as competitive racing, automotive, wind energy, agriculture and earth moving equipment.

BENEFITS

- Surface reduction to mirror like finishes
- Reduced manufacturing times and production costs
- Finishes suitable for microbiological cleansing and sterilisation
- Optimum surface roughness and stress characteristics
- Reduced contact/surface fatigue
- Increased lubrication retention and heat transfer
- Good rounding ability to sharp edges for ease of handling and assembly
- Reduction in lubricant temperature
- Reduced transmission noise

APPLICATIONS

- Transmission Parts
- Bearings
- Cams and Followers
- Journals
- Seal faces
- Any situation involving metal to metal contact

Curtiss-Wright Surface Technologies is a leading provider of surface treatments for the aerospace, automotive, oil and gas, petrochemical, medical and other general industries. We have over 70 divisions worldwide forming a support network for key services such as Controlled Shot Peening, Laser Peening, Engineered Coatings and Material Testing and Analysis.