



Laser beam hardening of turbine blades

Problem

Laser beam hardening, the most advanced surface hardening technology, is now commercially available for protective hardening of new and refurbished turbine blade leading edges.

You get

- an industrially proved method with higher efficiency and flexibility
- turbine blades with remarkable increased lifetime
- a laser working station for multi-purpose use
- considerable cost savings especially for refurbished turbine blades

We offer

- complete solutions for the protection of turbine blades leading edges
- the know-how for optimized technology
- laser working stations, adapted to your needs, consisting of sophisticated 4 (5) axis-CAM-CNC-machines and industrial CO₂-lasers up to 20 kW, completed with special beam shaping attachments

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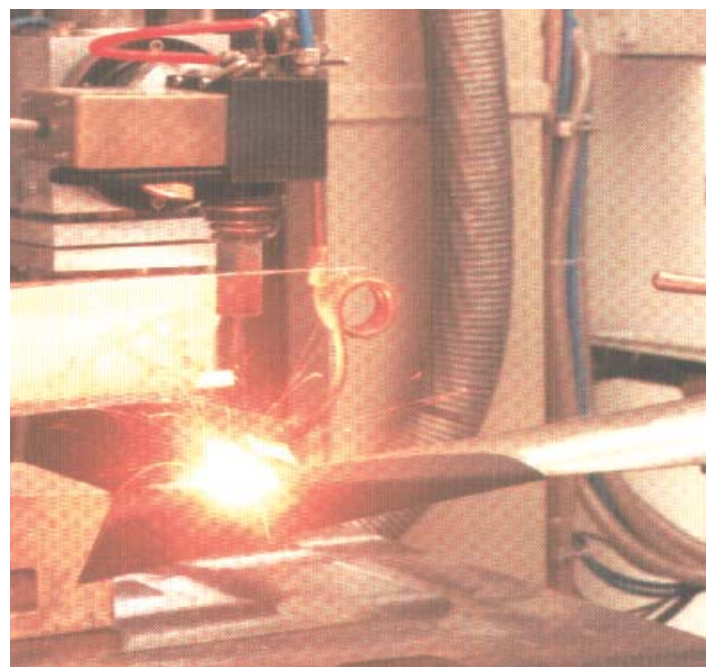


Fig. 1: Laser beam hardening of turbine blades

Advantages of laser beam hardening of turbine blades

- outstanding wear properties
- higher fatigue strength
- lower loss of blade ductility at higher surface hardness
- optimum geometry of the protecting zone
- smaller dimensional deviation of the hardened blade
- better reproducibility

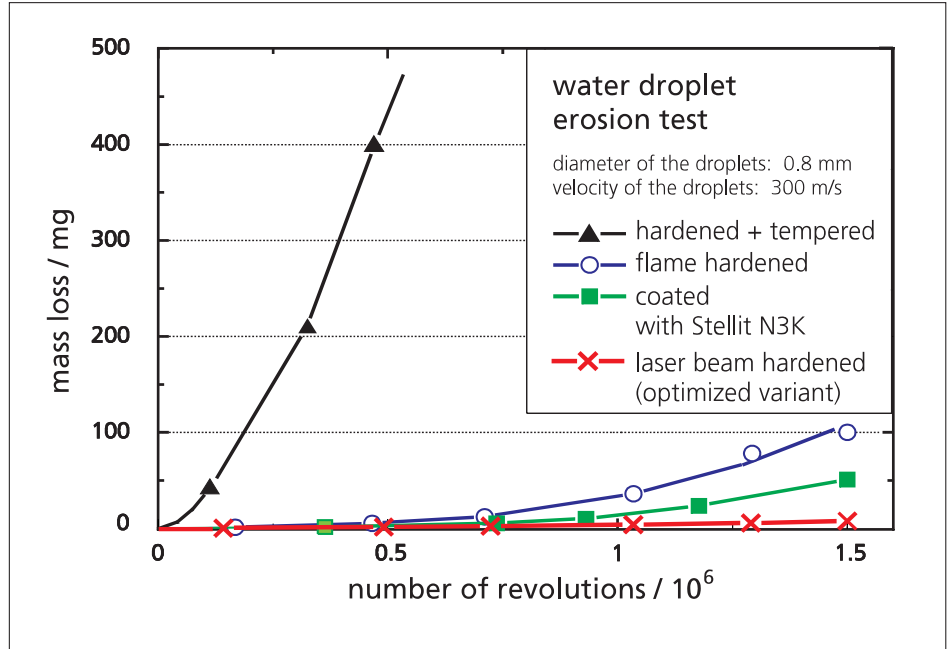


Fig. 2: Comparison of the effect of several turbine blade protection methods

The IWS - EFD program also comprises

- development of laser beam hardening technologies for improved machine and engine parts
- computer programs for optimization of laser treatment parameters
- optimization of microstructure as well as wear and fatigue properties of surface hardened parts and components
- laser working stations, especially for the hardening of cam discs
- local laser beam hardening of complex components

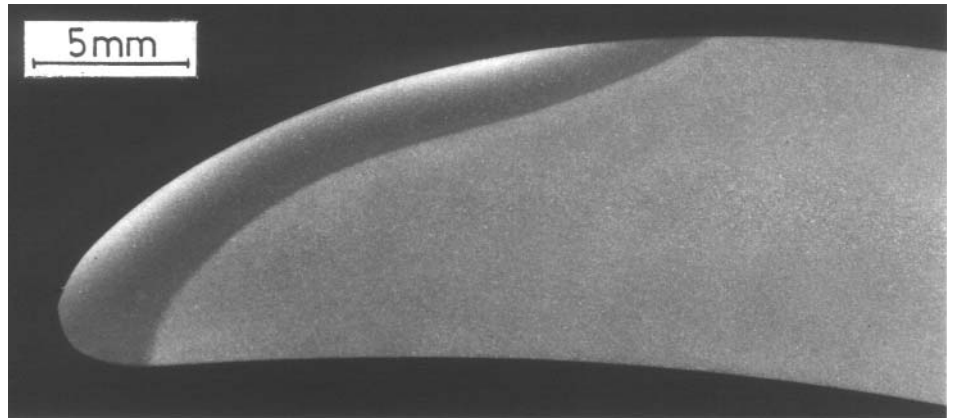


Fig. 3: Etched cross section of a laser beam hardened turbine blade leading edge