LASER SURFACE TREATMENT
FUNCTIONALIZING COMPONENT SURFACES

Component and tool surfaces are often subject to high levels of wear and corrosion. In order to retain component function, one can functionalize its surfaces to suit the subsequent use. Laser surface treatment is a flexible way of effectively protecting component and tool surfaces from wear and corrosion. The process can also be used to repair damaged components and tools. Laser surface treatment can be used to carry out localized repairs to worn sections of components and tools – flexibly and customized to each specific application.

Advantages of component surface functionalization

- Flexible modification of surfaces to suit the collective loads
- Significantly longer tool life
- Wide spectrum of applications

Our specialties

- Design of the process to suit specific applications
- Automated 5-axis process controls for dealing with complex components
- Representation of the entire process

Our offer

- Independent advice that takes your individual needs into consideration
- Feasibility and profitability studies
- Production of small and medium-sized series
LASER SURFACE TREATMENT – FLEXIBILITY THANKS TO PROCESS VARIETY

Various surface treatment techniques can prolong tool life and improve component, tool or die performance. The aim here is not only to select a suitable material and the right kind of heat treatment for the component but also to find the right surface treatment technique. The flexibility and ability to process near-net shapes means that laser technology can be used in various ways: laser coating, hardening, alloying or dispersion can be used to modify a surface in order to reduce wear. One can also repair localized areas of component wear via laser build-up welding.

Advantages of laser surface treatment

- Minimized introduction of heat into component
- Flexible process controls for complex components
- Localized wear protection and repair

Our specialties

- Coating of complex formed component surfaces in a highly modern machine tool system
- High degree of technical expertise in the design of laser processes and machining strategies
- Development and use of modern CAx technologies for product design, process design and simulation as well as NC data generation

Our offer

- Wear protection for new tools using application-specific processes
- Repair of worn areas of components
- Quick machining of complex components via CAM interfaces
INTEGRATED SOFTWARE SOLUTION FOR LASER SURFACE TREATMENT

Even the best technology will not survive in the market if it is not user-friendly in practice. The Fraunhofer IPT has developed an integrated software for laser surface treatment that is easy to use: the CAx modules integrate all the available knowledge about each laser process. These modules bring the whole planning process for laser surface treatment together – from the detection of component geometry and process simulation to the generation of NC code for the machining system. Highly modern equipment is used to perform the automated 5-axis component machining processes.

Advantages of CAx-aided process design

- No special knowledge about laser technology is required for NC programming as the system is based on an extensive technology database.
- “Lasertools” provides analogies to milling programs, making it easier to understand the process.
- Laser processes can be quickly modified to meet individual component requirements.

Our specialties

- Intuitive software operation via a operator-friendly graphical user interface with minimal training required
- Linked to a process and technology database
- Processing data provided in common NC formats, e.g. Heidenhein iTNC, Sinumerik 840D, ISO-NC, Siemens PLM Software CLS, CATIA APT and in other dialects
- Seamless integration of the software module into existing software systems such as Siemens PLM Software NX 4, 5, 6

Our offer

- Development of software for processing complex tool geometries with different laser surface treatment technologies
- Support during on-site software implementation
- Software training and workshops
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