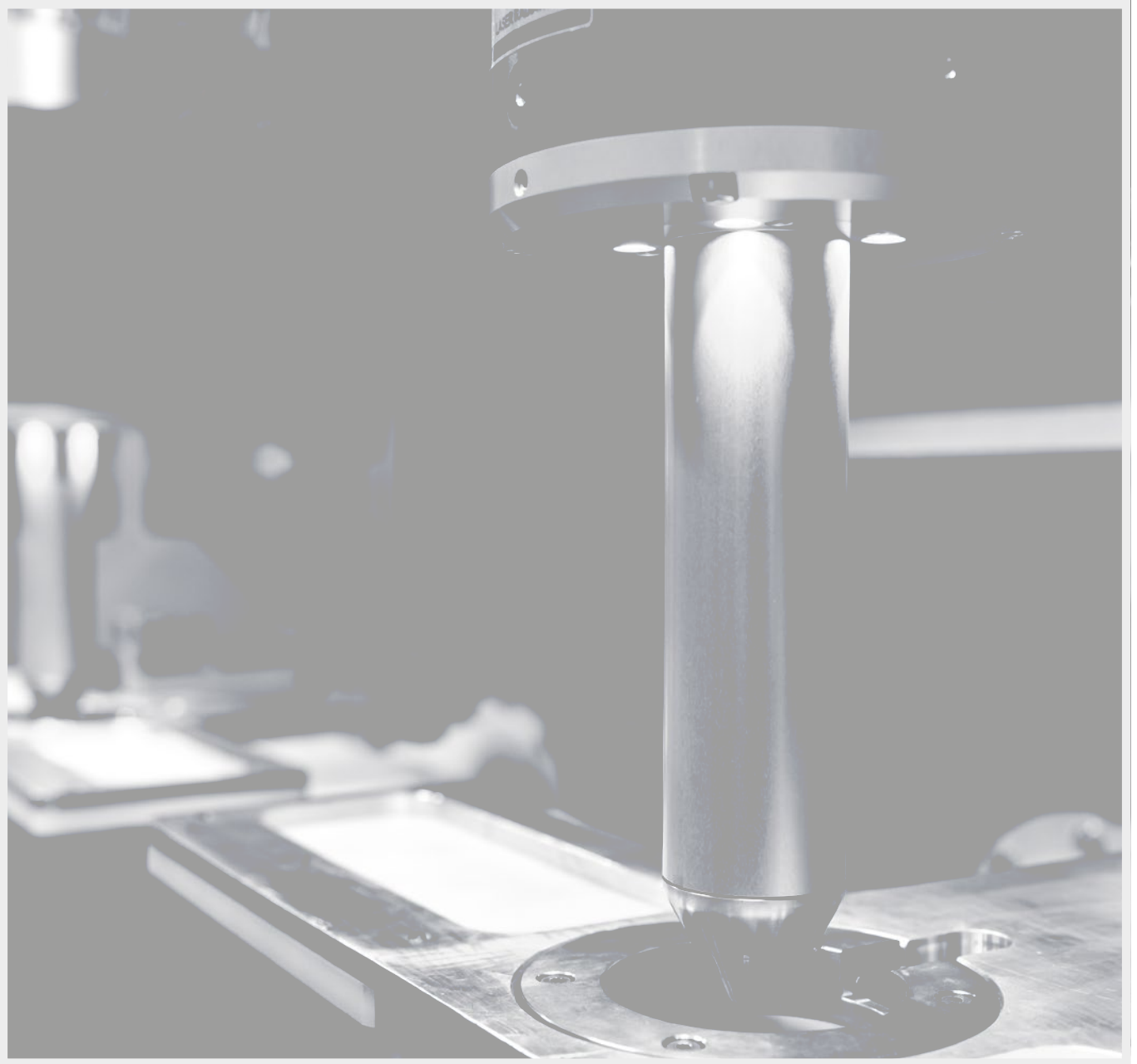


Laser roughening

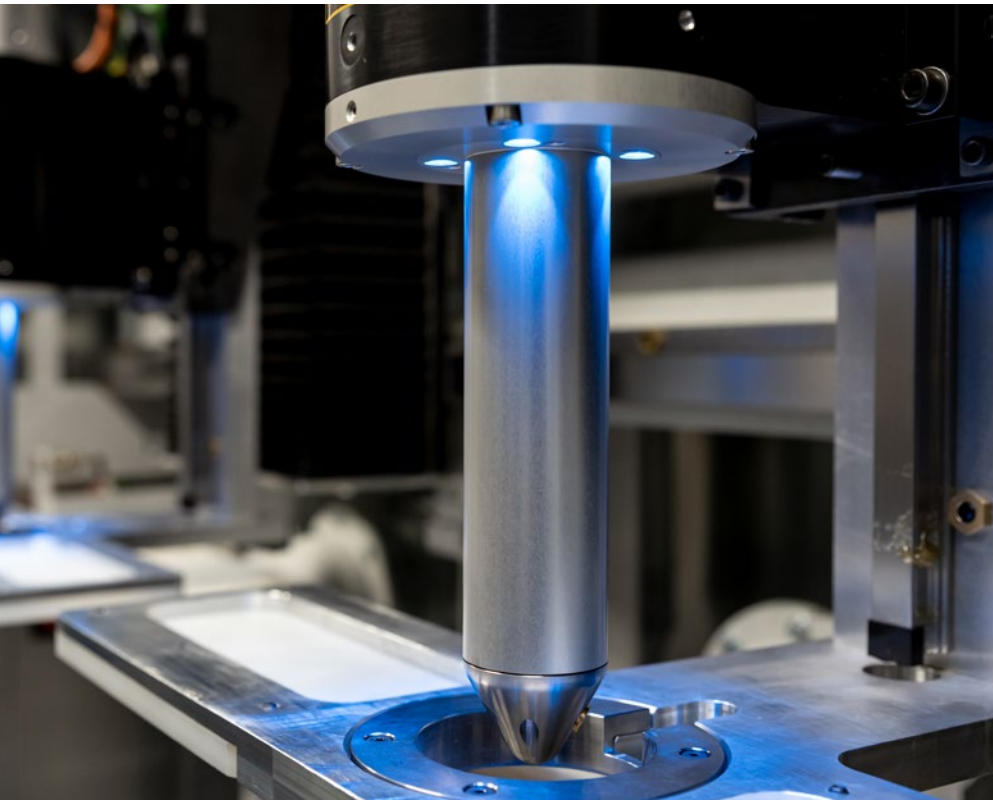
Innovative process for
modern series production



 **Gehring**

Excellence in motion.
Future in mind.

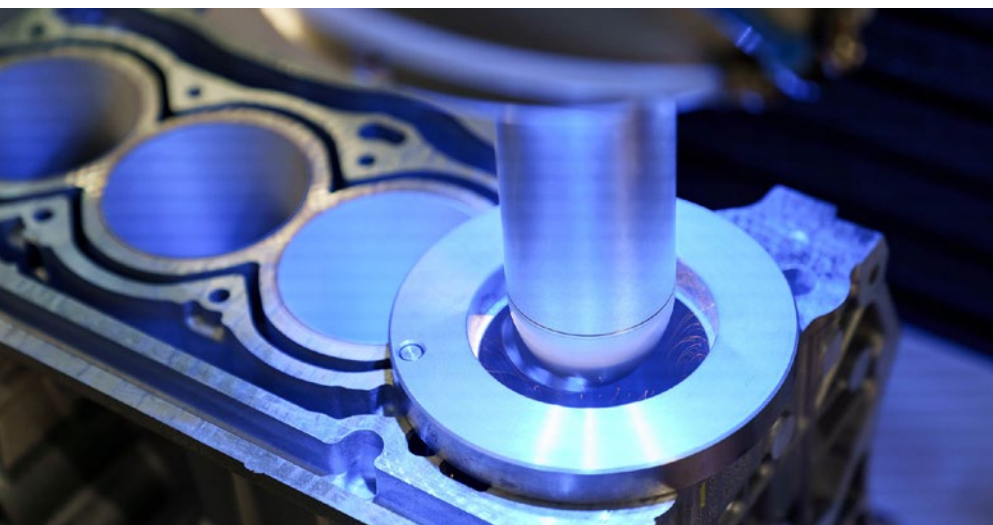
Laser roughening for functionally reliable track coating



Thermal coating of cylinder bores is a technology that is in high demand. The overriding goal is to increase the efficiency of the internal combustion engine. In order to produce a resilient bond between the coating and the substrate, high-performance roughening processes are required that ensure function in every respect.

Aim of the Laser roughening

The area-wide microforming enables high adhesive tensile strengths. These are of particular function of the coating. importance. This means that the layer is sufficiently direction, the layer is sufficiently resilient. A further objective is the flexible design of the roughness profile. Beam parameters and process kinematics allow both spiral profile grooves profile grooves as well as closed cavities. Since no mechanical processing with high tooling costs, the operating operating costs are comparatively low. Likewise, with laser roughening a considerable saving of coating material is possible, since high adhesive tensile strength can be achieved adhesive tensile strengths are achieved.



GEHRING FOR FULLY RELIABLE

Production technology for laser roughening

The laser roughening process is determined by the innovative rotary optics. Due to the compact design of the Gehring machines, twin processing of two cylinder bores simultaneously is possible. The quasi vibration-free operation is made possible by hollow shaft motor and stationary immersion optics. The use of high-quality materials guarantees a long service life of the optical components. An industrial camera is used for process monitoring, especially during setup. The periphery for the fully automatic reaming module with optimized footprint consists of an exhaust system and coolant equipment for beam source and rotating optics.

Fields of application

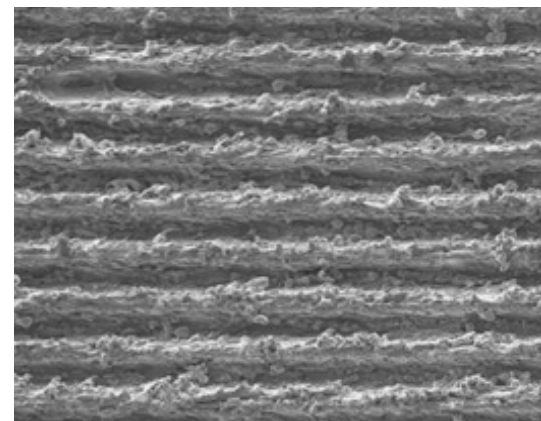
Many years of experience with engines of different performance classes show that laser roughening is an innovative and economical process for modern series production. Laser roughening is used as a pre-treatment for all common thermal coating processes. The processing of aluminum alloys as well as cast iron is possible. A special potential of laser roughening is shown in the processing of cylinder liners.

Locally targeted laser roughening is possible for selective coating in the piston running area and also on the top deck chamfer.

Gehring has extensive know-how of the complete process chain „laser roughening, coating and honing“. Coordinated process steps lead to low-friction and wear-resistant cylinder barrels.

Your advantages

- High adhesive tensile strength
- Saving of coating material due to low roughness and simultaneously high adhesive tensile strength
- Suitable for cast iron and aluminum
- Use also within two-stroke engines
- High flexibility in the shape of the roughness topography through parameterization
- Suitable for all thermal spray coatings
- Series-proven process
- Economical series operation, as no tooling costs
- No mechanical damage to the surface but thermal structuring



Laser roughened surface



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