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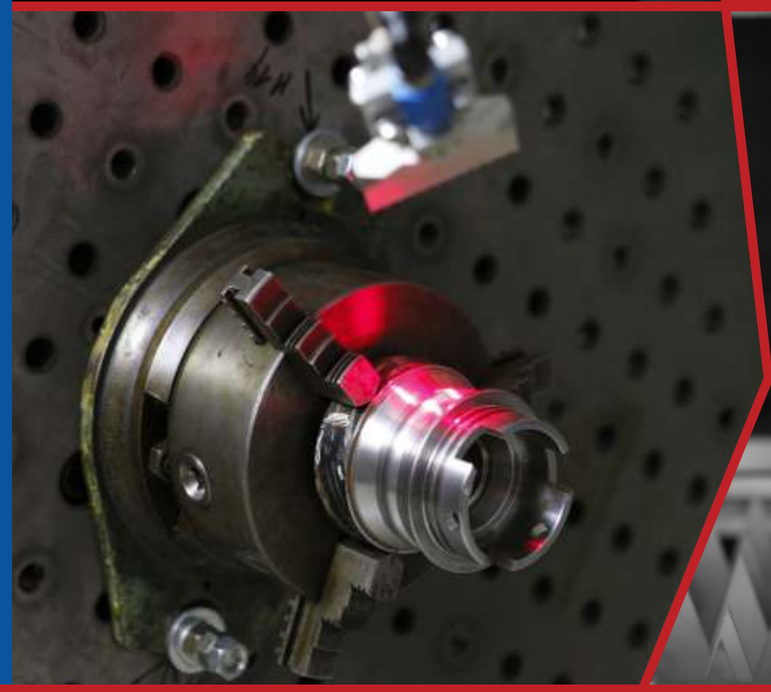
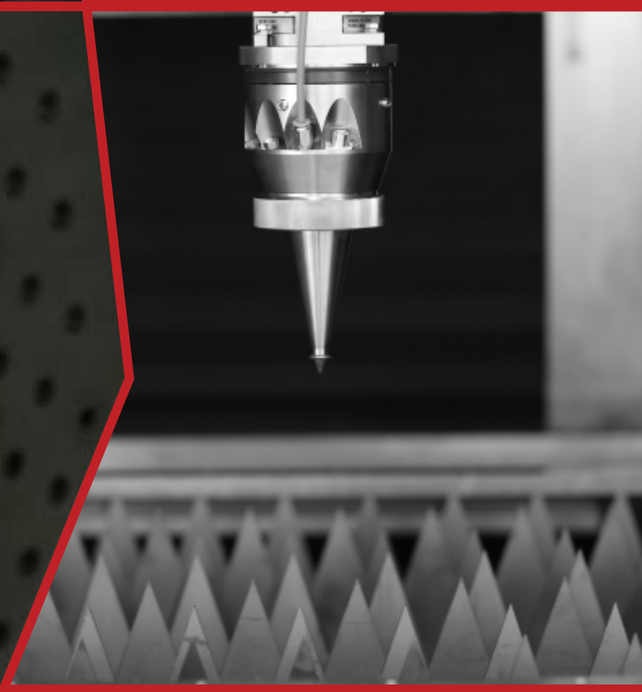
VÚTS LIBEREC

Laser Application Center LAC

LASER APPLICATION CENTER





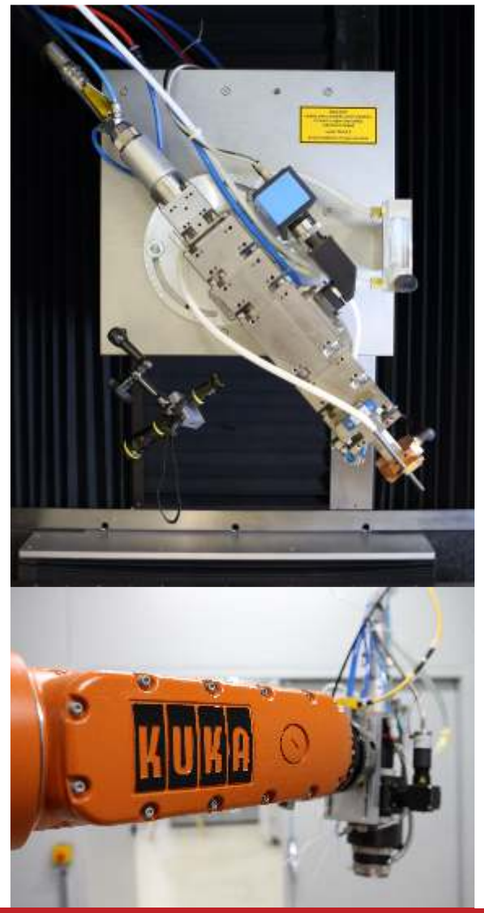
Vision unlimited

LASER APPLICATION CENTER

Laser Application Center - LAC is focused on laser technology in mechanical engineering, particularly on the development of theoretical and practical knowledge about possibilities of laser application for machining and heat treatment mainly metallic materials. The center provides research and implementation of development work focused on the development technological possibilities of the principle, the subsequent design and construction of special machines and equipment for specific applications. The results of R&D and design work are then applied to create optimal technological procedures, design, manufacturing and supply of machines for customers.

OBJECTIVES AND ACTIVITIES

- Searching application options and specific solutions for customer problems related to machining technology, welding, and heat treatment by laser at the phase of technology, as well in the phase of mechanical equipment and service.
- Development of theoretical and practical knowledge about possibilities of laser application in machining and heat treatment, especially metals.
- Readiness and skills for testing and verification new possibilities for the laser application in manufacturing industry.
- Obtaining financing for the operation and development through the application of research results and developments in the industry.
- Short-term R&D contracts.
- Proposals and problem solving for customers in the form of short-term one-off orders.



LASER WELDING OF METAL

Laser welding technology is an effective method joining of metallic materials, which excel in high welding speeds, minimal deformation of connecting parts and very narrow heat-affected areas.

LASER WELDING OF PLASTICS

The technology of laser welding of thermoplastic materials is a progressive process for the realization of high process weld speed and quality with regard to accuracy and degradation properties of materials.

LASER POWDER CLADDING

Laser powder cladding technology is one of the latest and most advanced methods of surfacing. This laser technology has great economic importance; it is very profitable aspect of reducing production costs in case of repair and maintenance tools. Properties of the weld depends on the choice of weld powder added that the laser beam melts the base material to the required cladding point.

LASER CUTTING

Using laser cutting technology can be cutted materials very accurately, even fragile or easily deformable. With the ability to control the laser beam is also possible to create very complex shapes with a high quality cut.

LASER HARDENING

The principle of the laser surface treatment is a rapid thermal cycle of heating and cooling which takes place in the surface layers of the material. In the case of steel is in the heating phase (austenitizing) and the subsequent phase rapid cooling to the martensitic transformation. Increased hardness of martensitic structure improves particularly wear resistant of functional surfaces.

Part of the Centre is fully equipped

METALOGRAPHIC LABORATORY

for checking and evaluation parameters.

USED EQUIPMENT:

- Saw Delta AbrasiMET.
- Electrohydraulic press SimpliMet 1000.
- Grinding machine / polisher EcoMet 250 with automatic head AutoMet 250.
- Inverted microscope Im7520.
- Stereomicroscope EMZ - 13TDR.
- Microhardness tester MicroMet 6000 with SW OmniMet MHT - F.