



INSTYTUT SPAWALNICTWA

LASER TECHNIQUES TESTING- EXPERTISES- SERVICES IN THE AREA OF WELDING TECHNOLOGIES USING CO₂ AND YAG LASERS

In order to ensure demanded quality, repetitiveness, application of unique structural solutions and reduction of costs of welded products, Instytut Spawalnictwa offers research, technology, expertise and advice in the range of laser welding and cutting technologies. Service works are conducted with the use of numerically controlled and robotised stations with CO₂ and YAG lasers for welding and cutting two and three-dimensional elements.

LASER WELDING

The application of a laser beam in welding processes makes it possible to:

- join materials without edge preparation and the use of welding consumables
- achieve very narrow welds with restricted heat affected zone and minimum distortions in welded joints
i.e. to weld "ready-made" products
- weld elements different of thickness
- simplify the structure of a product and its manufacture technology

The application of laser welding makes it possible to simplify the manufacture of a product through the modification of its design. The aforementioned alteration consists in the partition of a structure into elements of simpler geometry and the welding of such elements without additional postweld machining.

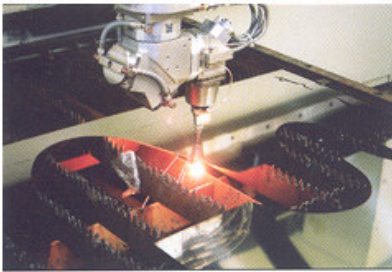
Instytut Spawalnictwa offers laser welding with the use of technology which makes it possible to perform welds unlimited in shape, both on two and three-dimensional elements. The numerical control of the process enables the obtaining of very high repeatability of welding parameters as well as excellent quality welds.

LASER CUTTING

Laser cutting is a very precise technology, ensuring high accuracy (up to 0,1 mm) and dimensional repeatability of cut out elements. Quality of the edges is so good, that any additional machining is not required in most cases.

Special software helps in nearly scrapless layout of the elements, which results in substantial savings of materials.

Instytut Spawalnictwa offers the development of laser cutting technology of two and three-dimensional elements made of unalloyed and high-alloyed steels as well as nonferrous metals such as aluminium, titanium, nickel and their alloys.



Laser cutting technologies can be used for cutting of coated plates, pipes and stamped elements, etc.

The operating range of the laser:

- dimension of plates 1500 x 3000 mm maximum
- height of three-dimensional elements up to 400 mm
- cutting thickness:
 - carbon steel _____ up to 12 mm
 - stainless steel _____ up to 6 mm
 - aluminium _____ up to 4 mm
 - other materials _____ to be negotiated
- number of elements: single elements, small, middle and large batch

Elements are arranged with use of drawings or files in *.dxf format from CAD programmes.

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