**Tool Producing Department renders the following services:**

I. Vacuum heat treatment of steel

II. Laser cutting of steel and nonferrous metals

III. Plasma cutting of steel

I. ***Heat treatment*** is performed in a vacuum furnace with gas cooling system, made by the company SECO/WARWICK (Poland).

* Maximal weight of charge with tool-set is 1500 kg
* Maximal operative temperature is 1320°C
* Possible types of heat treatment: tempering, isothermal tempering, cementation, snap temper, curing.
* Cooling gas (99,999)

The advantages of heat treatment in a vacuum furnace:

* High quality (without tarnishing) heat treatment of patterns
* Good process frequency
* Absence of oxidation
* Minimal deformation while tempering what allows to minimize tolerances on mechanical treatment after tempering
* Evenness of carburized layer thickness around all the area of a component, including through holes
* Universal furnace

Quality of heat treatment provides:

* Position of heating elements along the radius of the heating room what improves even distribution of temperature (evenness of temperature pattern ± 5°C). It minimizes deformation and eliminates the need of further treatment.
* Orbital cooling gas system provides even distribution of gas for multi-surface charges.
* Quick and uniform heating
* Special form of nozzles and high speed of cooling gas provide great penetration through charge space and uniform cooling.
* Isothermal tempering provides minimal deformations and eliminates microcracks in big matrixes
* Carburization under low pressure of gases provides very good penetration of carburized environment, including tightly grouped charges with big surface of the diffusion front and also in components with deep holes during the treatment of which the equality of layers of internal and external hole surfaces (±0,05mm) is achieved.
* Absence of carburized layer
* Possibility to perform every process separately what allows fulfilling individual unique orders.

II. ***Laser cutting*** is performed on the machine, made by the company Promotec (Spain).

* Thickness of a workpiece: low-carbon steel – up to 12 mm

 stainless steel - up to 6 mm

* The used gas: nitrogen (99,996%)

 oxygen (99,95%)

* Maximal dimension of the material to be cut – 1650x1600mm

The advantages of cut:

* High quality of cutting of patterns, which allows to make the smallest holes from 0,5mm
* Processing of tiny metal sheets that are deformed while physical affecting
* Absence of thermal influence on the whole surface of a pattern what leads to the absence of undesirable deformation
* High cutting accuracy, which is important for production of small components.
* High level of economy (minimum of waste).
* This is the best decision when production in small lots is necessary. There is no need to use casting mould.

The quality of laser cutting is provided by:

* High density and power of laser
* Control of the metal laser cutting machine with the help of CNC
* Accuracy of laser head and automatic focalization of the beam

III. ***Plasma cutting*** is performed on the machine, made by the company Promotec (Spain)

* Thickness

 Low-carbon steel - up to 64 mm

 Stainless steel - up to 50mm

 Aluminum alloys - up to 50mm

* The used gas: Nitrogen (99, 99%)

 Oxygen (99, 5%)

 Hydrogen (99, 995%)

 Argon (99, 99%)

* Maximal dimension of the table is 2100 x 4500mm
* Maximal dimension of the material to be cut is 2000 x 2000mm.

The advantages of cut:

* Possibility to treat any type of materials, independent of their specifications
* 2 times higher speed if compare with flame (torch) cutting
* Heat deformation of metals is excluded
* Better quality of cut
* Possibility to cut geometric figures and forms