



**STEEL AND ALUMINIUM  
METAL STRUCTURES  
MANUFACTURING**

**OFFERED SERVICES**



**AREAS OF APPLICATION:** chassis, arms, frames and other structural components for:

○ Agricultural Machinery and Tractors

○ Construction Machinery

○ Motorcycles

○ Automobile

○ Buses

○ Commercial Vehicles

○ Solar Energy Installations

○ Industrial Equipments

○ Railway Equipments



## RELATED EQUIPMENT

CNC BENDING PRESS - **Abkant Bystronic Xpert 150**, automatic with **Bystronic BySoft 7** software programming, can work with a robot. It is used for bending parts with complex shapes and with controlled angle.

<b>MAX BENDING LENGTH:</b>	2.550 mm
<b>OPENING HEIGHT:</b>	215 mm
<b>STEEL THICKNESS MAX:</b>	15 mm
<b>ALUMINIUM ALLOYS:</b>	15 mm
<b>STAINLESS STEEL:</b>	12 mm



On this line can also be used:

- **Abkant Durma E2040 Press / 40 tone**

**MAX BENDING LENGTH:** 2.000 mm.    **MAX. THICKNESS** 10 mm

- **Guillotine Shear Durma SB 3010NT**

**MAX CUTTING LENGTH:** 3.000 mm.    **MAX. THICKNESS** 10 mm



**MANUFACTURING CAPACITY** for the **CUTTING LINE:** (cutting + bending):

**300 tonnes/month**

**PUNCHING**

We cut, by punching, steel and aluminium plates, on **MACHINERY TYPE PUNCH PRESS CNC Amada EMZ 3612 MII** with automate charging and discharging, software **PUNCH 5 ( LINE 5 16.0)**.

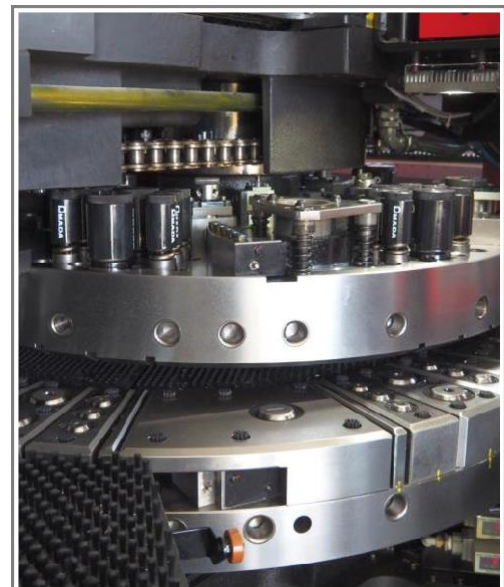


**Revolver System:** the revolver tool holder system “turret-shaped tool holder” allows up to 44 tools.

**Distance between holes** (bridge) = material thickness.  
*Finished parts with cuts and contours in complex shapes are processed without scratches, at the highest quality and in high productivity.*

<b>SEMI MANUFACTURED DIMENSIONS MAX:</b>	
	3000 mm x 1500 mm
<b>STEEL THICKNESS MAX.:</b>	6 mm
<b>ALUMINIUM ALLOYS:</b>	6 mm
<b>STAINLESS STEEL:</b>	4.6 mm
<b>TOLERANCES:</b>	+/- 0.1 mm

**PUNCHING CAPACITY :**  
**105 tonnes/month (STEEL)**  
**36 tonnes/month (ALUMINIUM ALLOYS)**



## CNC MACHINING

**RAAL** offers **PRECISION CNC MACHINING** – precision milling, lathing, drilling. Mainly, the processing sector is equipped with:

- **CNC LATHES** of last generation **DOOSAN** and **MAZAK** for processing parts with sizes up to  $\text{Ø}350 \times 550$
- **CNC MILLS / 3 AXES DOOSAN, FANUC, GIBAS, HURCO** and **MAHO** for processing parts with sizes up to X=760/ Y=500/ Z=570
- **MILLING CENTRES SORALUCE** (3+2 axes) for processing parts with sizes up to X=3500/ Y=1200/ Z=1500

Generally, on these machines are processed aluminium alloys parts, but we do not exclude that for larger orders, to process parts made of steel and stainless steel.



# ROBOT AND MANUAL WELDING

RAAL has a rich experience in welding parts of:

- ALUMINIUM ALLOYS
- STEEL
- STAINLESS STEEL

## ALUMINIUM ALLOYS WELDING

**PROCESSES:**   ◦robot **MIG**   ◦mechanized **MIG**   ◦manual **WIG**   ◦manual **MIG**

### CURRENTLY USED MATERIALS:

3003

6060

44200 (cast)

#### Filler used:

Al Si 5, 4043

Al Mg 5, 5356



### EQUIPMENTS for:

- **ROBOT MIG WELDING**
  - **IGM robot welding cell** with welding source **FRONIUS CMT** / power 500 Amps.
  - **Welding robots ABB** with welding sources **FRONIUS** / power 400 Amps.
- **MECHANIZED MIG WELDING**, lines with two welding positions / power 300-500 Amps.
- **MANUAL MIG WELDING**, welders / power 270-400 Amps.
- **MANUAL WIG WELDING**, welders / power 300-500 Amps.

**max. THICKNESS**  
**30 mm**



**STEEL WELDING**

**PROCESSES:**    manual WIG                      manual MAG                      spot welding

**EQUIPMENTS for:**

- **MANUAL WIG WELDING**, welders, power 500 Amps.;
- **MANUAL MAG WELDING**, welders, power 270 - 400 Amps.
- **SPOT WELDING**, welder, power 10 kWA

**THICKNESS** 1.5 - 20 mm

**STAINLESS STEEL WELDING**

**EQUIPMENTS:**

- Welders, with power 300 - 500 Amps;

**CURRENTLY USED MATERIALS:**

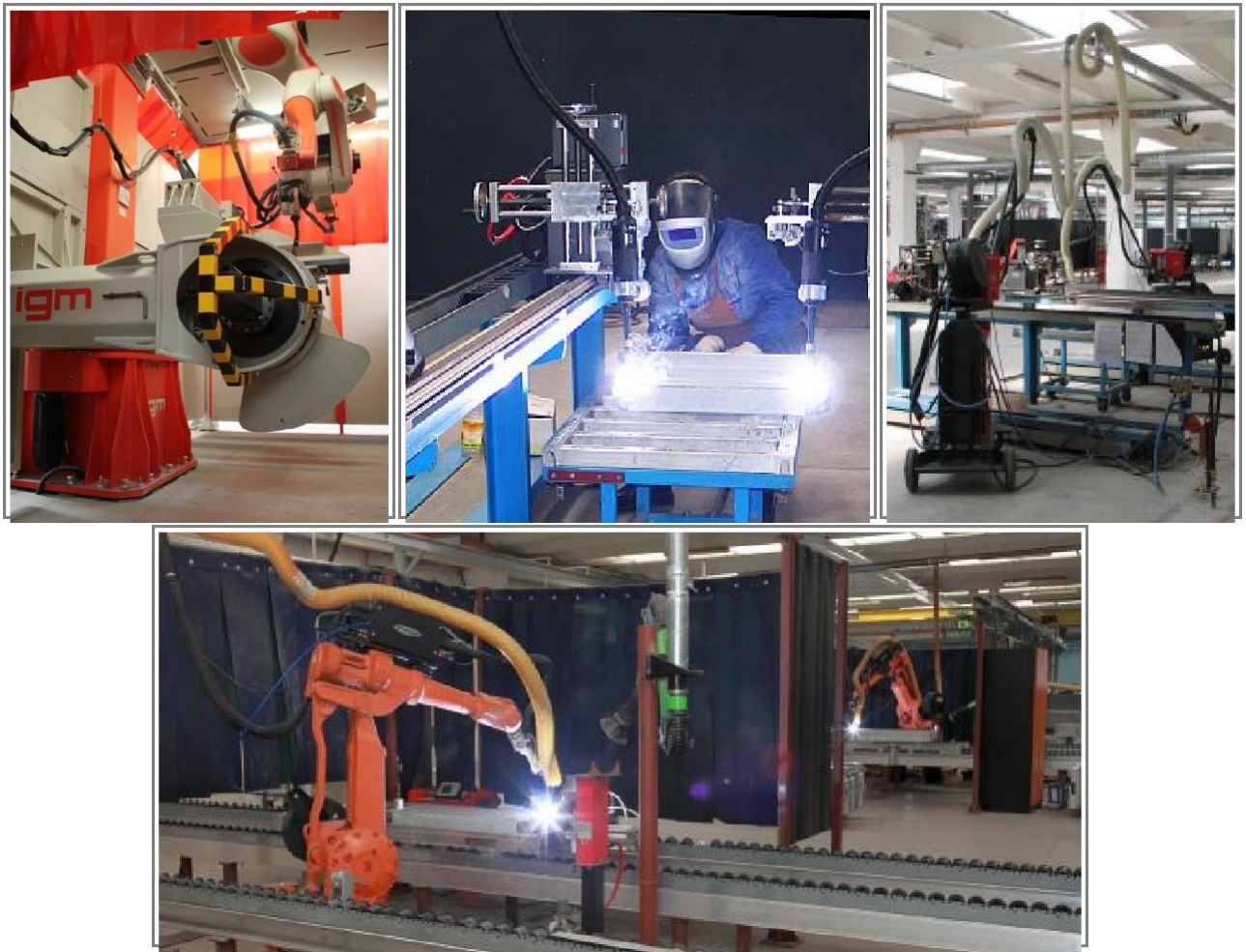
AISI304, AISI316                      Fillers: 308L and 316L

**Gas used:** argon, corgon

**Authorized** according EN 287-1(9606-1)

**PROCESSES:**    manual WIG

**THICKNESS** 1 - 12 mm



# KTL LINE AND POWDERS COATING LINE

**RAAL** ensures corrosion protection for steel and aluminium alloys parts on **KTL line** and on the **electrostatic painting line**.

## CATAPHORESIS (KTL)

The **cataphoresis process (KTL- Kathoden-Tauch Lackierung)** or cathodic electro deposition is a fully automated painting process by immersion. The KTL coating process main goal is to protect metallic surfaces against corrosion as well as/or to create a support for subsequent powders painting.

**MATERIAL PARTS**  
currently coated by RAAL using **KTL** technology

- steel
- aluminium alloys

**PARTS MAX. SIZES:**  
2200 x 850 x 1800 mm

**CAPACITY**  
**180 - 225 m<sup>2</sup>/hour**  
**in 2 shifts**



**KTL PAINT:** Powercrom 6000HE, last generation paint, have the following advantages: excellent corrosion resistance on edges, low polymerization temperature, good heat transfer efficiency, low film density and good corrosion resistance, free of heavy metals (Pb).

**KTL ADVANTAGES:**

- the possibility of painting any electrically conductive material, with complex shape and geometry, including sharp edges ;
- parts ultra cleaning before painting;
- high parts paint film uniformity;
- high chemical resistance following to the triple treatment applied to steel parts, namely ( Zn-Ni-Mn) phosphate + KTL + powder coating, thus being possible to obtain salt fog > 1000 h according to ISO 9227;
- low emission of volatile organic compounds



## POWDERS COATING

The **powders coating** process is a fully automated one. The process takes place within a spray booth equipped with cyclone filter using automatic sprinklers, where the parts are covered with powder paint injected by automatic pistols (6 pcs). In order to get complete painting coverage for the hardly accessible spaces, the booth has a manual painting space, at the entrance as well as at the exist zone. The painting can be done on the parts surfaces:

- pre treated (tri cationic phosphate) or;
- on the parts surface pre treated and KTL painted



**PARTS MATERIAL**  
currently covered at RAAL by the **powders coating** technology

- steel
- aluminium alloys

**MAX PARTS SIZES:** 1800x850 mm

**CAPACITY:** 180-225 m<sup>2</sup>/hour in 2 shifts



**POSSIBILITIES REGARDING CORROSION PROTECTION**

The **PRE-TREATMENT** for **STEEL / ALUMINIUM** can be combined with:

<b>+ POWDER PAINTING</b>	<b>ALUMINIUM</b>
<b>+ KTL PAINTING</b>	<b>STEEL / ALUMINIUM</b>
<b>+ KTL PAINTING + POWDER PAINTING</b>	<b>STEEL / ALUMINIUM</b>

## PRODUCTS GALLERY



## WHY US ?

Owing our industrial experience and other positive business traits, we are considered to be a trusted brand on the market. Some of the factors that recommend us to be the preferred choice on the market are:

- Expertise field
- Well developed infrastructure
- Highly professional engineers
- Approved quality products
- Scheduled delivery

These lead to a maximum client satisfaction.

### **RAAL SA, ROMANIA**

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## SUPPORT ACTIVITIES

### ■ TOOLING AND CHECKING DEVICES DESIGN AND MANUFACTURING

In **RAAL** operates a department for the design of tooling and checking devices « in house », that can produce custom tools for each project. Because we offer this service, we are able reduce:

- tools costs;
- respons time for orders;
- delivery time for new orders.

In addition, we take the full responsibility for the delivered products quality.

### ■ ENGINEERING

The **Research / Development Department** having new products design compartment, tooling and checking devices design compartment and testing laboratories, where work over 80 engineers, acts continuously as though the services offered to the clients to be at the highest quality standards.

The **RAAL laboratories** can, on demand, ensure:

- **Chemical and corrosion tests**
- **Measurements and 3D dimensional control**, done with a portable measurement 3D arm CIMCORE 7520 – Hexagon AB Suedia. The Delcam PowerINSPECT measurement software allows editing the measurement sheet by making a comparison between the imported CAD pattern and the processed piece.
  - ✓ Measurement field 2000 mm
  - ✓ Repeatability precision (probing error) ± 0.016 mm
  - ✓ Volumetric precision (palpation) ± 0.023 mm
  - ✓ Portable modul containing a WiFi system and a rechargeable battery.
- **Spectral analysis** using Spark Optical Emission Spectrometer OES - Tasman Q4 - Bruker Quantron GmbH Germany
- **Vibration resistance tests**, etc

### ■ LOGISTICS

**RAAL** uses an ERP system that integrates in real time the informational flow from all the company activities: orders, design, purchase, production, etc.

**RAAL** can provide to its clients logistic services (transport, storage and JIT delivery)

