



ZAVAR [®] d.o.o.

CATALOG
AUTOMATION
AND
ROBOTIZATION

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THE IMPORTANCE OF PREHEATING

- ▶ Preheating is a **vital** process in the welding industry.
- ▶ Preheating **reduces the risk of cold cracks** forming.
- ▶ **Preheating is adjusted** according to the material, thickness, standard requirements, and available resources.
- ▶ **Open-flame heating is highly efficient** due to its flexibility, speed, and low cost.
- ▶ Combinations of gases and oxidizing agents - acetylene, LPG, or natural gas with oxygen or air - enable a **wide range of applications** for **various heating needs**.



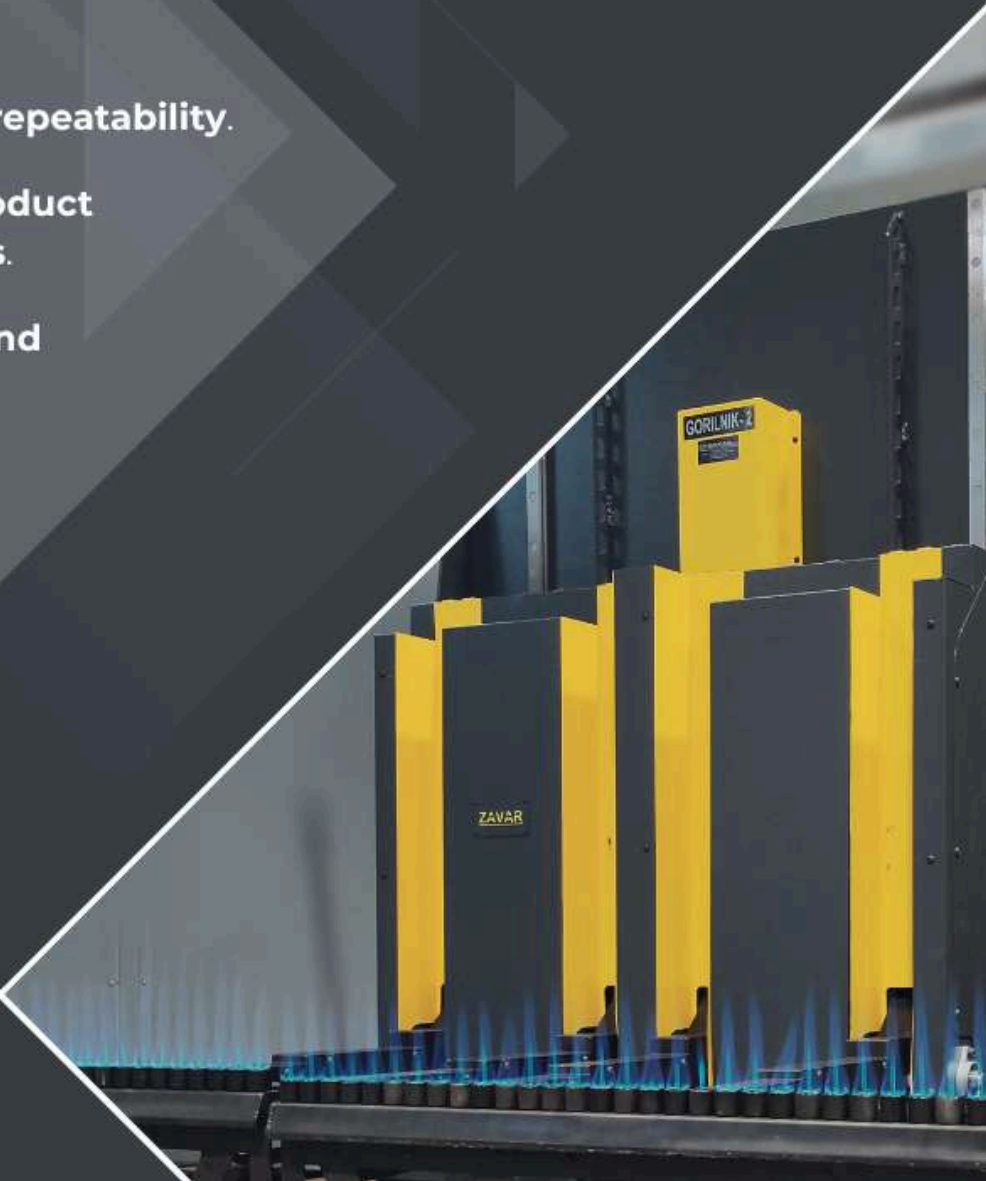
Safe and effective preheating requires **expert knowledge, appropriate equipment, and compliance with safety guidelines**. Modern mechanical and robotic systems enable process automation.

Automation improves precision and safety while increasing production efficiency.

AUTOMATIC PREHEATING

Advantages of robotic automated preheating solutions:

- ▶ They ensure **high process repeatability**.
- ▶ They ensure **consistent product quality** and **reliable results**.
- ▶ They **increase the speed and efficiency** of production processes.
- ▶ They **reduce the number of errors**.
- ▶ They **reduce long-term operating costs**.



Automated robotic preheating ensures the **preheating process** of the material **is fully controlled, repeatable** and highly **reliable**. Robotic preheating **improves** weld **quality**. As the robot performs the process automatically, **production is faster** and **more efficient**, while also **enhancing safety** and **ergonomics** in the work environment.

ROBOTIC PREHEATING

- ▶ For **even heating or preheating of workpieces in robotic cells.**
- ▶ The welding robot **performs the preheating automatically** before welding.
- ▶ The system features **gas and pressure monitoring, automatic ignition and flame control, temperature measurement, safety functions, and integration with robots and control systems.**
- ▶ You can choose between natural gas, acetylene, or LPG (propane) with air or oxygen for more efficient combustion.
- ▶ **Compliant with all applicable standards** for automatic mechanical burners.
- ▶ Robotic preheating systems are tailored to the customer's requirements.



For many years, our company has been developing and manufacturing burners for robotic preheating, designing each system to meet customer's needs. After reviewing your technical requirements or challenges, we prepare the optimal technical solution and a comprehensive offer. We provide expert support from design all the way to system launch.

CASE STUDIES

PROJECTS:

AUTOMATION

efficient

safe

reliable

ROBOTIC BURNER

▶ Robotic torch for preheating steel workpieces.

▶ *Mounted on a robot with a welding gun.*

▶ *The robot performs preheating and welding at the same time.*

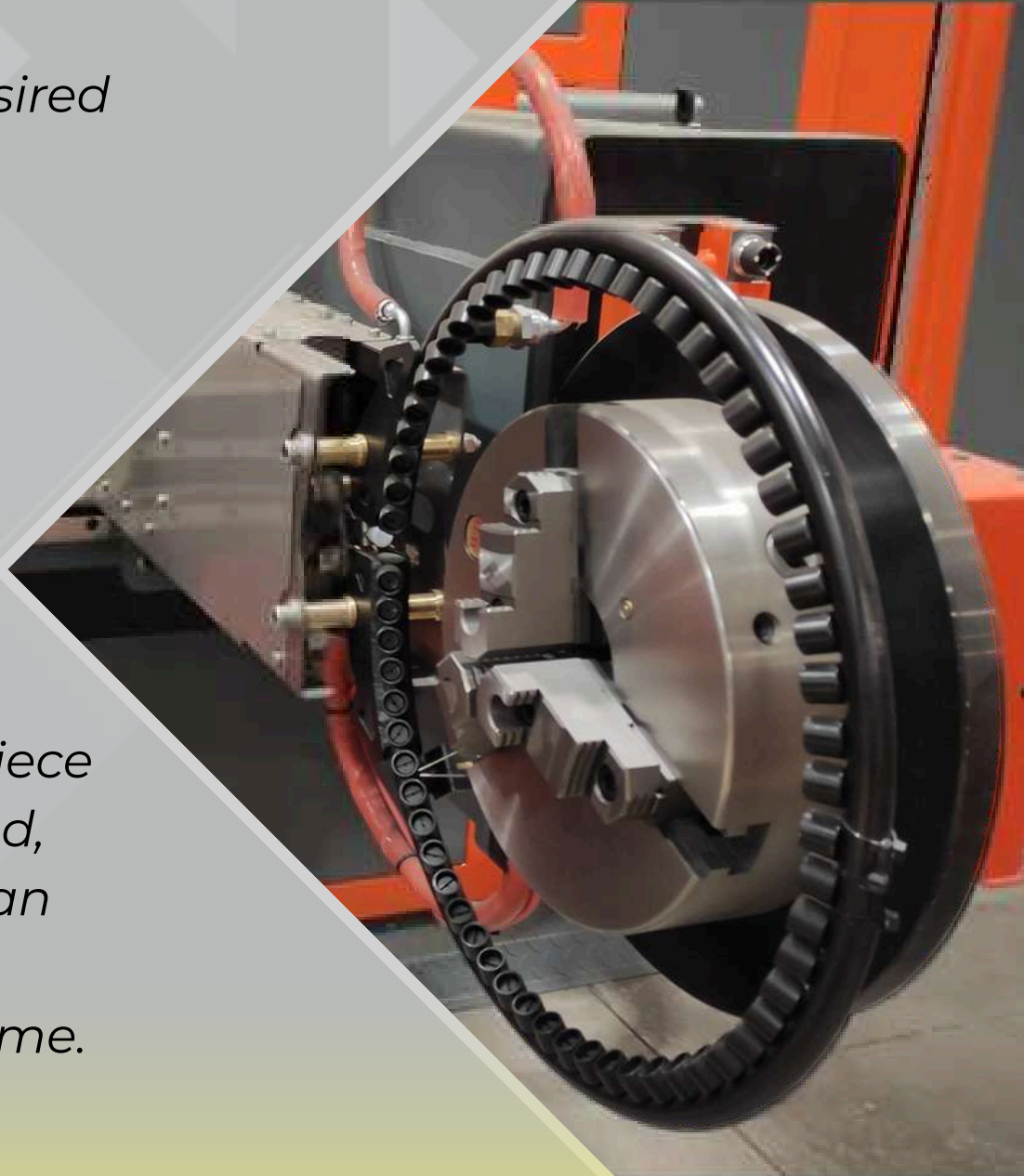
▶ *Once preheating is complete, the robot immediately begins welding.*

▶ **GAS:** oxygen + LPG / natural gas / acetylene.



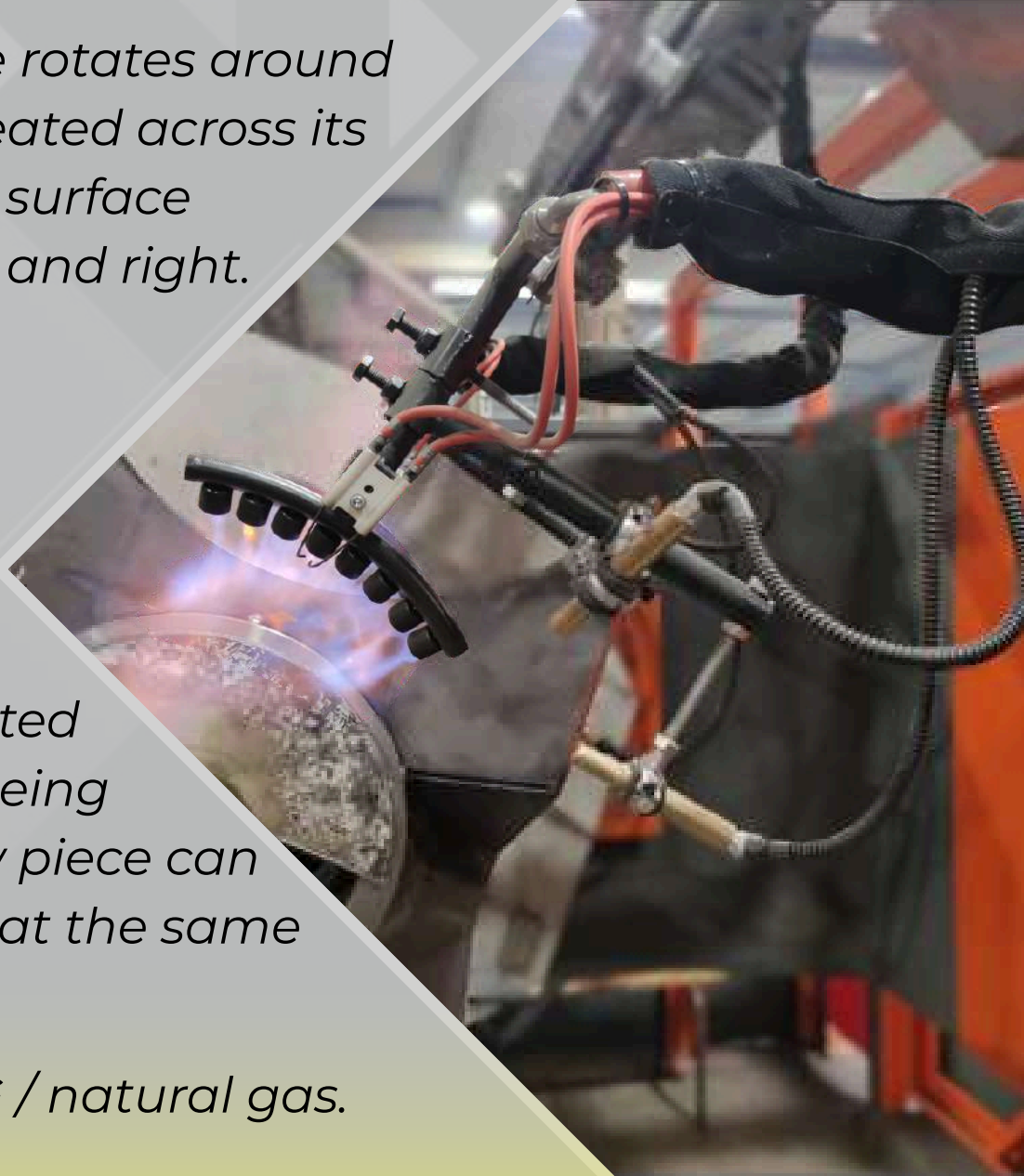
ROUND AUTOMATIC BURNER

- ▶ A dedicated mechanical burner for even heating of round workpieces.
- ▶ It ensures even heating across the entire round surface.
- ▶ *Adjustable desired preheating temperature.*
- ▶ **GAS:** air + LPG / natural gas.
- ▶ *While the heated workpiece is being welded, a new piece can be preheated at the same time.*



ARC AUTOMATIC BURNER

- ▶ A specialized arc torch designed for even heating of round workpieces.
- ▶ It ensures even heating across the entire circular surface.
- ▶ *The workpiece rotates around an axis; it is heated across its entire circular surface from both left and right.*
- ▶ *Adjustable desired preheating temperature.*
- ▶ *While the heated workpiece is being welded, a new piece can be preheated at the same time.*
- ▶ **GAS:** air + LPG / natural gas.



SQUARE AUTOMATIC BURNER

- ▶ A specialized mechanical burner designed for even heating of rectangular workpieces.
- ▶ It ensures even heating across the entire rectangular surface.
- ▶ *Adjustable desired preheating temperature.*



- ▶ **GAS:** *air + LPG / natural gas.*

INLINE AUTOMATIC BURNER

- ▶ An inline machine burner with servo-controlled movements for adjusting the heating position.
- ▶ It's programmed to adapt to the workpiece shape for efficient heat input.
- ▶ *When not in use, it automatically retracts to ensure the robot operates smoothly.*
- ▶ **GAS:**
air + LPG / natural gas.
- ▶ *Adjustable preheating temp. and the option to preheat a new piece simultaneously while welding another.*



INFRARED (IR) BURNER

- ▶ Dedicated infrared (IR) heater for heating with thermal radiation.
- ▶ Adjustable height and angle of the IR panel for optimal heat distribution.

- ▶ *Suitable for drying materials, the paper industry, and fire resistance testing.*

- ▶ **GAS:**
air + LPG / natural gas.

- ▶ *Equipped with safety features for flame and medium control.*



IR BURNER UNIT

- ▶ Custom-built unit for an IR burner with integrated controller and gas control unit.
- ▶ Custom design, fully tailored to the customer's specifications.

- ▶ *Built-in air compressor for mixing combustible gas and oxidizer.*
- ▶ *It enables fully independent operation of the system.*
- ▶ *No additional compressed air connection is required.*



SAND BURNER

- ▶ A sand burner for burning propane or natural gas.
- ▶ Custom-made to the customer's requirements.
- ▶ *Designed for testing the fire resistance and durability of materials.*
- ▶ *It enables controlled creation of high temperatures.*
- ▶ *It contains all the necessary functional and safety components for safe gas combustion.*



SAND BURNER UNIT

- ▶ Dedicated control unit for the sand burner.
- ▶ It includes all gas and control safety features.
- ▶ *It is equipped with wheels for easier movement around the workspace.*
- ▶ *It allows you to set heating programs using the colour touchscreen display.*



IGNITION UNIT - ROBOTIC BURNER

- ▶ Standard ZAVAR ignition unit for automatic robotic burners.
- ▶ Designed for reliable ignition of robotic burners.

▶ *The robot moves the burner toward the ignition station, where an electrode ignites the flame in a controlled environment.*

▶ *After checking for a flame, the robot continues the preheating process.*



FREE-STANDING BURNER

- ▶ A dedicated torch for heating workpieces mounted on a robotic arm.
- ▶ Once the heating process is complete, the torch nozzle automatically retracts.

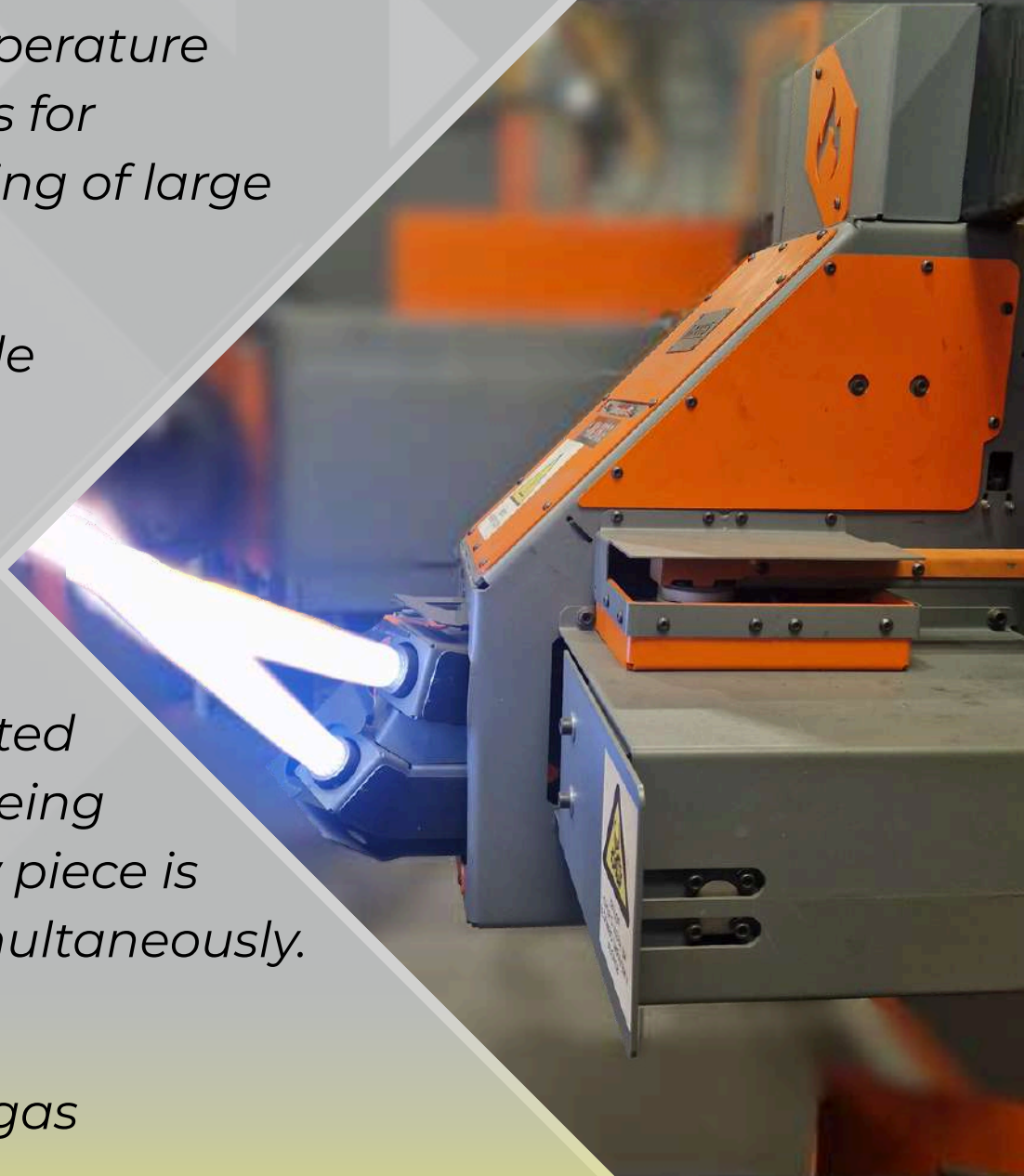
▶ *A high-payload robot picks up the workpiece and moves it toward the torch.*

▶ *The burner performs ignition and flame monitoring, and moves the nozzle, which contains a mixture of oxygen and LPG or natural gas, into the operating position.*



AUTOMATIC MACHINE BURNER

- ▶ A dedicated automatic burner with servo drives for customized heating of workpieces.
- ▶ It allows you to preset heating positions based on the workpiece characteristics.
- ▶ *Two high-temperature oxygen nozzles for rapid preheating of large workpieces.*
- ▶ *Fully adaptable operation depending on the workpiece.*
- ▶ *While the heated workpiece is being welded, a new piece is preheated simultaneously.*
- ▶ **GAS:** oxygen + LPG / natural gas



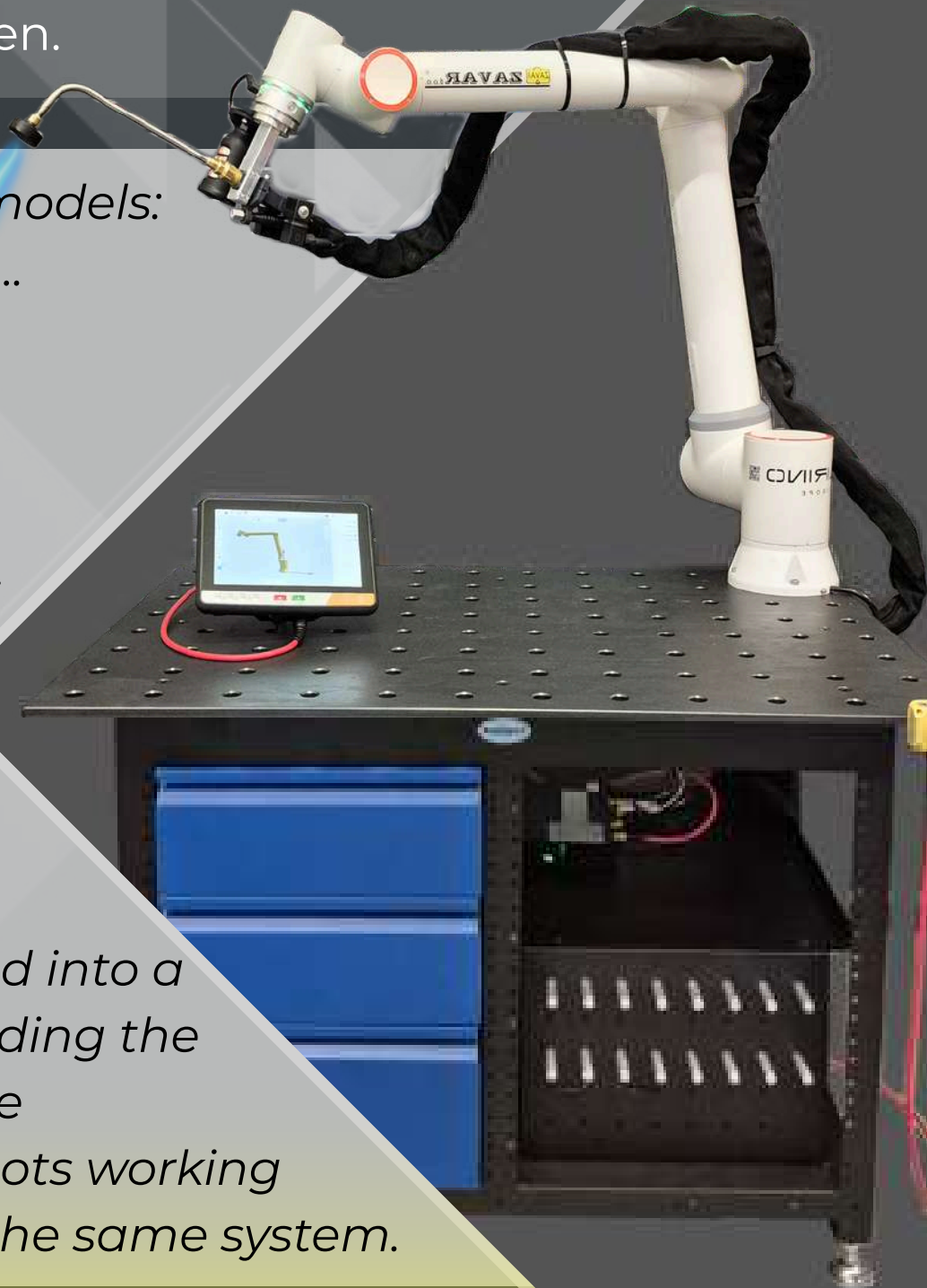
GAS PRESSURE REDUCTION UNIT

- ▶ Standard ZAVAR gas pressure reduction unit for automatic mechanical burners.
- ▶ It ensures reliable gas distribution to the burner.
- ▶ *It features numerous safety functions: leak detection, backflow prevention, gas monitoring, and pressure and flow regulation.*
- ▶ *It features a cleaning function and automatic shut-off of the supply in the event of a dangerous situation.*
- ▶ **GAS:** oxygen / air + LPG / natural gas / acetylene.



COLLABORATIVE ROBOT - COBOT

- ▶ A collaborative robot for flame heating or preheating and welding of various materials.
- ▶ Easy-to-use plug-and-play system with a touchscreen.
- ▶ Available robot models: 5 kg, 10 kg, 20 kg...
- ▶ The system as a whole, with pre-installed burner functions.
- ▶ It can perform preheating and welding simultaneously.
- ▶ Can be integrated into a robotic cell, including the option of multiple collaborative robots working together within the same system.



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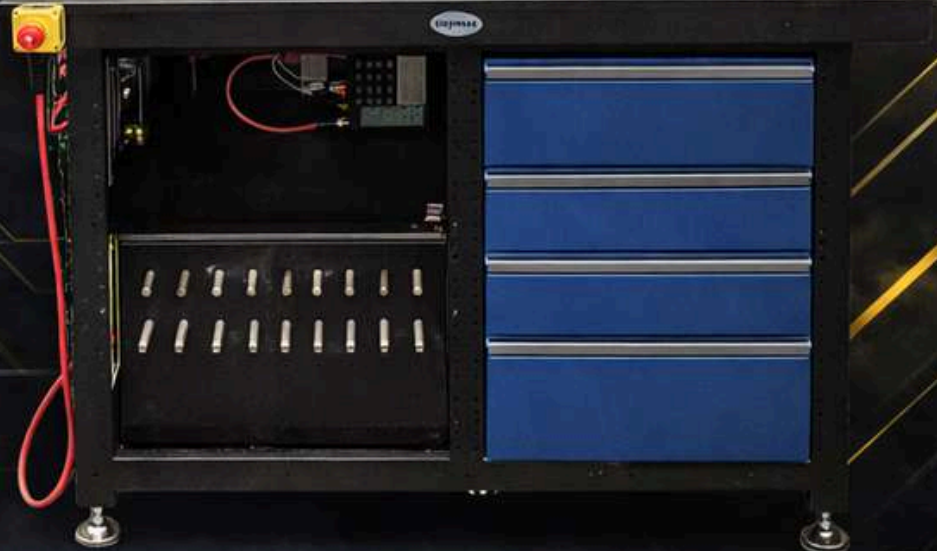
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