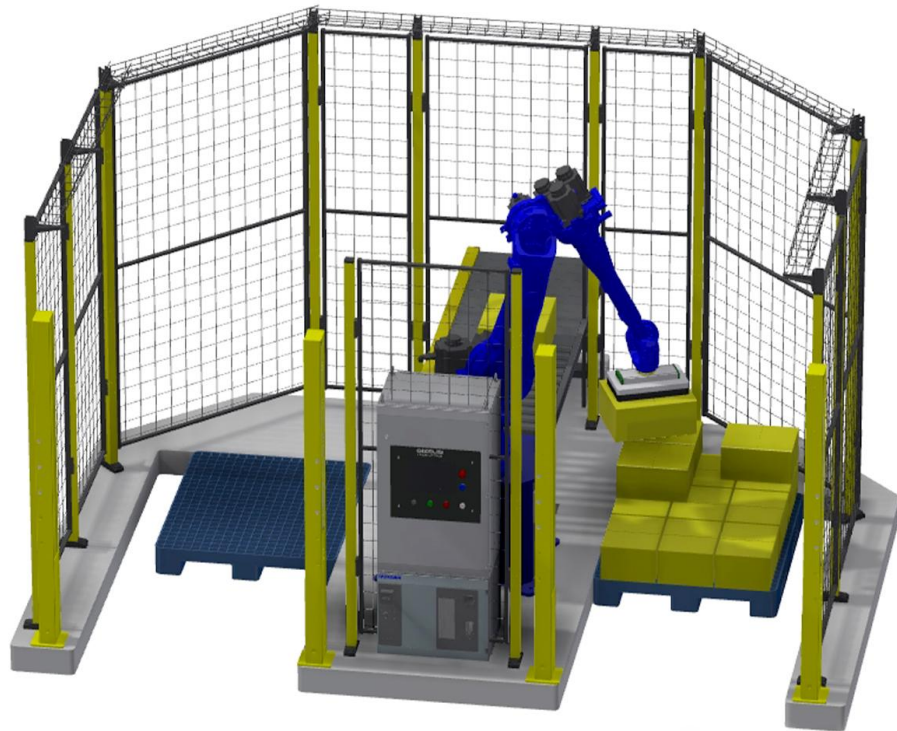


CELL-PAL DUAL

PALLETIZING SOLUTION



ALLIANCE
AUTOMATION

INNOVATE. CREATE. **ADVANCE.**

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A | Introduction

A/A	Component Description	Pieces
1	Robot PL80	1
2	Robotic Gripper	1
3	Robot Base	1
4	Robot Controller	1
5	HMI with specialized palletization program	1
6	Safety Systems – Safety Curtains	2 set
7	Carboard Box Conveyor Belt	set
8	Safety Fence	1
9	Electrical Board	1

Application's technical specifications

Products: **Cardboard Boxes**

Max product weight: **50 kg / item**

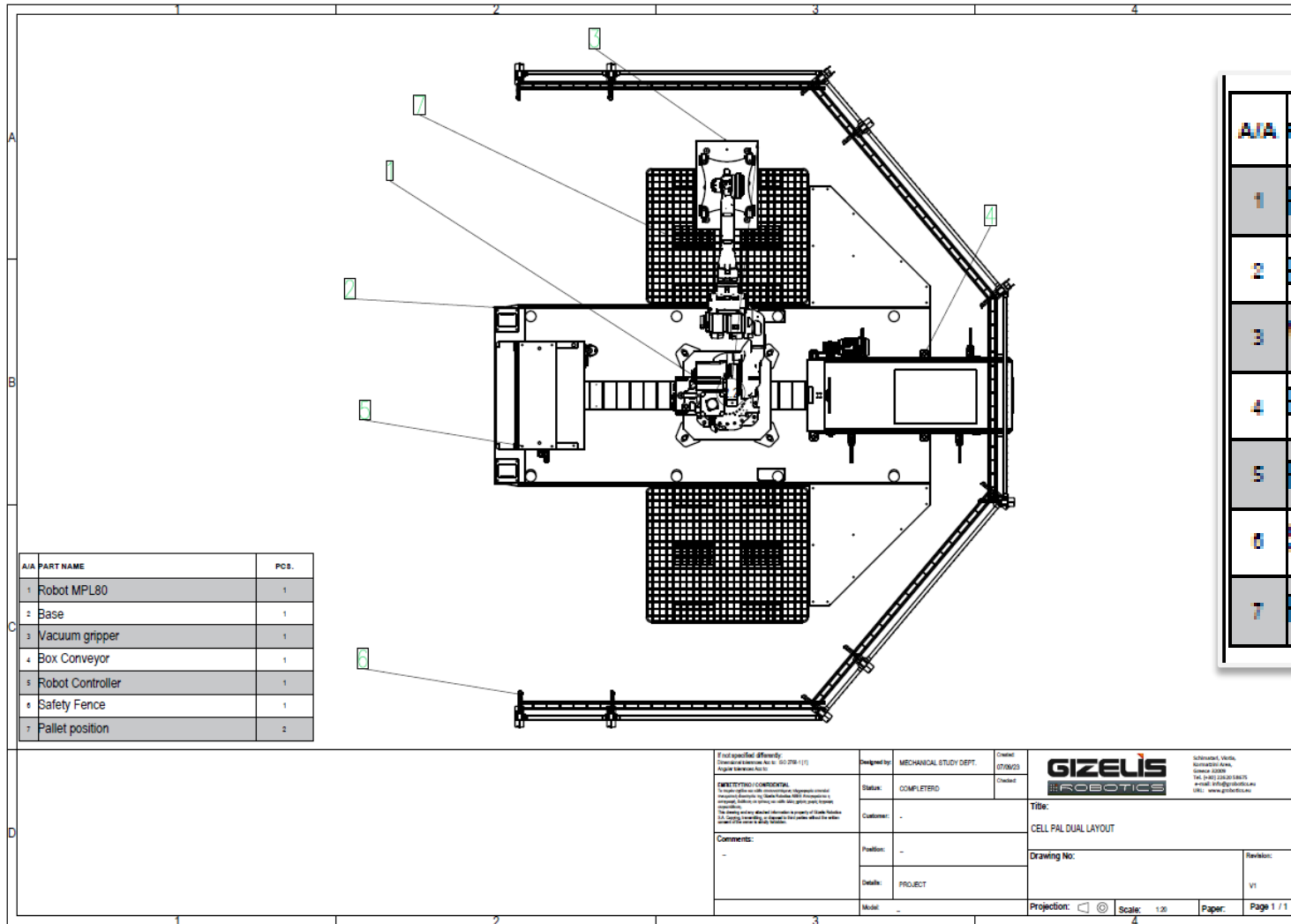
Max Pallet Height **235 cm**

Productivity: **600 boxes / hour**

** CE mark for the entire robotic system is provided.*

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B | Mapping



A/A	PART NAME	PCS.
1	Robot MPL80	1
2	Base	1
3	Vacuum gripper	1
4	Box Conveyor	1
5	Robot Controller	1
6	Safety Fence	1
7	Pallet position	2

C.1 | Technical Solution Description

- › Cell Pal Dual is Gizelis Robotics palletizing solution offering double pallet positions. This new feature offers increased independency as it provides the operators with more available time before pallet changeover.
- › With the use of Yaskawa's PL80 robot, we ensure total repeatability and zero product fall due to Gizelis Robotics specially designed pneumatic gripper.
- › The system can be easily moved from one line to another due to its rigid metallic base.

C.2 | Operating the robotic system is done with the following procedure:

- › Initially, the **operator** feeds the system with an empty pallet by placing it on special bases.
- › The operator selects the appropriate **product** from the HMI and initiates the automatic operation of the system.
- › The **robot** picks up the cardboard box with a special gripper and places it in a suitable position on the pallet.
- › When the **pallet** is completed, an audible signal notifies the operator to manually remove the finished pallet.

** This cycle is repeated until the production plan is completed.*

C.3 | Minimal Footprint

- › Our professionals have designed this robotic system in such a way to ensure that its footprint at our clients' premises will be very small.
- › This way, we have ensured a highly functional and quick system occupying minimum space, which is impossible for other conventional systems to succeed.

C.4 | Less maintenance Reduced Operational Expenses

- › Our system has been developed to minimize the needed maintenance time.
- › The operation of the system requires daily and periodic maintenance, which is thoroughly described in the provided technical manuals.

C.5 | Reducing Line's downtime Reduced Operational Expenses / increased productivity

- › The line's downtime is minimized as a direct result of reduced needs for maintenance.
- › Consequently, the system can work at an exponentially higher rate without need for stops.
- › At the same time, the system's operating panel will be programmed in such a way, to provide the operator with a full description of a potential problem, including a visual space representation.
- › The operator will therefore be able to have a clear view of the exact point causing a stop in the production process thus ensuring immediate problem identification and damage repair.

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D | System Components

D.1 | Robot Yaskawa PL80

- › The versatile and powerful 5-axis MOTOMAN MPL80 II robot provides high performance in case palletizing, bag palletizing, order picking and many further logistical tasks for end-of-line or distribution center automation.
- › Its extensive vertical reach of 3291 mm combined with 2061 mm horizontal reach enables high palletizing loads. Empty tubes for internally routed airlines and cables from base to end-of-arm tool maximize system reliability.
- › The MPL80 II is driven by the high-performance DX200 controller which is available with the optional Category 3 Functional Safety Unit (FSU), providing a variety of new safety functions.

KEY BENEFITS

1. Flexible and powerful
2. High Payload: 80 kg
3. Maximum reliability, empty tubes for internally routed airlines and cables
4. Internally routed fieldbus connection (optional) to T-axis/tool
5. Enhanced Safety Functions for DX200 Functional Safety Controller (FSU)

* Full technical specifications for the arm can be found in the relevant [Yaskawa Europe](#) specification sheet.



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D | System Components

D.2 | Controller DX 200

The point that makes a Yaskawa Robot excel is its Controller DX200 software. Some core features it provides:

- › Standard capabilities for 40 general-purpose inputs and 40 general-purpose outputs.
- › Manages up to 4096 I/O signals.
- › Supports programming with up to 200,000 steps and 10,000 instructions. For its internal ladder logic, it can handle up to 15,000 steps.
- › Ability to connect to all commonly used industrial Ethernet networks.
- › Can run six (6) programs simultaneously, one (1) of which can control motion.
- › Comes with a lightweight (0.986kg) programming pendant with a 5.7-inch touchscreen display.
- › Offers an optional feature for synchronized motion, allowing the robot to work in coordination with external axes with precise synchronization. This capability is particularly useful in applications like welding on a rotating axis with a complex contour.
- › For complete technical specifications of the DX200 controller, you can refer to the Yaskawa Europe's relevant specification sheet.

* Detailed technical specifications for the Robotic System can be found in the [Yaskawa Europe](#) relevant pdf.



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D | System Components



D.3 | Roller Conveyor

- › A conveyor for the transportation of products is offered.
- › The conveyors will have side guides, frame & support legs with driven conveyor transfers for easy and smooth product transition from conveyor to conveyor.
- › The movement will be carried out with an inverter.

D.4 | MPL80II Robot Base

- › A robotic metal base is offered according to robot type and payload to support the robot.
The base will be painted with special anticorrosion painting.



D.5 | Teach Pendant

Easy and fast programming, with several user levels (from operator to safety mode) and Help function.

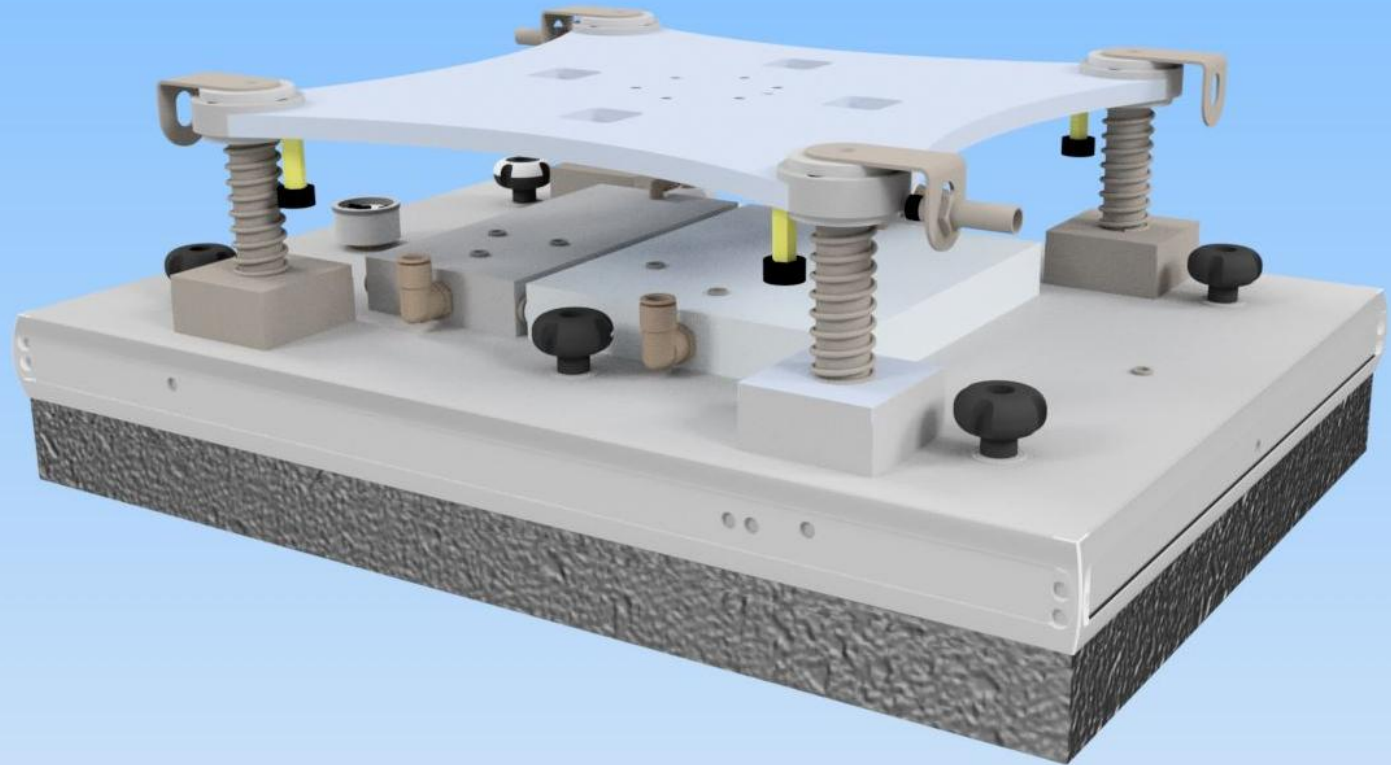


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D | System Components

D.6 | Robotic Grippers

- › A vacuum gripper with robotic functionality is available for handling your product.
- › This gripper will be capable of managing one cardboard box during each palletizing movement.

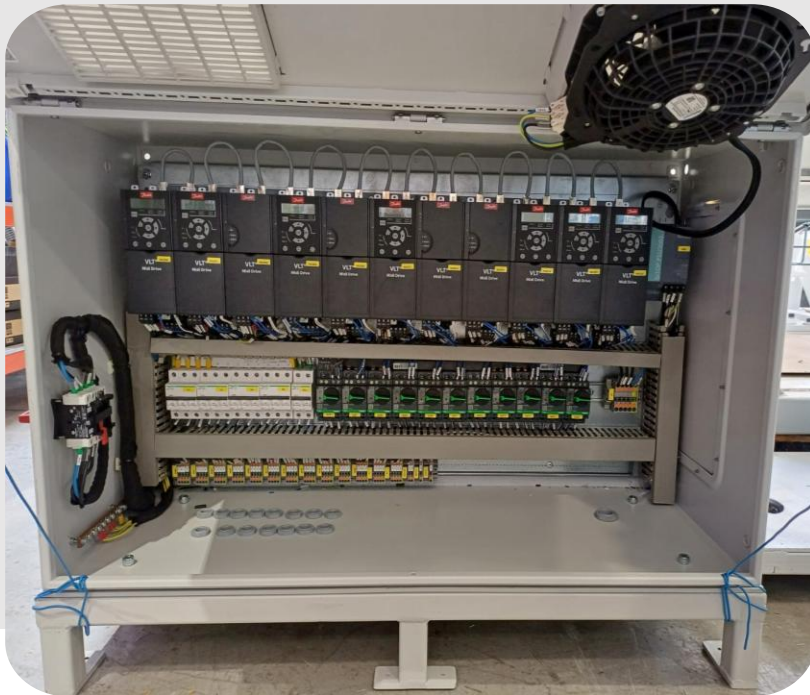


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D | System Components

D.7 | RITTAL Electrical Board Cabinet

We offer RITTAL electrical board of appropriate dimensions for the installation of the HMI and all electrical parts of the system.



D.8 | Safety Fences

Security enclosures of top-quality Swedish design are available. During system operation, the robot moves at high-speed following predetermined movements. To prevent injuries and ensure the safety of equipment from the entry of other machines (e.g., forklifts) into the system area, the use of safety enclosures around the perimeter is required.



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D.9 | Safety Locks EUCHNER

- › The safety locks that we offer are of the top lead manufacturer EUCHNER (CAT 4) - These are the best quality in the market.
- › Additionally, these systems offer the highest safety factor in comparison to any similar equipment in the market.



Guard locking type MGB-L2 - The locking arm is held in the locked position by solenoid force and is unlocked by spring force when the solenoid is switched off (open-circuit current principle, electrically locked).

Door stop A mechanical doorstop is permanently integrated into the evaluation module of the MGB. A marking on the stop makes adjustment easier.

LED indicator Indicates all important system and status information.

D | System Components

Monitoring outputs

- › OD - ON when the door is closed
- › OT - Bolt tongue inserted into the evaluation module
- › OL - Guard locking solenoid in locked position
- › OI - Diagnostics; there is a fault

Emergency stop device

- › S1 - Two positively driven contacts and one NO contact (e.g. monitoring contact), emergency stop with turn-to-reset, not illuminated

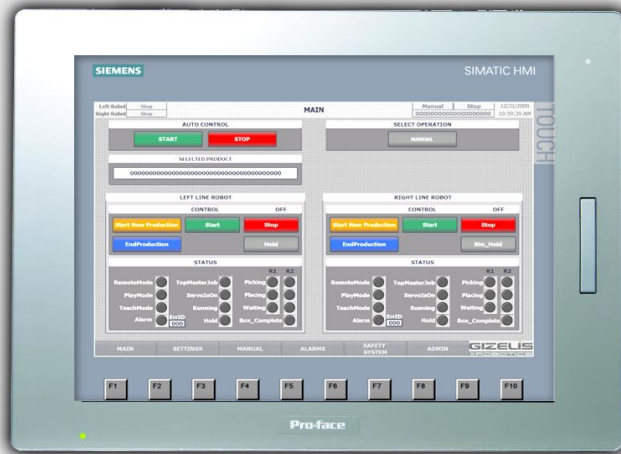
Pushbutton

- › S2 - One NO contact, illuminated
- › S3 - One NO contact, illuminated

Lens set The color of the pushbutton can be selected using the lens set included (five colors). Item no.: 120344

Escape release Enables people accidentally shut in to open the guard locked door from the danger zone.





D.10 | Human Machine Interface (HMI)

- › The HMI is installed to provide easy, fast and user-friendly operation of the system.
- › Within the HMI screen there will be graphics that will help the operator to understand each option and user parameter provided. Alarms will be illustrated and will be easy to follow its source.
- › In the HMI graphics user interface (GUI) all messages – alarms – statuses of the robot, supplementary equipment, PLC, and safety system are illustrated.
- › The communication is bidirectional and will allow the operator to issue commands.
- › With this way the operation of the system becomes easy without any need of special knowledge from the operator side. The HMI shall have the option for Greek language.

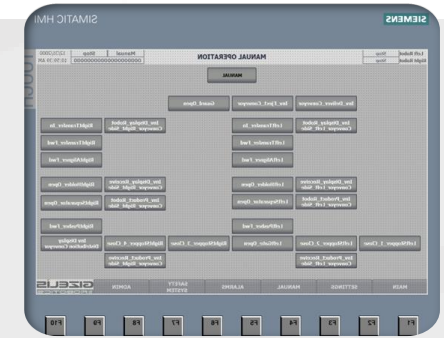
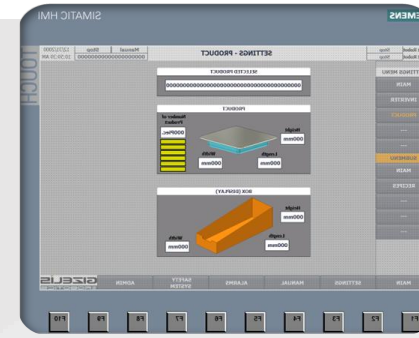
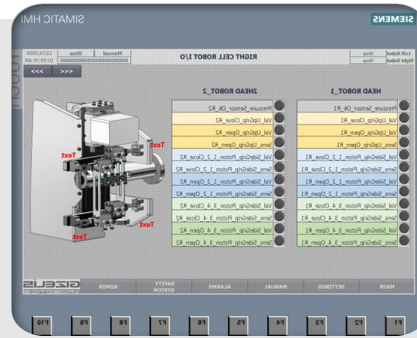
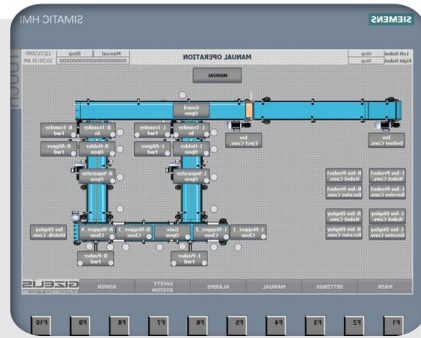
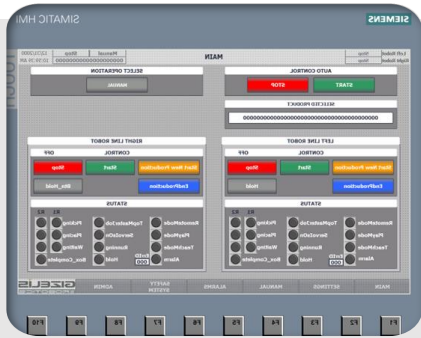
*** All software programming for all offered machinery is included in our offer.**

The system will be able to execute the program for the product according to the project's specifications. For the robot, one (1) palletizing program has been planned.



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E | Programming



- › **Start Screen:** From this screen the operator can initiate or stop boxes feeding as well as the operation of the robots. Furthermore, indications regarding the status of the robots at any given time are shown.
- › **Settings Screen:** The operator can indicate the appropriate feed times for a smooth handling of the cartons.
- › **Settings – Inverter left Side:** The operator will choose the speed of the conveyor belt for the robot pair on the left or the right side of the cell or upon exit of the cartons.
- › **Settings – Product:** The operator will choose the appropriate product/ recipe.
- › **Manual Handling:** Through this screen the operator can manually handle the conveyor belts and the plungers.
- › **Left/ Right Cell:** Through these screens the operator can manually handle the gripper.
- › **Controller Screens:** In these screens the operator can activate/ deactivate the robot pair either on the left or right, choose a different language or user account.
- › **Safety Screen:** The robotics cell's safety system is pictured.

* Indicative Screens

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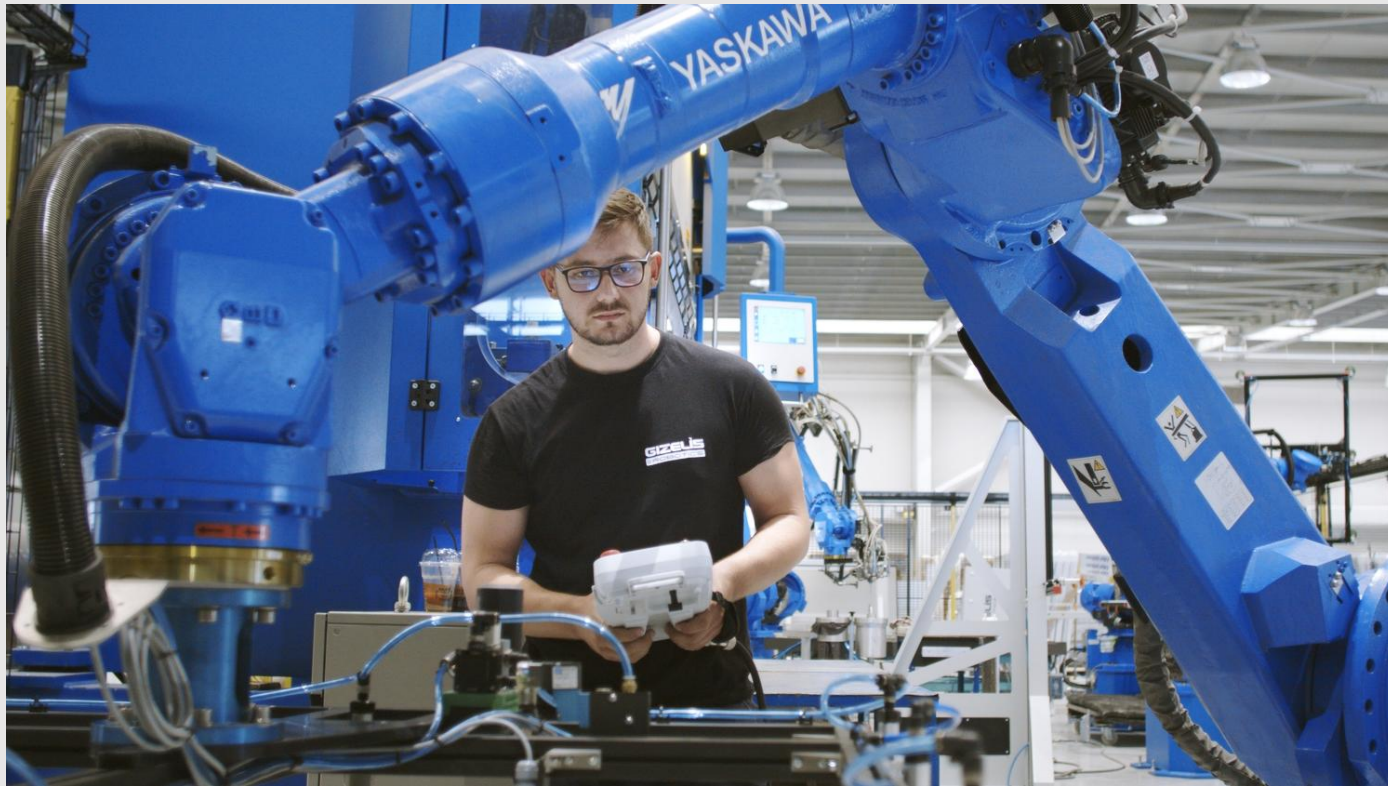
F | Installation (FAT)

- › The equipment / technical solution manufactured and supplied by GIZELIS ROBOTICS SA will be installed and tested within our own factory therefore the dispatch of commonly agreed test products by the customer's side is necessary and scheduled prior to the testing.
- › The installation of the equipment in our premises will be completed by our own experienced technicians maintaining all corresponding technical and safety regulations.
- › After factory installation, dry and wet test runs shall be performed where applicable.



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G | Training



- › Our company is offering full system training to your installation team. The training courses are divided into theoretical and practical sections.
- › We are following specific training procedure to ensure that your installation team will acquire all the necessary knowledge. The installation takes place once upon agreement between the two companies.
- › The number of trained personnel must be agreed before the training process begins.
- › After the training sessions are over; the customer signs a training protocol.