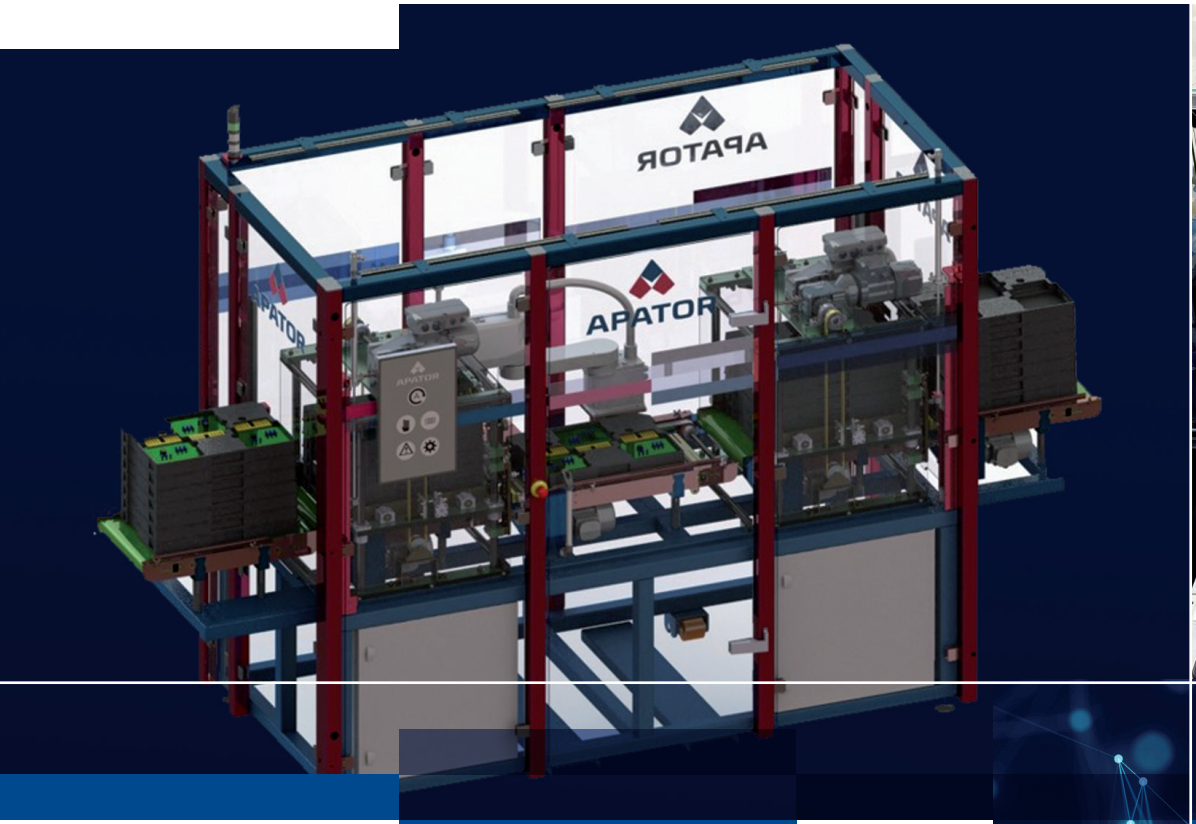
APATOR



FAGUS

Robotic device
for loading/unloading of components
from/to product trays

Experience, knowledge, competence

Over **10 years** of experience in robotisation and automation of production plants

Over **50** implemented projects

Production of machinery of a value of PLN 50,000,000

100% commitment to projects

A team of creative engineers specialized in mechanical engineering and innovative technological lines

Full technical advice and support in business calculation

Highest standards and technical resources

Professional approach

Our team of engineers is able to design **optimal solutions** based on the most up-to-date circuits and components available and used worldwide by industry leaders.
Together with the client, we analyse various solutions and select the most beneficial ones for the investor. We rely on an open model of cooperation with our client's team of specialists to ensure that every significant stage of the project is business-optimised.

The quality of our solutions guarantees safe, effective and long-term operation without unnecessary interruptions and unplanned downtimes. We are ready for further challenges.

Our team

Runs and tests the implemented solution.

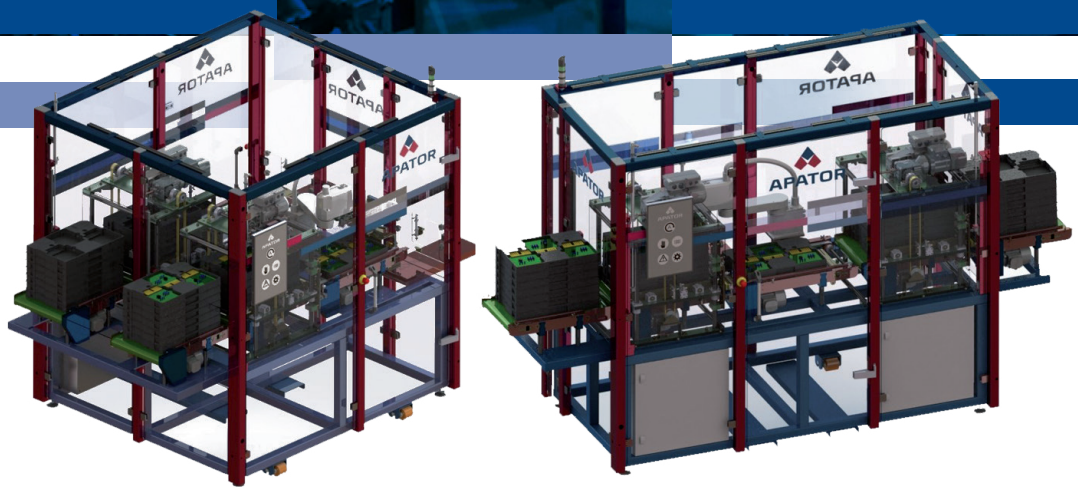
Install the line at the client's premises and integrate it with existing solutions.

Train the client's team in the operation and help integrate the process into production.

Take care of the maintenance of the delivered line.

Stacker/destacker FAGUS

The FAGUS stacker/destacker is a universal robotic device designed for automatic separation of single trays and stacking. The use of a robot makes it possible to quickly and accurately pick up products from production lines or put finished products on dedicated trays. The unit can operate in-line as well as being a separate machine that has a compact, mobile design with the ability to be moved. Our solution is a great way to increase production efficiency, optimising it cost-effectively. FAGUS not only replaces the monotonous tasks performed by operators, but above all guarantees high precision and ensures a just-in-time product flow.

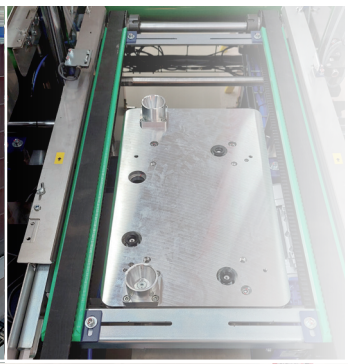


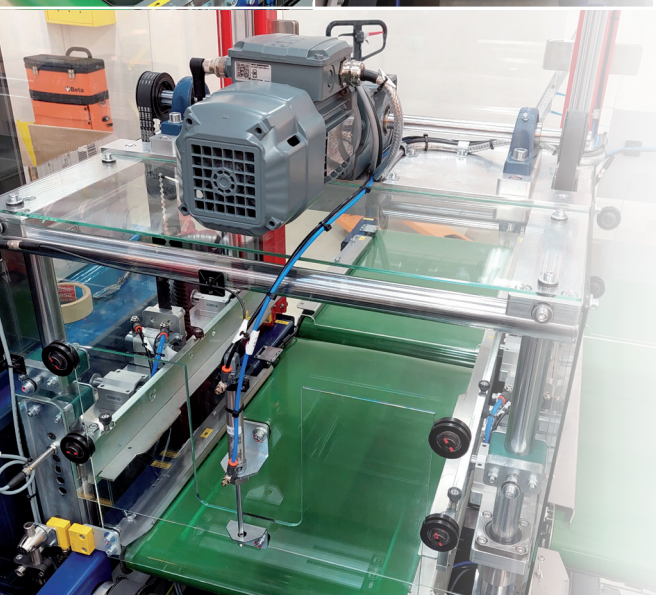
Examples of applications for FAGUS stacker/destacker

- Automatic assembly
- Automotive industry
- Electronics
- Food industry
- Plastics
- Confectionery industry
- Chemical industry

Features and benefits

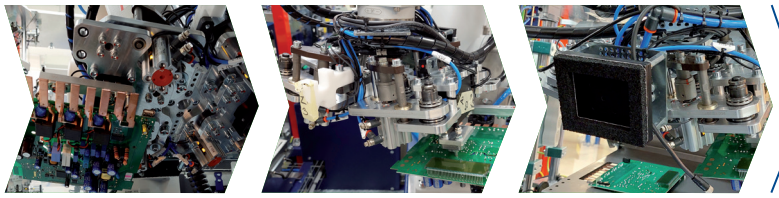
- A versatile, cost-effective unit that handles any product depending on individual customer needs
- The device has a loading, unloading or loading/unloading function
- Guaranteed high capacity of the device up to **2 seconds/piece**
- Handles trays with a maximum dimensions of 600x400 mm
- Minimised downtime and high process repeatability
- Two configurations available: serial (FAGUS 1) and parallel (FAGUS 2)
- The height of the stack of trays handled by the machine is up to 8 pieces
- Operating autonomy of up to several hours
- Possibility to adapt the width of the side walls of the stacking and destacking systems to different types of trays
- Can be integrated into a production line
- High reliability and low operating costs
- Positioning and control of the correct tray position
- Operation of the device and display of all text messages on a clear, intuitive HMI panel
- No damage to products during transport on conveyors
- ESD standard compliance



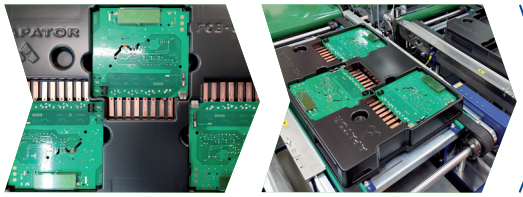


Main components of the device

- SCARA robot
- Mechanical gripper with product picking function
- Vacuum gripper with the function of picking up and putting away trays
- Solid basic frame that can be relocated
- High-quality tempered glass housing
- Input and output conveyors: belt and pulley
- Tray destacking system on the input conveyor
- Tray stacking system on the output conveyor
- Arrangements for lifting and positioning the tray in the place where plates are picked up and placed
- Control system including safety system, intuitive operator panel (HMI) and a number of sensors
- Danger zone entry/exit valves
- A system leading the detail out of the robot's reach zone into a supported machine or introducing the detail from a supported machine into the robot's reach zone

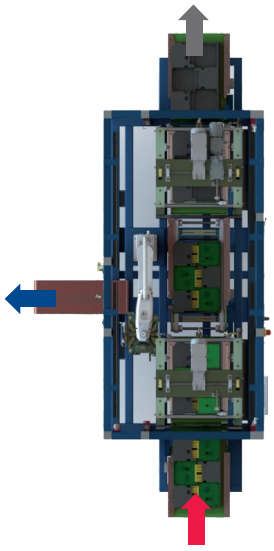


Our grippers have an axle-release function. This prevents unnecessary stresses from occurring during picking and depositing of products.

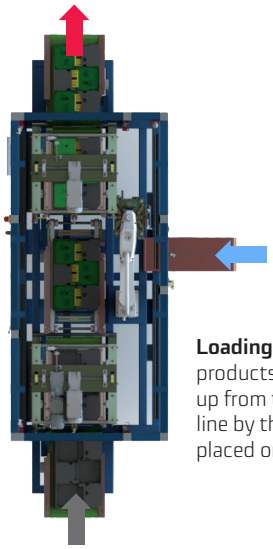


We work with several tray suppliers, so we have developed an innovative standard of side surface solutions that enable trouble-free operation.

FAGUS 1 – serial circuit



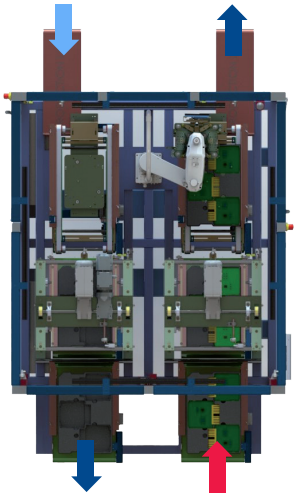
Unloading function - products delivered in trays are inserted by the robot into the production line



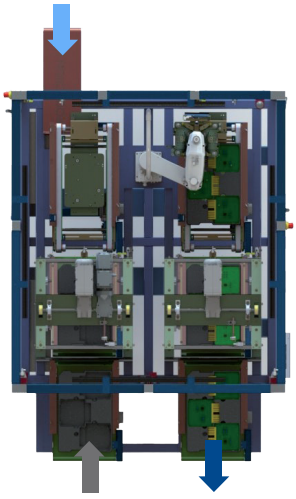
Loading function - products are picked up from the production line by the robot and placed on trays

- Product input/full tray
- Product output from the device
- Product entry from the production line
- Empty tray

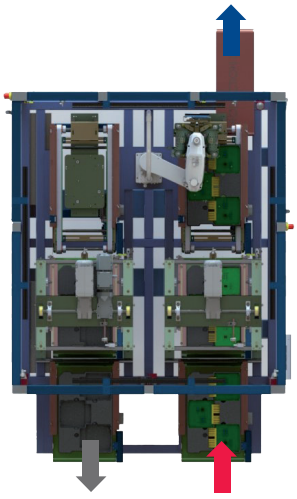
FAGUS 2 – parallel circuit



Loading and unloading function - the robot brings products from trays into the production line. After emptying, it places the empty tray on the output conveyor. The products are then removed from the production line by a robot and deposited in empty trays.



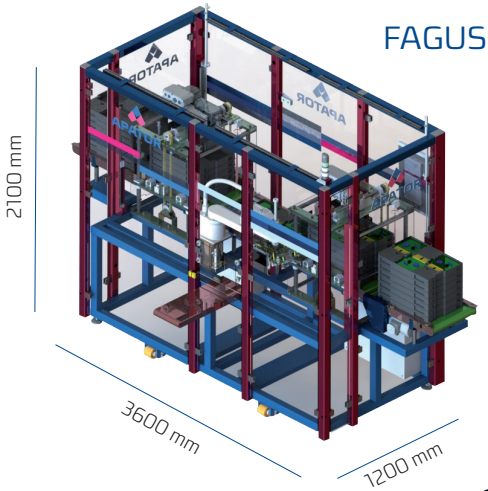
Loading function - products are picked up from the production line by the robot and placed on trays. The full trays are placed by the robot onto an output conveyor.



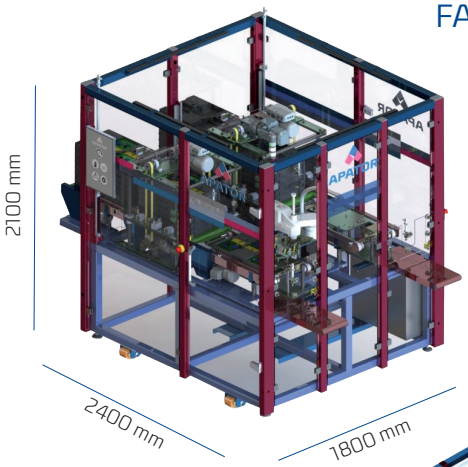
Unloading function - products delivered in trays are inserted by the robot into the production line. The empty trays are deposited by the robot onto the output conveyor.

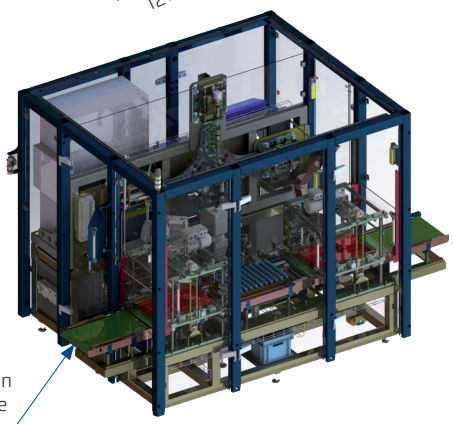
Device dimensions

FAGUS 1

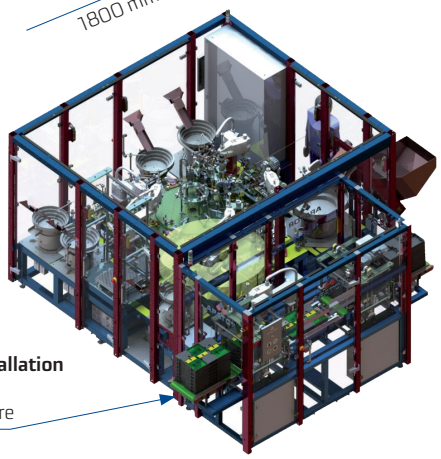


FAGUS 2





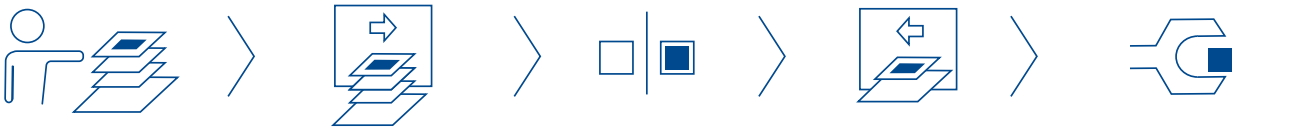
In-line assembly - can be integrated into the machine structure



Free-standing installation - can be positioned anywhere

Example operating sequence FAGUS 2

The solution is based on staking/destacking systems and operating SCARA-type robots. Products are delivered to or from the working area of the machine in customised trays with maximum dimensions of 600x400 mm by means of built-in input conveyors.



1. Operator loads trays with products onto input conveyor
2. Trays with stacked products enter the destacking device
3. Full trays are separated
4. A single full tray leaves the destacking zone
5. The SCARA robot takes the product from the tray and places it on the conveyor of the production line
6. The empty tray is moved by the robot to the input conveyor of the stacker
7. The robot takes products from the production line and places them in the tray
8. Stacking system forms a stack of full trays
9. Stack of full trays leaves the work zone of the stacker
10. Operators take a stack of full trays from the output conveyor

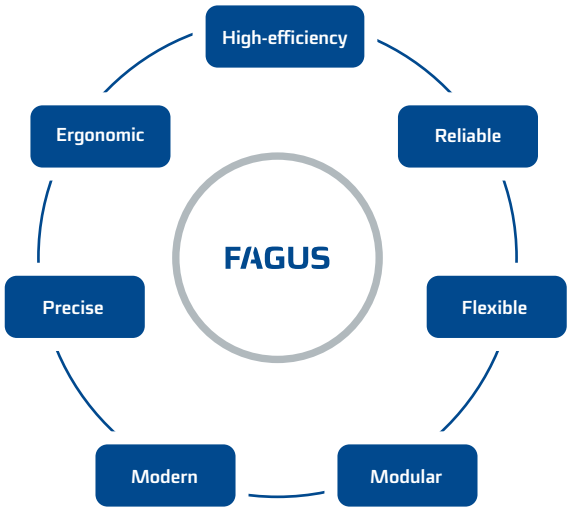
Technical data of the device

Parameter	Value (parallel/serial)
Rated voltage	400 VAC, 3P, 50 Hz
Control voltage	24 VDC
Network system	TN-S
Pneumatic supply	6-8 bar
Device dimensions	2400 x 1800 x 2100 mm/ 3600 x 1200 x 2100 mm

Sample capacity calculation

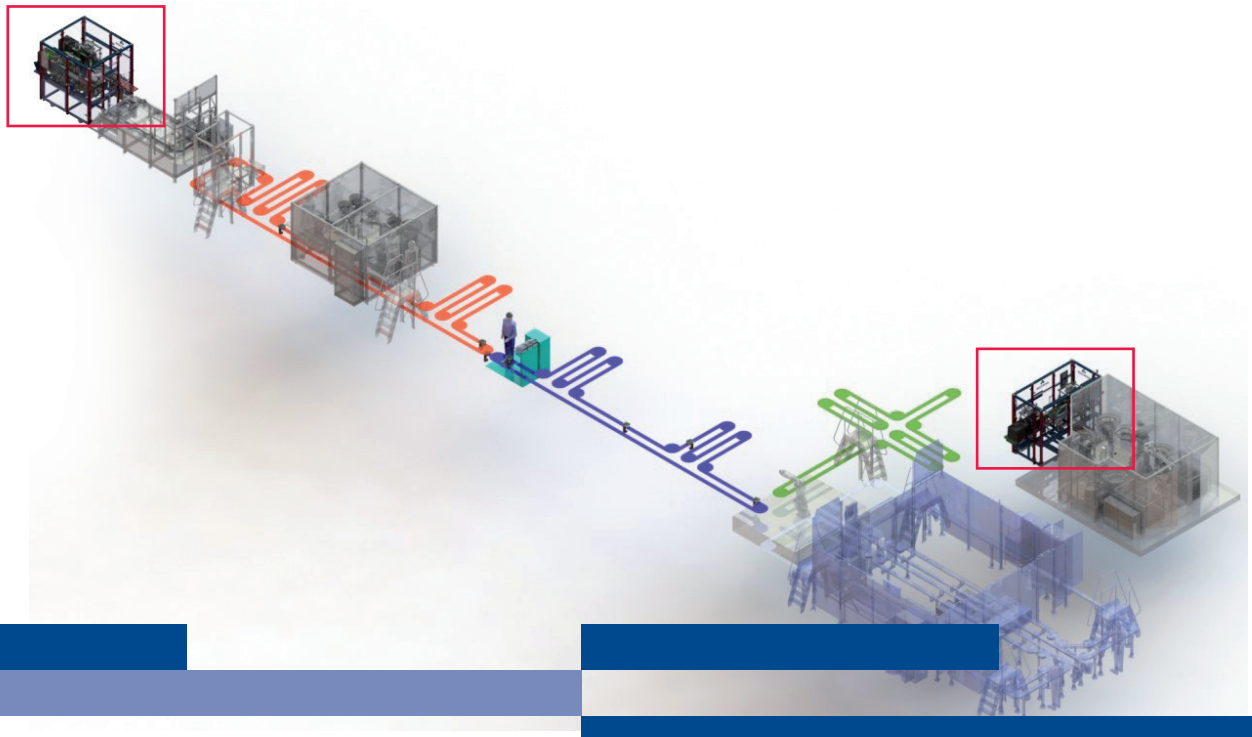
Functional parameter	Product
Number of products in the tray	115
Number of full tray layers	8
Total number of products in two stacks	1600
Production line cycle time [s]	2
Length of shift [h]	7,5
Capacity [pcs/shift]	13.500
Operating autonomy [h]	~1h

* Device capacity depends on the type of products



Individual approach

We implement new solutions as well as modify and integrate those currently used by our clients. We aim to provide solutions that are stable, compatible and modular - with the possibility of further expansion.
It all starts with a visit to the client's premises, during which we discuss the details of the process to be automated, but not only - we also closely analyse the processes around the main issue. A broader view of what takes place before, after and beside us in the production plant positively influences the concept of the automation and robotisation system to be implemented, so that the whole becomes an optimal and efficient solution.



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