Rockwell Automation

expanding **human possibility**®

Presentation of the Industrial Automation Laboratory


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Autom

PLC Controller and Point I/O

The workstation includes a **PLC (Programmable Logic Controller)**, which acts as the core of the automation system. Its main function is to **control machines and processes** by receiving signals from sensors, processing them according to programmed logic, and sending commands to actuators such as motors and valves.

Next to the PLC is a **Point I/O station**, which can be installed anywhere away from the controller. Using **EtherNet/IP communication**, it handles **input and output signals** through modular cards, enabling flexible signal distribution across the plant and reducing wiring complexity.

Computer and Control Panel at the Workstation

The workstation includes a **computer** used for creating control algorithms and visualizing system operations. This allows students to experience how programming and process monitoring are implemented in industrial automation.

It also features a **control box with buttons, switches, potentiometers, and an ammeter**, designed to demonstrate the operation of equipment commonly installed in factories. This setup helps students understand the differences between **analog and digital signals**, which is essential for designing and troubleshooting automation systems.

PowerFlex – Variable Frequency Drives (VFDs)

Devices used to **control the speed and torque of electric motors**.

Enable smooth speed regulation, energy savings, and machine protection.

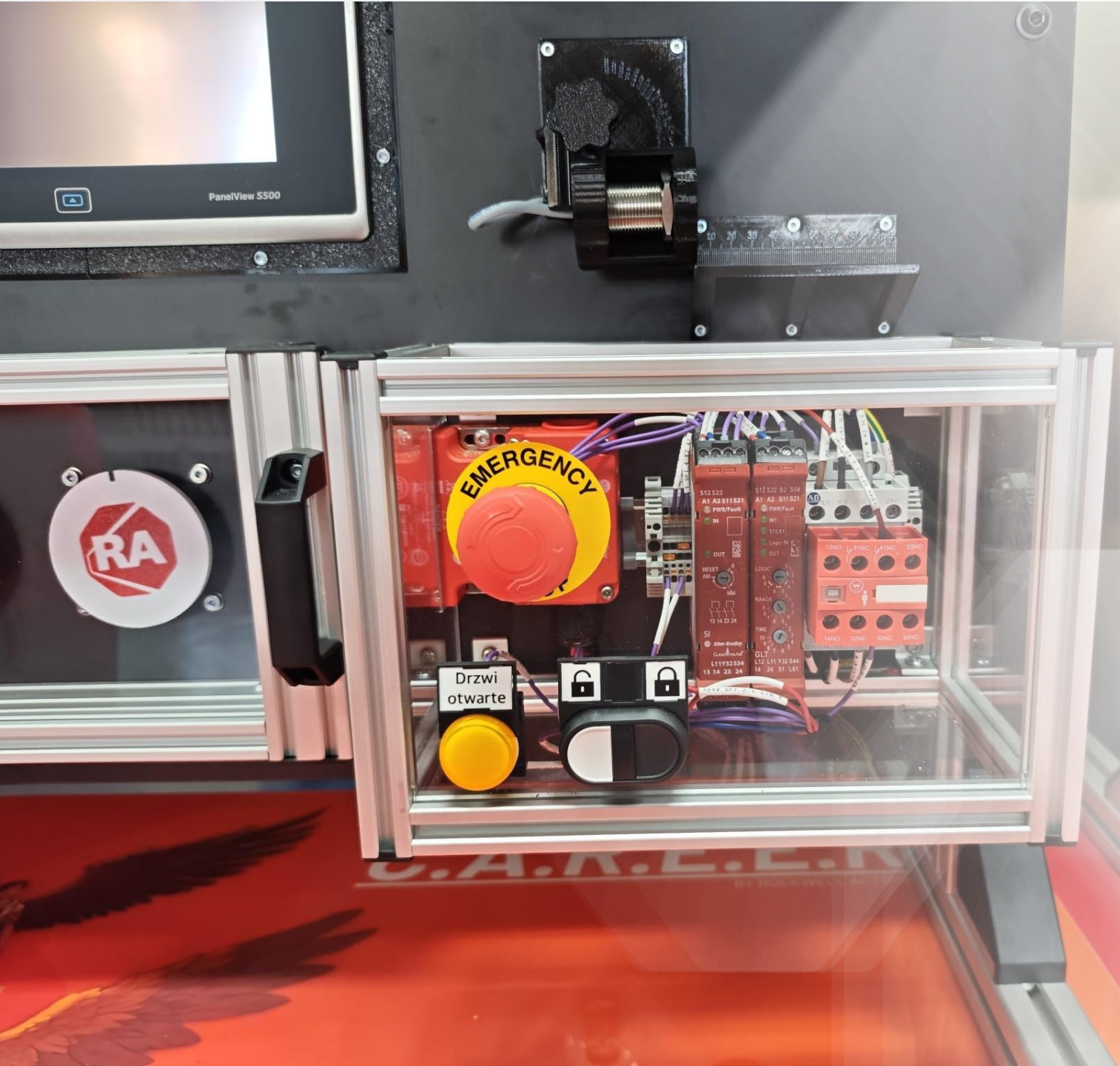
Applications: pumps, fans, conveyors, production lines.

Kinetix – Servo Drives and Servo Motors

Systems for **precise motion control** in machines.

Provide accurate control of position, speed, and multi-axis synchronization.

Applications: robotics, packaging, assembly, high-speed machinery.



Safety Components in Industrial Automation

The workstation includes a **safety control box** that contains components commonly used in modern factories to protect both people and machines. Its purpose is to **prevent access to hazardous areas** and **cut off power in emergency situations**, reducing the risk of injury and equipment damage.

This setup was created to give students **hands-on experience with essential safety solutions**, which are a critical part of industrial automation and mandatory in professional installations.

Additional Components of the Workstation

The workstation also includes **sensors** that provide signals to the controller and an **HMI panel**, designed for system visualization and intuitive control.

Additionally, there is a **motor control box**, where students will have the opportunity to set motors in motion and learn practical aspects of drive control.

The setup also features a **section for learning electrical apparatus**, equipped with components such as contactors, timers, relays, indicator lights, and push buttons, enabling students to understand the fundamental devices used in industrial automation.

Thank you

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