AUTOMATION STUDIO™ E6
Educational Edition

The Tool of Choice for Teaching, Training and Learning Automation, Electrical and Fluid Power Engineering Technologies

Your Mechatronics Teaching and Training Platform

A Product of Famic Technologies Inc.
If you teach subjects related to hydraulic, pneumatic, electrical and control technologies, the illustration of concepts and the behaviour of systems are no doubt at the heart of your requirements.

Created in 1986 by Famic Technologies to meet the needs of technical teaching and training and used in thousands of schools worldwide, Automation Studio™ is a unique software solution, which offers intuitive design, animation, simulation and system analysis features in a versatile and user-friendly environment. It allows teachers to present more content in less time, improves students’ understanding of concepts and diagnosis capabilities and brings to schools, colleges and universities an optimal return on investment.

**Complete Software Solution for Teaching Future Technicians and Engineers that Covers all Levels**

**High School**  
**College**  
**Corporate Training**  
**Vocational Training**  
**University**  
**Workforce**

**The Most Cost-Effective Solution for Teaching and Learning**
Automation Studio™ is a complete solution which covers a wide array of technologies. It is offered to schools at a very attractive price.

**Maximum Return on Investment: One Solution for Several Departments**
Since it covers most industrial technologies, Automation Studio™ is ideal for many curricula and can therefore be used by several schools’ departments. They can take advantage of one single complete software solution and share its cost.
Teachware

Course material is available for various technologies. It provides teachers and trainers with the essentials for preparing course curriculum. Automation Studio™ offers guides, lectures, animations and lab notes for all levels of discipline.

Unlike other teachware made using multimedia sequences, course content offered by Automation Studio™ is interactive and animated live by the software’s simulation. Teachers can modify this content using Automation Studio™ to better fit their needs.

Online Remote Access Licensing

Easy-to-use, reliable and accessible, wherever you are!

Benefit from an online remote access license connection for teachers and students. You can prepare and simulate your courses and homework from home, school or workplace.

Interactive Lab Exercises

Interactive lab exercises created in Automation Studio™ are available for different technologies to test students’ comprehension. These exercises include simple schematics that can be simulated and animated in order to be analyzed. Students can answer related questions for each exercise using the provided interactive form in Automation Studio™. Teachers can also modify these exercises and create new ones.

Workflow

The Workflow allows teachers to create and sequence content in order to evaluate students’ knowledge retention. It does not require any programming knowledge and it can be used to create all types of interactive and automated exercises. Text-to-speech can also be integrated to include voiced instructions for each exercise.
All-in-One Mechatronics Teaching Solution
From Basic Concepts to Multi-Technology Systems

Overview

- Complete Set of Libraries
- Rich Set of Data Analysis Tools
- Drag and Drop Objects
- Bill of Material
- Dynamic Measuring Instruments
Component Failures

Troubleshooting and Diagnostics

Virtual Systems

Control Panel

Configurable Displayed Information

Dynamic and Realistic Simulation in Full Colour
Hydraulics
Complying with ISO 1219-1 and 1219-2 standards, the Hydraulic Library (industrial and proportional) offers all the component symbols required to create mobile and industrial hydraulic systems and functions. Components are preconfigured. Moreover, simulation parameters such as performance curves, external loads, leaks, viscosity and thermal characteristics can be configured as needed.

Pneumatics
The Pneumatic Library includes all the symbols necessary to create pneumatic, electropneumatic and logic systems. Like in the Hydraulic Library, the parameters of pneumatic components can also be configured.

Programmable Logic Controller (PLC)
Automation Studio™ offers three PLC Ladder Logic Libraries: Allen Bradley™, Siemens™ and IEC61131-3. It becomes easy to create and simulate the control part of an automated system.

Digital Electronics
This library includes standard devices such as inverters, logic gates, flip-flops, counters, shift registers, comparators, switches, LEDs, 7-bar display, decoders, multiplexers, etc.

Electrotechnical One-line
This library enables the design of diagrams for all voltage levels in a typical one-line representation of networks for power generation, transmission and distribution.
Electromechanical

AC/DC Current and voltage (RMS/average/instant)

Electrical Controls
The Electrical Controls Library interacts with all components from other libraries so as to create electrically controlled systems. It supports IEC and JIC standards.

Frequency
Resistance
Frictions
Hysteresis
Pressure, flow and temperature

HMI and Control Panels
With this module, users can easily create animated shapes that reproduce the behaviour of the equipment they represent. It also allows to create control panels and to operate the virtual system or real equipment.

Sequential Function Chart (SFC/GRAFCET)
The Sequential Function Chart (SFC) Module is the tool of choice to implement control structures. In addition to macro-steps, Automation Studio™ includes encapsulating steps which enable hierarchical order.

Block Diagram
With the Block Diagram Library, it is possible to create a graphical environment for component and system modeling using predefined function blocks. It can also be used to create and test complete control loops.

Electrotechnical
The Electrotechnical Library offers a wide array of components to create AC and DC electrical circuits, from basic to advanced uses. It supports IEC and NEMA standards.

Motor soft starters and variable frequency drives are available. The library’s components are built according to the real manufacturers’ models such as Siemens™, Allen Bradley™, etc.

Tools are available to quickly implement and design entire scaled cabinets and junction boxes. A rail mounting for assembly grouping as well as ducting elements for wires are available.
Adjustable Component Simulation Parameters

Default simulation parameters are set for each component so that no initial configuration is required. This includes parameters such as applied loads, dimensions, angles, internal leakages, force, torque, etc. Users can also choose to display favourite properties of a selected component.

Component Sizing

Automation Studio™ provides calculation worksheets specific to each category of pneumatic, hydraulic and electrical components which include calculation tools necessary for component sizing. Input parameters can be defined using curves to generate energy calculations. Users have quick access to applicable equations and parameters’ definitions.

Create and Customize your Own Symbols, Libraries and Templates

Using the standard components, the flexible drawing tools and the grouping function, users can create and customize their own libraries and templates. This makes it easy to create libraries specific to an exercise and containing only the required components.

You can use the components from your library to recreate virtually the same labs that are provided with your hydraulic, pneumatic, electrical and PLC equipment. Students will be much more efficient once they move to the hands-on lab.

Configuration Tools

Automation Studio™ allows you to create and configure valves, cylinders, motors, etc., to obtain components which are graphically compliant with your requirements and respectful of real technical performances.

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Dynamic, Realistic and Visual Simulation
Automation Studio™ allows to accurately reproduce the system’s behaviour in a dynamic and visual way. During simulation, components are animated and lines and wires are colour-coded according to their state. The simulation can then help to explain system operation and to assimilate more quickly theories and concepts studied in class. You can also monitor variables such as pressure, flow, displacement, current and voltage at any point in a circuit. The simulation paces “Normal”, “Slow Motion”, “Step by Step” and “Pause” allow to control the simulation speed.

Virtual Systems
Using the Electrical, PLC Libraries and SFC/GRAF CFT Module, the student simply links sensors, switches, lights, conveyors, etc., in order to make the Virtual Systems operate according to the teacher’s instructions. All this is done in a safe environment!

3D Editing and Animation
Automation Studio™ includes a 3D editor for creating and importing 3D parts in STEP, STL and IGES. It is possible to visualize, simulate and animate them simultaneously with the technologies that drive the system.

Mechanical Links
Using the Mechanism Manager, mechanical bodies can be linked to Fluid Power actuators to simulate and animate their effects.

Cross-Section Animation
Users can build cross-section animated views and link them to the simulation results in order to produce synchronized animations.
System Behaviour Analysis
You can monitor and visualize simulation variables during simulation. Results can be analyzed after simulation and exported into other applications for further analysis.

Troubleshooting Module
Create or activate pre-defined component failures and analyze the related system behaviour. Students learn to quickly and easily solve “What-if” scenarios of potential problems. Failures can be triggered automatically by preset conditions or manually during simulation.

Circuit Modification During Simulation
Automation Studio™ provides tools for disconnecting wires and pipes during simulation to isolate parts of a circuit, perform measurements and repair or replace components to fix suspected failures. The state of the complete circuit is instantaneously and realistically updated. A repair tool is also provided, allowing you to select and remove any suspected faults.

Diagnostic Tools
Automation Studio™ provides extensive diagnostic tools allowing to detect inconsistencies or errors such as non-compliance with ISO standards, free connectors, redundant or overlapping lines, etc.
Manufacturers’ Catalogues
Automation Studio™ is the only software solution offering teachers and students an extensive library with thousands of preconfigured components that reproduce real world functions.

Save time with ready-to-use components from renowned manufacturers:
- Manage component options
- Create circuits with manufacturers’ parameters
- Access instantly updated catalogue versions

CAN Bus Links to Operate Virtual Machines
Automation Studio™ can communicate with any OPC/CAN Bus compliant control devices via an OPC interface.

Each component has been carefully and rigorously bench-tested within Automation Studio™ to ensure that the simulation meets a manufacturer’s typical application and performance specifications. The virtual test benches provided also help understanding the components’ behaviour and validate product selection.

Automation Studio™ PLC Export
Users can export SFC/GRAFCET into XML format or into Siemens STEP-7 Graph in order to program their Siemens S7-300 Series PLC. Allen-Bradley Ladder Logic code can also be generated from the SFC/GRAFCET module, which can be transferred to the PLC.

Interfaces to Programmable Logic Controllers (PLCs) and Equipment
In order to connect Automation Studio™ to an external hardware, you can either use an I/O interface kit or an OPC Client/Server.

I/O Interface Kit
This Interface Kit is a hardware solution that allows connecting 8 digital inputs and 8 digital outputs directly to a PLC or to equipment such as relays, contacts, valves, sensors, etc.

Complete OPC Client/Server Connectivity
Automation Studio™ offers both OPC Client and OPC Server modules. The OPC Client is a standard software interface that allows Automation Studio™ to exchange data with any PLC or other control devices for which an OPC Server is available.

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Annual Maintenance and Technical Support Plan

Subscribe to our Annual Maintenance and Technical Support Plan which grants you, for a period of one year, exclusive advantages such as:

- Remote Access Licensing (WAN)
- Software Updates, Service Releases, New Versions
- Online Training Session (2 hours)
- Unlimited Technical Support (Phone, Fax, Email, Technical Support Portal)
- Teachware
- Manufacturers’ Catalogues

Libraries and Modules

- Electrotechnical (AC/DC)
- Hydraulics/Proportional Hydraulics
- Pneumatics/Proportional Pneumatics
- Electrical Controls
- PLC Ladder Logic, Allen Bradley™ Siemens™ and IEC 61131
- Sequential Function Chart (SFC/GRACFET)
- Digital Electronics
- Electrotechnical One-line
- 2D-3D HMI and Control Panels
- Block Diagram-Math
- Fluid Power Component Sizing
- Electrical Component Sizing
- Troubleshooting and Diagnostics
- Mechanical Links
- Catalogue Manager
- Bill of Material and Report
- OPC Client, OPC Server (CAN Bus)
- SFC Compilers, Export to Siemens™ and XML Format (Automation Studio™ PLC)
- APIs/Script Language

While Automation Studio™ can be used without training, we offer training programs that provide in-depth knowledge for a wider range of uses. Whether online, on-site, or at our offices, we have the right training for you!

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