Automation Studio

A power tool for hydraulics and pneumatics
Automation Studio is a completely integrated software package that allows users to design, simulate and animate circuits consisting of various automation technologies including pneumatics, hydraulics, PLCs, electrical controls, motor controls, SFC-Grafset, and digital electronics. Automation Studio is the ideal CAD and simulation tool for teachers, students and engineers.

Famic Technologies Inc., ELWE – Technik is partner of this company, is the only fluid power / automation company to design product features specifically for the education and training market. Automation Studio has become a standard in education and training at all levels from university, college, high school, vocational institutions, and corporate training. Furthermore, with a history spanning over fourteen years, eight different language versions, and over 55 000 licenses sold, it is easy to see why our clients have placed their confidence in our extensive experience / product and services.

Automation Studio is highly effective in educational environments, economical, easily integrated into a curriculum and most importantly, easy-to-use. Students will learn faster and retain course content longer when using the Automation Studio software. And as an added bonus, students are learning software that is also used in the commercial fluid power engineering community. By using schematics, help files, cut-away animations, and data monitoring, it becomes an indispensable tool that helps explaining equipment and controls operation from the component up to the system level. Automation Studio makes it easy to experiment with all types of systems, from basic to complex. As the students advance, the simulation reinforces the understanding of the interaction between the various electrical, automation and fluid power technologies.

More educators and trainers rely on Automation Studio for Fluid Power / Automation circuit design, simulation and curriculum development than any other application. It is unique in its way of allowing the educator to design and simulate all important automation circuit technologies, whether one technology at a time or a combination. Furthermore, educators can prepare and present interactive circuits, changing values ‘on-the-fly’ and demonstrating the changing behavior of a circuit with virtual instruments.

From a professor’s standpoint, Automation Studio will enhance and optimize teaching curriculum in the following way:

- **Simplifies** teaching by not only using the software for circuit examples but also as presentation tool.
- **Increase** student knowledge retention
- **Shorten** learning curve
- **Create a safer** working environment
- **Allow educator to teach more content within same time frame**
- **Widen** student understanding of circuit behavior and relationships
- **Create a dynamic**, interactive environment to learn technology theory
- **Help expand** to other curricula with Automation Studio multiple technologies
Characteristics and Benefits

Automation Studio is a completely integrated software package that allows users to design, document, simulate, and animate circuits consisting of various automation technologies including Pneumatics, Hydraulics, PLCs, Sequential Function Charts, Electrical Controls, and many more. Automation Studio is easy-to-use, and economical, and adapts to any curriculum. It truly helps students learn and retain course content faster. With Automation Studio, students spend their energy learning the technology, not the software interface.

Characteristics:
- Multi Document Interface with full color simulation
- Make your Own Symbols, Components, Libraries, and Templates
- Plotting Simulated Parameters
- Cross-Section Animations
- Dynamic and Realistic Simulation Parameters
- Interface to Programmable Logic Controller (PLCs) and Equipment

Multi Document Interface
Automation Studio allows the creation of multi-document projects. This is helpful as separate diagrams by function and category can be generated, and during simulation, all the diagrams interact seamlessly with each other. Users can also include Word, Excel, or other types of Windows documents. This can be helpful to add notes and instructions to labs and exercises.

Full Color Simulation
During simulation, components become animated and lines are color-coded according to their states. Users can further control the simulation pace with functions such as Normal, Slow Motion, Step by Step, and Pause.
Make your own Symbols, Components, Libraries, and Templates
Using the standard components, the flexible drawing tools, and the grouping functions; users can create and customize their own libraries and templates. For training, teachers can create libraries specific to an exercise, thereby limiting the number of components to only what is needed.

Available Libraries
- Hydraulic
- Pneumatic
- Electrical Controls
- PLC Ladder Logic (AB)
- Sequential Function Chart (GrafceT)
- Digital Electronics
- Bill of Material and Report Module

Features & Benefits
- User-friendly with a very short learning curve
- A cost-effective solution; reduces the need to purchase expensive equipment
- Allows experimentation with virtual equipment that may not otherwise be purchased or manipulated (i.e. large cylinders, large loads, a complete factory)
- Accurate simulation reinforces learned principles
- Simplifies teaching as it can be used for demonstrations
- Simulation stimulates learning for students
- Multiple technologies help expand to other curriculums
- Customizable libraries for each lab exercise
- Increases knowledge retention
- Makes learning safer by utilizing a virtual factory instead of operating real equipment
- Enables professors to teach more course content by saving time with software
- Capacity to quickly build, load, modify, and manipulate circuit examples
- Capacity to show relationships between moving components and automated systems
- Allows students to learn a wider range of integrated circuit technologies and their interactions
- Safe and efficient way to experiment and learn which complements “hands-on” hardware curriculums
Plotting Simulated Parameters
With a simple drag and drop operation, users can set up a plot of any simulated parameter and variable for any component. Further, the results can be transferred to a text file and used in any spreadsheet or database compatible application such as MS Excel or MS Access.

Cross-Section Animations
The animated component cross-section illustrates the internal functioning of the components. These animations are synchronized with the circuit simulation.

Dynamic and Realistic Simulation Parameters
Automation Studio includes simulation capabilities that meet the requirements of all the supported technologies. The accurate Hydraulic and Pneumatic Simulator is based on sound and reliable modeling techniques such as Bernoulli’s law and gradient method. During simulation, users can precisely monitor pressures, flows, and displacement values at any point in a circuit.

The default simulation parameters supplied with Automation Studio’s Hydraulic and Pneumatic components eliminate the need to perform an initial set-up. Just lay out the components and start the simulation. For most components, users can modify simulation parameters such as applied loads, dimensions, angles, as well as advanced parameters including internal leakage, friction, etc. Calculated variables such as areas and volumes are automatically displayed.
To illustrate more complex concepts, users can modify the simulation parameters and show different behaviors including dynamic friction, static forces, etc. Wherever applicable, characteristic performance curves can be entered to obtain a more realistic behavior of the system using numerical interpolation.

**Interface to Programmable Logic Controller (PLCs) and Equipment**

To connect Automation Studio to the outside world, users can choose from two options: I/O Interface Kit or OPC Client module. The Automation Studio I/O Interface Kit is a hardware solution that allows connecting 8 inputs and 8 outputs directly to a PLC I/O or to real equipment such as relays, contacts, valves, sensors, etc. As for the OPC Client (OLE for Process Control), it is a standard software interface that allows Automation Studio to exchange data with any PLC or other control devices for which a manufacturer supplies an OPC server software. After installing the OPC server for the device of your choice, simply map the addresses and turn Automation Studio into a versatile I/O simulator or a Soft-PLC.

**Teaching and Learning with Automation Studio**

Automation Studio allows educators to quickly draw circuits and perform demonstrations. By using schematics, help files, cut-away animations, and data monitoring, it becomes an indispensable tool that helps explaining equipment and controls operation from the component up to the system level. Automation Studio makes it easy to experiment with all types of systems, from basic to complex. As students advance, the simulation reinforces the understanding of the interaction between the various electrical, automation and fluid power technologies. Not only can the student learn by observing the states of switches and components, but also by observing the color schemes of symbols and using the variable plotting functions.

Even if the curriculum concentration is focused on one specific technology, the students will be exposed to a wider understanding of circuit technology relationships therefore students will be better able to understand how ladder logic, PLC circuits, motor controls, and digital electronics function to control the fluid power circuits. This is why Automation Studio has become the worldwide standard in education and training at all levels for fluid power and automation technologies.