

INTERLOCKS®

INTERLOCKS for Proficiency Training, e-Learning, Troubleshooting and Performance Support

As systems grow more complex, the ability to create a full-scale prototype model becomes cost prohibitive. INTERLOCKS® modeling and simulation tool is an affordable alternative. Using discrete event simulation INTERLOCKS can be used during any stage of the product lifecycle and provides the same benefits to the engineering, training, or maintenance process as a full-scale prototype. The system design, operations, and component interrelations are clearly represented in the logic, flow and equipment diagrams. In addition, event time sequences and procedural simulations demonstrate normal operation and casualty scenarios. INTERLOCKS is able to provide efficient modeling and simulation solutions through reusable components, events, logic threads, and relational databases and can also embed documents to provide related reference information.

The screenshot displays the INTERLOCKS software interface, which is used for modeling and simulating complex systems. The main window shows a simulation of an Automated Electrolytic Oxygen Generator Model. The interface is divided into several panes:

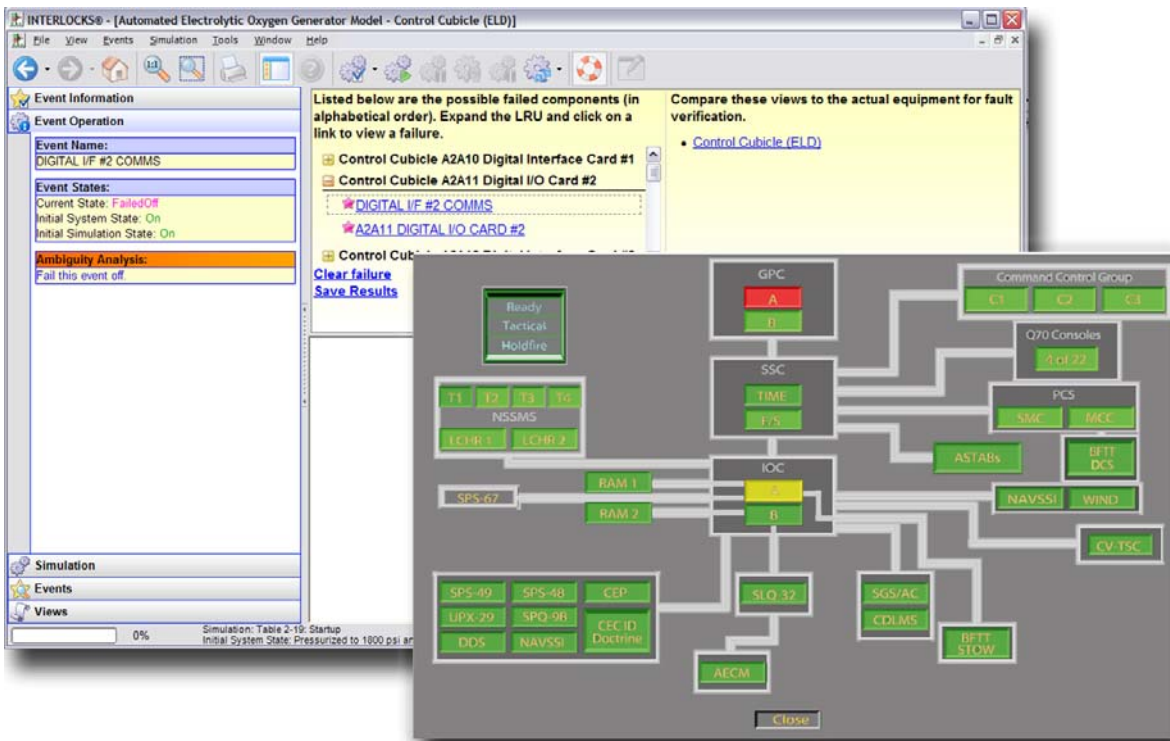
- Event Information:** A sidebar on the left lists various events and simulation commands, such as "FLUID", "HARDWARE", "INDICATOR", "INITIAL STATE CONFIGURATION", "OPERATOR-ACTION", and "POWER".
- Table 2-19: Startup:** A central pane displays a table of startup procedures, including required initial states and a list of actions to be performed (e.g., "Verify valve lineup", "Press MENU on the keypad", "Press FILL on the keypad").
- OXYGEN/HYDROGEN PHYSICAL FLOW:** A diagram on the right shows the physical flow of gases through the system, with color-coded lines representing different flow paths.
- Logic Levels:** A diagram at the bottom shows the logic levels of the system, including "ADJUST CURRENT AND COOLING WATER" and "SERIAL CONNECTION".
- Event Operation:** A pane on the right shows the current event being simulated, including the event name ("CIRCUIT BREAKER CB1 (OP)"), description, and associated logic.
- Simulation:** A pane on the right shows the simulation status, including the current time and the state of the system.

The interface also includes a toolbar with various simulation controls and a status bar at the bottom showing the current simulation time and state.

Troubleshooting

One of INTERLOCKS most sought after training benefits is its fault insertion and troubleshooting capabilities. Any system failure can be inserted into the model and the cascading effects are instantly displayed. This enables fault recognition and the ability to practice maintenance and casualty procedures.

The automated troubleshooting mode uses discrete event simulation to calculate the cause of system failures. By inputting symptom indications, a list of Lowest Replaceable Units (LRUs) whose failure could cause the observed symptom(s) is generated. This list is interactive allowing the user to select a possible fault and observe its effect on the system. The entire troubleshooting session can also be saved as an external HTML file for further analysis or reporting.



Performance Support

INTERLOCKS® modeling and simulation tool has been described as “**the system expert in a box.**” The large database of system information provides in-depth understanding of operation, maintenance, and troubleshooting tasks. Through its event relationships and specific application features, users are guided to various aspects of related information including graphics and system simulation. The application is an interactive learning experience helping users to perform tasks with minimal support or intervention from other people.