



What is 3KEYTOUCH™?

The concept behind Curtiss-Wright's* GlassTop Simulator is to provide customers an alternative simulation delivery platform with a state-of-the-art tool that can be used to off-load a variety of tasks currently implemented on the full scope hard panel simulator and bring lifelike full scope simulation to other plant disciplines.

A single 3KEYTOUCH™ Simulator consists of a structure with two 46" LCDs using optical touch screen overlays and one 46" LCD to resemble a typical main control room panel. The touch-enabled LCDs are mounted on the lower sections of the panel, while the non-touch screen LCD is mounted on the annunciator section. Panel graphics are displayed on the three LCDs and the touch screens allow for easy navigation from one panel to another. On the two lower LCDs, the panel graphics allow for interaction between the control room panel devices and the simulation models with the touch of a finger. Windows multi-touch gesturing capabilities (zoom and pan) are provided as well as voice-activated commands for navigation.

Key Components

- Three commercial-grade LCD monitors, two with touch screen overlays
- Workstation/Server and/or a display client PC
- Retractable Upper/Middle Section (motorized)
- Panel structure with side panels & apron door
- Pull out keyboard/mouse tray
- 3KEYMASTER™ or other simulation software package with soft panel graphic capability



Configurable for Stand Alone Operation or Networked for Multiple Unit Operation

3KEYTOUCH™ Uses

3KEYTOUCH™ provides instructors and students the ability to perform an assortment of tasks without the need of the hard panel simulator:

- Practice various plant evolutions (startup, shutdown, accident scenarios, etc.)
- Provide refresher training of abnormal or uncommon operations
- Support individual self-paced lessons with our Job Performance Measures (JPM) Tool
- Conduct individual and group training
- Test simulation model changes, panel graphics, or instrumentation modifications
- Standard/Emergency Procedure V&V

*: WSC, a legacy brand of Curtiss-Wright's Simulation Group, headquartered in Frederick, MD, is a global simulation and services company. Acquired by Curtiss-Wright in 2024, WSC is recognized for the quality and efficiency of their products and flexible team-oriented approach to serving its customers.



3KEYTOUCH™ users can select a slice of the control room from the worldview and display it on the vertical screens (pictured above, Susquehanna Back Panel Worldview)

3KEYTOUCH™

GlassTop Simulator

3KEYTOUCH™ Advantages

- Expandable—use as a single stand-alone panel or combine with two, three or more panels to create a more lifelike resemblance of several control room panels, running from a single simulation load
- Portable—easily moved from one room to another; motorized linear actuator retracts upper sections; rolls on heavy-duty casters
- Runs with our 3KEYMASTER™ Simulator environment and soft panel graphics or other simulation software soft panel graphics
- Can be used with 3KEYMASTER™ Instructor Station or Intelligent Tutoring System (JPM Tool) to provide all kinds of lifelike training scenarios
- Excellent platform for today's younger, visually adept students



Retractable GlassTops

3KEYTOUCH™ Control Room GlassTop Simulator (CRGTS)

Many operating Nuclear Power Plants are undergoing a major plant upgrade to replace their existing turbine controls with a new distributed control system (DCS). To provide a means to train the plant operators on the new DCS prior to the system implementation in the plant, customers contracted Curtiss-Wright to provide what is being coined as a Control Room GlassTop Simulator (CRGTS).

CRGTS Advantages

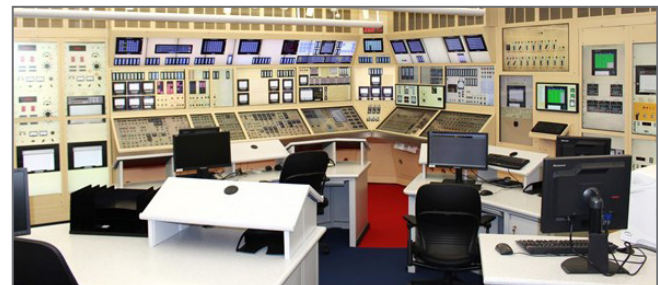
- Cost and lead time
- Ease of modification
- Availability for Integrated System Verification (ISV)
- Operators typically familiar with GlassTops
- Integrated LCD Touch Monitors minimize bezel dead space, improving overall fidelity
- Full HD (1920 x 1080)



Actual Control Room Hard Panel Simulator

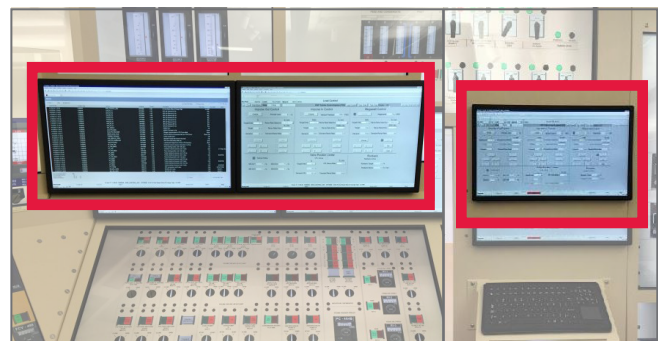
Why Build a Control Room from Touch Screens?

- Entire control room is replicating 100% scale through off-the-shelf touchscreens
- Almost replica touch and feel to comment and improve control room ergonomics
- Easily integrated with the new DCS HMI (see photos to the right)
- Ability to make rapid changes on the panels and the DCS HMI to evaluate the changes
- Provide realistic environment for effective operator training
- Little difference between actual hard panel control room and Replica CRGTS (see photos to the right)



Replica Control Room GlassTop Simulator (CRGTS)

Although the CRGTS is initially targeted for operator training on the new DCS equipment, the control room GlassTop simulator can be used in other applications including DCS logic and control validation, JPM development and verification, Just-In-Time Practice, examination development, procedure development and verification, HFE design, auxiliary plant operator familiarization, emergency planning, as well as classroom instruction.



CRGTS Integrated with new DCS Monitors and Input Devices, Touch Pad (left) and Keyboard (right)

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