

3KEYMASTER™ GPWR Full Scope Simulator

Generic Pressurized Water Reactor Simulation Modeling

**CURTISS -
WRIGHT**

Nuclear Power Products and Services



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.

Generic Pressurized Water Reactor Overview

As nuclear power is expanding around the globe, so is the need for a trained nuclear workforce. In this regard, Curtiss-Wright has expanded our capabilities of nuclear power plant training offerings by developing a Generic Pressurized Water Reactor (GPWR) real-time, full scope, high fidelity simulator. The GPWR allows students to perform complete plant startups, shutdowns, and load maneuvers, as well as realistically simulating normal and abnormal plant transients, including malfunction scenarios. This simulator can be provided for installation at a customer site using standard local area network technologies in a client/server mode or in standalone mode.

Our Simulation Group also offers the ability to access the simulator through a web-based simulator interface; thereby allowing use of the simulator over the Internet from anywhere in the world. The GPWR simulator is geared toward newly formed nuclear agencies, universities, and institutes, and can be integrated with a Learning Management System (LMS) to track each student's progress through the lessons.

Our customers are using the GPWR simulator to provide training on nuclear power plant fundamentals, concepts and operations, and exposure to the various PWR systems. The target students range from the general workforce to engineers and plant operator candidates that will staff existing or newly built or designed nuclear power plants.

Key Features

- Full Instructor Station capabilities
- Access to over 75 graphics to supervise and control the plant based on modern DCS control
- Full trending capability allowing user to trend any process parameter for transient analysis
- Complete alarming system with multiple sounds based on priority and type of alarm
- Over 10,000 Input/Output points displayed on ergonomically designed screens
- Runs on protected servers with access to a graphical user interface through the World Wide Web
- Multi-screen capability to allow visualization through multiple screens and Web browsers
- Web-based security and company firewalls
- LMS connectivity capability maintaining the student's records

Learning Objectives

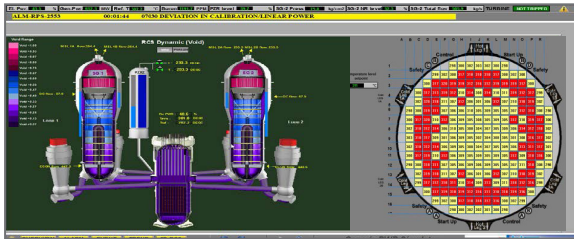
- Basic understanding of nuclear engineering fundamentals
- How nuclear plant works; the systems' function and purpose
- Major plant components, system operations, controls and safety
- Perform transient and control analysis
- Skills and knowledge foundation required to operate a PWR plant

3KEYMASTER™ GPWR

Generic Pressurized Water Reactor Simulation Modeling

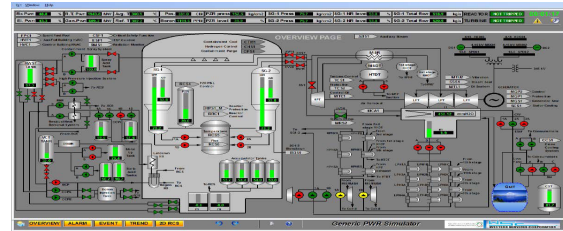
Plant Operations

- Normal Operations
- Reactor Startup and Shutdown
- Turbine Startup and Shutdown
- Generator Synchronization
- Loading and Unloading
- Transients
- Emergency Operations
- Conduct Operations/Team Training/Command and Control
- Safety System Surveillances



Advantages of 3KEYSTUDENT

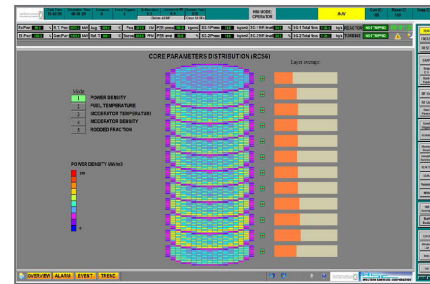
- Capable of delivering simple to full-scope high-fidelity simulation lessons over the Intranet or Web
- Lessons may range from simple component or system lessons to full startup/shutdown
- Expandable to deliver lessons from 1 to 100's of students concurrently
- Lessons can be interrupted for any reason and resumed at a later time
- Safe and protected environment with the simulation software running on remote/local Servers



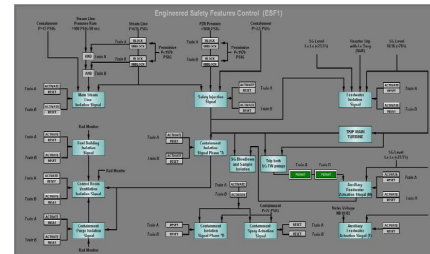
Integrated with our 3KEYSTUDENT™ Environment, the GPWR training tool is a powerful training system.

Key Features of 3KEYSTUDENT

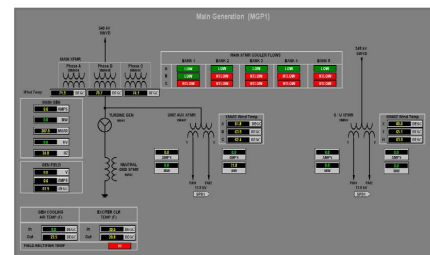
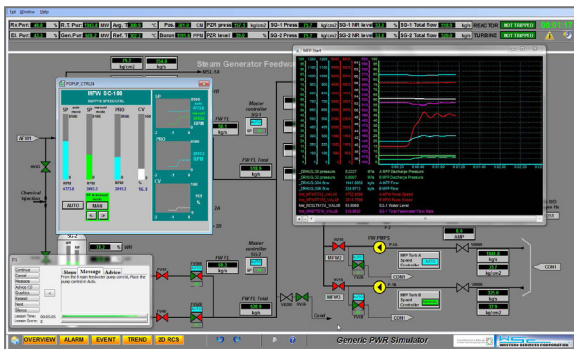
- Integrated with a full featured Intelligent Tutoring System to provide instructions and procedures visually and verbally
- Multiple modes of operation based on “show,” “mentor” and “test” mode
- Capable of downloading 1 to 100's of graphical interface screens for plant controls
- Web based Student and Instructor, single or shared access from anywhere in the World
- Provides hints with graphical highlights to aid the student in understanding the lessons
- Provides time and score functionality compliant with SCORM LMS Systems
- Can be centrally controlled by one instructor with students anywhere in the world



Reactor Core Parameters with Axial and Radial Distribution



Engineered Safety Features Control



Main Electrical Generator

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