# Process Power Simulator

## Real-time electrical simulation for operator training and electrical system assessment

### Process Power Simulator — reduce unplanned downtime through simulation

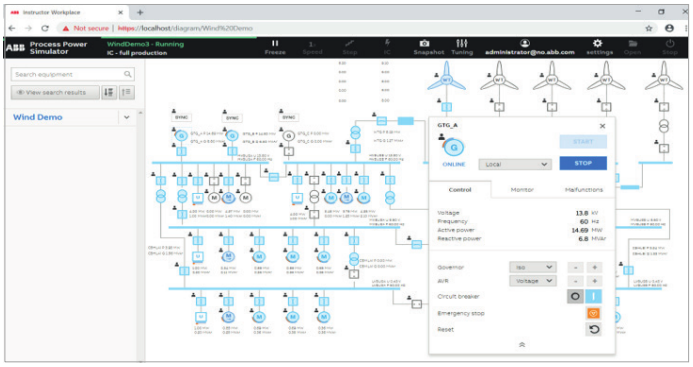



ABB Process Power Simulator allows electrical operator training and electrical control system testing to be conducted in a realistic and safe environment ABB Process Power Simulator uses a replica of the facility electrical control system to create accurate and realistic environment to expose operators to situations and circumstances they may never experience during day-to-day operations, such as load shedding and power control. Process Power Simulator can help operators anticipate what the use of new functionality, new features, and changes in the electrical topology could mean for plant processes and production. ABB Process Power Simulator allows for verification and validation of control strategies, product solutions, procedures and sequences to be completed in a safe environment. It can be used for optimization, electrical application behavior and engineering studies to improve productivity and energy savings.

ABB Process Power Simulator simulates real-time system dynamics of the electrical system, such as reactive and active power, voltage and frequency, and is connected with a replica of the facility electrical control system and HMI in simulation mode.

Uncover optimization opportunities:

- Find level of cost of import versus inhouse power production
- Find out how distribution of power between generators affects fuel costs Identify where power is consumed
- Optimize generator mode settings for maintain frequency and voltage to minimize fuel cost and generator wear-and-tear
- Find and tune operational limits
- Tune load priority for the load-shedding scheme to reduce production loss and minimize recovery time
- Extract data for KPIs and electrical system performance
- Control concept for improved system stability and utilization of renewables

# The Features

Simulated components:

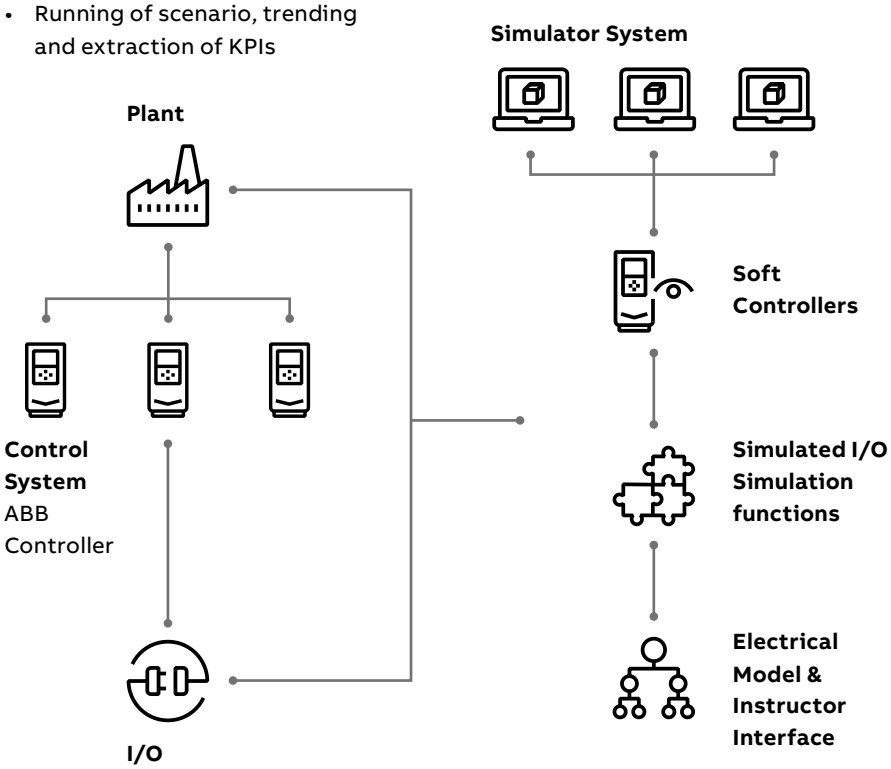
- Engine and Generator; Speed governor (GOV), Automatic Voltage Regulator (AVR)
- Transformer with Online Tap Changer
- Bay Circuit breaker
- Protection relay
- Grid
- Bus bar
- Synchronizer
- Loads and motors; Direct online induction motor, Motor starter, Variable speed drive, Generic load
- Wind turbine generator

800xA electrical control system with additional simulator functionality for testing and training scenarios:

- Start, stop, freeze and resume
- Speed up/down
- Initial conditions
- Step execution
- Record and replay
- Soft controllers
- Process Power Manager library

Instructor interface features:

- Instructor Commands: Start/Stop, Freeze/Resume, Load/Save IC
- Local/Remote control
- Equipment operation
- Equipment malfunction
- Equipment parameter tuning
- Single signal trip generation
- Online value status presentation
- Running of scenario, trending and extraction of KPIs




**The Situation**
There is an increased focus on health and safety, project savings and operational benefits on electrical plants.

**The Problem**
How to avoid blackouts and production loss on electrical plants.

How to reduce risk on increasingly complex electrical control systems and power management systems.

**The Solution**
Process Power Simulator offers electrical operator training and electrical control system testing conducted in a realistic and safe environment.

# The Benefits

- Lowers execution time by testing electrical control system in early project phase
- Ensures that electrical control system handles situations as specified (disturbance, overloads)
- Increases quality by testing implementation before commissioning
- Captures and shares electrical system operator knowledge
- Reduces the number of process interrupts and blackouts
- Increases safety and reliability
- Helps ensure compliance with regulatory testing
- Improves operations with lowered electricity costs and reduced emissions
- Increases plants' life beyond intended life cycle with best practices and proper operation

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