

GE EHC MK I Turbine Controls

This seven-day course provides a component-level study of the system's control circuits with demonstrations of control system response using a MK I EHC table-top simulator. This simulator uses meters to display the processing of input signals by the control system, and makes available to the student the controls and indications normally available to an operator, including turbine load set, pressure set, bypass valve jack load limiter, turbine warming controls, and valve response.

I. EHC System Overview

- EHC System Block Diagram
- Control Panel
- Test Panel
- Control Line-up

II. Turbine Control Hydraulics

- Pumps
- Nitrogen Charged Accumulators
- Filters and Strainers
- Pressure Switches and Setpoints
- Fullers Earth System
- Fluid Actuation System
- Stop Valve Actuators
- Control Valve Actuators
- Combined Reheat Valves (CIV)
- Cyclic Maintenance and Troubleshooting

III. Emergency Trip System

- Mechanical Trip System
- Electrical Trip Solenoids
- Electrical Trip Lockout Valve
- Backup Overspeed Trip
- Relay Dump Valve
- Thrust Bearing Wear Detector

IV. Bearing Oil System

- Main Shaft Oil Pump
- Oil Driven Suction Pump
- Turning Gear Pump
- Emergency DC Pump
- Lift Pumps

V. Speed Control

- Speed Control Block Diagram
- Speed Sensors
- Frequency-to-Voltage Converters
- Primary and Secondary Low Value Gates
- Speed Control References and Logic
- Speed Matcher
- Calibration and Testing Speed Control Circuitry

VI. Load Control

- Control Valve Amplifier/Stop Valve Amplifier
- Intercept Valve Amplifier
- Load Set Circuit
- Load Limit and Load Set Runback Circuit
- Load/Pressure Limit Logic
- Loading Rate and Load Set Limits Circuit

- Loading Rates and Load Set Limit Logic
- Load Control Unit Logic
- Stage Pressure Sensor/Feedback
- Throttle Pressure Compensator/Limiter
- Chest/Rotor Shell Warming
- Testing and Calibration of Load Control

Circuits VII. Flow Control

- Main Stop Valve Position Control
- Intercept Valve Position Control
- Control Valve Position Control
- Stop Valve Position Driver
- SADI Cards
- Diode Function Generators
- Control Valve Position Driver
- Valve Logic

VIII. Miscellaneous Control Circuits

- Alarm and Trip Circuitry
- Monitor Circuit and First Hit Detection
- Standby Control System
- Power/Load Unbalance Circuit
- Early Valve Actuation Circuit
- Total Control Valve Signal

IV. Common Circuit Cards

- 1 KHz and 3 KHz Oscillators
- DC OP Amp.
- OP Amp/ DFG Driving Amp
- Voltage Comparator
- Meter Amplifier
- Calibration and Testing

X. Valve Testing

- Control Valve Testing
- IV and RSV Testing
- Stop Valve Testing