

Turbine Start and Load Program

Features

- Emulates turbine OEM start and load recommendations
- Logic is placed directly into turbine control drop
- No additional hardware is required
- 2 modes of operation: Monitor and Automatic
- Rotor Stress calculator

The Emerson turbine start and load program emulates the current turbine OEM starting and loading recommendations. Turbine logic sheets are placed directly into the turbine control drop and therefore do not require any additional hardware for implementation.

The program has two modes of operation: monitor and automatic. If a mode is not selected, the system will default to monitor mode and the program will run while still suggesting ramp rates, soaks and holds, but it will be up to the operator to roll the turbine. If automatic mode is selected, the following steps will automatically happen with limited operator intervention:

- Initiate the turbine pre-warm
- Assure the pre-roll conditions are met prior to initial roll
- Ramping the turbine from 0 to 3600 RPM at the appropriate acceleration rate
- Holding at certain speed plateaus for the required soak times
- Initiate the TV/GV transfer (Westinghouse turbine only)
- Close the generator breaker



- Initiate the Full to Partial arc transfer (GE turbine only)
- Determine the amount of initial load to pickup
- Perform the initial load soak

Rotor stress fatigue curves are used to determine a maximum ramp rate for the first stage metal temperature. If the turbine exceeds the maximum ramp rate, the program will create a hold. The turbine start and load graphic shows the required program steps, when they are completed and required soak times. Soak times are displayed on the graphic as countdown timers, which inform the operator of the soak time remaining before continuing the turbine ramp.

For Emerson to properly implement the turbine start and load program, the following is required:

Required Turbine Information

- Current starting and loading procedures followed by operations from the turbine manual
- Startup and loading recommendation charts

- Turning gear status
- Turbine Eccentricity
- Bearing oil pressure
- Condenser vacuum

Note: It is the responsibility of the end user to provide the I/O and data mentioned above.

Required I/O:

- 1st stage metal temperature
- Inlet steam temperature
- Inlet steam pressure
- Reheat bowl metal temperature (GE turbine only)

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