

Industrial Design Solutions Contracted to Improve Frequency Response for Texas Power Plant



INDUSTRIAL DESIGN SOLUTIONS

A large once-through unit was failing to meet NERC/ERCOT performance standard BAL-001-TRE-01. Modifications to boiler turbine coordination were necessary to meet the requirements for both initial response and sustained response.

BACKGROUND

With the increase of renewable energy and decrease of large steam turbine power, frequency response has become a priority. Traditional droop response has become largely insufficient to meet modern response requirements.

SOLUTION

The plant selected Industrial Design Solutions, a control system design firm based out of Phoenix, Arizona, to review the existing Honeywell combustion control and GE turbine control coordination. The response of the turbine governor was fighting with the coordinated front end. Several changes were made to the coordinated front end, including changes to the frequency response logic and droop curve. IDS installed several modifications online.



- Turbine master matches the governor droop response
- Evaluated trade-off between MW error and throttle pressure deviation
- Frequency response bias visible to operators
- Coordinated front end stays in automatic and responds to AGC signal from ERCOT without operator intervention

THE BOTTOM LINE

At IDS, we work closely with customers to make both large- and small-scale process control changes which can improve plant performance and reduce operating costs.

SOLUTION BENEFITS

- Meets BAL-001-TRE-01
- Better turbine and boiler coordination during frequency measurable events

SOLUTION ROI

- Meet the PUPFR (Initial Response) and exceeds PUSPFR (Sustained Response)
- Supports balancing authority targets
- Eliminates penalties for failure of compliance

SOLUTION PLATFORM

- Honeywell TDC HPM controls for Boiler Control System (BCS) and Coordinated Front End
- GE Woodward controls for Turbine

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Project Duration: 3 weeks