

PPL's Brunner Island Power Plant Reduces Commissioning Time of New FGD Controls by 15% Using Emerson's Ovation™ Simulation

RESULTS

- Decreased commissioning time of new plant controls for recently added FGD equipment by 15%
- Provided ability to pre-train operators on new plant equipment and controls 3 to 4 months ahead of startup
- Implemented 15 simulated malfunctions to train operators' reactions to emergency situations

APPLICATION

Simulation of a 3-unit, 1,483-megawatt coal-fired steam station. Units 1 and 2 generate 334-megawatts and 390-megawatts of electricity, respectively, both with CE tangential boilers and Westinghouse steam turbine generators. Unit 3 produces 759-megawatts of electricity with a CE tangential boiler and a GE steam turbine generator.

CUSTOMER

PPL Corporation, PPL Generation (PPL), Brunner Island Power Plant located in York Haven, Pennsylvania.

CHALLENGE

PPL Generation, a division of PPL Corporation, controls more than 11,000-megawatts of generating capacity. PPL's Brunner Island Power Plant plays an important role in meeting the electricity needs of approximately one and a half million people in the northeastern United States.

During annual outages, various upgrades are made to the Brunner Island station with the goal of optimizing the plant's operating performance. Simulation technology is an important factor in preparing unit operators to play a key role in meeting that objective. A plant control system migration along with the addition of flue gas desulphurization systems to each unit required modifications to the plant simulator. Goals for the simulator upgrade were to achieve cost savings by:

- Minimizing commissioning time of new plant controls
- Sharpening the skills of existing operators
- Training new operators
- Testing and validating new or changed control logic



“Emerson’s Ovation™ simulation played a vital role in our control modernization project. By verifying the new Ovation control strategies prior to actual installation and facilitating operator training, the Ovation simulator helped us to avoid costly delays.”

Charles Sweeney
Senior Instrument and Controls Engineer
PPL Generation
Brunner Island Power Plant

SOLUTION

To help the plant achieve its goals, Emerson migrated the existing WDPF™ simulator to Ovation™ simulation with high-fidelity models. The Brunner Island station Ovation simulator mirrors the plant's actual Ovation control systems, which monitor and control each unit's boiler, turbine, flue gas desulphurization, and other critical plant processes.

PPL uses three simulation models to train their Brunner Island operators; each model duplicates the unique characteristics of its corresponding unit. An integral part of the control system migration included using the Ovation simulator to validate the ladder to SAMA logic conversion prior to the outage.

Additionally, Ovation simulation was used to verify proper operation of the recently added FGD logic and to pre-train the operators on how to control and monitor the equipment 3-4 months before live operation. This contributed to a 15% decrease in the commissioning time of the new FGD control strategies.

Ovation simulation has proven to be a valuable training tool for Brunner Island operators - both for the ongoing education of existing employees as well as for qualifying new employees for continued safe and efficient plant operation.

Well-trained operators who are prepared to handle abnormal operating situations can significantly reduce costly plant trips. With that in mind, the Brunner Island's Ovation simulator contained 15 malfunctions - including critical malfunctions - pre-programmed into the simulation.

***“Ovation simulation allows new operators to come up to the performance standards of more trained operators much sooner than if they were interacting with the control system only when the unit is operating.*”**

Experienced operators could work almost their entire career and never encounter an unusual event on the real units. With Ovation simulation, operators can practice their response to one-time events, preparing them for a swift and accurate response.”

Charlie Sweeney

Senior Instrument and Controls Engineer
PPL Generation
Brunner Island Power Plant