



DOMINION VIRGINIA POWER

Chesterfield Unit 6 THINK™ Simulator for Control System Checkout and Training Overview

Introduction

Microfusion Engineering Labs (MEL) delivered the Chesterfield Unit 6 Boiler Simulator, built using MEL's THINK™ (Thermal Hydraulic Integrated Network) software to Virginia Power for staging and training purposes. As a result of using the THINK Simulator, Virginia Power was able to reduce Unit 6 commissioning time by more than three weeks.

Chesterfield electric generating station Unit 6 is a 695 MW turbo generator first commissioned in 1968. The turbine is a single-shaft General Electric machine with single reheat and a hydrogen-cooled generator. The boiler is a fossil-fueled [coal] design by Combustion Engineering and has tangentially fired twin furnaces with six pulverizers. There are two levels of close-coupled overfire air and three levels of separated overfire air. In addition, the firing system incorporates three levels of warm-up oil. Operating design conditions are 4,387,488 lbs/hr at 2,400 psig and 1,005 degrees F.

Controls System Checkout and Functional Testing

Using the THINK™ Simulator, Virginia Power personnel were able to verify, test, and, debug:

- The new burner management system
- Combustion & miscellaneous Controls
- Water/steam
- Fuel and air
- The turbine control system

Operator Training

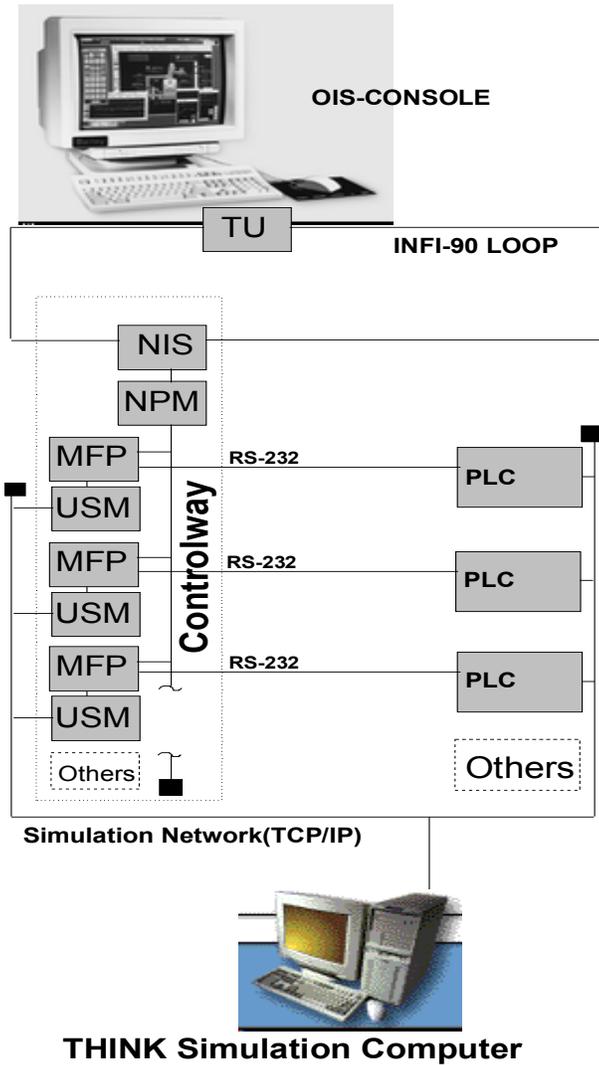
The THINK™ Simulator was used for operator training after the control system staging was complete. The operators were able to evaluate and test alternative operating procedures for normal and abnormal operation, including startup and restart, and improve upon the existing operation.

Improved Schedule Performance

Because of using the MEL THINK™ boiler simulator for control checkout and operator training, Dominion was able to start up Chesterfield Unit 6 within days after field construction was complete.

Simulation System Scope of Supply

The system diagram shows the system layout and interface to the control systems for Chesterfield Unit 6 THiNK™ Simulator:



The MEL scope of supply consists of:

- THINK™ simulation engine running on WindowsNT™
- Modicon PLCs
- Bailey Bridge Controllers (BRC100)
- Bailey Modcon Gateway Interface
- Bailey (ABB) LUSM02 Universal Slave Modules
- PCView Operators Station