FLOWNEX®

SIMULATION ENVIRONMENT

Flownex® SE determines pressure drop [flow] and heat transfer [temperature] for the connected components of a complete system in steady state and transient, e.g. pumps or compressors, pipes, valves, tanks and heat exchangers.

TYPICAL USES:

ANALYSIS

- Simulation.
- Performance assessment.
- Modification assessment.
- Fault root cause assessment.

DESIGN

- System sizing.
- Component sizing.
- Determining operating ranges.
- Flow, temperature, pressure, power consumption, etc.
- Testing of control philosophy.

TRAINING

- System behavior examination
- Performing basic flow and heat transfer calculations.
- Thermohydraulic principles and properties referencing.

BRINGING NUCLEAR QUALITY AND STANDARDS TO SYSTEM SIMULATION

Flownex is developed in an ISO 9001:2008 and NQA1 quality assurance system environment.
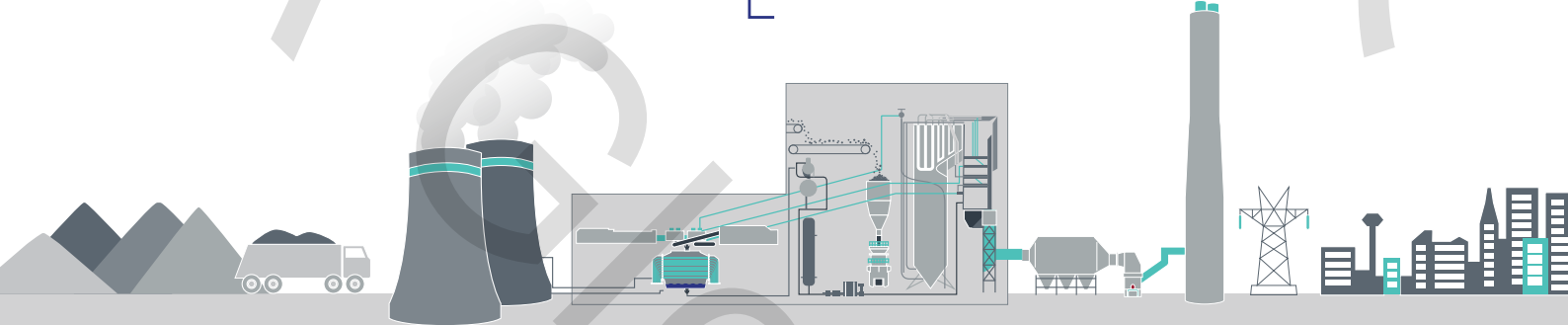

"Engineering productivity for the design and analysis of complex thermofluid systems such as those found in large coal fired power plants is vastly improved by modeling in Flownex®. In addition, the system knowledge and understanding gained by the modeler is invaluable in subsequent activities.

Gary de Klerk, Pr. Eng.
Chief Engineer, Plant engineer
Turbine Process Group Technology
ESKOM
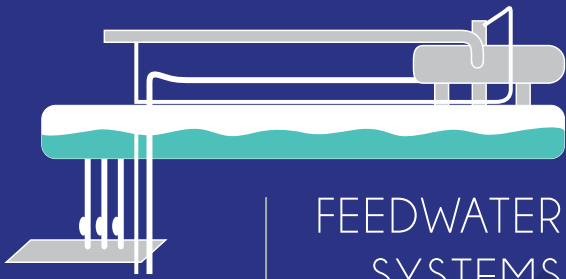
FEEDWATER SYSTEMS

- Pipeline, valve and pump sizing.
- Cavitation, flashing and condensing detection.
- Pump performance and NPSH.
- Feedwater heater performance and tube leaks.
- Flash tank behavior.

COOLING WATER CIRCUITS

- Pipeline, valve and pump sizing.
- Water hammer.
- Cooling tower response.
- Heat exchanger sizing.
- Water reticulation flow balancing & energy efficiency.

BOILER STEAM SYSTEMS

- Once-through and reheat boilers.
- Temperature calculation and change rates.
- Boiling stability & boiling regime examination.
- Detection of boiling oscillations (Ledinegg, density wave, pressure drop-type)
- Recirculation rate and steam production.
- Natural circulation boiler.
- Attemperation system.
- Dry out prediction.
- Load changes.

STEAM TURBINE & SUPPORTING SYSTEMS

- Start-up, shutdown and load following operation.
- Turbine trip control.
- Gland steam systems.
- Lubrication systems.
- Generator hydrogen and lubrication systems.
  - Assess cooling system and heat exchanger performance.

NATURAL CIRCULATION BOILER

- Calculation of recirculation rate and steam production.
- Prediction of dry out.

ASH SLURRY

- Pump and pipe sizing.
- Plant expansion.
- Slurry settling and blockage.
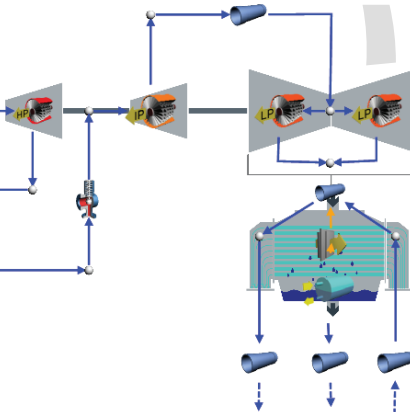
BOILER AUXILIARY SYSTEMS

Start-up fuel oil or gas systems.
- Flow balancing in branching networks.
- Pipe heat loss estimation.
- Pump sizing and viscosity adjustment.
- Control philosophy testing.
- Pump/pipe/injector matching.

Draught group/Flue gas system: Calculation of ID or PA fan capacity margin as function of loss characteristics: Pulverisers, air heater seal leakage, flue gas ducts, precipitators, flow regulator vanes, flue gas desulphurization units (FGD).

CONDENSERS

- Air leak detection.
- Condenser level following.
- Wet and dry condenser heat exchange.

FLOWNEX®
LICENSE
HOLDERS

minnesota power

EAST KENTUCKY POWER COOPERATIVE

BiLFINGER

Dominion

Eskom

babcock