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Detailed Model of an Industrial Power Plant

DESCRIPTION:

CHEMCAD 5 can be used for optimizing operation of an existing plant. This flowsheet presents a single block of a big industrial power plant, producing simultaneously electricity and HP, MP, and LP steam for a chemical plant.

This block has seven turbine sections: six of non-condensing type and one of condensing operation. Depending on current demand, the power plant manager can decide upon steam distribution in the system. Specific streams can be shut (actually one of steam outlets has been deliberately closed.) This flowsheet has been made non-optimal on purpose. A CHEMCAD user can play with controllers, especially with those responsible for operation of re-heaters, to increase overall thermal efficiency of the plant.

A very useful feature of CHEMCAD 5.1 is capability to write own programs and unit operations in Visual Basic (in Excel or as Visual Basic Professional applications.

For the example under consideration, an unit operation to calculate current thermal efficiency of the plant has been made in Excel. The calculated efficiency can be the input to CHEMCAD Optimization tool.