

UniSim® Feedwater Heater Modeler

The Challenge

Pre-heating water delivered to a steam generating boiler is an important process in a power plant operation. Optimizing such process will have a direct impact on the energy consumption and the overall efficiency of the plant operation.

The Solution: UniSim Feedwater Heater Modeler

Honeywell's UniSim® Feedwater Heater Modeler is a unique modeling tool for power plant feedwater heaters, making allowance for the particular shell and tube geometry used for de-superheating condensing, and sub-cooling the steam heat source. It helps reduce the irreversibility involved in steam generation and therefore improves the thermodynamic efficiency of the system. This leads to reduced plant operating costs, and also reduces the risk of thermal shock to the boiler metal when the feedwater is introduced back into the steam cycle.

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Benefits

Improved design – UniSim Feedwater Heater Modeler is a comprehensive, easy-to-use tool for the design of feedwater heaters. It enables more efficient design of new heaters and cost-effective revamp studies. It can also augment or replace in-house tools that are difficult to use and expensive to maintain and update.

Improved process operations – UniSim Feedwater Heater Modeler provides the benchmark to assess the effects of operational changes for load optimization and fouling.

Increased engineering efficiency – The complex interaction of the de-superheating, condensing and sub-cooling zones with the high-pressure feedwater on the tube-side is modeled with rigor in a user-friendly tool.

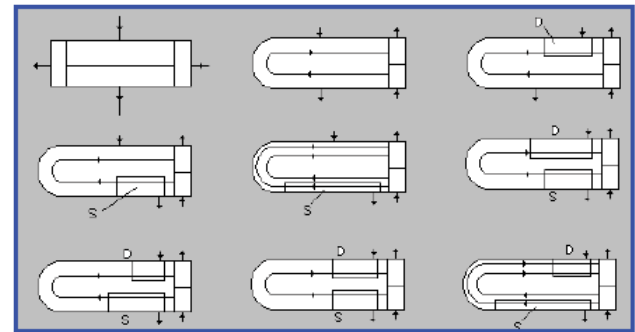
Features

This modeling tool has two operating modes:

Checking / Rating – Used for troubleshooting, identifying operating constraints, and assessing the impact of fouling on plant efficiency.

Simulation – Used for identifying optimized heater configuration or revamping/retrofitting existing equipment to improve energy efficiency.

It supports most of the commonly used heater orientations:



With user-specified condensing section operating pressure, required heat transfer rate for each zone, drains and feedwater outlet temperatures, the program will perform checking/rating calculation and determine required surface area for each zone. In the simulation mode, it will calculate the heat transfer rate and outlet conditions with user-specified heater geometry, extraction steam inlet state, feedwater mass flowrate and inlet conditions.