

Net Heat Input Evaluation

Background

Plant procedures require operators to perform a calorimetric measurement periodically throughout the cycle to verify the reactor coolant system (RCS) power that is being generated by the reactor. A major input to this procedure is the RCS net heat input variable. Historically, a net heat input variable was determined by using conservative heat inputs and losses. The net heat input value is typically subtracted from the total power generated from the steam generators (nuclear steam supply system [NSSS] power) to determine the power generated by the reactor, known as reactor thermal power (RTP). New calculations using plant operating data have been developed that more accurately determine RCS heat inputs and losses.

Benefits

A review of many plants' net heat input value has been completed and Westinghouse has determined that a sizeable number of plants could raise the net heat input value by approximately 2 MWt. This increase will most likely result in an increase of approximately 0.6 Mwe. Once the revised net heat input has been determined, the plant can optimize the power output by increasing the NSSS power limit by the same change in net input value that will be calculated. This is accomplished without decreasing any margin in the safety analysis.

Deliverables

The customer will receive the letter report and safety evaluation within two calendar months after receipt of an order, as well as all required plant operating data.

Experience

Westinghouse has developed new RCS net heat input variable values for Westinghouse two-, three- and fourloop NSSS designs for U.S. and international plants.

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