Parameter Selection in a Combined Cycle Power Plant

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A combined cycle power plant are modeled and considered for calibration. The dynamic model, aimed for start-up optimization, contains 64 candidate parameters for calibration. The number of parameter sets that can be created are huge and an algorithm called subset selection algorithm[2] is used to reduce the number of parameter sets. The algorithm investigates the numerical properties of a calibration from a parameter Jacobean estimated from a simulation of the model with reasonably chosen parameter values. The calibrations were performed with a Levenberg-Marquardt algorithm considering the least squares of eight output signals. The parameter value with the best objective function value resulted in simulations in good compliance to the process dynamics. The subset selection algorithm effectively shows which parameters that are important and which parameters that can be left out. A combined cycle power plant are modeled and considered for calibration. The dynamic model, aimed for start-up optimization, contains 64 candidate parameters for calibration. The number of parameter sets that can be created are huge and an algorithm called subset selection algorithm is used to reduce the number of parameter sets. The algorithm investigates the numerical properties of a calibration from a parameter Jacobean estimated from a simulation of the model with reasonably chosen parameter values. The calibrations were performed with a Levenberg-Marquardt algorithm considering the least squares of eight output signals. The parameter value with the best objective function value resulted in simulations in good compliance to the process dynamics. The subset selection algorithm effectively shows which parameters that are important and which parameters that can be left out.

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