

Optimization and Validation of Steady-State Flowsheet Simulator Metamodels

The use of metamodels allows the optimization of steady-state flowsheet simulations to proceed while requiring only a small number of solutions to be obtained from the simulation. This paper presents the techniques needed to optimize the metamodel forms described in Palmer and Realff (2002). Through a case study, we exemplify characteristics of the solution process and demonstrate the strength of the metamodeling approach. The operating cost of an ammonia synthesis plant is optimized over 6 input variables using a total of only 32 solutions of the plant simulation as data for the metamodels.