비용과 안전을 고려한 보일러 공정의 최적화 운전 조건 탐색

이창준†, Gustavo Matheus de Almeida[1], Song Won Park[2]
부경대학교 안전공학과; [1]Federal University of Minas Gerais; [2]University of São Paulo
(changjunlee@pknu.ac.kr†)

In case of a boiler process of a pulp mill, it is impossible to use conventional modeling software. To perform a modeling for a boiler process in this study, support vector regression is introduced to mimic a dynamic model of a boiler. To find the optimal operational condition under various uncertainties, Monte-Carlo based sample average approximation is introduced to generate a stochastic optimization problem. In addition, a particle swarm optimization technique, which is one of sampling approaches and does not need the derivatives of equations, is used to find a stochastic optimal solution, since our models based on a support vector regression is not able to provide their differential equations. To verify the performance of a stochastic optimal solution, the value of the stochastic solution is calculated and the result shows that the performance of a stochastic solution provides better performance than that of a deterministic solution. The proposed study can be easily to black box models.