

## **Exothermic batch process optimisation via multivariable genetic algorithm**

### **ABSTRACT**

This paper aims to optimise the exothermic batch productivity while minimising the waste production by manipulating the fluid temperature and fluid flow rate. During the process, a large amount of heat is released rapidly when the reactants are mixed together. The exothermic behaviour causes the reaction to become unstable and consequently poses a safety concern to the plant personnel. Commonly, the optimisation of the batch process is based on the predetermined optimal reference temperature profile. However, this reference profile is unable to limit the waste production effectively. Therefore, a multivariable genetic algorithm (MGA) is proposed in this work to optimise the productivity of the process without referring to the predetermined reference profile. The results show that the MGA is able to harvest more than 80 % of yield in handling human error and equipment failure.