# Optimization Analysis of a Concentric Tube Heat Exchanger with Field Synergy Principle

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**Abstract :** The paper investigates the optimization analysis to the heat exchanger design, mainly with response surface method and genetic algorithm to explore the relationship between optimal fluid flow velocity and temperature of the heat exchanger using field synergy principle. First, finite volume method is proposed to calculate the flow temperature and flow rate distribution for numerical analysis. We identify the most suitable simulation equations by response surface methodology. Furthermore, a genetic algorithm approach is applied to optimize the relationship between fluid flow velocity and flow temperature of the heat exchanger. The results show that the field synergy angle plays vital role in the performance of a true heat exchanger.