عنوان مقاله:

Modeling and Hybrid Pareto Optimization of Cyclone Separators Using Group Method of Data Handling (GMDH) and (Particle Swarm Optimization (PSO

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خلاصه مقاله:

In the present study, a three-step multi-objective optimization algorithm of cyclone separators is utilized for the design objectives. First, the pressure drop (Dp) and collection efficiency (h) in a set of cycloneseparators are numerically evaluated. Secondly, two meta models based on the evolved Group Method ofData Handling (GMDH) type neural networks are regarded to model the Dp and h as the required functions of geometrical characteristics. Finally, a multi-objective (MO) algorithm based on hybrid of Particle Swarm Optimization (PSO), multiple crossover and mutation operator are used for Pareto basedoptimization of cyclones considering two conflicting objectives Dp and h. By comparing the Pareto results of MOPSO with that of multi-objective genetic algorithms (NSGA II) regarding Pareto based multiobjective optimization of the obtained polynomial meta-models, it is shown that there are some interesting and important relationships as useful optimal design principles involved in the performance of cyclone separators

کلمات کلیدی:

Two-phase Flow,Gas-solid,Particle Swarm Optimization,Multi-objective Optimization,GMDH