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PROCESS AND PRODUCT TECHNOLOGY

粒子群算法在不确定性调度问题中的应用

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摘要 Blending is an important unit operation in process industry. Blending scheduling is nonlinear optimization problem with constraints. It is difficult to obtain optimum solution by other general optimization methods. Particle swarm optimization (PSO) algorithm is developed for nonlinear optimization problems with both continuous and discrete variables. In order to obtain a global optimum solution quickly, PSO algorithm is applied to solve the problem of blending scheduling under uncertainty. The calculation results based on an example of gasoline blending agree satisfactory with the ideal values, which illustrates that the PSO algorithm is valid and effective in solving the blending scheduling problem.

关键词 调度问题; 动态规划; 粒子群算法; 非线性规划; 混合整数规划; PSO算法;

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Blending Scheduling under Uncertainty Based on Particle Swarm Optimization Algorithm

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Abstract Blending is an important unit operation in process industry. Blending scheduling is nonlinear optimization problem with constraints. It is difficult to obtain optimum solution by other general optimization methods. Particle swarm optimization (PSO) algorithm is developed for nonlinear optimization problems with both continuous and discrete variables. In order to obtain a global optimum solution quickly, PSO algorithm is applied to solve the problem of blending scheduling under uncertainty. The calculation results based on an example of gasoline blending agree satisfactory with the ideal values, which illustrates that the PSO algorithm is valid and effective in solving the blending scheduling problem.

Key words Blending scheduling; nonlinear; dynamic programming; particle swarm optimization; algorithm; mixed-integer optimization;

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