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一种新的聚类算法 (分类)及在工业过程报警管理中的应用

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摘要: 在现代工业生产过程中,过程报警(警报)信号的产生给生产操作带来很多困难。为了确保工业生产的安全性和可靠性,报警管理的有效性是一个亟待解决的问题。本文提出一种新的报警管理方法,即基于模糊聚类算法的报警管理方法。模糊聚类算法能够根据工业过程变量的特性,自动地将报警信号分类,并且能够根据工业过程的实时状况,动态地调整报警分类的参数。本文将该方法应用于乙烯裂解炉的报警管理,证明了该方法的有效性。

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A New Fuzzy Clustering Ranking Algorithm and Its Application in Process Alarm Management

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Abstract: Previously alarms of modern chemical process give the operators many difficulties to decision and diagnosis. In order to ensure safe production and process operating, management and optimization of alarm information are challenge work that must be confronted. A new process alarm management method based on fuzzy clustering algorithm is proposed. The fuzzy clustering algorithm is used to classify automatically the process variables, and differences driving decision algorithm make different classes and process parameters in every cluster. The alarm signal of higher rank is handled preferentially to manage effectively alarms and avoid blind operation. The validity of proposed algorithm and solution is verified by the practical application of ethylene cracking furnace system. It is an effective and dependable alarm management method to improve operating safety in industrial process.

Key words: process alarm management; fuzzy clustering algorithm; ethylene cracking furnace;

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