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RESEARCH NOTES

基于模糊CMAC神经网络的4-CBA软测量

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摘要 Soft sensor is attractive in dealing with online product quality measurement by virtue of other easily measured variables. In AMOCO PTA (purified tereph thalic acid) production process, the unavailability of real-time measurement of 4-CBA makes it impossible for timely adjustment and thereby influences the product quality and the plant economy benefit. In this paper, a kind of FCMAC (fuzzy cerebellar model articulation controller) method is presented to solve the online measurement problem. Different from the conventional CMAC (cerebellar model articulation controller) networks, which has inferior smoothing ability because of its table look-up based technology. Integrating fuzzy model into CMAC networks, it becomes more accurate in functional mapping without weakening its generalization ability. Numerical example and industrial application results show the method proposed here is satisfactory and feasible.

关键词 4-CBA; 传感器; 模糊神经网络系统; 产品质量; PTA 精对苯二甲酸

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4-CBA Soft Sensor Based on Fuzzy CMAC Neural Networks

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Abstract Soft sensor is attractive in dealing with online product quality measurement by virtue of other easily measured variables. In AMOCO PTA (purified tereph thalic acid) production process, the unavailability of real-time measurement of 4-CBA makes it impossible for timely adjustment and thereby influences the product quality and the plant economy benefit. In this paper, a kind of FCMAC (fuzzy cerebellar model articulation controller) method is presented to solve the online measurement problem. Different from the conventional CMAC (cerebellar model articulation controller) networks, which has inferior smoothing ability because of its table look-up based technology. Integrating fuzzy model into CMAC networks, it becomes more accurate in functional mapping without weakening its generalization ability. Numerical example and industrial application results show the method proposed here is satisfactory and feasible.

Key words fuzzy CMAC networks; 4-carboxybenzaldehyde (4-CBA); purified terephthalic acid plant; soft sensor

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