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基于神经网络建立液态挤压成形管、棒材工艺参数知识库

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ESTABLISHING THE KNOWLEDGE BASE OF PARAMETERS FOR SHAPING TUBE AND BAR PRODUCTS ON THE NEURAL NETWORK

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摘要

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摘要 采用人工神经网络方法, 将81组实验数据用于神经网络的建模及检测, 建立了液态挤压成形管、棒材工艺参数知识库, 可以对该工艺的关键参数进行较为准确的预测, 从而为推动该金属成形新工艺的实际应用奠定了基础。

关键词: 神经网络 液态挤压 知识库

Abstract: The liquid extrusion process, which is developed by incorporating the strong points of liquid metal forging and hot extrusion process, is a kind of new metal forming technology for shaping nonferrous metal tube and bar products in recent years. Because the process is concerned with a series of complex problems in metallurgy, heat transfer, solidification and plastic deformation, establishing its exact mathematic model is very difficult. The process parameters are only selected by experience, which makes the quality control of products uneasy. For solving the problem, an artificial neural network has been applied to the process in this paper. The knowledge base for shaping tube and bar products has been established and verified by 81 series of experimental data. By this research, the key process parameters of liquid extrusion, including deforming pressure and delay period, can be accurately predicted, and an important foundation has been laid for advancing the new forming process utilized in practice.

Keywords: neural networks liquid extruding knowledge bases

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