

عنوان مقاله:

Expert System Approach for Manufacturability Evaluation of Nd: YAG Laser Beam Machining Process

محل انتشار:

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نویسنده:

M. Sadegh Amalnik* - *Department of Mechanical Engineering, University of Qom, Qom, Iran*

خلاصه مقاله:

In this paper, an expert system (ES) is developed for manufacturability evaluation of ND:YAG laser in computer based concurrent engineering. The expert system evaluates machining cycle time and cost in less than ۳۰ seconds. Experimental verification and validity of the expert system is carried out. The results of expert system are compared with the results of experimental laser beam machine. Results are presented. The results of the expert system show machining cycle time and cost for expert system is about ۱۰ percent less than the experimental one. In addition material is selected by the expert system. It gives valuable information to help designers and manufacturing engineers to improve design and manufacturing. The expert system links with design feature library, material database and laser beam machine database. The design specification is acquired through a feature based approach. Material database holds attributes of more than ۱۰ types of materials. Laser beam machine database holds attributes of ۲ types of laser beam machine and machine parameters. For each design feature, the expert system provides information needed for manufacturability evaluation and estimation of machining cycle time and cost. It can be used for design and manufacturing optimization. The expert system can be used as an advisory system for designers and manufacturing engineers. It can be used as a teaching program for new laser operators in computer based concurrent engineering environment.

کلمات کلیدی:

Design, Expert System, Manufacturing, ND: YAG Laser

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