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Development of a knowledge based expert system on casting defects

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ABSTRACT

Knowledge based expert systems are computer programs which use a collection of facts, rules of thumb to suggest solutions to specific problems. Foundry related practices are rich in thumb rules and knowledge bases which can be implemented in such programs to help the foundrymen. One such very important use of expert systems can be in the diagnosis of casting defects. This paper outlines the procedure adopted to design an expert system, to identify the casting defect by appearance and at the same time also suggest the remedial solution for the casting defect identified. The knowledge-base of this expert system (named NCDA, NIFFT Casting Defect Analysis) is rule based. A large number of rules have been built that constitute the decision making sequence for each area of defect, which when consulted by the user gives a probable or certain solution depending upon the parameters supplied by him/her. The system has been built using the expert system shell VP-EXPERT. A friendly environment has been created for the user that tries to sumulate actual human interaction. The knowledge base is open to further additions or modifications.

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