Assembly Evaluation Model With Concurrent Consideration of Design for Flexible Assembly and Assembly Sequence Planning

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ABSTRACT

The purpose of this project is to develop an assembly evaluation model withconcurrent consideration of Design for Flexible Assembly(DFA) and AssemblySequence Planning(ASP). By applying the concepts of Design for Flexible assemblyin the early stage of the design process, flexible assembly products can be designedand thus increase the flexibility of the assembly systems. In addition, AssemblySequence Planning helps the selection of the best assembly sequence in which partsof subassemblies are put together in the mechanical assembly of a product that candrasticlly affect the affect the efficiency of the assembly process. Based on thestudies of DFA and ASP, the project takes a concurrent engineering approach by integratingthe DFA in the design stage with the ASP in the manufacturing stage in order todelelop an assembly evaluation model for assembly product design and process planning.The DFA module includes the functions of Flexibility Criteria, Flexibility Evaluationand Redesign Diagnosis. The ASP module includes the functions of Sequence Representation,Sequence Evaluation and AI Search Algorithm. Finally, an example is adopted forthe application and illustration of the concurrent assembly evaluation model being developed.

Keywords : 並行工程 ; 裝配彈性設計 ; 裝配程序規劃 ; 裝配評估模式

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