

INTEGRATION OF PROCESS PLANNING AND SCHEDULING ACTIVITIES USING PETRINET

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Abstract

Computer Aided Process Planning (CAPP) system is a dynamic workshop environment, in which selection of machining resources, determining set-up plans and sequencing machining operations should be considered simultaneously to achieve the global lowest machining cost. In this paper, process planning is considered as a NP-hard combinatorial optimization problem and a methodology has been developed using Petri nets that address the problem of process planning and scheduling activities. The Means Ends Analysis has been used in the first stage to generate some initially good alternative process plans. These alternate process plans were sent to the scheduling module with an objective of minimizing the make span using Penalty Co-efficient method, that the integration of these two functions can result in significant improvements to the efficiency of the manufacturing facilities through the reduction in scheduling conflicts, reduction of flow-time and work-in-process on one hand and on the other hand increase in utilization of the other production resources and adaptation to irregular shop floor disturbances.

Keywords: Computer Aided Process Planning (CAPP), Petrinets, Scheduling