

## **ABSTRACT**

*Scheduling is the decision process on a regular basis in many manufacturing and service industries and are associated with the allocation of resources to tasks over an extended period of time to optimize one or more objectives. Some goals of the scheduling is the increased utilization of resource use, reduced work-in-process or job waited in the production process and reduce delays in the fulfillment of the due date. Each job has a due date and each with a penalty if the job is completed after the due date.*

*Flow pattern can be divided into flow shop and job shop. The flow pattern of the flow shop has the same sequence. In general flow shop, there is possible variations between jobs or jobs that come not to be done on all machines. This condition causes the variation in time-based job sequencing process.*

*Many heuristic methods have been developed and used to generate the proper scheduling which computational time is relatively long. One is the method adopted in this study, namely Hybrid Simulated Annealing algorithm. Hybrid Simulated Annealing algorithm is a scheduling method to solve the problem of routing machines with the objective function minimizes the makespan (the time required to complete the entire operation of a job).*

*The study is expected to provide solutions to minimize makespan using Hybrid Simulated Annealing algorithm taking into account its due date of each job. The effect of minimizing makespan is expected to lower the percentage of delays and idle time in scheduling.*

*Keywords: production scheduling, flow shop, job order, makespan, algorithms, Nawaz Enscore Ham, NEH, Simulated Annealing, idle time*