

## ABSTRACT

Machine selection is one of the most important operational issues within the company. The problems that arise is determining which routes the machine must be used to produce, PT Dirgantara Indonesia is the only company in Indonesia that produce aircraft and helicopter parts. Therefore PT Dirgantara Indonesia should strive to reduce total operations cost, according to the company's third goal of reduction of production costs, one of which can be achieved by selection of more efficient machines. This problem can be solved by using a search algorithm called Genetic Algorithm (GA).

Machine selection is essential to the FMS problem. This typically involves a set of equipments or machines used in production based on technical and economic criteria. To assist principals in selecting sets of production machine is suitable from the available, with consideration to the minimization of operating costs, proposed using Genetic Algorithm approach to the machine selection. Used objective function leads to the minimization of the total operation cost, the value of the set up machine for each operation is done on the selected machine, and the total time required to perform all operations on the selected machine. The objective function in the Genetic Algorithm is represented as a fitness function, which in theory Genetic Algorithm will select individuals who have the largest fitness value, or in other words objective minimization function. For the case of Genetic Algorithm minimization its fitness value is a quarter the value of the objective function. Machine candidates which amounted to be selected are 14 machines replacing FMS machine.

The Use of Genetic Algorithm on the machine selection process in PT Dirgantara Indonesia is proven to increase the efficiency of the company up to 40%. This means that by applying the Genetic Algorithm in the selection machine process, PT Dirgantara Indonesia can reduce total operating costs up to 40%. With so PT Dirgantara Indonesia will be able to meet the company's third goal of reduction of production costs, because the total operations cost included in the company's total production costs. So that with one of these ways, PT Dirgantara Indonesia is expected to compete at the global level.

**Keywords: machine selection, Genetic Algorithm**