ABSTRACT

Electricity is a primary need for the people. So the availability of equipment becomes a very important factor for PT PJB as power generation companies. Gas turbine system is one of the power system that produces 100 MW / hour. System failure can be caused by gas turbine core components and auxiliary components. The determination of appropriate treatment interval can prevent failure of auxiliary components. On the other hand, excessive treatments can cause maintenance costs a lot because of the cost of production loss. This present study examined the financial calculation of the alternatives to determine the best appropriate maintenance interval. The method used was the prioritization list of failure types and components using cost-based criticality which consists of the cost of production loss and capital loss due to failure and the probability of failure occurrence. Maintenance intervals were calculated for each component and has been fixed into the interval maintenance alternatives. Those alternatives were compared financially, reliability, and the amount of production loss time during the period of 60 months. Financial comparison carried out by the method of Net Present Value. From the calculation of cost-based criticality there are 11 types of failure and critical auxiliary
components, namely by pass stack with abnormal pressure and leak failure, main control oil with abnormal pressure failure, intake air filter with unclean failure, ignitor with a low electrical current, unclean, and damaged, trouble of exciter, inlet guide vane with jammed and leak failure, and the main fuel oil pump with abnormal pressure failure. From the calculation of optimum maintenance interval, there are five scenarios and the reliability at t 8,000 hours, the amount of lost production time and financially for a period of 60 months with inflation and interest rate 0.65% and 0.69%. Alternative 2 has the greatest reliability 0.0084, but with NPV Rp (28,957,160,449). The greatest NPV is alternative 1 with NPV of Rp 55,556,332,787. Alternative 4 has the smallest lost production time during a period of 60 months of 2553 hours. But from the calculation of incremental Benefit Cost Ratio, the best alternative is alternative 1 with the Benefit Cost Ratio of 1.973517. So that the selected alternative is the alternative 1.

**Keywords**: Prioritization, cost-based criticality, reliability, maintenance interval, net present value, incremental benefit cost ratio.