ABSTRACT

PT XYZ is a manufacturing company that produces aircraft for military and commercial purposes. One of the aircraft produced by PT XYZ is NC212 aircraft. As aircraft in general, the NC212 is composed of various components, one of which is empennage or commonly called the tail. On the tail there is a stabilizer that functions as a balancer for the aircraft when it is in the air. The stabilizer is also composed of several components, the Rear Spar is one of the components that make up the stabilizer on the aircraft which has an important role, namely as the framework of the stabilizer. The Rear Spar production process at PT XYZ often experienced delays which had an impact on aircraft completion delays. The cause of delays in Rear Spar component is dominated by material flow and information flow that is not integrated which causes delays in the delivery of parts from the Fabrication Line which causes the parts that were received are incomplete with a percentage of 36%, followed by chatting and idle operators with a percentage of 22%, tools are placed carelessly which causes operators to often look for tools with a percentage of 14%, operators pay less attention to SOPs with a percentage of 14%, and operators in the internship or training period so that they are less skilled with a percentage of 14%. Because PT XYZ implements a make-to-order production system, the delay will have a serious impact to the company both in terms of cost and customer confidence. In this study, a control system design process in the form of a website-based e-kanban was carried out to minimize delays in the production process of Rear Spar components. Kanban in Japanese means a visual sign or signal that gives instructions for pulling or producing a product. Thus, e-kanban can be interpreted as an electronic kanban that no longer uses cards but uses a more modern and sophisticated information system. In calculating kanban, the Constant-Quantity Withdrawal System method is used which is a method of calculating kanban cards that is suitable for making withdrawals within the company area and does not require withdrawal schedule data, so withdrawals can be made at any time. In calculating the number of kanban cards using the Constant-Quantity Withdrawal System method, there are several stages, namely: calculating lead time, calculating necessary number of parts during the lead time, calculating safety inventory, and count the number of kanban cards. Before carrying out these calculations, supporting data are needed such as working hour data, production process time data for Rear Spar constituent parts, and the flow of the Rear Spar production process in company. These data are obtained from historical company data, direct observations, and interviews with managers and supervisors of the Production Control Division. After calculating with the acquired data, it is found that the number of kanban for the Assembly Line to the Assembly Store is 1 sheet of production kanban and 1 sheet of withdrawal kanban. Then, the number of kanban cards for the Assembly Store to the Fabrication Line is 1 sheet of production kanban for each part of the Rear Spar with a total of 31 sheets. In addition, designing the kanban card, the kanban systematic, the use case diagram, the activity diagram, the entity relationship diagrams, the interfaces and mechanisms for using the e-kanban websites were also carried out. The output created in this study is in the form of an e-kanban design that has been verified based on verification scenarios and has been validated by the company. In addition, a result analysis and cost analysis have been carried out which show that the use of the e-kanban website can minimize or even eliminate delays in 15 constituent parts of The Rear Spar. As a result of the loss of delay, the cost incurred for the implementation of e-kanban is lower than the cost of the delay penalty. Therefore, the purpose of this study which is to design an e-kanban to minimize the delay of the Rear Spar component can be achieved.