

Abstract

This thesis studies and combines the manufacturing between continuous and one piece flow systems. The combined system is used to improve the production line of spindle motor for hard disk drive product in order to reduce the number of work in process (WIP) and increase the balancing of the production line.

This work used the principle of lean manufacturing through the continuous and one piece flow systems. Firstly, the current production, a full continuous process, was determined and found that the production of interest had 51 working processes and was not suitably designed to be a full continuous flow since there was a constraint of holding time due to a specification from product design. In this case, 19 working processes were assigned to be one pieces flow system. Secondly, the minimum-maximum number of WIP was determined in order to control and reduce the number of WIP which, consequently, provided a continuous flow of this combined production system. Then, the bottle neck of the production was determined through the working time using time study. Line balancing was applied to smoothen the production line by work improvement including the selection of a suitable container, the settlement of standard number of WIP, and the maintenance of continuous flow of combined system, etc,. Further more, the manufacturing rules was established and used to monitor and maintain the combined system.

During the implementation, it was found that the good understanding through the whole organization and a good support from management were also needed. Therefore, the change from one single production system to the combined system, continuous and one piece flows, can proceed following the 5 steps including; 1) the policy from the management, 2) the good understanding through the whole organization, 3) the setting of the number of WIP, 4) the improvement and line balancing, and 5) the monitoring and controlling of process.

After applying the combined production system as procedures above, it was found that the number of work in process was reduced from 4,779 to 1,122 pieces or 76.5 % and the balance of production line was increase from 79.1 % to 87.0 %