

The Application of Line Balancing Technique and Simulation Program to Increase Productivity in Hard Disk Drive Components

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Abstract : This study aims to investigate the balancing of the number of operators (Line Balancing technique) in the production line of hard disk drive components in order to increase efficiency. At present, the trend of using hard disk drives has continuously declined leading to limits in a company's revenue potential. It is important to improve and develop the production process to create market share and to have the ability to compete with competitors with a higher value and quality. Therefore, an effective tool is needed to support such matters. In this research, the Arena program was applied to analyze the results both before and after the improvement. Finally, the precedent was used before proceeding with the real process. There were 14 work stations with 35 operators altogether in the RA production process where this study was conducted. In the actual process, the average production time was 84.03 seconds per product piece (by timing 30 times in each work station) along with a rating assessment by implementing the Westinghouse principles. This process showed that the rating was 123% underlying an assumption of 5% allowance time. Consequently, the standard time was 108.53 seconds per piece. The Takt time was calculated from customer needs divided by working duration in one day; 3.66 seconds per piece. Of these, the proper number of operators was 30 people. That meant five operators should be eliminated in order to increase the production process. After that, a production model was created from the actual process by using the Arena program to confirm model reliability; the outputs from imitation were compared with the original (actual process) and this comparison indicated that the same output meaning was reliable. Then, worker numbers and their job responsibilities were remodeled into the Arena program. Lastly, the efficiency of production process enhanced from 70.82% to 82.63% according to the target.

Keywords : hard disk drive, line balancing, ECRS, simulation, arena program

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