

Abstract

This research is aimed at investigating the factors of hard disk drive cleaning machine that affect the cleanliness of 2.5" hard disk drive. The cleanliness is measured from the reduction in percentage of particle size (0.1 to 5 micron) in the hard disk drive.

The first part of research applied a completely randomized design for 4 factors: the screw cleaning time (A), the whole drive cleaning time (B), the number of knocking (C) and the frequency of the pump (D). Each factor was evaluated at 3 levels. The findings revealed that factor A had no significant effect on the response while factor B, C and D had significant effect on the response at 95% confidence interval. Subsequently a 3^4 full factorial experiment was applied for these 4 factors. The results indicated that the main factors B, C, D and the interaction of BC, BD, CD and BCD had significant effect on the response at 95% confidence interval. Based on the consideration of the main effect plot and the interaction plot, it was found that the highest response appeared to be at the third level of the main factors B, C and D. Also, the highest response was at the third level of factors B, C and D for the interaction of BC, BD and CD. Thus the third level of factors B, C and D was selected for setting the machine. For factor A which had no significant effect on the response at 95% confidence interval, the first level was selected (to reduce the operation time). When the machine parameters were set according to the findings, it was found that the quantity of particles inside the hard disk drive was reduced by about 84%.