Wanpen Moonkhonburi 2011: Analysis of Non Repeatable Run Out Disturbance for Process Improvement of Head Stack Assembly in Hard Disk Drive. Master of Engineering (Engineering Management) Major Field: Engineering Management, Department of Industrial Engineering. Thesis Advisor: Mr. Chuckaphun Aramphongphun, Ph.D. 140 pages.

Non Repeatable Run Out (NRRO) is the main cause of functional problems including position error signal and track misregistration in hard disk drive (HDD). These problems are often found in high track density HDD. NRRO is generally caused by excessive vibration of the components in HDD.

This research work aims to analyze failure symptom of NRRO caused by head stack assembly (HSA) and to improve the process by minimizing the NRRO failure. The applied improvement method will not significantly affect the assembly process in terms of quality, cost, and are possible to implement in production. The statistical analysis was applied to determine the suitable conditions of the process parameters including (i) screw fastening torque to fix the flex cable and carriage, (ii) rotational speed of electric driver, and (iii) applying adhesive on the carriage to increase contact area between the carriage and tail of head gimbal assembly (HGA). In addition, the process steps were also investigated to explain how a gap between carriage slit and HGA tail appeared and to improve the work instruction of the process step to reduce the gap. Finally, the rework method of the NRRO-failed HSA by re-soldering on the flex pad and HGA pad was studied to reduce HGA tail floating and, consequently, avoid the repeated NRRO failure in HDD.

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