

## Abstract

This research aims to improve plate quality for slider head using design of experiment fractional factorial ( $2^{5-1}$ ) technique. In general, common quality problems found in slider head are: high MRR loss defect rate, high slider surface roughness, and low plate life time. The objectives of this research are: to reduce MRR loss defect, to reduce slider surface roughness, and to increase plate life time. A total of 5 factors were used in the design of experiment, consisting of diamond charging time, lap plate speed, ceramic ring oscillation speed, ceramic ring speed, and diamond charging weight, with a total of 17 experiments.

From the result of experiment, the findings revealed that the optimum condition for producing lap plate were: diamond charging time of 75 minutes, lap plate speed of 35 rpm., ceramic ring oscillation speed of 15 rpm., ceramic ring speed of 15 rpm., and diamond charging weight of 18 kg. After improvement it was found that MRR loss was reduced from 3.0% to 1.62%, slider surface roughness reduced from 0.3 nanometer to 0.24 nanometer, and average plate life time increased from 600 bars per plate to 786 bars per plate.