

MACHINING PARAMETERS OPTIMIZATION IN END MILLING OF Ti6Al4V USING TAGUCHI METHOD

AMAL T.S¹, VIDYA V² & ABRAHAM K VARUGHESE³

¹M.Tech Scholar, Department of Mechanical Engineering, Sree Buddha College of
Engineering, University of Kerala, India

²Assistant Professor, Department of Mechanical Engineering, Sree Buddha College of
Engineering, University of Kerala, India

³Scientist/Engineer SG, VSSC, Trivandrum, India

ABSTRACT

Ti6Al4V has inevitable applications in aerospace industry where high surface finish is required. In this research the endmilling of annealed Ti6Al4V is performed using coated carbide inserts. The study in the effect of tool geometry has great importance in improving the quality of milled product. Cutting speed, feed rate, depth of cut and nose radius of milling cutter is selected as the input parameters. The responses observed are the surface roughness and cutting force. Taguchi method is employed for the design of experiments. L9 orthogonal array is selected for four factors and three levels by using MINITAB software. Each response is separately optimized by using signal to noise ratio analysis (S/N ratio analysis). ANOVA is employed to find out the percentage influence of input parameters on response. Optimum combination of machining parameters is obtained for surface roughness as well as for cutting force by using Taguchi based S/N ratio analysis.

KEYWORDS: Slot Milling, Nose Radius, Taguchi Method, Signal to Noise Ratio Analysis, Grey Relational Analysis, ANOVA