
Evaluation of forming parameters affecting the grooving process for automotive connecting rod: an experimental and statistical approach

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Abstract: Forming industries are trying to reduce the cost of product without affecting its quality by minimising the defects to get-up the globalisation, competition and increase demand in the manufacturing domain. Present investigation is focused on identifying and minimising the various defects occurs in the grooving operation for connecting rod used to connect recliners of automobile seat. The cumulative approach of Pareto, AHP and Taguchi analysis has been applied to overcome the defects and to improve the productivity. Pareto analysis is used to find out the major intensity of defects, AHP techniques is applied for selection of most appropriate operational parameters. Finally, Taguchi analysis is carried out for optimisation of process parameters and selection of the best range of each parameter. From ANOVA the optimised value of each process parameter for minimisation of defects are evaluated and validated by conducting experiments in the industrial unit and found huge reduction in the percent rejection of component.

Keywords: metal forming; defects; quality; Pareto analysis; analytical hierarchy process; AHP; design of experiment; DOE; ANOVA; forming parameters; optimisation; productivity improvement.

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