

## TAGUCHI METHOD FOR IMPROVING POWDER COATING PROCESS – A CASE STUDY

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### ABSTRACT

Powder coating is widely used in industry to give a product protection from the atmosphere, improve the aesthetics and the surface finish. Electrostatic powder coating process (EPCP) using Corona gun is extensively studied in this work with the perspective of determining operating variables which govern the quality of coat. The parts which were studied were found prone to orange peel defect and were having high dry film thickness (DFT). It was revealed that three controllable process variables namely the applied voltage, powder flow rate and blow air flow rate were responsible for quality of the film coated.

Further the Taguchi method was used to investigate the effects of process parameters on the response characteristics. The effect of each parameter on both response characteristics namely the orange peel defect and DFT was studied using orthogonal array, S/N ratio and ANOVA. Optimal combination of parameters was found for optimum response characteristics. The optimum combination was verified experimentally and it was confirmed that Taguchi method successfully improved the quality of powder coating.

**KEYWORDS:** Electrostatic Powder Coating Process (EPCP), Dry Film Thickness (DFT), Orange Peel (OP), Design of Experiments (DOE), Taguchi Method, Signal to Noise (S/N) Ratio