CERTIFICATE

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Date:-_____

This is certified that the work contained in this dissertation entitled **"Finite Element Analysis of Deep Drawing of a Fuel Tank Exterior for a Motorbike"** by **Mr. GURVEEN SINGH** is the requirement of the partial fulfilment for the award of Degree of **Master of Engineering (M.E.)** in **Production Engineering** at **Delhi College of Engineering**. This work was completed under my supervision and guidance. He has completed his work with utmost sincerity and diligence. The work embodied in this major project has not been submitted for the award of any other degree to the best of my knowledge.

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(GURVEEN SINGH)

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ABSTRACT

Despite the fact that sheet metal forming techniques are extensively used in the modern industry, the use of new manufacturing concepts and advanced materials is of major interest to manufacturers of automobile sector. In this connection, the use of computer applications for the effective & precise analysis of sheet metal forming is quite important in the light of large number of variables which are influencing the process. The recent development of more reliable and flexible numerical and analytical methods provides economically sound solutions to many sheet metal forming problems.

In sheet metal forming operations CRDQ steel has gained a lot of importance (because of its extreme good deep drawing capabilities) among most of the major motorbike manufacturers and steel companies worldwide. Therefore CRDQ steel sheet of 0.8mm thick was selected and characterized for various mechanical properties.

For theoretical analysis in this work finite element analysis software (HyperMesh & Dynaform), is used to perform the numerical simulation of the deep drawing of a fuel tank exterior for a new generation motorbike. Simulations were carried out for varying blank holding force during the draw for the analysis of strain distributions and drawbead.

Deep drawing operations were performed at m/s Satyam Auto components Ltd., for CRDQ steel for different blank holding forces during the deep draw. The blank hoding force with and without draw bead and strain distributions have been analysed experimentally and results were compared with the FE simulation.

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