DECLARATION

We hereby declare that this submission is our own work that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

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This is to certify that project report entitled "**OPTIMIZATION OF CNC LASER ENGRAVER/ CUTTING MACHINE**" which is submitted by Vaibhav Chaudhary, Suryansh Singh, Sumit Kumar Singh and Vatsala Misra in partial fulfillment of the requirement for the award of degree B.Tech. in Department of Electronics and Communication Engineering of Dr. A.P.J. Abdul Kalam, Technical University, is a record of the candidates' own work carried out by them under my supervision. The matter embodied in this thesis is original and has not been submitted for the award of any other degree.

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ABSTRACT

Laser engraving process is non conventional machining process used for marking/engraving of almost each material which cannot be mark by conventional machining processes. In laser engraving process the surface of material is heat up and subsequently vaporizes the material. With the use of laser engraving machine the marking/engraving is possible by using different input parameter as spot diameter, laser power, laser frequency, different wave length etc, and get the changes in output parameter like material removal rate, surface finish and indentation. To optimization of all these parameters with multiple performances characteristic based on the Grey relational analysis. Taguchi method of orthogonal array will be performed to determine the best factor level condition. By analyzing Grey relational grade, it will be observed that which parameter has more effect on responses of input parameter to the output parameter. In this the fundamental goal is to design and fabricate the laser cutting and engraving machine which is convenient to controlled by the Arduino CNC. It is accessible and perfect utilization for small and medium scale industries. This model is small, simple to work, cost of manufacturing and to effortlessly transport from one work station to other work station.

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LIST OF ABBREVIATIONS

CNC	Computer Numerical Controlled
NC	Numerical Controlled
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing
MIT	Massachusetts Institute of Technology
Nd	Neodymium
EE	Energy Efficiency
m/s	Meter per second
SMPS	Switch Mode Power Supply
IDE	Integrated Development Environment
ASCII	American Standard Code for Information Interchange
PCB	Printed Circuit Board
HP	Horsepower
kWh	kilo Watt Hour
INR	Indian National Rupee
DPR	Detailed Project Report
NPV	Net Present Values