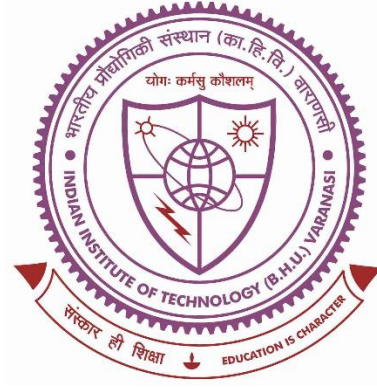


***Modelling, Simulation and Experimental Study of Ultrasonic
Vibration Assisted Grinding of AISI D2 Tool Steel Using
Eco-friendly Cutting Fluids***



Thesis submitted in partial fulfilment

for the award of degree

Doctor of Philosophy

By

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CERTIFICATE

It is certified that the work contained in the thesis titled *“Modelling, Simulation and Experimental Study of Ultrasonic Vibration Assisted Grinding of AISI D2 Tool Steel Using Eco-friendly Cutting Fluids”* by *“Abhimanyu Chaudhari”* has been carried out under our supervision and this work has not been submitted elsewhere for a degree.

It is further certified that the student has fulfilled all the requirements of Comprehensive Examination, Candidacy and SOTA for the award of Ph.D. Degree.

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DECLARATION BY THE CANDIDATE

I, "*Abhimanyu Chaudhari*", certify that the work embodied in this thesis is my own bona fide work and carried out by me under the supervision of "*Dr. Meghanshu Vashista* and *Dr. Mohd Zaheer Khan Yusufzai*", from *JULY 2018* to *March 2023*, at the "*DEPARTMENT OF MECHANICAL ENGINEERING*", Indian Institute of Technology (BHU), Varanasi. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma. I declare that I have faithfully acknowledged and given credits to the research workers wherever their works have been cited in my work in this thesis. I further declare that I have not wilfully copied any other's work, paragraphs, text, data, results, *etc.*, reported in journals, books, magazines, reports dissertations, theses, *etc.*, or available at websites and have not included them in this thesis and have not cited as my own work.

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This is to certify that the above statement made by the candidate is correct to the best of our knowledge.

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The world is going through some unprecedented times as the normal has been upended by the arrival of the deadly coronavirus pandemic. People across the globe are battling with Covid-19. Many people who are locked at home like us are doing their part also by helping others in many ways. But others like doctors, soldiers, teachers, bank employees, office staff, railway employees, social volunteers etc. who were working outside to fulfil our requirements and taking care of the affected ones by risking their lives. I would like to thank them for their service towards humanity. Also, I would like to express my deepest condolences to those who lost their lives during this pandemic. Hope can always help pull people out of the most difficult of times. It is a powerful force and can prove to be a source of reassurance. Hence, I am immensely optimistic that very soon we will win this battle.

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(ABHIMANYU CHAUDHARI)