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(51) International classification		:A61P0025280000, A61Q0019000000, A61P0037000000, C12N0005077500, A61P0009100000	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Mahip Singh Address of Applicant :Dr. A.P.J. Abdul Kalam Technical University, New Campus, Sec-11, Jankipuram, Vistar Yojna, Lucknow, Uttar Pradesh-226031, India Lucknow ----- 2)Amit Rai Dixit Address of Applicant :Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Dhanbad - 826004, Jharkhand, India Dhanbad ----- 3)Anuj Kumar Sharma Address of Applicant :Dr. A.P.J. Abdul Kalam Technical University, New Campus, Sec-11, Jankipuram, Vistar Yojna, Lucknow, Uttar Pradesh-226031, India Lucknow -----
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(57) Abstract :

The present invention relates to a dynamic cutting fluid supply system and a method in order to maintain a constant cutting zone temperature during the machining of workpiece (W), either the supply of cutting fluid is regulated based on the relative linear velocity, or the RPM of the machine is adjusted to ensure a constant relative linear velocity. These adjustments are designed to optimize cooling and temperature control in the cutting zone for consistent machining performance. The invention is designed to optimize heat dissipation during metal cutting operations. Excessive heat generation in such operations can lead to reduced tool life and inferior surface finish of workpieces. The proposed system (100) utilizes high-resolution laser sensors (4) with 1mm resolution and a microprocessor (5) to dynamically regulate cutting fluid supply based on real-time parameters such as workpiece diameter (d) and machine RPM (N). This innovation ensures continuous surface finish, prolongs tool life, and optimizes cutting fluid usage, thereby enhancing the efficiency and economy of metal cutting operations. [figure 1]

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