



# SMART TURNING RULE FEEDBACK CONTROLLER FOR CHATTER SUPPRESSION IN MAGNETO-RHEOLOGICAL FLUID BASED TURNING PROCESS APPLICATION

**Shanmugasundaram B**

Research Scholar, Mechanical Engineering, Karpagam Academy of Higher Education,  
Coimbatore, India

**Suresh Prabhu P**

Director - Research, Karpagam Academy of Higher Education, Coimbatore, India

**Prathipa R**

Professor, Department of Chemistry, Siddharth Institute of Engineering & Technology,  
Andhra Pradesh, India

## ABSTRACT

*This paper proposes a Turning Rule Feedback Controller (TRFC) technique based on Magneto-Rheological Fluid (MRF) to control the chatter in turning, which coordinates the issues of low precision and poor surface quality, etc., due to the chatter in turning. It can finish the steps change of firmness and damping parameters by modifying the coil current in Turning Rule magneto-rheological controller utilized as a part of apparatus and the magnetic field quality. The paper aims to bring out the modeling of surface roughness in turning process by using an MRF-based Novel controller. To accomplish this objective, which extensive and predictable information are used by directing turning which investigates a CNC machine under four turning parameters: cutting speed, feed rate, depth of cut, and nose radius. The created model is assessed by execution criteria of Mean Squared Error (MSE). Along with these lines, the attention of supporting element and insightful babble control online in turning. Finally, the trial framework utilized as a part of chatter concealment of smart magneto-rheological elastomers turning bar is set up on the machine of CA6140. The outcomes demonstrate that this technique can hinder chatter rapidly and proficiently in turning and enhance the surface quality significantly.*

**Keywords:** Turning, Chatter, MRF and TRFC.