

METHOD FOR ANALYSIS OF MACHINES

ANALYZING WEAR PROCESSES THAT OCCUR IN THE MACHINING OF MATERIALS



TECHNOLOGY FIELD

Manufacturing methods and Materials

IP PROTECTION

US Patent No. 9,934,339

RESEARCHER



Vis Madhavan has been teaching at WSU since August 1996. He teaches and conducts research in the area of manufacturing processes. His research interests have been predominantly focused on fundamental mechanics and tribology issues in the areas of machining and sheet

metal forming and in the use of Virtual Reality in the design of manufacturing processes as well as in engineering education. Specific research topics include FEA of machining and sheet metal forming, Strain rate and temperature measurement in machining, Constitutive models, Tribology of high speed sliding contacts, Inverse estimation of friction and material properties and Immersive virtual reality for design of assembly operations. His work in these areas has been funded by NSF, DoD (Army Research Office), Boeing Co., Cessna Aircraft Co., Raytheon Aircraft Co., NIST and Naval Research Laboratory.

➔ With technology continuing to advance, industries from around the world need to find a way to keep up with it. Industrial and manufacturing research at Wichita State University has produced a new method for analysis of machining. This new idea makes it possible to analyze the thermo-mechanical deformation, fracture and wear processes that occur in the machining of materials, so that the analysis can be used to minimize processing costs, while satisfying constraints on part quality, machine capability requirements, and process robustness.

ADVANTAGES

The presented technology provides advantages over the current competition, including, but not limited to:

- Being one-thousand times faster than Finite Element Analysis
- Having a reduced energy and coolant usage rate

APPLICATIONS

This technology would be utilized in CAM (Computer Aided Machining) software which could potentially place it in every machine shop that implements the use of automated machining hardware.

- Aircraft
- Automotive
- Robotics

For additional information, please contact:

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