To, 07.04.2022

Dragan Marinković

Editor-in-Chief,

Facta Universitatis, series Mechanical Engineering.

Dear Sir,

Please find enclosed the manuscript titled “**Maximization of wear rates through effective configuration of standoff distance and hydraulic parameters in ultrasonic pulsating waterjet”** by **Akash Nag, Amit Rai Dixit, Jana Petrů, Petra Váňová, Kateřina Konečná and Sergej Hloch**. The corresponding author declares on behalf of all the authors that the work presented in the manuscript is original research and has not been submitted for publication elsewhere.

The present study aims to understand the combined effect of technological parameters of pulsating water jet such as **supply pressure (*p* = 20, 30 and 40 MPa), nozzle diameter (*d* = 0.3 to 1.0 mm) and standoff distance (*z* = 1 to 121 mm)** for optimizing the technological process leading to material disintegration. The efficiency of material disintegration in the current study is determined in terms of achieved **disintegration depth and volume removal**. In this study, **statistical analysis and formulation of implicit regression models** for determining the **effective range and optimal value of standoff distance** based on input parameters such as supply pressure and nozzle diameter was carried out which was **not explored till now**. **Hydraulic power** was determined as the **suitable indicator** to **predict the effective standoff distance range** which shifted towards higher values with increase in the hydraulic power for given combination of supply pressure and nozzle diameter. Additionally, surface integrity study of selected samples was conducted which included **surface and cross-sectional topography** along with the evaluation of induced **subsurface micro-hardness** of the disintegrated samples.

The outcomes of this study would help to **quickly tune the technology to resonance** while also using it for practical purposes. A tuning methodology is proposed according to the **implicit function for the determination of the optimal and effective range of standoff distance**, which simplifies further research.

Figures and tables listed in the manuscript purely belong to the authors. Authors have sincerely followed the instructions provided in the guidelines to prepare this manuscript. Kindly, consider the submitted materials for further process.

Sincerely,

On behalf of the authors

Dr. Amit Rai Dixit

Department of Mechanical Engineering, IIT(ISM) - Dhanbad

Jharkhand, India. Email: [amitraidixit@iitism.ac.in](mailto:amitraidixit@iitism.ac.in)