

ABRASIVE SLURRY PREPARATION UNIT FOR MICRO ABRASIVE WATER JET MACHINING APPLICATIONS

IITM Technology Available for Licensing

Problem Statement

- The problem statement discussed in the present invention is **how to generate micro abrasive suspension jet in effective manner.**
- Hence, subject invention addresses the issue in efficient manner.

Technology Category/ Market

Technology: Abrasive slurry preparation unit;

Industry/Application: Micro machining applications; Heavy Machinery, Metal Fabrication, Automotive & Transportation;

Market: The global **abrasive** market is projected to reach at a **CAGR of 5.0%** during the forecast period **(2024-30)**.

Technology

- The claimed patent describes an apparatus for preparing a **uniform mixture of abrasive particle** for the generation of micro abrasive suspension jet.
- The apparatus comprises of:
 - a **slurry preparation unit** for preparing a **high-pressure slurry** of carrier fluid and abrasive particle,
 - a **source for pressurized carrier fluid**,
 - a **conduit** to connect source of carrier fluid to an inlet of slurry preparation unit,
 - a **conduit** to connect an outlet of the slurry preparation unit to cutting head;
 - a **diamond orifice** to form micro abrasive suspension jet.

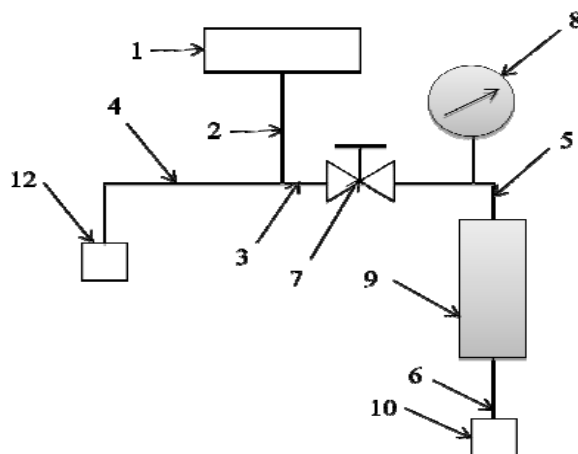


Fig.1 depicts a **flow circuit diagram** of an **apparatus** for generating micro abrasive suspension jet for micromachining application;

Brief Functionality:

The **slurry preparation unit** is for preparing **high pressure slurry** of **carrier fluid** and **abrasive particles** into **abrasive slurry** and has a **hydraulic cylinder with piston**, a **slurry cylinder with piston**, and **hopper for continuous refilling of slurry preparation unit** which in turn connected with a **diamond orifice** to generate **micro abrasive suspension jet**.

TRL (Technology Readiness Level)

TRL-3, Experimental proof of concept;

Intellectual Property

IITM IDF Ref. 1099;
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Research Lab

Prof, Ramesh Babu N,
Dept. of Mechanical Engineering

CONTACT US

Dr. Dara Ajay, Head TTO
Technology Transfer Office,
IPM Cell- IC&SR, IIT Madras

IITM TTO Website:
<https://ipm.icsr.in/ipm/>

Email: smipm-icsr@icsrpis.iitm.ac.in
sm-marketing@imail.iitm.ac.in
Phone: +91-44-2257 9756/ 9719

