

Waterjet Edge



Cognitive Insights Newsletter



From the Desk of 2Do

Welcome to the inaugural issue of 2Do Waterjet Edge, a cognitive newsletter crafted to unify all stakeholders in the waterjet cutting industry. With rapid innovation and growing applications in aerospace, automotive, architecture, and industrial design, this space deserves sharper intelligence and stronger collaboration. Let's cut through the noise—together.

Industry Intelligence

Market Conditions for the Waterjet cutting Industry in India.

Current market size, trends, growth projections, key players, and consumer behaviour over the past year and anticipated developments over the next five years.

Current Market Size and Growth Rate

The Indian metal cutting machine market, which encompasses waterjet cutting machines, was valued at approximately USD 471.95 million in 2023 and is projected to reach USD 842.22 million by 2032, growing at a compound annual growth rate (CAGR) of 6.61% from 2024 to 2032.

Market Trends

1. Technological Advancements:

The integration of automation, robotics, and Industry 4.0 technologies is enhancing the precision and efficiency of waterjet cutting machines. Innovations such as real-time monitoring and predictive maintenance are becoming more prevalent.

2. Sustainability Focus: Waterjet cutting is gaining popularity due to its environmentally friendly nature, as it minimizes material wastage and eliminates the need for hazardous chemicals.

3. Diversification of Applications:

Beyond traditional sectors like automotive and aerospace, waterjet cutting machines are finding applications in electronics, healthcare, and construction, driven by their versatility in handling various materials.

Key Players

The Indian waterjet cutting machine market features both domestic and international manufacturers. and after-sales service.

In this newsletter you can expect:

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2Do Corner

Notable companies include:

- Flow International Corporation
- OMAX Corporation
- Semyx LLC
- Dardi International Corporation
- Jet Edge Inc.
- Techni Waterjet
- Resato International BV
- Waterjet Corporation S.r.l.
- Hornet Cutting Systems
- A Innovative International Ltd.

These companies compete on factors such as product quality, technological innovation, pricing, and after-sales service.

Consumer Behaviour

Over the past year, there has been a noticeable shift towards adopting advanced manufacturing technologies among Indian consumers. Industries are increasingly investing in waterjet cutting machines to enhance precision, reduce material wastage, and achieve cost efficiencies. The demand is particularly strong in regions with concentrated industrial activities, such as Maharashtra, Gujarat, Tamil Nadu, and Karnataka.

Future Outlook (Next 5 Years)

The Indian waterjet cutting machine market is poised for significant growth over the next five years, driven by:

· Government Initiatives:

Programs like "Make in India" are promoting domestic manufacturing, thereby increasing the demand for advanced cutting technologies.

· Infrastructure Development:

Ongoing infrastructure projects are expected to boost the construction industry, leading to higher demand for waterjet cutting machines.

· Technological Integration:

Continued advancements in automation and digitalization will likely enhance the capabilities and adoption of waterjet cutting machines across various sectors.

In summary, the Indian waterjet cutting industry is on an upward trajectory, with technological advancements and supportive government policies playing pivotal roles in shaping its future landscape.

Source: [credenceresearch](#) [markwideresearch](#) [urjadaily](#) [Indiashorts](#) [marketsandata](#)

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Stakeholder Spotlight

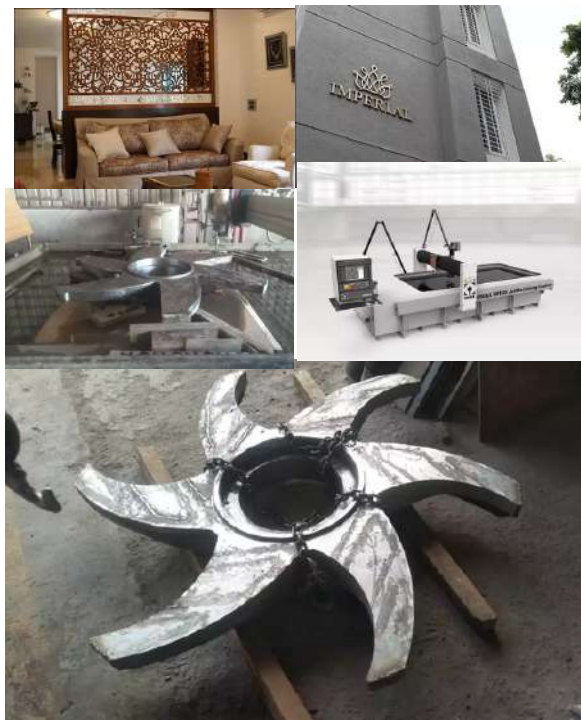


Kakade Laser, Pune, Maharashtra

From last 20 Years, Kakade laser is delightfully serving for all engineering requirements. A CNC waterjet cutting service provider based in Pune, Maharashtra. They perform engineering job work services for both on demand manufacturing as well as mass production for a waterjet cutting services.



Everything from titanium plate to thinnest of paper can be cut efficiently via waterjet technology, making the potential applications for this process ever expanding.



They position themselves as the customers most reliable source for their rapid prototyping, On-demand manufacturing and mass production requirements.

Source: kakadelaser.in

Case of the Month

A Comprehensive Study on the Challenges of Using Pure Water Jet as Post-Treatment of Abrasive Water Jet Milled Pockets in Titanium Alloy

by Nikolaos E. Karkalos and Panagiotis Karmiris-Obratanski

Abstract

Abrasive waterjet (AWJ) machining offers the possibility of creating a wide range of features on mechanical parts with different degrees of complexity with a relatively high efficiency. However, after the roughing passes, the surface quality of features such as blind pockets is rather low, with unfavourable implications for surface waviness and form deviations apart from high surface roughness. Apart from the traditional methods for finishing, such as grinding or lapping, it is worth attempting either to improve the surface quality obtained during roughing by using a pure WJ in the existing process in order to ameliorate the surface quality. Thus, in the current study, the effect of pure waterjet (WJ) post-processing of machined pockets by AWJ milling on a Ti-6Al-4V workpiece using recycled glass beads was investigated under different conditions. The findings indicate that although the different post-processing treatments by a pure WJ can affect the surface quality on average, these differences are not considerably important, probably due to an insufficient capability of material removal, which hinders the smoothing effect on machined surfaces. Thus, it was indicated that a higher number of post-processing passes under different conditions than those of the roughing pass can be more favourable for efficient post-treatment by a pure WJ.

[Download their study article as a pdf](#)

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Source : mdpi

Ask an Expert

Q: What's the biggest mistake job shops make when using waterjet cutting?

A: Failing to optimize machine settings for each specific job.

Great question — and super relevant to improving both profit margins and cutting efficiency.

Why this is such a big deal ?

Most shops default to “one-size-fits-all” settings — same pressure, same speed, same abrasive flow rate — regardless of material, thickness, tolerance, or desired finish.

This leads to:

* Wasted Time

- Too slow = longer cycle times = fewer jobs per shift.
- Too fast = incomplete cuts = rework or scrap.

* Excessive Abrasive Usage

- Running the abrasive too high doesn't always mean faster cutting — often it just burns through garnet and increases costs.

* Overworking the Pump and Nozzle

- High pressure on thin materials wears out consumables faster without any gain in quality or speed.

* Poor Edge Quality or Taper

- Not adjusting for pierce dwell time or kerf offset can leave rough edges, taper, or lead-ins that customers reject.

How to fix it ?

1. Use a material-specific cutting database.

- Waterjet software often includes this update and customize it!

2. Calibrate and tune parameters per job:

- Pressure
- Traverse speed
- Abrasive flow rate
- Standoff distance

3. Run test cuts for new materials or tolerances.

- Saves money down the line.

4. Train operators to recognize when settings aren't optimal.

- A skilled operator can hear or see when something's off.



Oldest Waterjet cutting Machine known ?

The earliest use of waterjet cutting dates back to the mid-1800s in mining applications like hydraulic erosion mining. However, the first patent for a waterjet cutting machine is credited to Norman Franz, a professor at the University of British Columbia. His invention, using water at 10,000 psi, is considered the first documented waterjet cutting machine.

Early Applications and Development:

- **Mining:** Waterjet cutting was initially used for excavating coal mines and clearing gold veins in the 1850s in Russia and New Zealand.
- **Industrial Applications:** The first industrial application of waterjet cutting outside of mining was in the 1930s, with American and Russian engineers using it to clean castings.
- **Soft Materials:** Early waterjet machines, like the one developed by the Paper Patents Company in 1933, focused on cutting softer materials like paper.
- **Hard Materials:** In 1958, Billie Schwacha developed a system using ultra-high-pressure water to cut hard materials like stainless steel, using a 100,000 psi pump.
- **Abrasive Waterjets:** The addition of abrasives to the waterjet in the 1980s revolutionized the technology, making it possible to cut almost any material.

Source: [Techniwaterjet](#), [icscuts](#), [wikipedia](#)

Marketplace & Innovations



Here's a closer look at the key areas of innovation:

The waterjet cutting marketplace is seeing innovations in materials, machines, abrasives, software, and automation. Waterjet cutting is used for cutting a wide range of materials, from metals and composites to stone and glass. The latest innovations focus on improving precision, speed, and efficiency, along with advancements in software for design and control.

1. Materials:

Composites and Advanced Materials:

Waterjet cutting is becoming increasingly popular for processing advanced composites and materials in industries like aerospace, automotive, and construction.

Specialty Materials:

Specific abrasive materials are being developed to cater to the needs of cutting harder or more complex materials.

2. Machines:

High-Speed and Precision Machines:

Waterjet cutting machines are being designed to offer higher cutting speeds and improved precision, enabling faster production and more complex designs.

Advanced Automation:

Automated systems are being integrated into waterjet cutting machines, including robotic arms for material handling and loading/unloading.



3. Abrasives:

Synthetic Abrasives:

Synthetic abrasive materials are being developed with better hardness, durability, and cutting performance.

Custom Abrasive Solutions:

Companies are offering custom abrasive solutions tailored to specific materials and applications.

4. Software and Automation:

CAD/CAM Integration:

Improved software integration with CAD/CAM systems allows for easier design and programming of complex waterjet cutting paths.

Intelligent Automation:

Software-based automation is being developed to optimize the waterjet cutting process, from material feeding to post-processing.

Real-Time Monitoring and Control:

Software-based monitoring tools provide real-time feedback on the cutting process, allowing for adjustments and optimization.

5. Automation:

Robotic Arm Integration:

Robotic arms are being used to automate material handling, loading, and unloading, improving efficiency and reducing labor costs.

Automated Parts Handling:

Automated systems are being developed to handle and stack cut parts efficiently, reducing manual handling and improving safety.



In Conclusion:

The waterjet cutting marketplace is a dynamic and evolving space with ongoing innovation in materials, machines, abrasives, software, and automation, leading to improved efficiency, precision, and versatility in various industries.



Training & Events

- Expo: Metal Forming (Pune, April 11-13, 2025) (<https://www.metalformingexpo.com>)
- Expo: Indus-Tech (Kolkata, April 25-28, 2025) (<https://industechexpo.com>)
- Expo: Blech India (Mumbai, May 8-10, 2025) (<https://www.blechindia.com/>)
- Expo: IMTOF India Machine Tools Show (New Delhi, May 15-18, 2025) (<https://www.kdclglobal.com/kdcl-event/india-machine-tools-show/>)
- Expo: ACMEE (Chennai, June 19-23, 2025) (<https://www.acmee.in/>)

2DO DIY

OUR
IMPACT
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2Do Corner

We are thrilled to bring this cognitive initiative to the industry. In future issues, we'll also include business modelling tips, digital tools, and case-driven marketing strategies for industrial players.

Tool Highlight: Try our 2Do Development Impact & You program for your need

<https://2doffice.zohosites.com/2Do-DIY>

Call for Collaboration

We're inviting stories, cases, innovations, or partnerships. Want to get featured or co-develop a solution?

Email us at 2DoMarketingSolutions@gmail.com

2Do Marketing Solutions

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