

**AQUAJET**

No. 1 2024

# magazine

HYDRODEMOLITION NEWS

## Super Lance system

DIVIDE THE POWER

Adapt your reach  
with the Extender

THE NEW AQUA CUTTER 750 ACCESSORY

**FAQ**

WE GOT THE  
ANSWERS





Dear Readers,

In a world flooded with information, staying connected with our valued customers is challenging. Introducing AQUAJET Magazine, a fresh avenue to share our latest innovations, inspiring you to explore new technologies for enhanced efficiency and safety in your business.

Stay informed about hydrodemolition technology advancements, new product releases, upcoming Aquajet activities, and aftermarket updates. At Aquajet, we don't wait for changes; we drive them. Our DNA is embedded in creating machines of unparalleled quality, innovation, design, and efficiency. With innovations like our renowned ceramic nozzles from 1995, still the best on the market for hydrodemolition, and our latest patent -the Infinity oscillation system that was released in 2022, Aquajet leads the way in cutting-edge solutions.

Our success is not just about technology but also about our dedicated staff and an extensive global network of partners. Together, we ensure you receive the best service and support, always.

Best regards,

Roger Simonsson  
CEO, Aquajet Systems AB

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**AQUAJET**<sup>®</sup>

**Every industry has them – the questions you get asked over and over. Despite being around for more than 40 years, hydrodemolition is still an intriguing new process for a large portion of the population. And they have questions. Here, we try to answer the most common hydrodemolition questions.**

For even more information, please visit our website. [www.aquajet.se](http://www.aquajet.se)

## What's the production rate?

**This is probably the question we get asked the most. It's also one of the hardest to answer since there are a lot of variables to consider. To give an accurate answer, you need to know the compressive strength and aggregate size of the concrete; the amount and size of rebar; the state of decay; removal depth; and the pressure and flow of the high-pressure pump, but we can provide some basic estimates.**

For example, let's say we have concrete with a compressive strength of about 35 MPa (5,000 psi) and want to remove at a depth of 100 mm (4 in). In an hour, our Aqua Cutter 410V, using 1,000 – 2,800 bar (15,000 – 40,000 psi) water pressure, can remove as much as 0,7 m<sup>3</sup> (25 ft<sup>3</sup>). With the same range of pressure and higher

water flow, our Aqua Cutter 710V can remove as much as 1 m<sup>3</sup> (35 ft<sup>3</sup>) per hour.

What's not up for debate, though, is the significant increase in productivity hydrodemolition robots offer compared to manual removal methods. Our machines are up to 25 times more productive than handheld pneumatic devices. For surface preparation applications, they offer up to 10 times the productivity of hand lances.

Factor in the safety boost from using robotic equipment compared to the good, old-fashioned manual way of doing things, and there's really no comparison.



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## How much water do you need?

The answer to this will vary depending on the project. The simple answer is: The amount of water you need is directly proportional to your high-pressure pump. If your pump needs 227 lpm (50 gpm), then your water source needs to provide at least that, and preferably a little more. You'll need to plan for additional volume if you use water to clean the surface after the hydrodemolition process.

But liters per minute (gpm) isn't all people are looking for when they ask this question. They also want to know:

### How much water will they need to supply?

For urban projects or those near a reliable water source, this might not be an issue. But for those trucking in water, running out

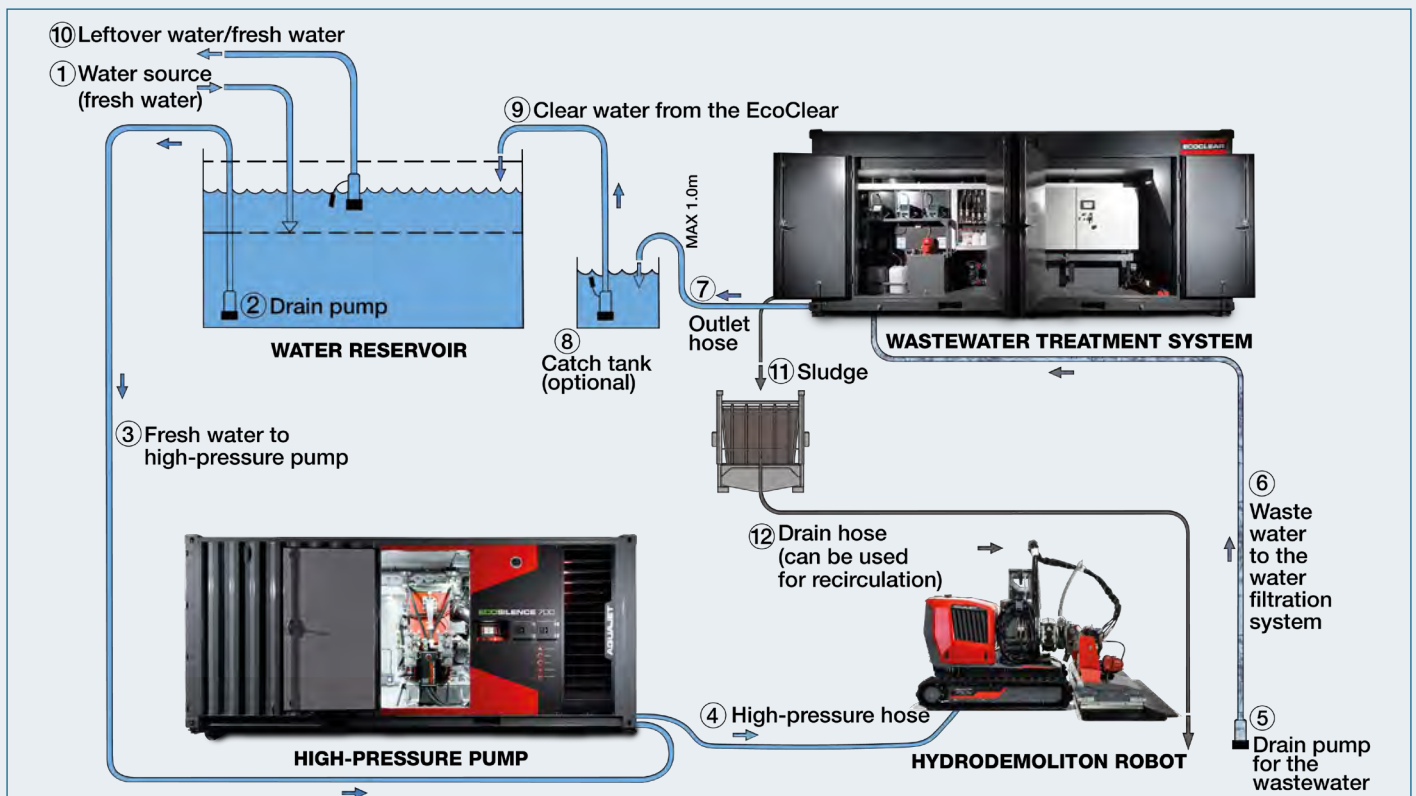
could spell disaster, making water logistics a top priority — and also an expensive one. For example, if a contractor needs 13,600 l (3,000 gal) every hour to complete a project, and the water source is several miles away, they are looking at a significant cost in both fuel and time to keep the project going.

A better solution would be to employ a closed loop system where the wastewater is treated on-site and reused in the high-pressure pump. A customer recently used an Ecoclear closed loop system with two 1 m<sup>3</sup> (21,000 gal) tanks on a concrete removal project in a remote part of Manitoba, Canada. In a 12-hour shift, the contractor removed an average of 4 m<sup>3</sup> (141 ft<sup>3</sup>) of concrete and used an estimated 180 m<sup>3</sup> (40,000 gal) of water.

Of this, roughly 20% of the water was lost during the hydrodemolition process due to evaporation and absorption into the concrete. However, the remaining 80% — 145 m<sup>3</sup> (32,000 gal) — was collected and recycled with the Ecoclear system. Over the course of the project, the Ecoclear processed more than 6,000 m<sup>3</sup> (1.3 million gal) of water.

### How much water will they need to manage once hydrodemolition starts?

This will depend on the scope of the project. A 227-lpm (50-gpm) pump will create 227 liters (50 gal) of water per minute, at maximum RPM, regardless of pressure. If the project takes 40 hours, they're looking at 545 m<sup>3</sup> (120,000 gal) for the hydrodemolition alone.



## How much pressure is needed?

It depends on what you want to accomplish and how fast you want it done. Our Aqua Cutter robots operate between 1,000 and 2,800 bar (15,000 and 40,000-psi), allowing you to select the right pressure for the job at hand, whether that's hydrodemolition or hydromilling. What's the difference?

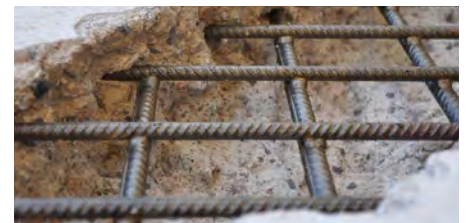
### Selective removal

Hydrodemolition provides a more selective removal. This means it removes deteriorated concrete without damaging the good concrete around it or causing microfractures. The water jet travels over the surface

at a constant speed and pressure between 1,000 – 1,400 bar (15,000 – 20,000 psi). This method requires a high volume of water, but maximizes productivity.

### Hydromilling

Hydromilling uses ultra-high pressure for controlled depth removal. The water jet travels over the surface at a constant speed and pressure between 2,000 – 2,800 bar (30,000 and 40,000 psi), removing all concrete, good and bad, to a certain depth. This process uses a low volume of water.



Selective removal.



Hydromilling.





# Aquajet Super Lance system

MORE THAN JUST A LANCE

**More than just a lance, it's a comprehensive solution featuring elbows, lance extensions, and various nozzle options. Designed for maximum control over concrete removal depth, operators can achieve the ideal result with numerous configuration possibilities. From navigating obstacles with elbows to customizing length with stacked extensions, each element serves a crucial role, empowering contractors with effective problem-solving capabilities. Supercharge your Aqua Cutters' versatility with the Super Lance System.**

The Super Lance system is a well-thought-out solution to enhance Aquajet's already innovative Hydrodemolition robots. The system doesn't only include a lance, but multiple parts — such as elbows, lance extensions and different nozzle options — to give operators more control over the concrete removal depth and as many options as possible to achieve an ideal result. Each element of the Super Lance system serves an important purpose to help contractors problem solve. Elbows help operators navigate tricky obstacles while lance extensions can be stacked to create the correct length required for the application. This way the Super Lance System increase the versatility of its line of Aqua Cutters by allowing for several configurations.

## The Aqua Cone® solution

The Super Lance System is based on Aquajet's standardized Aqua Cone® that makes several configurations possible. It features unique elbows compatible with all hose adapters that can be stacked to go around obstacles as needed. It also offers several nozzle types, lances, lance extensions, as well as the dual and triple nozzle heads, to provide contractors with

greater versatility.

It is also compatible with Aquajet's ceramic nozzles engineered for extreme durability. With an expected lifetime of 350 hours, Aquajet's ceramic nozzles provide industry-leading longevity, cost savings and productivity to maximize efficiency on the toughest jobs.

## Divide the power

The Dual and Triple nozzle heads are perfect for shallower removals, as they disperse the waterjet impact across multiple points, effectively extending the covered area.

Dual and triple nozzle heads work with lances, lance extensions and Rotolances. The dual and triple nozzle heads split the waterjet to impact the concrete at multiple points, allowing it to cover more surface area in each pass. This allows an operator who is working with a very powerful high-pressure pump, for example, to effectively execute a shallower removal (25.4 to 50.8 millimeters or 1 to 2 inches). Without the dual/triple nozzle, a contractor with a 500-600 horsepower pump would typically maximize speed and oscillation to avoid cutting too deeply. But this can compromise the quality of the result.

## Aquajet ceramic nozzles

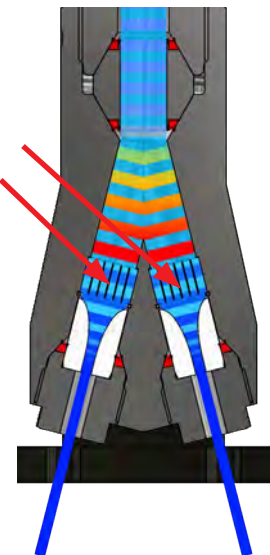
Using Aquajet's acclaimed ceramic nozzles and seals, the Dual and Triple Nozzle Heads guarantee consistent and reliable performance, upholding the highest quality standards synonymous with the Aquajet brand.

## Laminar flow

The Dual and Triple Nozzle heads features our unique LFD® (Laminar Flow Director) concept. The innovative LFD® design effectively eradicates turbulence right

before water enters the nozzles, ensuring operational efficiency comparable to using two or three separate lances.

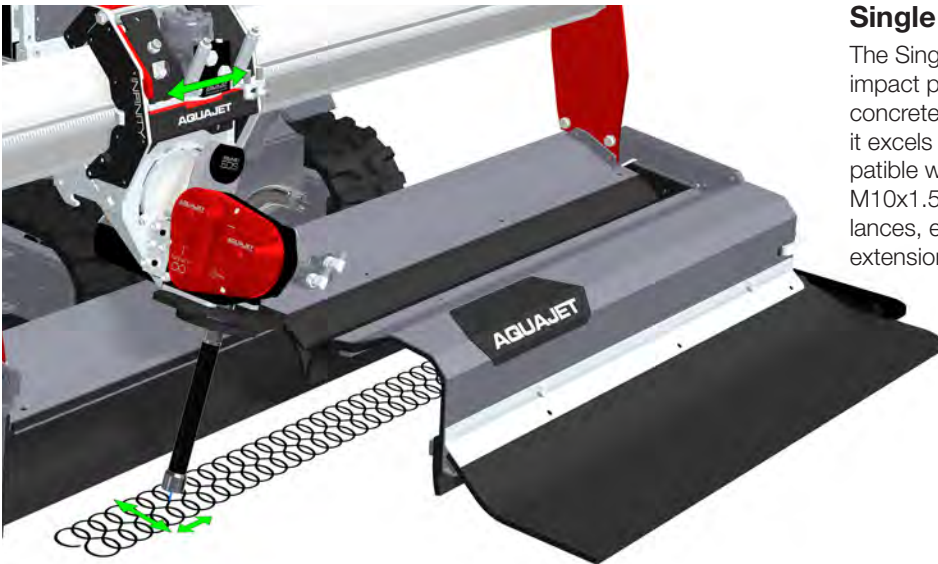
Traditional setups experience turbulence when the flow of water changes direction or passes through diameter variations, disrupting the water jet's flow through the orifice and diminishing its effectiveness. The LFD® design mitigates this issue, maintaining a smooth flow and optimizing the water jet's performance.



## Versatile performance

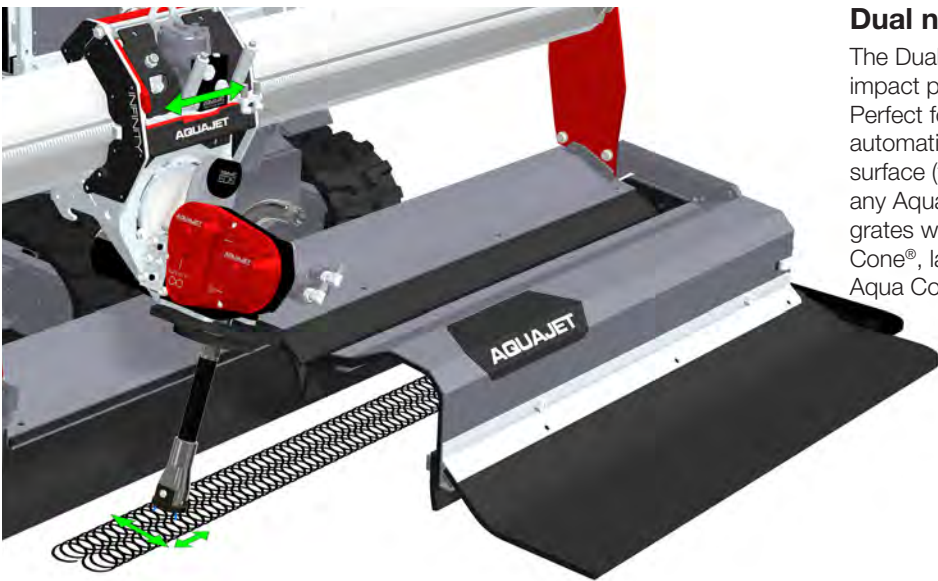
The Dual and Triple Nozzle Heads from Aquajet are ideal for scenarios involving high-powered pumps to remove shallow areas. In contrast to a single nozzle setup, employing these nozzle heads eliminates the need for the robot to move at high speeds for optimal results or reduce pump power. The intentional design of the nozzle heads, being both compact and lightweight, ensures the robot can fully unleash its potential, delivering efficient and precise hydrodemolition in various applications.





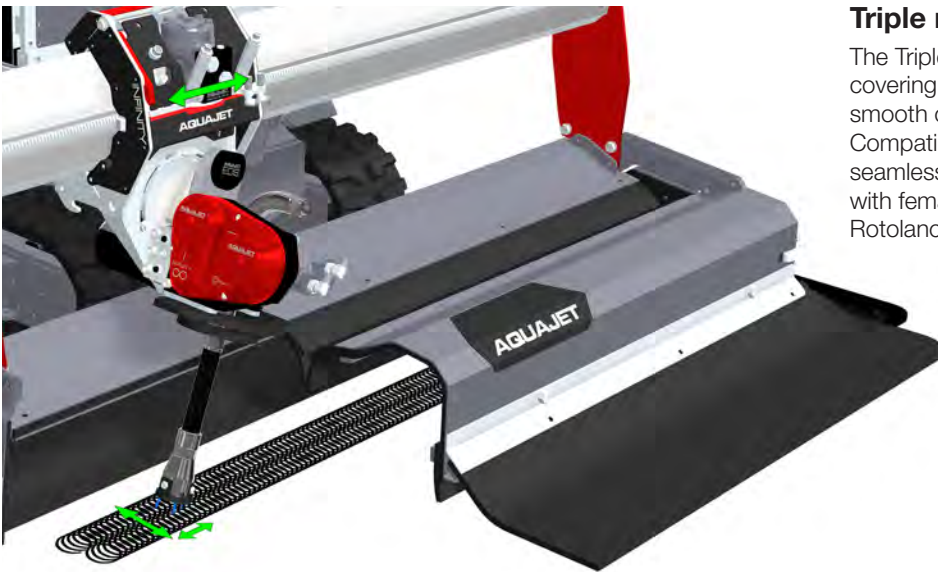
### Single nozzle

The Single Nozzle concentrates all power into a single impact point, providing the most effective and fast concrete removal. With a scattered oscillation pattern, it excels in deeper cuts of 50 mm or more. Compatible with AquaJet ceramic nozzles and standard M10x1.5 with a conical seal, it seamlessly fits all lances, elbows with a female Aqua Cone®, and lance extensions.



### Dual nozzle

The Dual Nozzle divides water jet power into two impact points, narrowing the oscillation pattern. Perfect for shallower removals where the robot's automatic speeds may fall short in smoothing the cut surface (typical depth 20-80 mm). Compatible with any Aqua Cone® end, this nozzle seamlessly integrates with all lances, elbows featuring female Aqua Cone®, lance extensions, and Rotolances (with an Aqua Cone® adapter).



### Triple nozzle

The Triple Nozzle further divides water jet power, covering three times more area for consistently smooth cuts, even at shallow depths of 10-50 mm. Compatible with any Aqua Cone® end, this nozzle seamlessly integrates with all lances, elbows with female Aqua Cone®, lance extensions, and Rotolances (with an Aqua Cone® adapter).

**Note!** All rendered images of the oscillation when using a single, dual and triple nozzle are made with an Aqua Cutter 750V and the Infinity oscillation system.



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Please visit our website for more information.  
[www.aquajet.se](http://www.aquajet.se) or simply scan the qr code.



# Adapt your reach with the Extender

## THE NEW AQUA CUTTER 750 ACCESSORY

The Extender, a flexible addition to the Aqua Cutter 750, simplifies hydrodemolition in various scenarios – overhead, below grade and within constrained spaces. Whether dealing with sloped roofs, varying roof heights, below-grade tasks like ditches or canals, or working between beams on structures like bridges and parking garages, the Extender is your solution for versatile hydrodemolition operations. What's more, it's a simple adaptation for the robot with no need for any additional hydraulics.

Designed especially for overhead hydrodemolition operations in spaces with sloped or varying-height roofs, the Extender, once attached to the robot, enables it to execute hydrodemolition work within height differences of up to 1.2 m.

This adaptable accessory is also essential for below-grade operations, effortlessly executing hydrodemolition in areas like

ditches or canals, where the concrete surface lies up to 1.0 meter below grade level.

Featuring full side shift capability, the Extender also enables side operations between beams. By attaching the Aqua Cutter 750 roller beam to the Extender, along with the smaller protection cover over the power head, the capability for sideways applications is further enhanced. This is particularly beneficial in confined or tight spaces.

Whether below grade, overhead, or sideways, the Extender sets new standards for precision and adaptability in hydrodemolition operations.

Please visit our website for more information.



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# Join us on tour!

Are you ready to witness cutting-edge hydrodemolition technology up close and personal? Look no further! We're thrilled to invite you to join us at various exhibitions and events where you can explore our state-of-the-art hydrodemolition equipment.

Don't miss the opportunity to meet us in person, ask questions, and experience the power of hydrodemolition equipment firsthand. Our team will be on-site to guide you through the features and advantages of our equipment, answering any questions you may have and providing live demonstrations to highlight the unparalleled capabilities of our technology.

Stay tuned for updates and additional events on our website and social media channels. We look forward to welcoming you and showcasing how our technology is revolutionizing concrete removal.



Please visit our website for more information, and make sure to follow us on social media for the latest updates.

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or simply scan the qr code.



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## Event schedule

Januari — June, 2024

### World of Concrete

January 23-25, 2024

Las Vegas Convention Center, USA  
Booth C4005, Central hall

### Intermat

April 24-27, 2024

Paris, Nord Villepinte, France

### Aquajet World Tour - USA

April 24-25, 2024

Brokk Inc., St. Joseph, MO, USA

### Ifat

May 13-17, 2024

Munich, Germany  
Booth C4.133

### Aquajet World Tour - Europe

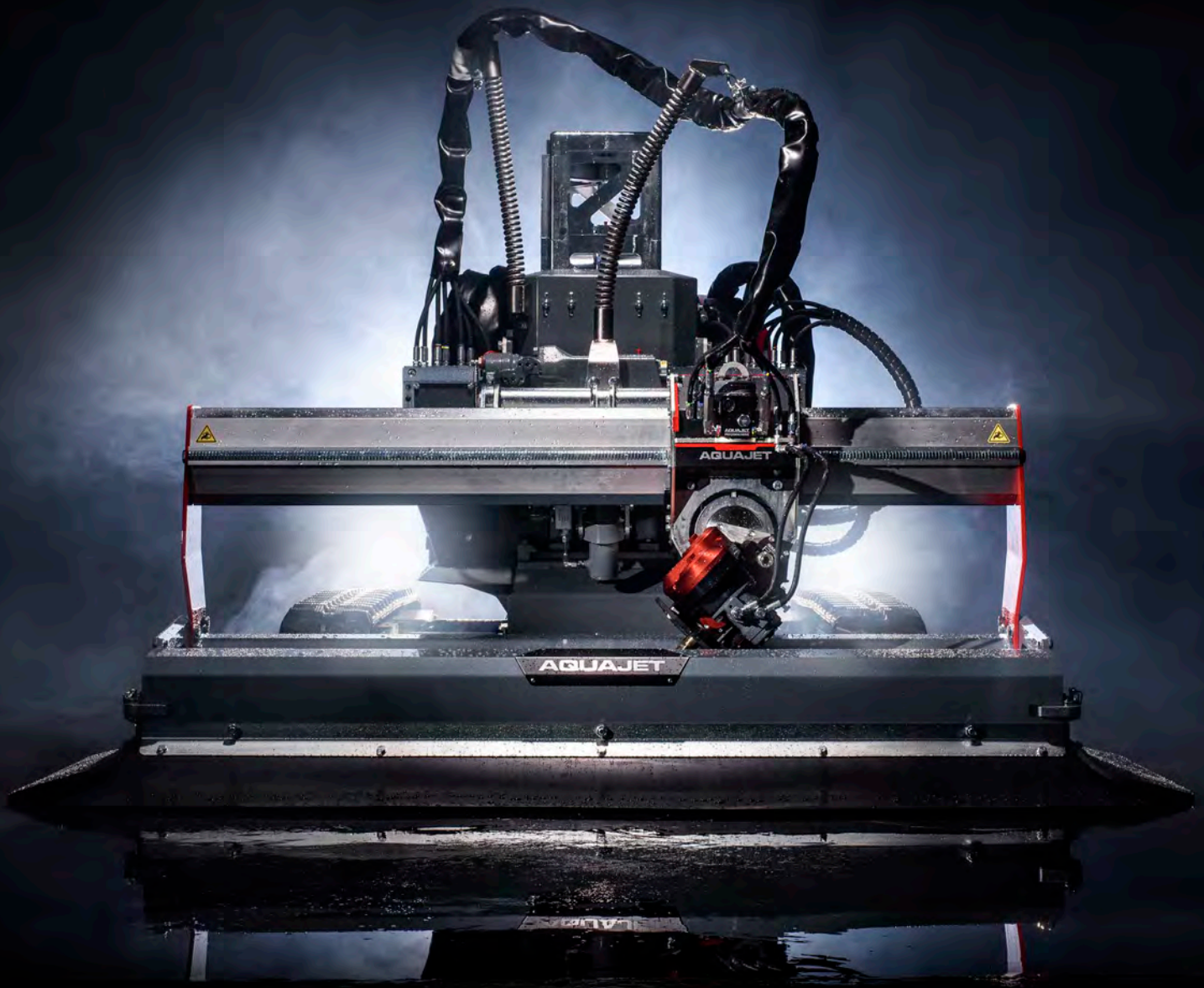
June 5-6 2024

Brokk DA, Friedenweiler, Germany



# Want to learn more about Aquajet and our products?

SCAN THE QR CODE,  
VISIT OUR WEBSITE



**AQUAJET<sup>®</sup>**

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