



WATERJET CUTTING AT **6,000 BAR** PRESSURE



**More pressure,
less abrasive,
faster to the finish!**

HyperPressure technology – the benefits

Cut faster

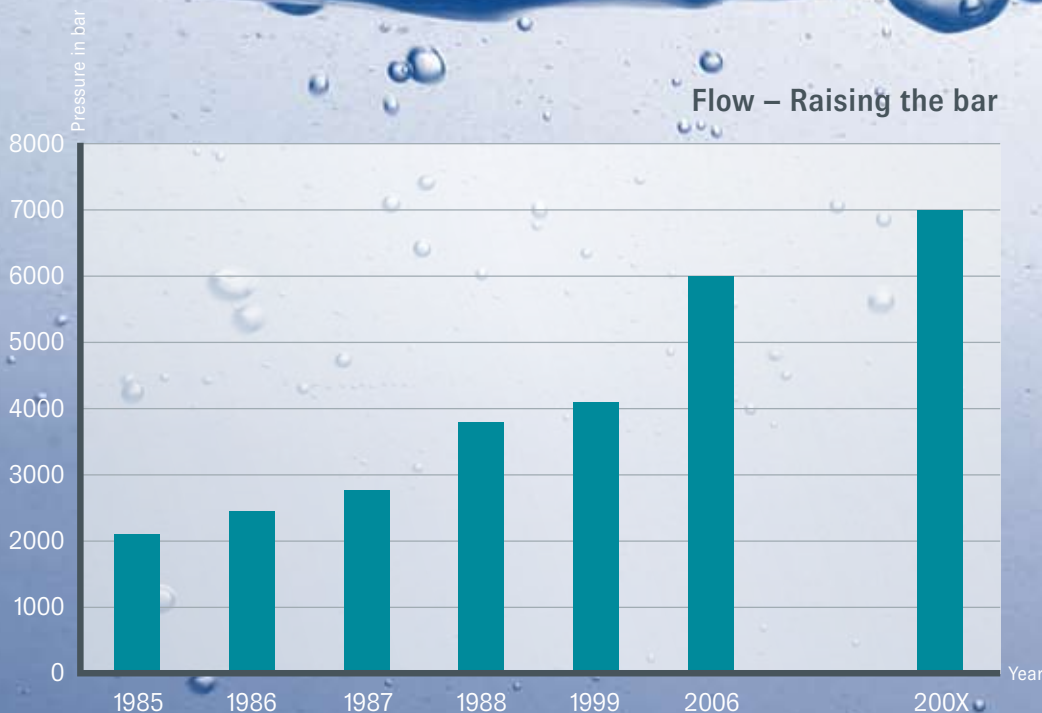
Cutting at 6,000 bar water pressure opens up new dimensions. Compared to traditional systems (4,100 bar), this represents an increase in pressure of 45 percent. This accelerates the waterjet up to 1,000 meters per second. Regardless of material or thickness this waterjet can handle any processing task at up to 50 percent higher cutting speed.

Increase production

Cutting at 6,000 bar leads to a measurable increase in productivity in any market segment or industry. Whether inhouse production, supplier or job shop: At 6,000 bar, more parts are produced in a shorter time and at the wellknown excellent Flow quality.

Lower costs

Increased production doesn't come at a higher cost – 6,000 bar HyperPressure pumps cost less to operate. Because HyperPressure pumps move abrasive particles faster, you will use 30 to 50 percent less abrasive to complete a job. The enormous pressure increase to 6,000 bar makes this possible. Total machining costs can be reduced by up to 30 percent per workpiece on a 6,000 bar system compared to traditional 4,100 bar systems.



Higher pressure makes the water and abrasive particles move faster, decreases the jet diameter, thereby increasing the jet's power density and efficiency, and decreasing cost per inch...

**Dr. Mohamed Hashish,
Inventor of the abrasive waterjet**

Water is a powerful tool

Waterjet cutting is among the most advanced and versatile cold cutting methods for processing a wide variety of materials. In addition to pure waterjet cutting, abrasivejet cutting has also established itself for a long time now in industrial applications. This method involves mixing abrasive garnet to the high-pressure waterjet. This enables precise cutting through practically any material without inducing heat-affected zones or mechanical stresses.

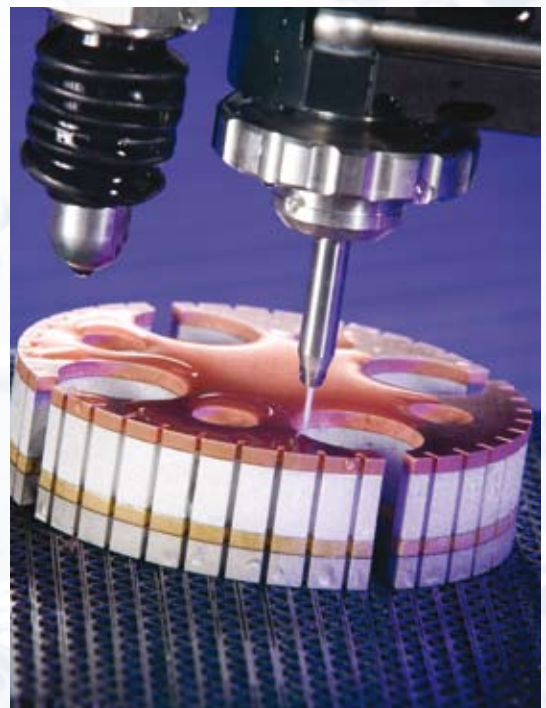
Flow's waterjet cutting systems and high-pressure pumps have been global leaders for many years. In 1979, Flow introduced the world's first abrasivejet cutting system to the market. Time and time again, Flow has contributed innovative technologies to waterjet cutting. And this success story continues!

HyperPressure Technology – A new dimension at 6,000 bar

In introducing the world's first 6,000 bar waterjet cutting system, Flow is setting a new standard when it comes to cutting speed, abrasive consumption and productivity.

Cutting at 6,000 bar means:

- 45 % more pressure than traditional systems
- More than 3,500 kilometers per hour waterjet velocity
- Up to 50 % higher cutting speed
- Up to 50 % less abrasive consumption
- Up to 30 % lower cost per part
- Improved competitiveness for Flow users



The pump – designed for success

Today, ultrahigh-pressure waterjet and abrasivejet cutting systems from Flow are being used in a wide variety of industries all over the world, at the facilities of global players as well as at small and mid-size companies. The heart of every Flow system is the pump. Our pumps are powerful, reliable and efficient drive units that are continually being further developed by our engineers.

The 6,000 bar HyperJet pump

The top model of Flow's pump series and the result of our engineering achievement is the new 6,000 bar HyperJet pump. It makes us the first company to offer a waterjet cutting system working at a continuous operating pressure of 6,000 bar. The HyperJet pump is driven by two redundant motors that let the two pressure intensifiers build up a water pressure of 6,000 bar. The HyperJet pump is an extremely stable high-tech pump that is easy to control via an external monitor. A user interface right on the pump simplifies care and maintenance when used as a stand-alone unit.



The PASER Mach4 cutting head

The newly developed PASER Mach4 cutting head with its unique diamond orifice ensures that the water pressure of 6,000 bar is converted into cutting power and high cutting speed.



The Mach4 on/off valve

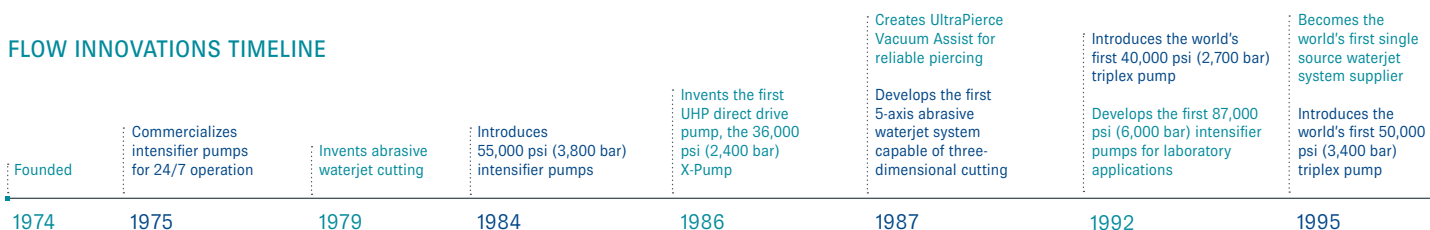
The new Mach4 valve responds quicker to control commands, and this reduces cycle times. The abrasive tubes can be aligned in any position.

Dynamic Waterjet® with Active Tolerance Control

Above all, stream lag and taper are natural but undesirable side effects of high cutting speeds in waterjet cutting. This leads to part geometry errors. Dynamic Waterjet is a patented system consisting of a newly developed motion system and mathematical cutting models. Dynamic Waterjet automatically corrects stream lag and taper. The combination of 6,000 bar HyperPressure technology and Dynamic Waterjet turns every Flow system into a high-end solution for the most stringent requirements.



FLOW INNOVATIONS TIMELINE



Complete systems with HyperPressure technology



IFB | Integrated Flying Bridge

The IFB is the most popular waterjet cutting system in the world with over 2,000 installed systems. Above all, customer value its small footprint, optimal access and user friendliness. All machine components are integrated in the system in a space-saving way.

Available sizes (work envelope):

Dynamic Waterjet technology:

7.2 x 2 m; 3.6 x 2 m;
2.4 x 1.2 m

Conventional technology:

7.2 x 2 m; 3.6 x 2 m;
2.5 x 1.25 m

Z-axis travel:

Up to 200 mm, motorized axis

Rapid traverse speed

maximum 12.5 m/min;

Contour speed

maximum 7.6 m/min

Machine positional specifications:

(per linear axis, at 20 °C +/- 2 °C):

Linear positional accuracy:

+/- 0.08 mm

Repeatability:

+/- 0.05 mm

WMC® | Waterjet Machining Center

The fully modular design of the WMC offers a wide variety of equipment and configuration options, customized to individual requirements.

Available sizes (work envelope):

X-axis (bridge): 3 m or 4 m

Y-axis (base): 2 m, 3 m, 4 m or 6 m

Other sizes on request

Z-axis travel:

Up to 200 mm, motorized axis

Machine dynamic motion ranges:

Rapid traverse speed, maximum 35 m/min

Contour speed, maximum 25 m/min

Machine positional specifications:

(per linear axis, at 20 °C +/- 2 °C):

Linear accuracy: +/- 0.05/500 mm

Linear positioning accuracy: +/- 0.08 mm

Repeatability: +/- 0.025 mm

Specified in accordance with ISO 230-2

and applicable NMTBA specifications



Launches FlowMaster® Windows®-based intelligent waterjet control software

Introduces the Bengal, the first fully integrated waterjet system

Introduces the PASER® 3 abrasive waterjet system

Commercializes 87,000 psi (6,000 bar) pumps and systems for food pasteurization

Introduces 60,000 psi (4,100 bar) intensifier pumps to the waterjet cutting market

Introduces the IFB which quickly becomes the world's best selling waterjet system

Introduces ESL ceramic components to double pump seal life and increase reliability

Launches Dynamic Waterjet® to eliminate taper, increase cut accuracy and speed

Develops HyPlex pumps, the world's first 55,000 psi (3,800 bar) triplex pump family

Introduces state-of-the-art WMC®, a complete abrasive waterjet system

Commercializes highly precise waterjet singulation systems for the electronics industry

First manufacturer to introduce 87,000 psi (6,000 bar) pumps for waterjet cutting applications

1996

1997

1998

2001

2002

2004

2006



INNOVATION | EXPERTISE | COMMITMENT

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