

WHITE PAPER

High-Pressure Precision:

2025 Trends in Waterjet Cutting



From Good to Great:

How Waterjet Cutting Will
Evolve in 2025



Enabling the Cutting

For more than 70 years, waterjet cutting technology has revolutionized the way materials are divided. Simply put, water is moved by a pump through pipework and ultimately through a cutting head. But getting water to cut the hardest materials requires complex technology coupled with the best raw materials used for assembling the high-pressure pumps and experienced people planning and implementing the required setup.

For manufacturers of high pressure pumps, waterjet cutting means a lot of knowledge and experience in the fields of materials science and cutting-edge engineering. Based on over 40 years of experience, BFT offers high pressure waterjet pumps that are manufactured to the highest technological standards. It all results in a useful technology that enables users to easily cut the hardest materials.



Explaining the Trends of 2025

What do I need for waterjet cutting? Where do I find the right suppliers? Can I combine systems from different manufacturers? And can this also work in an energy-efficient manner?

We cover the answers to these questions and further information in the following 10 chapters:



TREND #1
ONE-STOP-SHOP FOR
HP WATERJET PUMPS



TREND #2
THE MACHINE-PUMP
INTERWORKING



TREND #3
SPARE PARTS BY
ORIGINAL
MANUFACTURERS



TREND #4
GREEN EFFICIENCY:
SAVING MONEY BY
SAVING ENERGY



TREND #5
CORPORATE FIRMS
VS. FAMILY-OWNED
BUSINESSES



TREND #6
AUTOMATION AND
INDUSTRY 4.0
INTEGRATION



TREND #7
INTEGRATION INTO
AUTOMATED
PRODUCTION LINES

Trend #1

One-Stop-Shop for High Pressure Waterjet Pumps and Equipment



Someone clever once said that time is money. If your purchasing department is searching for different suppliers delivering high pressure waterjet pumps, cutting heads, high pressure lines, abrasive systems and more, then they'll need a lot of time and money to do that. BFT serves you best as your one-stop-shop for high pressure waterjet pumps and everything else that comes with it.

Ideally, you have a purchasing department that is tasked with finding suppliers. In many cases however, there is a lack of technical knowledge about the complexity of individual components or, in case of leaner organizations, users themselves start searching for suitable suppliers. In both cases, a lot of working time is needed finding suppliers for different HP waterjet pump components and a one-stop-shop would save a lot of time and money.

In addition, cutting heads are also needed. And if your requirement is to cut the hardest materials, such as metal or stone, an abrasive system consisting of the container and the dosing device is a necessary addition to your cutting setup.

At some point in your HP waterjet pumps life you may also need spare parts, like valves, filters, fittings, or pipes to name a few – ideally delivered and installed by your original equipment manufacturer.

COMPONENTS OF THE CUTTING SYSTEM:

- the HP pump
- an abrasive system
- cutting heads

A ONE-STOP-SHOP SAVES TIME AND MONEY

COMPONENTS YOU NEED FOR WATERJET CUTTING

The main components you need for waterjet cutting include a high-pressure pump – the heart of the waterjet cutting technology – along with other required equipment, such as a control unit, sourced as needed for your setup.”



ONE SUPPLIER FOR YOUR WATERJET CUTTING NEEDS

As a small family business located in Austria, BFT offers you the best variety on high pressure waterjet pumps and everything else to fulfill your waterjet cutting needs.

What counts is offering the best solution for your application. You want to cut something, preferably very precisely, with little cutting surface. If you go more in-depth, requirements for energy efficiency, ease of maintenance, and the best and fastest service can also be added.

To conclude, we don't want you to lose time and money searching for different components offered by different suppliers all over the world. As a full-service provider for high pressure waterjet pumps from Austria, BFT offers you the easiest way to get different materials cut, with the all-around best service.

THE PERFECT SETUP DOESN'T EXIST? SPECIAL SOLUTIONS ACCORDING TO YOUR WISHES PROVE THE OPPOSITE!

Customer-specific requirements need a solution tailored to the customer. For example, your spatial conditions may make it necessary to plan complex high-pressure piping between the pump and the cutting table.

BFT offers you full service according to high-pressure Equipment, to your waterjet cutting wishes and needs from A to Z. We have the knowledge as well as the experience when it comes to components, installation and service of high-pressure waterjet cutting.

CUSTOMER-TAILORED SOLUTIONS ARE OUR MAIN BUSINESS

AND LAST BUT NOT LEAST: WARRANTY

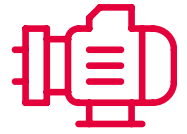
If different manufacturers are included, there are often inconsistencies when it comes to the issue of warranties. Complicated communication channels, different contact persons and stressed nerves can be the result of that. Additionally, by using different manufacturers, especially for unlicensed spare and wear parts, your original HP pump manufacturer cannot guarantee your pump's warranty anymore (see also: Trend #3 'Spare parts by original manufacturers').

WARRANTY BY BFT

If you choose a waterjet solution from BFT, you only have to contact one person that is responsible for everything from service to warranty claims. And as personalized as we support our customers in designing and converting their waterjet solutions, we don't leave them out in the cold when problems arise. By commissioning BFT as your complete waterjet provider, **you can be sure to receive the best support to ensure a long HP pump life.**

Trend #2

The Machine-Pump Connection



If you have a complete waterjet system from one provider, then you will eventually encounter a problem: After a few years of service, your high-pressure pump and/or your abrasive system may have already reached its effective lifetime, while your cutting machine is still perfectly operable. In that case, you may run into problems with your system supplier.

In general, high pressure waterjet pumps are fairly long-lasting systems that can last well over 20 years with proper maintenance. However, at some point the system will have to be replaced, either due to technological progress rendering the model too inefficient to keep up (*see also: Trend #1*) or due to maintenance costs surpassing the model's rentability.

HP PUMPS GENERALLY LAST WELL OVER 20 YEARS

However, replacing the pump is not equal to replacing the complete system. While pumps and abrasive systems last a long time, the cutting table may last longer. The result being that if you use a complete waterjet system from the machine builder, after a few years of service, one half of it needs replacement while the other half doesn't.

BFT can replace any pump, and our BFT specialists can establish an interface with any cutting table.

WARRANTY BY BFT

If you have to replace your cutting table or your HP pump, you don't need to exchange the entire machine. BFT will support you with the implementation and also with the piping of different systems.

SWITCHING PUMPS MAY BE DIFFICULT – OR EVEN IMPOSSIBLE

Throwing out the entire system because of an outdated pump is of course not an ideal situation for the end customer. Cutting tables themselves are expensive systems and in theory, it can be connected to any high-pressure pump, regardless of the manufacturer.

In practice, however, partial switching poses two challenges:

First, on a **technical basis**, connecting a waterjet pump to a cutting table from a different manufacturer often includes the need to connect two different systems with two different connectors.

Often, a complex connection system is required and connecting the two systems is a cumbersome process that not every pump supplier includes in their service. That issue arises if you intend to switch up your manufacturer for pricing or quality reasons (or because you may be unhappy with your old partner, more on that in trend #4 "Corporate vs. Family").

Second, on a **service level**, your current provider may also insist that you replace the complete system rather than just one part of it and simply doesn't offer you the option of a partial switch. If that is the case, then it's perhaps best to just replace the provider as well.

SWITCHING YOUR HP SYSTEM MAY PROVIDE TECHNICAL AS WELL AS SERVICE-LEVEL CHALLENGES



WHAT YOU SHOULD LOOK OUT FOR WHEN REPLACING YOUR WATERJET PUMP

In case you wish to install a new waterjet pump and/or abrasive system BFT is your full-service partner.

- BFT machines and components have a simple connection system that enables quick changes.
- As a full-service provider for high pressure waterjet pumps, BFT has no conflict of interest when it comes to replacing just the pump or the abrasive system.
- Above all, BFT also takes on the actual replacement of the pump as part of the service. this service makes it easier for you to connect the systems of two suppliers and enable smooth cooperation between the high-pressure pump and the cutting unit.

YOUR BENEFITS WITH BFT:

- Simple connection with components
- No conflicts of interest
- Professional & individual service

WHEN THE EXCHANGE PAYS OFF

If you choose a BFT pump, you get a high-quality cutting system that you can confidently use with your existing setup. The exchange goes as smoothly as possible for you, as BFT also offers the installation service as an all-inclusive carefree package. Our goal is the uncomplicated and quick recommissioning of your waterjet cutting system.

Trend #3

Spare Parts by Original Manufacturers



Regular maintenance and installation of new spare parts are essential for keeping a waterjet pump functioning as long as possible. However, parts from unlicensed third party suppliers are often used for maintenance or when setting up a spare parts reserve.

After all, there is a very convincing argument to be made for using third-party spare parts: price. These parts are often cheaper than those distributed by the original manufacturer – especially, if you want to build up a reserve of spare parts, buying them from the original manufacturer requires a higher upfront investment.

**DON'T BE BLINDED BY
SUPPOSEDLY LOW PRICES,
KEEP THE TCO* IN MIND**

***TCO = TOTAL COST OF OWNERSHIP**

But that is where the advantages of unlicensed parts end. Because aside from short-term savings, there is no benefit, finance- or functionality-wise, with building cheaper, lower-quality spare parts into an otherwise perfectly functioning, high-quality machine.

LOW-QUALITY PARTS RESULT IN LOW-QUALITY PERFORMANCE

The biggest issue with unlicensed spare parts is the fact that they are produced with much lower quality standards regarding to materials, know-how, and manufacturing. As such, the parts are more prone to wearing down or breaking, resulting in more frequent outages and subsequently, more effort and money spent for maintaining the machine. In the worst case, the entire machine can be damaged permanently.

Even – or especially – if the pump has already seen a few years of service, one could think that the cost of originally produced spare parts may not be worth the money and that unlicensed parts also do the trick. However, if a pump is already this long in use, maintaining it with 100 % quality parts no longer provides an advantage for the business and replacing the pump entirely should be taken into account – an option which should already be considered in terms of energy-efficiency. (see also: Trend #4: 'Green Efficiency: Saving money by saving energy').

CHEAP, UNLICENSED SPARE PARTS MAY CAUSE THE FOLLOWING ISSUES:

- Faster wear or breaking
- More outages
- In the worst-case-scenario:
the replacement of the entire pump

UNLICENSED SPARE PARTS WILL VOID THE PUMP'S WARRANTY

Finally, maintaining and servicing your pump is an intrinsic part of every professional waterjet manufacturer's quality promise. But if you are using unlicensed spare parts, your original HP pump manufacturer cannot guarantee your pump's warranty anymore. If a pump breaks down due to using low-quality parts not approved by the manufacturer, the manufacturer cannot be held responsible. *(See also: Trend #1 'One-stop-shop for HP waterjet pumps')*

“IF YOU BRING FAST FOOD TO A 3-STAR RESTAURANT, YOU CAN'T BLAME THE CHEF, IF THE FOOD TASTES BAD.”

– AUSTRIAN WISDOM

THE BEST WAY TO AVOID UNPLEASANT SURPRISES? BUY ONLY FROM THE ORIGINAL MANUFACTURER!

Now, defining the problems with unlicensed spare parts is one thing – it is an entirely different manner to actually find out who sells them. Given how they are copied goods from another manufacturer, they are not only visually indistinguishable from original parts, but they are also easily available on the internet. As a result, customers are often unaware that they are using unlicensed components at all, as they are sold under the original manufacturer's brand name.

GET THE QUALITY YOU NEED!

The best way to get the quality you want is simply to buy spare parts from the original manufacturer only. This way, you can be sure that your machine is supplied only with high-quality components and that it will continue to provide you a great service with your waterjet applications.



Trend #4

Green Efficiency: Saving Money by Saving Energy



Pumps that have been built about 20 years ago are highly energy inefficient by modern standards. Technological standards have moved forward, and energy efficiency has become a highly relevant topic in today's industry. If you are currently operating with an old waterjet pump model, 2023 is a great year to send your old machine into its well-deserved retirement. But which device should replace it?

First of all, replacing an old model with a new one pretty much always pays off, no matter the replacement. Modern pumps are more energy efficient than models from 20 years ago – even models with average performance save up to 25 % compared to their long-time predecessors. A new pump will amortize itself in a few years in any case. Aside from their efficiency, modern pumps are also generally quieter and easier to operate.

**SAVE UP TO 25 % ENERGY
WITH A NEW HP PUMP**

***COMPARED TO OLDER PUMPS**

Still, the new pump chosen should be as energy efficient as possible. BFT offers you a wide range of high-pressure waterjet pumps and the matching accessories. With the two pump models SERVOTRON® and VECTRON®, BFT is taking a big step towards energy sustainability. However, what should not be neglected is the quality and the output of the machine. That's why the SERVOTRON® is patented and exclusively available from BFT – you won't find a pump like this anywhere else. Therefore, let's take a closer look at the SERVOTRON®.

What our SERVOTRON® HP pump can do for you

The unique combination of a pressure intensifier in conjunction with BFT's patented servo drive implements unprecedented energy efficiency as well as reliability. This system makes SERVOTRON® one of the most environmentally friendly high-pressure pumps for waterjet cutting. With the SERVOTRON® high-pressure pump, an internal gear pump is coupled with a highly dynamic, frequency-controlled servo drive. In approximately 60 milliseconds, the motor is accelerated from zero to up to 2,700 rpm. This drive concept has a decisive advantage, i.e., improved energy efficiency! In comparison with an asynchronous motor, the efficiency of this new drive concept with a frequency-controlled servo drive is approximately 15 % higher.

**60 MILLISECONDS FROM 0 UP
TO 2,700 RPM**

With its long service life, SERVOTRON® keeps the overall efficiency of your waterjet cutting system at a consistently high level. Pressure fluctuations remain at a minimum of +/-1 % thanks to its dynamic servo drive and a 2,49-liter damping volume in the accumulator. This low fluctuation protects the entire pump system, extends the service lives of high-pressure seals and non-return valves, and also has a positive effect on the cutting result.

THE EU SUBSIDIZES YOUR SWITCH TO AN ENERGY-EFFICIENT PUMP WITH UP TO 30 %

In short: BFTs SERVOTRON® makes you cut more energy efficiently than ever before!



SERVOTRON®: BFT'S HIGH-EFFICIENCY POWERHOUSE

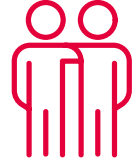
SERVOTRON® is equipped with a patented alternative drive system that is more efficient and consumes less power than conventional drives.

THE PERFECT TIME TO REPLACE YOUR PUMP IS NOW

The replacement of a machine with an energy-saving model is subsidized by the EU. If you are operating in Europe, you can apply for a subsidy of up to 30 % for your investment at your local funding agency. In addition to the energy-efficient machine itself, planning and assembly costs are also funded (please consider that the funding is only granted for the replacement of existing, non-energy-efficient systems, the costs for a new purchase are not funded).

Trend #5

Corporate Firms vs. Family-Owned Businesses



Whether you're an OEM who wants an independent HP pump manufacturer or an end customer, the manufacturer you choose to partner up with makes a profound difference when it comes to a great waterjet experience. In both fields, choosing a small, independent manufacturer over a large corporation-bound one may be the better choice. In this chapter, you'll find out why.

In terms of sheer company size, BFT is an outlier amongst the large market contestants. We are the only privately-owned, family-led business on the global market that operates completely independently from larger publicly-owned corporations. We may be small, but this gives BFT a set of advantages for both OEMs and end customers that other companies cannot provide.

SMALL COMPANY = SMALL BUREAUCRACY

If you work for or with a large corporation – or even if you ever had to interact with one for any reason – you'll know that it tends to take time until decisions are finalized. Often, the direct contact person does not have the necessary authority to make quick decisions, resulting in very restricted room for individual solutions. As such, customers don't really have the option to implement ad-hoc changes, which is especially disadvantageous if quick reaction speed is needed.

**FAMILY-OWNED MEANS
QUICK, UNBUREAUCRATIC
DECISIONS AND BINDING
CONTACT PERSONS**

Small companies like BFT are organized much more horizontally – consequently, they can operate not only faster, but also take their customers' needs into account much more easily. If for example a sudden adaptation of a contract is needed – let's say, a customer requires a more specific setup of their pump – a large company would have to funnel the request throughout several instances before eventual approval. At a small company, you are most likely already talking to the person in charge – or your contact has that person on speed dial. What this means is that decisions can be made on the spot and alterations are implemented quickly, easily, and without bureaucracy.

**FAMILY-LED COMPANIES PUT VALUE ON EACH
INDIVIDUAL CUSTOMER**

This quick and easy way to do business is accompanied by a level of levity in many otherwise tedious processes. From more transparency in cost increases to choosing your preferred communication channels: Your personal wishes and preferences can be met much easier if your partner themselves has a more family-like structure.

WHY FAMILY-OWNED? IN SHORT:

There is much more focus on the “relationship” part of a business relationship, when working with a small family-led company.



Philipp Aichhorn, CEO & Owner of BFT

“BFT IS MORE THAN ‘JUST’ AN HP PUMP SUPPLIER. WE LIVE FOR OUR PRODUCTS AND SERVICE TO LEAD OUR CUSTOMERS INTO AN ADVANCED FUTURE!”

– PHILIPP AICHHORN

LARGE COMPANIES MAY BE PARTNERS OF YOUR DIRECT RIVALS

It’s a fairly unique situation in the waterjet industry, that the public conglomerates holding the largest HP pump manufacturers also hold a significant number of full-system suppliers for waterjet cutting. In other words: If you are an independent OEM working together with a waterjet provider from

such a conglomerate, chances are that this partner is a sister company of your direct rivals! Suffice to say that this is a disadvantageous situation for your company for many reasons.

With a privately-owned, family-led business like BFT, this situation is avoided completely. As there is no full-system supplier tied to our company, there is also no risk for our OEM customers to indirectly support the companies they vie for customers with. And without any third-party interests for us to consider, BFT can guarantee a 100 % independent service.

BFT CAN GUARANTEE A 100 % INDEPENDENT SERVICE

CHOOSE A PRIVATE FIRM FOR AN INDEPENDENT & PERSONAL PARTNERSHIP

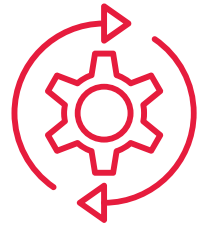
In conclusion: Cooperating with small family-led businesses offers OEMs and customers a bunch of perks and benefits that large publicly-owned companies simply cannot provide: Direct communication, personal support and service, and fast, uncomplicated decision-making to name a few. The most important factor however – and one that is specifically true for the waterjet industry – is that privately-owned companies are 100 % independent. This means that you can be sure that your businesses do not end up benefiting your rivals, and that you can rely on your waterjet partner to always provide first-rate service tailored to your needs – no cuts needed!

PERKS OF FAMILY-OWNED BUSINESSES:

- Direct communication
- Personal support
- Fast, uncomplicated decision-making
- 100 % independent

Trend #6

Automation and Industry 4.0 Integration



The integration of automation and Industry 4.0 technologies has revolutionized the efficiency of waterjet cutting technology in recent years. Companies are increasingly relying on intelligent, automated systems that allow them to optimize the entire cutting process, minimize downtime, and increase productivity. BFT supports this transformation by developing high-pressure pumps that can be easily integrated into automated and robot-controlled environments.

Furthermore, the increasing interconnectivity of machines ensures that all components can communicate optimally with each other. This allows precise control of the cutting process and minimizes material waste by executing cuts more efficiently and without errors. The ability to evaluate data in real time enables continuous optimization of production processes, leading to higher profitability. Predictive maintenance is also becoming a key advantage, as companies can anticipate failures and reduce unexpected downtimes.

THE INTELLIGENT INTEGRATION OF INDUSTRY 4.0 TECHNOLOGIES ENABLES HIGHER PROCESS SECURITY AND IMPROVED QUALITY CONTROL.

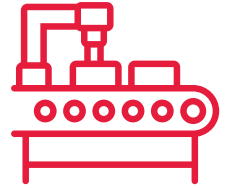
By using sensors and real-time monitoring, operators can detect problems early and plan maintenance proactively before costly breakdowns occur. This intelligent integration of Industry 4.0 enables higher process reliability and improved quality control. The combination of automation and waterjet cutting has led to a significant increase in efficiency, particularly in the automotive, aerospace, and metalworking sectors.

BFT offers customized solutions here that are suitable for both large industries and medium-sized companies, ensuring that Industry 4.0 integration enhances overall productivity.



Trend #7

INTEGRATION INTO AUTOMATED PRODUCTION LINES



Manufacturers worldwide are increasingly integrating waterjet cutting systems into automated production lines. This integration enables a significant increase in production speed, as the systems work in combination with robotic systems and other automation technologies. BFT has made advances in this area by developing high-pressure pumps optimized for seamless operation with robotic systems.

By combining waterjet technology with robotic arms, precise and repeatable cuts can be made, which is a significant advantage, particularly in the automotive and aerospace industries. This integration not only increases efficiency but also reduces error rates by minimizing human influence.



BFT offers customized solutions for integration into existing production lines, tailored to the specific requirements of customers. This includes not only providing the technical equipment but also supporting the planning and implementation of the systems. The combination of waterjet cutting and automation allows manufacturers to expand their production capacities without compromising the quality of the final products.

By integrating sensors and automated monitoring systems, production processes can also be analyzed in real time and continuously optimized. Furthermore, the use of IoT-enabled sensors allows for data-driven insights and predictive maintenance, which helps manufacturers reduce downtime and enhance the reliability of their production lines. This holistic approach to automation ensures that every aspect of the cutting process is optimized, leading to a significant competitive advantage in terms of quality, speed, and cost efficiency.

**INTEGRATION INTO
AUTOMATED PRODUCTION
LINES INCREASES EFFICIENCY
AND REDUCES ERROR RATES.**



A Member of
Dr. Aichhorn Group

BFT GMBH

Industriepark 24, A-8682 Hönigsberg

T. +43 (0) 3862 303 303 | **F.** +43 (0) 3862 303 304

E. info@bft-pumps.com

WWW.BFT-PUMPS.COM

LinkedIn
@ BFT GmbH