



Bystronic

ByJet Pro 3015

“...THEY BUILD MACHINES THAT CAN SUSTAIN SUCH FORCES”

WORLDWIDE, THERE ARE VERY FEW COMPANIES THAT APPLY WATERJET CUTTING AS PROFESSIONALLY AS THE BELGIAN COMPANY L&D JET TECHNIEK. IN AN EXPERT DISCUSSION GROUP, GENERAL MANAGER INGE LEFEVRE SHARES HER THOUGHTS AS TO WHAT MAKES A GOOD WATERJET CUTTING SYSTEM AND HOW IMPORTANT THE COOPERATION BETWEEN THE MANUFACTURER AND THE USER IS.

Text: Martin Engel, Photos: Mauro Bottaro



Bystronic waterjet cutting systems ensure maximum precision in 2D applications.

BystronicWorld: Why have you put your faith in waterjet cutting, Mrs. Lefevre?

Inge Lefevre: Waterjet cutting offers a wide range of possibilities to increase productivity. For example, several cutting heads can be used at the same time. Amongst other things, we have a system with twelve heads, and one of our two Bystronic systems is also equipped with four cutting heads and a shuttle table. And if you are willing to immerse yourself in the technology and the machines, you can process jobs that others would find almost impossible.

B.W.: Are there other providers of waterjet cutting solutions in Belgium?

I.L.: Yes, there are a few other job shops. But no other provider has four systems, as we have. Furthermore, we're the only Belgian company that has a twelve-head abrasive waterjet cutting system, and additionally we have the largest 3D waterjet cutting system in the Benelux countries.

Michael Merkle: 3D cutting, but also microprocessing which you offer, are surely niches and not really mass business opportunities. Or am I mistaken about this?

I.L.: Well, we do have some months where 80 percent of our orders are 3D cutting. Mostly these are very special parts, for the aviation industry, for example: parts for the Airbus A380, parts with jigs made of composite materials, titanium and aluminum. But you are correct, 3D cutting and microprocessing are niches, lucrative niches, since our competitors in Belgium only do flat cutting.

M.M.: And with 2D cutting, it is surely a high level of automation that is most important and the fact that orders can be processed quickly.

I.L.: I couldn't agree more. This is the main reason why, on average, we buy a new machine every two years. There comes a point where one can no longer work economically enough on older machines. We cut across the full range: from large series through to individual parts, where sometimes the programming and setting up takes longer than the actual cutting. In such cases, it is important that the new setting can be done as fast as possible. For

The Discussion Group

Inge Lefevre, General Manager of L&D Jet Techniek

Michael Merkle, Head of the Bystronic Division Waterjet

Daniel Marti, Head of Development Waterjet

Martin Engel, Editor-in-Chief BystronicWorld

*"Our systems must be able to do everything."
Inge Lefevre, General Manager, L&D Jet Techniek*



“Waterjet cutting offers a wide range of possibilities to increase productivity.”

Inge Lefevre,
General Manager,
L&D Jet Technik

this reason, we purchased a ByJet Pro with a shuttle table in 2008: one, two actions, press a button and it's already cutting again.

M.M.: What do you think are the most important characteristics that make a very good 2D waterjet cutting machine?

I.L.: The most important characteristics, as far as I'm concerned, are productivity and user-friendliness. I don't want to have to set up a number of things each time until the system is finally up and running. I always realize just how important this is when I have to train new employees. With the ByJet Pro, all one has to do is simply read in the cutting plan, select the correct parameters, load the program, fix the material in place, and press the start button. The less errors an operator can make, the better. What is also important is that the system cuts productively across the whole cutting spectrum and over several years, while at the same time showing no more than a tenth of a millimeter deviation with a 10-millimeter-thick sheet – and this across the whole of the cutting area. This demands that the machine has a good x-, y-, z-axis system and an equally good CNC. In these respects, the

Bystronic machines are superb. You know, the contour is always a movement in the x- and y-axes that has to be very finely tuned. This is an important point in machine construction: the interaction between the motors on the machine and the CNC.

Daniel Marti: Yes, the interaction is enormously important. The machine provides the prerequisite that allows the control to be able to implement the desired actions. It must be sufficiently rigid and precise.

I.L.: And with a machine with a cutting area of 4 by 2 meters, the high acceleration and the force of gravity also play a role. This is another Bystronic strength: they build machines that can sustain such forces. If a Bystronic system is maintained and serviced at regular intervals, it will continue to run around the clock after many years and still cut with the highest precision.

B.W.: You cut an unbelievable range of materials with waterjet technology, from glass through to composite materials. On the other hand, you want a system that is easy to operate. Is this not a contradiction in terms?



Left: The headquarters of L&D Jet Techniek in Diest, Belgium. The job shop was founded in 1994. Top right: The company is one of the most advanced users of waterjet cutting technology in 2D and 3D. Bottom right: In addition to productivity, user-friendliness is a main characteristic that distinguishes an excellent machine.

I.L.: No.

M.M.: We have systems with up to four cutting heads in our portfolio, which can additionally be equipped with a shuttle table and as an optional extra can also cut pipes and profiles. One of the challenges for our development department lies in the design of highly productive systems that in spite of their complexity are simple to operate. This includes not just the programming, but also the implementation on the machine as soon as the cutting plan is loaded.

B.W.: And how satisfied are you with your Bystronic systems in this respect?

I.L.: Very satisfied.

B.W.: What do you believe a pump should offer?

I.L.: It should have very few pressure fluctuations; it should switch over quietly and have a long service life.

M.M.: And what about the ease of maintenance?

I.L.: Yes, that's also very important. Maintenance should be easy to carry out. You see, a pump should be constructed as simply as possible and function stably. Even a little drop in pressure can be seen immediately in the cut, at least by specialists. With

metal sheets thicker than 10 millimeters, it is really bad and everybody can see it.

B.W.: How can one detect a drop-off in pressure in thin metal sheets?

I.L.: The giveaway is the poor quality of the cut in the place in question. In the case of a 70-millimeter sheet, one sees immediately whether it is cleanly cut through or whether there are large erosions. A pressure drop of just 500 bar at 3,200 bar is already sufficient. Therefore, fluctuations, which can't be avoided altogether, must only be minor. When I have a long running order, I don't want to unload the parts several hours later only to find that they are only suitable as scrap. If this happens, I have lost a lot of money.

B.W.: You have various systems in use. Does the Bystronic pump meet your expectations?

I.L.: It does what it has to do plus a little more, otherwise I wouldn't have purchased the product. The pumps that Bystronic offers today are at such a level that a constant cutting of between ten and twelve hours can be achieved without problems as a general rule.

B.W.: In addition to the two Bystronic systems, you

have amongst others a system that is equipped with a 6,000-bar pump. What do you use this system for?

I.L.: Mainly with thick materials: stainless steel up to 250 millimeters and aluminum up to 300 millimeters. You need the 6,000 bar as a reserve in order to cut thicker materials, to be more accurate and faster, but not for the normal orders. Then the 6,000 bar is just simply not necessary, that's a lot of pressure. In order to withstand the pressure, the

B.W.: A word about cooperation: how important is good customer service to you?

I.L.: I would say that as far as I'm concerned, customer service during the start phase is more important than the actual purchase price.

M.M.: In your case, this is most likely because you generally purchase the latest design. Often, you are the first customer to invest in a new model.

I.L.: That's right; we have occasionally purchased preseries models, not just from Bystronic, but also



pumps have to be extremely robust; this means that very expensive materials have to be used. And the cutting heads and valves have to be even more robust. It simply makes no sense to use it for cutting parts where one can achieve good results with 3,500 bar. A new job shop does not as a rule have such a system; such a pump is usually used in a second or third system.

D.M.: Do you use the capacity of the 6,000-bar pump to the full, or do you restrict the pressure slightly?

I.L.: We cut with a pressure of around 5,500 bar on this system.

M.M.: I assume this means that you limit the pressure so that the pump has a longer working life.

I.L.: Yes. Otherwise the seals and the pipes are damaged too quickly.

B.W.: Just how important is it to you that all key system components, including the mechanics as well as the pump, the control package, and the software, are provided by a single supplier?

I.L.: Very important. I prefer to have a single contact for everything. If at some stage a fault occurs, this is generally caused by an interaction of several factors. If I have several suppliers, then the discussions start and the solution to the problem can be a long time coming. I also believe that one cannot construct a machine without knowing precisely how the pump functions, and vice versa, since all the components have to be carefully matched to each other.

from competitors — or systems that were constructed especially for us. In this case, one doesn't need customer service in the classical sense, but rather a direct line to the development department.

B.W.: What role does the feedback from the customer play at Bystronic?

D.M.: Such feedback is very valuable. Just because the development engineer is happy with the machine doesn't necessarily mean that the customer, who cuts under production conditions, is also satisfied. It's not until the customer starts using the machine that the endurance test takes place.

I.L.: I believe that we are advanced users and are very qualified to give feedback. Machine suppliers that take that into account make good progress and develop machines such as those in our factory. But anyone who isn't interested in what the customer thinks has a poor chance of being able to develop really top-class products. Bystronic is exemplary in this respect: the two gentlemen want to know what my requirements are, since as a job shop one is confronted with a broad spectrum of all sorts of applications — in our case, a system must simply be able to do everything.

B.W.: Is a customer such as L&D already integrated into the development process when you design a new machine?

D.M.: Customer feedback is a fixed part of the development process.

M.M.: How do you actually judge the relationship between waterjet cutting and milling?

I.L.: I have many customers from the machine and equipment engineering sectors who have their parts pre-cut by us and then subsequently machine finish them. Hence, they achieve the required precision and also get the residual material from us that they can use again. And if the radius for the next part has to be larger or smaller, this is absolutely no problem for us. We don't have to change the cut-

B.W.: I see a fairly standard stainless steel part with a thickness of around 2 millimeters here. This would actually be a typical part for laser cutting, wouldn't it? How do you manage to be competitive with such a part compared to laser cutting?

I.L.: Absolutely correct. That's 2-millimeter stainless steel. In this case, we simply couldn't compete with the laser. That is why we also have a laser cutting machine. In my opinion, waterjet and laser cutting complement each other very well. I think that's one



Inge Lefevre, General Manager of L&D Jet Techniek, talks to Michael Merkle and Daniel Marti of the Bystronic Division Waterjet. The discussion was chaired by BystronicWorld Editor-in-Chief Martin Engel.

ting head or a tool; we simply adapt the program. That's a decisive advantage of the waterjet cutting technology. In the final analysis, it's a matter of the correct technology mix, and the decisive factor is money. A milling machine should mill in order to achieve the required precision and not simply to produce swarf.

reason why we at L&D have become well known in Belgium and Holland and have grown into a sizeable company: we cut with waterjet when the customer and the required quality demand it. And we cut parts that not everyone can or will.

L&D Jet Techniek

L&D Jet Techniek is a family-run job shop founded in 1994 with its headquarters in Diest, Belgium. The company has grown continuously since it was founded and today has more than 1,000 customers from all sectors of industry. It currently employs a staff of 20. L&D Jet Techniek is one of the most professional users of waterjet cutting technology worldwide and provides the full bandwidth of services from microprocessing through to 2D and 3D cutting. To do this, the company has a unique range of machines including a total of four abrasive waterjet cutting systems:

- ByJet Pro 3015 Expert model with four cutting heads and a shuttle table
- ByJet 3015 with two cutting heads
- A further 2D system with twelve cutting heads and a cutting pressure of up to 6,000 bar, on which parts up to 6,000 x 2,200 x 400 millimeters can be processed
- The largest 3D system in Belgium for processing pipes up to a diameter of 3,000 millimeters and other 3D parts up to 6,000 x 4,000 x 1,450 millimeters.

In the subsidiary L&D Speed Cutting, laser cutting orders are also processed. The company uses a Byspeed 3015 with 5.2 kilowatts of laser power.

www.lendwaterjet.be
