

**WATERJET CUTTING TECHNOLOGY** GOES BACK SOME 30 YEARS.

DESPITE THIS, EXTENSIVE RESEARCH IS STILL REQUIRED. IN 2007 BTH STARTED ITS WATERJET LABORATORY IN THE SMALL TOWN OF RONNEBY IN SOUTHERN SWEDEN – ALSO KNOWN AS “WATERJET VALLEY”.

# At the cutting edge



**The small town of Ronneby in southern Sweden has a world-leading cluster of companies in waterjet cutting technology. It is not by accident that BTH has located its Waterjet Laboratory there.**

Despite being a town with just 29,000 inhabitants it has become one of the world's leading development areas for waterjet cutting technology with no less than five leading companies. Locating the laboratory in what has become known as “Water Jet Valley” was a logical move.

– We are a research group with just five members and we are not linked to any specific company, states Dr Anders Jönsson, research leader for Swedish Waterjet Lab.

– We work closely with industry in different projects where we examine all aspects of waterjet cutting. A great deal comes down to producing research results in productivity and finding ways of cutting quicker and better. Our research covers control systems, motors, mechanics, abrasives and different materials. Our customers range from universities and to organisations and companies throughout the world although we are not consultants in the traditional sense of the word.

Often we receive inquiries to test something in order to find an optimal solution which the customer then introduces into industry.

## High-pressure cutting

Briefly, waterjet cutting means cutting any kind of material with a thin waterjet, sometimes mixed with an abrasive, under high pressure. Apart from cutting, this technique can be used to wash, mark or mill products. Two of the advantages are that the process does not expose the material to any heat and it is environmentally friendly.

– At present we can cut at a pressure of 6,200 bar, explains Anders Jönsson. This is the equivalent of the pressure from a 62,000 m high water column released through a nozzle just a few tenths of a millimetre in diameter. The speed of the jet can reach around 1,000 m per second, which is faster than any aircraft. We can cut through material that is up to

30 cm thick although this is quite slow. It is mainly manufacturing industry that is attracted by this technology although other sectors are also beginning to show an interest.

– We also co-operate with the glass-making industry and the Glass Research Institute, Anders Jönsson reveals. Polishing ornamental glass is currently done using acid, which is hazardous to health. We are examining new ways of polishing using waterjet cutting. Likewise glass as a construction material can be much more sustainable if we develop technology that can polish holes for bolts. At present there is no standard machine available and this is something that we are looking at.

## International collaboration

Swedish Waterjet Lab is a member of a number of collaboration constellations and networks, including the Scandinavian Waterjet Association and a German group working on producing its own standard, which will eventually become an EU standard. They are also actively involved in visiting conferences and trade fairs.

– Alongside everything else we are trying to produce a method to measure productivity so that customers and manufacturers have comparable data, states Anders Jönsson. There is a great deal to do but at present there

are just five employees. What we have not yet managed to find time for is to design higher education study programmes but this is in the pipeline. We believe that this will be an interesting area of study, particular for international students who want to bring “cutting-edge technology” back home with them.



Anders Jönsson, research leader, Swedish Waterjet Lab.

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## FACTS

Read more about Swedish Waterjet Lab at:  
[www.waterjet-lab.se/home.html](http://www.waterjet-lab.se/home.html)

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