

Large cutting tables

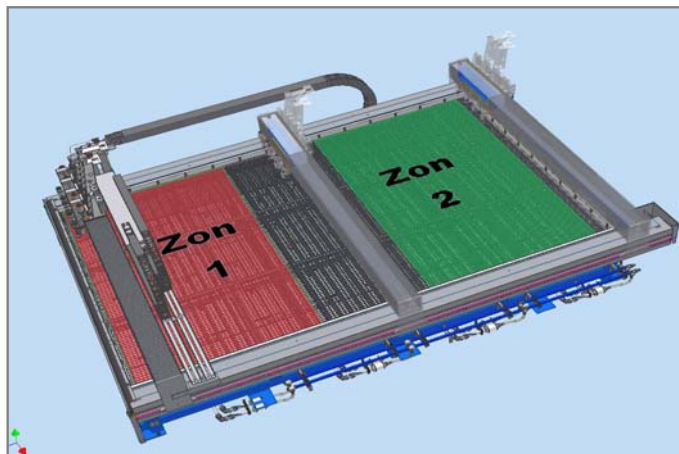
Bilaga 5
2141/07



Stahl Contor Zürich, 3.5x9m.

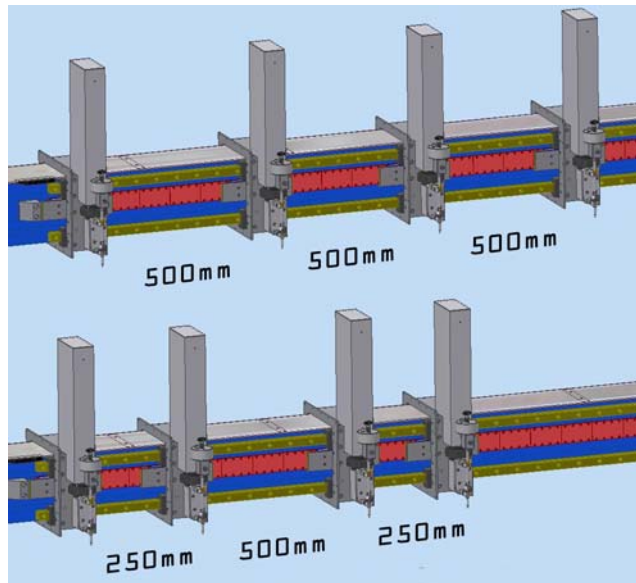
Source: Water Jet Sweden

Cutting zones



for efficient loading and unloading

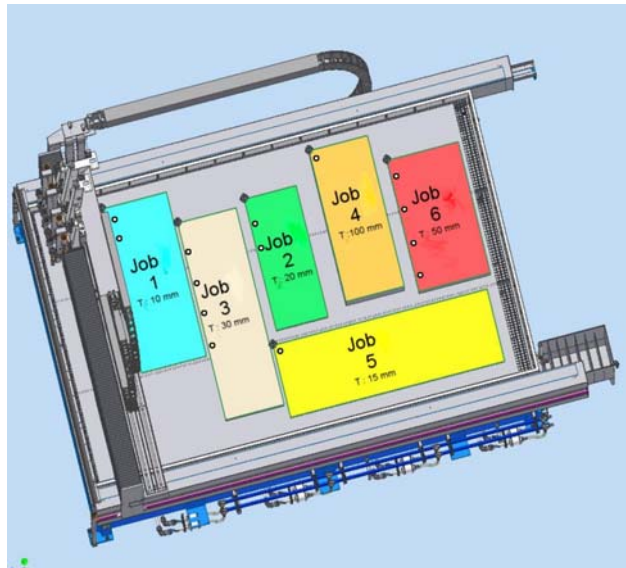
Source: Water Jet Sweden



Source: Water Jet Sweden

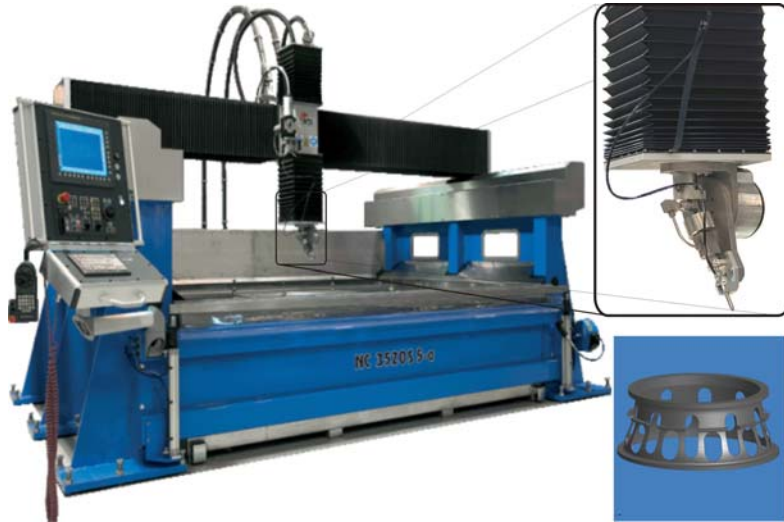
Figure 3.4

Job planning in large waterjet machines



Source: Water Jet Sweden

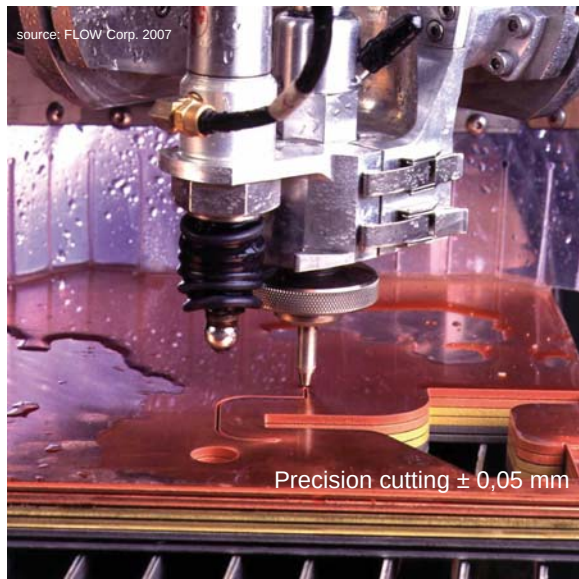
5 axis cutting of 3D parts



Source: Water Jet Sweden

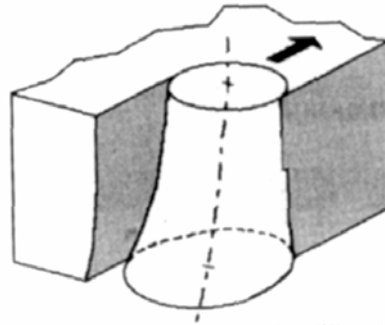
Figure3.6

"Dynamic waterjet"



Precision cutting by taper angle correction

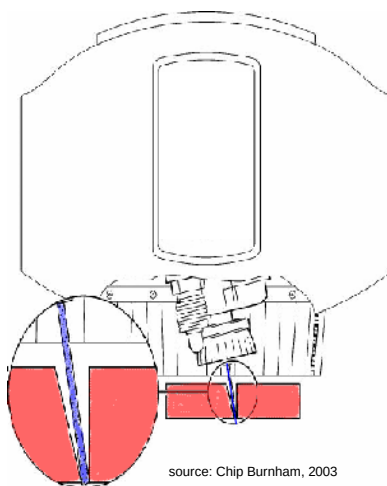
"Dynamic waterjet" a.k.a "Tilt-a-Jet" a.k.a. "Taper Angle Control"



Annoni&Monno,2000

- conicity (introduces a taper)
- lag (introduces contour form errors)

5-axis taper angle control



source: Chip Burnham, 2003

Five axis control in combination with mathematical modelling facilitates:

- Better utilization of jet energy
- Compensating taper angle errors

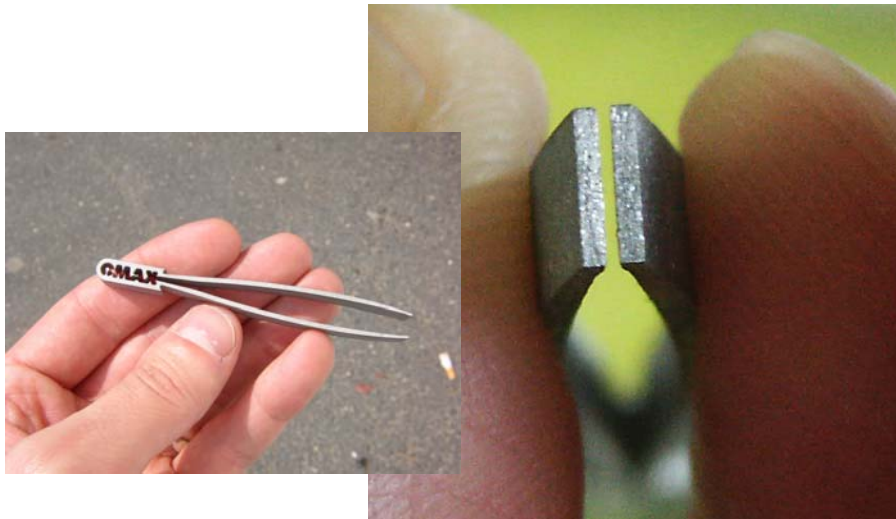


In practice:

- Faster cutting when angularity is important rather than surface roughness.
- Faster cutting speeds in corners and small radii.

NOTE: You will still have the striation marks typical to the selected cutting speed

5-axis taper angle control (cont'd)



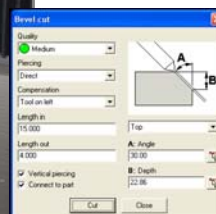
Source: Jay Zeng, Omax Corp.

Bevel cutting – for welding preparation

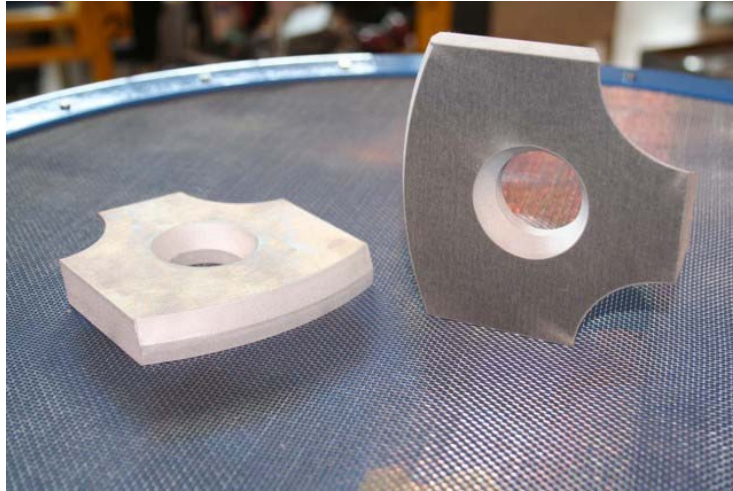


Beveltypes

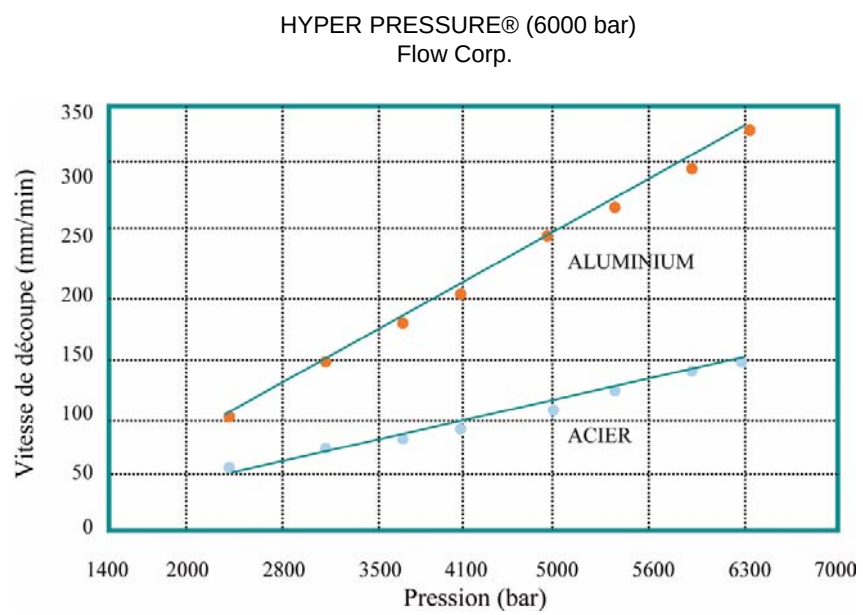
- Y-bevel
- Y-bevel
- V-bevel
- V-bevel
- X-bevel
- X-bevel
- K-bevel



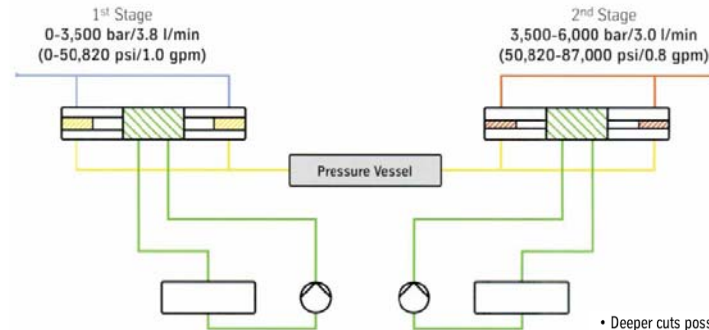
Source: Water Jet Sweden



Source: Water Jet Sweden



The UHDE concept of 6000 bar pumps



Advantages / Characteristics

- Increase in power density by 83%
- Up to 2.5 times faster cutting speed over the whole range of material thickness
- Up to 35% reduction of abrasive mass flow
- Up to 25% reduction in operating costs

- Deeper cuts possible without the use of abrasive, for example, for plastics and composite materials, as well as, aluminium up to 6 mm and titanium up to 3 mm thick
 - Since the maintenance costs of the pumps only amount to approximately 3% of the total operating costs of a system, economic efficiency is achieved even at double the maintenance costs
 - Particularly suitable for cutting tiles: 3 times faster cutting speed
- Source: UHDE brochure, 2007

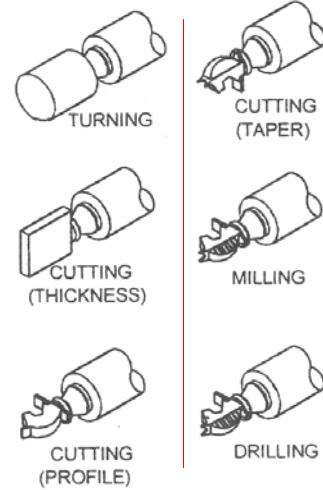
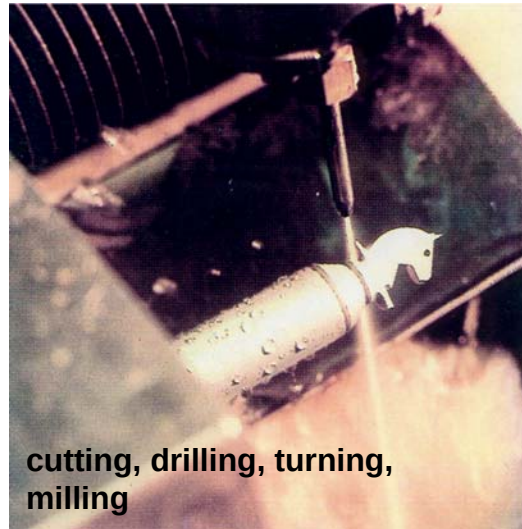
Some development trends

High flow pumps – KMT SL-V 200 hp



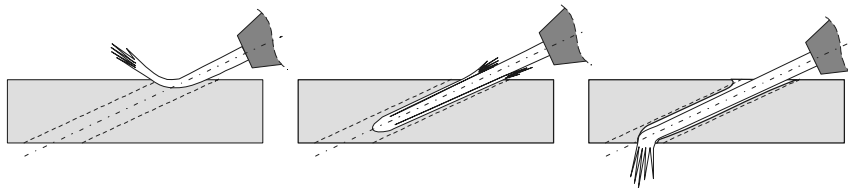
It can feed up to 32 cutting heads! Normal AWJ operation 8 nozzles.

Advanced AWJ applications Abrasive Waterjet Machining

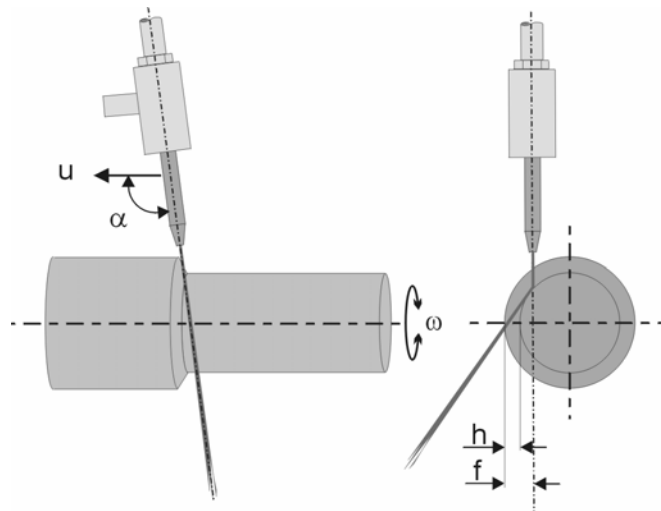


Source: M. Hashish, Flow Corp.

Small hole AWJ drilling down to 0,55 mm



AWJ drilling turning



AWJ drilling milling

