SOCIETE NAHAS POUR L'INDUSTRIE ET LE COMMERCE

# 5 AXIS
# WATERJET CUTTING SYSTEMS

# SNM-WCS5 AXIS

# MACHINE CHARACTERISTICS

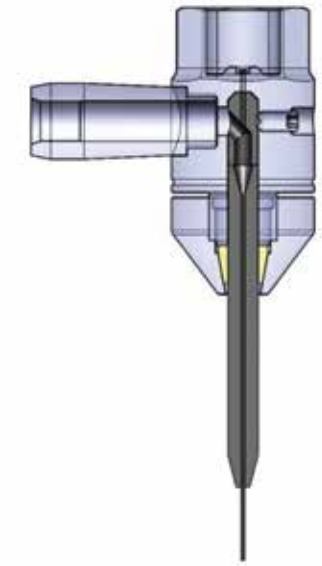
SNIC waterjet cutting systems are reliable, heavy duty and easy to maintain. Their higher efficiency and accuracy substantially reduce operating costs. In order to manufacture the best waterjet systems money can buy we have teamed with worldwide leading companies such as KMT, the company who invented waterjet cutting and has been leading the field in waterjet applications for over a quarter of a century.

## The cutting head

The ACTIVE IDE™ cutting head is the most efficient, long lasting cutting head with the fewest possible parts on the market. The key advantages of the ACTIVE IDE™ I are the exact targeted cutting jet, the pre-filter protecting the orifice and the advanced nozzle valve design. The unit is also virtually maintenance-free.

- As the cutting head contains a minimum number of components, it is particularly easy to handle. Its innovative design minimizes the jet stream width so that all impact energy is concentrated in the cutting tip of the jet. The result is a perfect and accurately positioned cut.
- The diamond orifice and the mixing chamber are combined in a single nozzle body. Thanks to this user-friendly design, the focusing tube and the pre-filter, which are the only wear parts, can be exchanged easily and quickly.





- The integrated diamond orifice far outperforms any sapphire orifice by ten to twenty times. The prolonged orifice life means longer uptime and thus more consistent precision cutting. This in turn helps increase the lifespan of the focusing tube and results in smoother cutting edges and less waste.
- The newly developed pre-filter is installed between the HD line and the nozzle valve body in the adapter. It keeps impurities from cloggings the orifice which significantly prolongs the service life of the nozzle and lowers the operating costs.
- Operators can quickly and easily change over from pure water cutting to abrasive cutting.
- Orifice sizes : 0.25mm, 0.28mm, 0.33mm, 0.35mm.

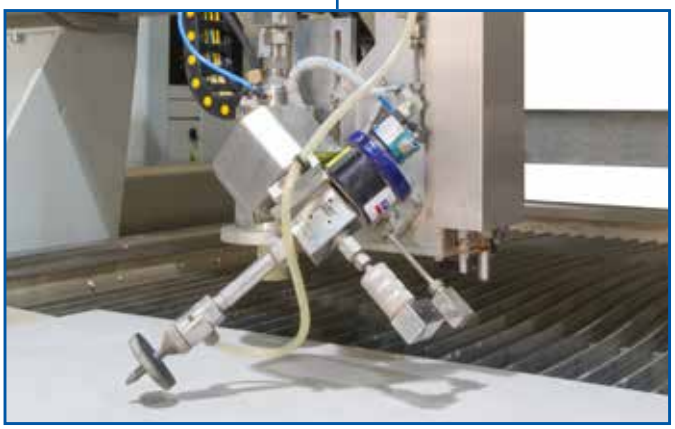
## The abrasive delivery system

- The automatic stainless steel abrasive bulk transfer system enables the machine to work unattended for several hours.
- Its abrasive metering assembly allows a visual check of the abrasive supply and provides very accurate metering control of the abrasive flow rate.
- Controlled by an accurate potentiometer, the lightweight and compact design Feedline V from KMT (optional) supplies the cutting head with the optimized flow of abrasive, saving materials and costs.
- The very constant abrasive flow combined with the kinetics of the machine provides outstanding precise cutting and superior edge quality.


Feedline V (optional)

## The working table

- Main structure made of special galvanized steel.
- Full stainless steel tank.
- High precision ball screw system for Y, Y1 and Z.
- High precision helicoidal rack system with reduced backlash gearbox for X.
- Thermal welded bellows covers for all axes.
- Mechanically paned table top.
- A & B tilting and interpolated up to 46 degrees.

## The intensifier

- Because it is the heart of the entire machine, SNIC waterjet sytems are equipped with the latest KMT Streamline™ SL-VI PLUS intensifiers. They are designed to deliver new levels of components reliability and system uptime, while retaining the ease of maintenance.
- Completely self contained, minimum-footprint unit with built-in controls, soft starter and 24VDC safety control.
- Fewer parts than conventional intensifiers.
- PLC controller with direct link to touch display showing operating system status, hour-meter, failure messages and comprehensive diagnostics for troubleshooting.

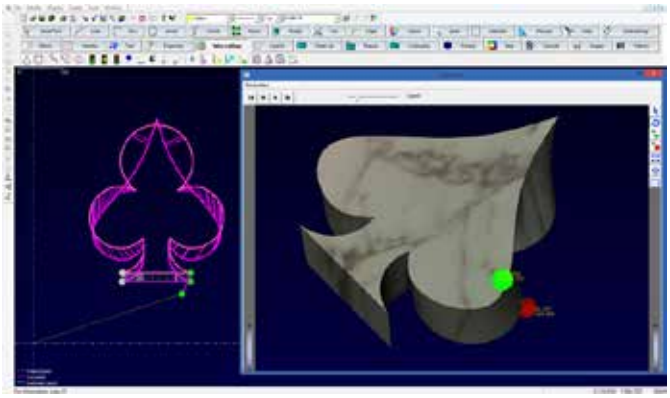

- Touch screen control system in 8 languages freely selectable.
- Variable displacement, pressure compensated hydraulic pump technology.
- Standard dual pressure control facilitates hole piercing and kiss cut applications.
- 4136 bar operating pressure.
- Sound insulated housing with see through top cover which opens on both sides. (optional)
- Standard high pressure fluid or water leak detection.
- Exclusive long slow stroke.
- Long life seal design provides reliable and improved service life.
- Patented ‘’Quick Plunger Removal” without disassembly of the hydraulic cylinder.
- Cartridge type hydraulic seal.
- Water pressure booster and filtration system with10-micron double-length filter.
- High efficiency heat exchanger in independent re-circulation pump circuit to cool all oil or air coolers.
- High-pressure safety dump valve.
- High-pressure accumulator (TUV approved).
- Water inlet shut-off valve.
- Separate water and oil drip pans.
- Two-liter accumulator. (optional)
- Upon customer request, SNIC waterjet systems can also be equipped with KMT Jetline™ or Streamline™ SL-VI Standard or Streamline™ PRO intensifiers.

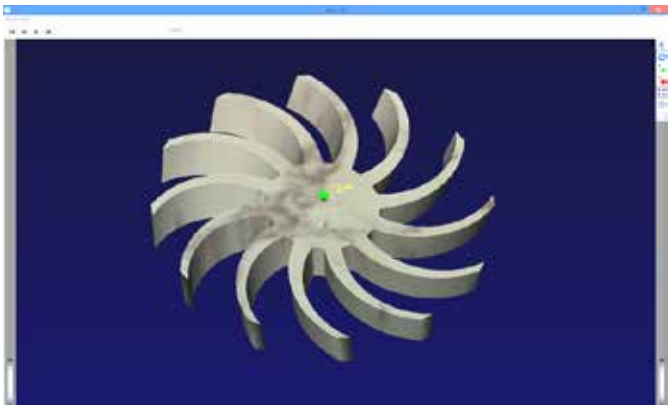
## The CNC Control


- Windows-like user interface.
- 15” TFT color display touch screen with antiglare screen.
- Dedicated scratch proof, oil proof IP65 keyboard.
- Silicon hard disk and USB ports.
- Speed control by electronic wheel mounted on the panel.
- RTCP function for 5 axis bevel cutting.
- Auto RTCP setup function.
- In-process adjustment of the cutting height controlled by the operator.
- Retrace and reposition functions for cutting restart.
- Probing method for acquiring the plate thickness.

## The CAD-CAM software

- The user has access to all features of 2D design and can import files in the most common formats (dxf, dwg...).
- The software is able to convert all kinds of entities and composition of the drawing (blocks, lists, spline, polyline...) whatever the level of complexity is.
- The drawing typically contains imperfections such as overlapping lines, discontinuities and small entities that can be easily deleted by automatic strategies.
- Macro and fixed shapes are available to simplify the drawing.
- The pre-programmed tables allow to define automatically the lead-in & lead-out as well as the cutting speeds, based on material type, thicknesses, and edge quality.
- It is suitable for programming simple miter cuts, like a 45-degree cut, or complex profiles that are completely different on two faces of the sheet.





# THE TECHNOLOGY

The intensifier generates a high pressure of up to 4136 bar, which is focused with high-speed water through a fine precious stone orifice. The jet stream velocity equals about 3 times the speed of sound. When cutting hard materials, garnet is added to the high-pressure water generating a high energy stream now containing water and abrasive.

## Main benefits of waterjet cutting

- Extremely fast transition from drawing to cutting.
- Faster setup – low tangential forces often eliminate the need for clamping.
- High accuracy – eliminates secondary cutting
- Fast cutting speed.
- Eliminates the need to sharpen tools.
- Safer for operators and the environment – avoids vapor, dust and smoke and does not require expensive coolants.
- Cold cutting process – eliminates heat-affected zones, hardened material and material stresses.
- Clean finished product eliminates secondary cleaning operations.
- Burr-free finish – eliminates any need for secondary surface finishing for most applications.
- Small kerfs.
- Ideal for quick prototype, flexible production and proven for high volume production.
- Optimum material utilization with CAD/CAM software.
- Customized system solutions.


Steel and sandstone, 20 mm thickness.

Stainless steel, 15 mm thickness.

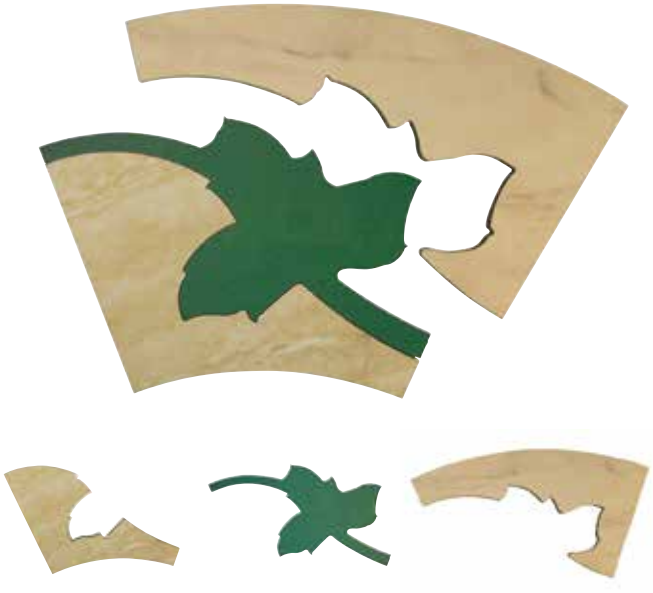
Marble, 30 mm thickness.

## Pure water cutting

This cutting method is primarily used for cutting soft materials such as rubber, foam, gasket, leather, textiles, foodstuffs and many other similar materials. Normal tap water is pressurized at ultra-high pressure levels and forced through a small precious stone orifice to form an intense cutting stream. The jet stream moves at a velocity of up to 3 times the speed of sound, creating the ability to cut at very high feed rates. The rates vary according to the material being cut – refer to the table below.

| Material | Thickness (mm) | Cutting speed (mm/min) |
|---|---|---|
| **Rubber** | 2 | 27.000 |
| | 10 | 11.500 |
| | 20 | 2.200 |
| **Synthetic** | 2 | 22.500 |
| | 5 | 8.900 |
| | 10 | 3.400 |
| **Foamed** | 10 | 27.500 |
| | 100 | 5.500 |

At 4.136 bar – Orifice sizes: 0.10 mm-0.25 mm; Surface quality: medium-fine



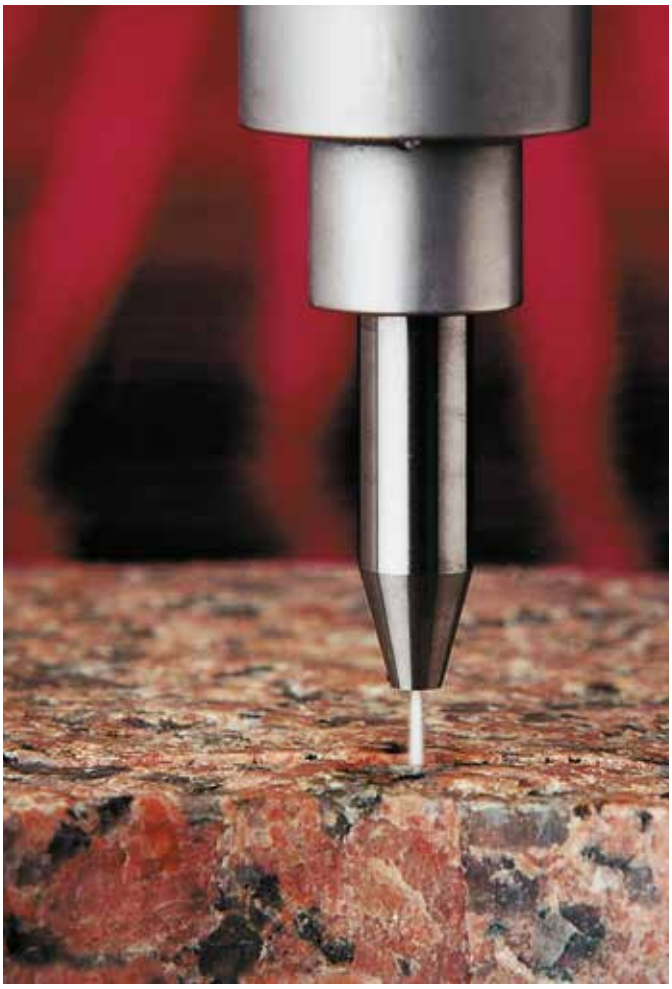
Ceramic, 10 mm thickness.

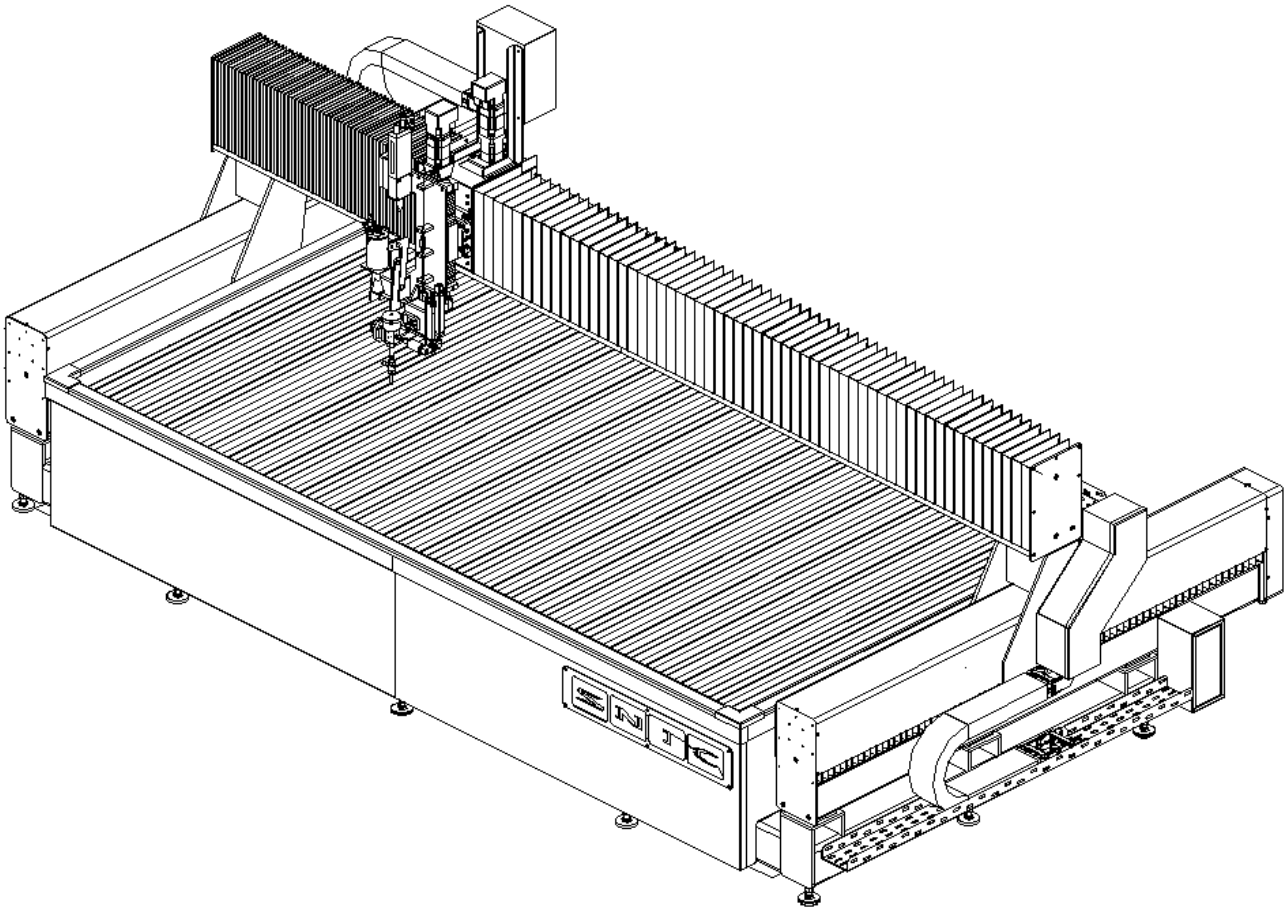
## Abrasive cutting

For your hard materials that cannot be machined with water only, the water nozzle nut is replaced with the IDE™ abrasive cutting head. The high velocity waterjet creates a vacuum which pulls the abrasive into a mixing chamber, producing a coherent, extremely energetic abrasive jet stream. This process is ideal for cutting intricate patterns in sheet metals, composites, decorative stone, synthetic ceramics, glass, etc. The rates vary according to the material being cut – refer to the table below.

| Material | Thickness (mm) | Cutting speed (mm/min) |
|---|---|---|
| **Titanium** | 10 | 150 |
| | 40 | 30 |
| | 100 | 11 |
| **Marble** | 10 | 800 |
| | 40 | 160 |
| | 120 | 46 |
| **Glass** | 10 | 635 |
| | 40 | 130 |
| | 120 | 37 |

At 4,136 bar – Abrasive flow: 450g/min; Orifice combination: 0.25-0.76 mm; Surface quality: medium-fine





## Technical data

| | Detail | Option 1 | Option 2 |
|---|---|---|---|
| **Cutting table** | Total length (mm) | 4600 | 4600 |
| | Total width (mm) | 2280 | 2780 |
| **Cutting area** | X Axis (mm) | 3000 | 4000 |
| | Y Axis (mm) | 2000 | 2000 |
| | Z Axis (mm) | 150 | 150 |
| | A & B (degrees) | +/- 46 | +/- 46 |
| **Intensifier pump** | Output (hp) | 30 | 50 |

Tables with individual cutting areas can be manufactured upon request up to 3m × 12m

- Drives are brushless alternating current servomotors.
- Additional options include multiple cutting heads and a height sensor.



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