Report
Cutting Technique

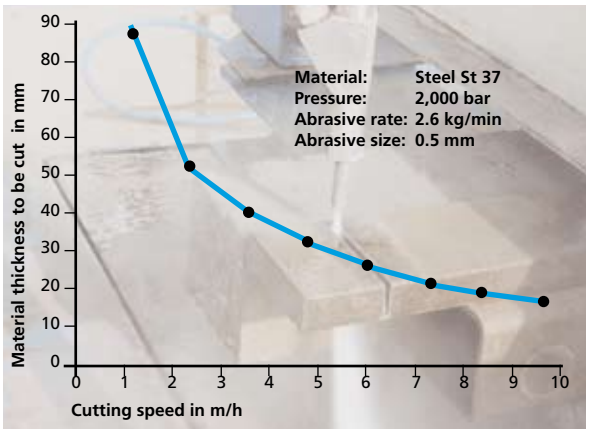
WOMA
Water as a tool
for a clean environment

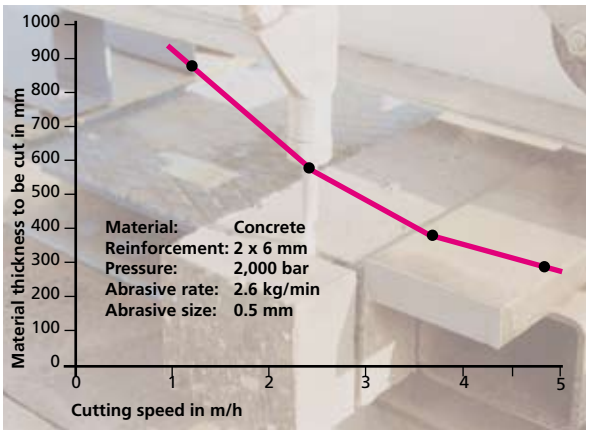
WOMA has done pioneer work in the field of abrasive high-pressure water jet cutting. As early as in 1974, a reinforced concrete wall was cut out in the basement of a data processing centre by means of a combined water and silica-sand jet without causing any vibrations – an unparallelled occurrence in the world at that time. Based on the newly developed ultra-high pressure technology it is now possible to use high-pressure water jets as a cutting tool in the outdoor industry – especially in the construction industry, maintenance, chemical processing industry, and the demolition industry. The general idea of the abrasive high-pressure water jet technique is adding small solid particles to the water jet, which are also called abrasives. The distinctive feature of the WOMA abrasive water jet technique is the fact that the required high water pressures are generated by plunger pumps which have a very favourable degree of efficiency and have proved successful in many branches of industry for many years.

Why Abrasive High-Pressure Water Jets?

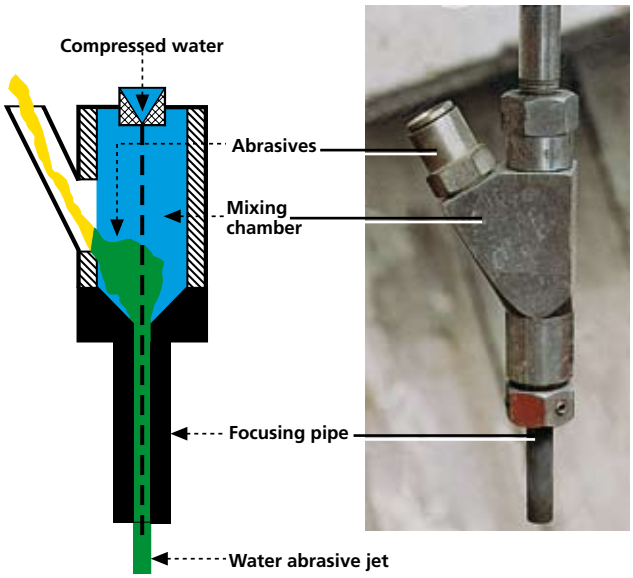
- Cutting is possible in all positions.
- Small tool dimensions.
- Any kind of shapes can be cut.
- The cutting progress is continuously adjustable and can be controlled.
- Low reaction forces, which makes mechanization/automation possible.
- No significant impact noise.
- No vibrations.

Cutting circular openings in steel plates





Approximated cutting speeds for structural steel and reinforced concrete



Design of WOMA's abrasive water jet cutting head

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▶ No formation of dust, vapour, gas and slag.

▶ No thermal and mechanical stresses at the cutting or breaking edges.

▶ Large cutting depth in one operation.

▶ The cutting of composite materials with one cutting step is possible.

▶ Application under water is possible.

These operational characteristics predestine abrasive high-pressure water jets for the use on or in occupied and managed buildings such as hotels, hospitals, office buildings, and constructions which are sensitive to dust and vibrations (e.g. data processing centres, locations of precision measuring instruments), and in narrow rooms.

The Range of Materials

The WOMA abrasive water jet cutting technique is suitable for effectively cutting most of the materials used in industry. The range of materials ranks from alloyed construction materials over steels, concrete and highly reinforced concrete, to high-strength ceramics.

The Technique

WOMA offers complete abrasive high-pressure water jet cutting systems for on-site-applications consisting of high-pressure plunger pump, cutting head, pneumatically driven guiding unit, abrasive tank, and control device.

The WOMA abrasive high-pressure water jet cutting program includes the following tools and accessories:

▶ Eco Top Cutter system for linear cutting for thin-walled structures as well as for thick-walled structures.

▶ Eco Top Cutter system for circular cutting of vessels, pipes etc. for thin-walled structures as well as for thick-walled structures.

▶ Cutting system for generating circular openings in plane or curved walls.

▶ High-precision cutting system for separating and demolishing pipes, vessels etc.

▶ Abrasive hopper including pneumatically driven control panel for cutting speed control.

▶ Different abrasive material types and sizes.

Partial demolition of heavily reinforced concrete ceilings

Cutting openings in large storage vessels

Demolition of double-walled steel structures

Pipe cutting with the high-precise abrasive water jet cutting system