TECHNICAL DEMOLITION ▪ DIAMOND TECHNOLOGY ▪ CONCRETE PROCESSING

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SURFACE PREPARATION
WITH RIDE ON MILLING MACHINE

Ride on machine milling is performed to supplement traditional milling. Machines can be used to achieve the highest possible milling performance available indoors.

The use small ride on milling machines makes it possible to:

- reduce time needed to complete work
- ensure a high level of efficiency per shift
- reduce costs
- achieve a high level of milling precision

Milling is carried out dry, which does not interfere with subsequent flooring work (resin flooring) and does not pose a risk of flooding of surfaces or equipment. Dust control is achieved through the use of high-performance industrial vacuum cleaners.

Small ride on milling machine applications:

- milling of large surfaces
- milling of grooves for rails
- milling of grooves for ducts, installations, drainage systems
- milling for magnetic and transmission wires, etc.,
- milling for levelling of the ground
- deep milling
- removal of wear-resistant layers

TRADITIONAL
MILLING

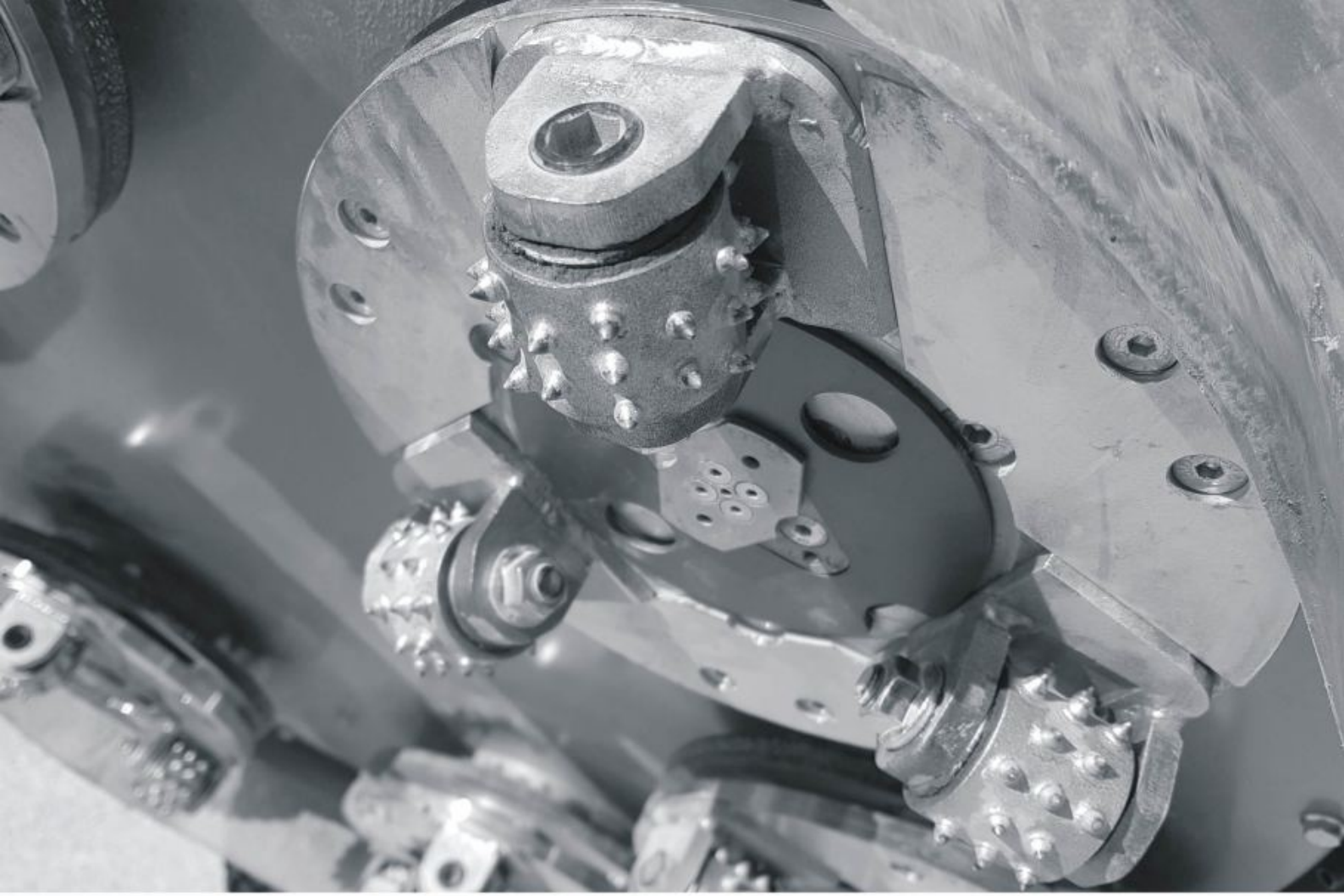
Concrete milling is used for levelling, profiling, cleaning, roughening and removing surface layers of the substrate. It is a key element in finishing and repair of concrete surfaces. The work performed results in a clean and strong substrate with very good adhesion.

In addition to conventional milling, we offer planetary milling to minimize unevenness and bring the concrete surface to a single grade.

Performed after conventional milling or independently, it can reduce material and labour costs by 50 %.

Milling enables the removal of:

- excess concrete and other layers
- damaged and contaminated substrate layers
- laitance and other weak surface layers
- floor coatings (resin, varnish, paint, glue residues)
- road markings
- compensate for height differences
- roughen smooth substrates



CONCRETE
BUSH HAMMERING

Concrete bush hammering is an alternative to milling and grinding, which allows to remove the surface layers of concrete substrates. The exposed surface is characterized by a complex and rough structure, maintaining high aesthetics. An unquestionable advantage is also the lack of damage and de-lamination of concrete.

Bush hammering applications:

- renovation of damaged concrete floors
- parking spaces and maneuvering areas
- transport routes and exit roads
- car wash and petrol station substrates

Due to the small size of the equipment and the use of efficient industrial vacuum cleaners, work can be carried out inside the existing facilities. The surface produced is aesthetically pleasing and safe by limiting slippage.

The advantages of concrete bush hammering:

- aesthetic and homogeneous structure
- rogh and non-slip surface
- attractive price of work
- high work speed/efficiency
- developed contact surface
- no damage or delamination of the deeper layers
- minimised nuisance of work

CONCRETE
SHOTBLASTING

Shotblasting, also known as blasting or peening, is one of the most economical and effective methods of surface preparation. It is extensively used for cleaning and preparation of surfaces before application resin coatings, laying tiles, painting, etc.

This method is also ideal for restoring roughness to concrete, asphalt and stone surfaces.

The surface after blasting is clean, dust-free and load-bearing. The shot removes the weakest layers of the substrate, dirt and old coatings. Thanks to the use of high-performance industrial vacuum cleaners, work is carried out without dusting. The blasting itself is a dry method.

During concrete shotblasting, possible damage in the form of cracks and fissures is revealed, which can then be repaired before the main bulk of work is commenced. Unlike grinding, shotblasting also reaches into recesses of the surface, allowing for their cleaning.

Shotblasting applications:

- removing laitance from concrete,
- removing paint and thin coatings
- removing horizontal markings on roads, parking areas, in halls, warehouses, etc.
- roughing out smooth concrete surfaces
- cleaning concrete, stone, asphalt and steel surfaces

CONCRETE
GRINDING

Grinding is performed to precisely level the surface, and achieve the required ordinate, or to remove old coatings. Surface grading can be performed up to several millimetres. If a deeper intervention is necessary, the concrete must be milled.

Horizontal surfaces (floors, ceilings) and vertical surfaces (walls, columns) as well as complex, small elements (stairs, surfaces before assembly) can be ground.

Efficient industrial vacuum cleaners with HEPA filters can filter up to 99.9 % of the dust produced in the grinding process.

Grinding is usually performed as a component of repair work or to prepare the concrete surface for further floor finishing.

Grinding applications:

- precise levelling of the surface
- removing laitance and other weak surface layers
- removing old coatings from substrates (adhesives, markings, resins, paints, varnishes)
- obtaining smooth surfaces after milling, graining
- surface cleaning
- surface repair and levelling

CONCRETE
POLISHING

Concrete polishing is performed in order to renew, harden and secure concrete, stone and terrazzo floors. Polishing can be also carried out on new floors as ultimate surface finish.

Polished concrete is an effective and inexpensive solution for industrial and commercial floors. A properly ground and polished floor, coated with a high-quality sealers prevents dusting and penetration of dirt and liquids.

The renovation of old floors by polishing can involve:

- surface repairs
- seaming hairline cracks and cracks
- repairing and restoring expansion joints
- surface proofing using an impregnate

Apart from an impressive decorative effect, the surface is characterized by high resistance to abrasion and low maintenance costs thanks to which the polished concrete can remain in perfect condition for many years.

MACHINE-ASSISTED
FLOOR CLADDING STRIPPING

Machine-assisted cladding stripping ensures maximum productivity while reducing the nuisance which is commonly associated with traditional methods.

Electric strippers can operate in closed rooms with unfavourable ventilation conditions - zero emission. Unlike motor devices, our stripping machines do not pose a fire threat. Since the devices are all battery-operated, they do not pose a high power demand in the facility - 230 V mains voltage is sufficient to charge the stripper batteries.

The strippers are small enough to drive through standard internal doors, and weigh enough to ensure safe work on the majority of structural floors.

Machine-assisted cladding stripping can be performed for:

- industrial floors
- resin floors
- sports surfaces
- ceramic and stone tiles
- adhesives and levelling layers
- wooden parquet floors
- floor lining
- PVC tiles
- roofing felt and bituminous surfaces

Apart from the highest work efficiency, the machine-assisted tile stripping method reduces the nuisance of traditional methods, such as manual jack-hammering. The substrate is not damaged during work and percussive operations are kept to a minimum.

Advantages of mechanical stripping:

- the fastest stripping method available
- limited dust and noise emissions
- minimized percussive operations
- minimum risk of damage to the original substrate
- savings on materials related to re-profiling and repair of the substrate

EXPANSION JOINT AND FLOOR

REPAIRS

By offering floor and expansion joint repair, we are able to provide comprehensive investment services.

Depending on the needs we can perform:

- repair and restoration of expansion joints
- execution of new expansion joints
- stitching and filling cracks in floors
- removal of existing horizontal markings
- new horizontal markings
- anti-slip grooving
- removal or restoration of drops
- execution of linear drainage
- execution of channels and depressions in floors

Expansion joints found in industrial floors are subject to natural degradation under the influence of operating loads and the work of the floor slab. The method of expansion joint repair depends on the type and degree of damage.

The simplest joint repair method involves removing the old joint, chamfering the edges of the existing joint and executing a new fill.

If there is significant chipping of the joint edges, it is necessary to cut a strip on both sides of the joint and remove the degraded material. Highly liquid, fast setting, controlled shrinkage repair mortars characterized by high strength are used to fill the cut-out area of the joint. After the repair mixture has hardened, a new incision is made along with the chamfering of its edges and filling.

The benefits of joint repair include:

- improved safety and compliance with health and safety requirements
- reduced wear on wheels, bearings and axles of transport equipment
- improved floor aesthetics
- further floor degradation is significantly limited

DEMOLITIONS
AND TECHNICAL DISMANTLING

Demolitions and dismantling carried out with the use of remote-controlled Brokk demolition robots are performed wherever heavy construction machinery cannot be employed, and wherever manual demolition is expected not to guarantee the desired pace of work, or wherever workers performing manual works could be exposed to significant hazards.

The advantages of demolition robots:

- remote control increases the safety of the work
- electric power supply enables operation in closed rooms
- highest performance, not achievable with manual labor
- compact, high-power design
- capable of entering through a narrow door
- capable of working in cellars at low heights
- capable of entering most ceilings - weight from 0.5 t
- capable of driving up the stairs and rubble
- can be transported vertically by crane
- capable of working in hazardous environments
- capable of working in confined spaces
- high precision of demolition work
- reduced noise and vibration

The accuracy of demolition work, its high speed and reduced risks for the operators and the structure to be preserved, is the greatest advantage of demolition robots. The price of the work is also an important factor, as it is much lower than in the case of wall sawing or manual demolition work.

Demolition robot applications:

- demolition and jackhammering of reinforced concrete, concrete, brick and stone elements
- removal of internal linings
- indoor work
- demolition work in tunnels
- demolition of stairs, foundations, ceilings and walls
- dismantling of chimneys, demolition of elevator shafts
- removal of blast furnace lining and slag in metal processing
- reinforcement uncovering/exposing
- possibility of digging after retooling
- crushing and cutting using jaws

MANUAL CONCRETE JACKHAMMERING
AND ASSOCIATED WORK

Demolition and technical dismantling often require manual jackhammering of concrete during auxiliary works such as: execution of sockets, precise levelling of substrates and assembly of beams and lintels. This work can be carried out at any stage, in addition to the basic work carried out using demolition robots and excavators.

The work is carried out using pneumatic or electric jackhammers, the weight and power of which is adapted to the task. If necessary, it is supported by diamond saws, cutters, slitting machines and other equipment.

Robots may be used to demolish various types of wall elements, ceilings, stairs, column, concrete or masonry structures. Work may also include stripping floors, plasters and various types of cladding.

CONCRETE
CUTTING

Cutting concrete, reinforced concrete and other materials using the diamond technology guarantees a precise cutting line with even edges. Since the technology involves wet work, it is dust-free.

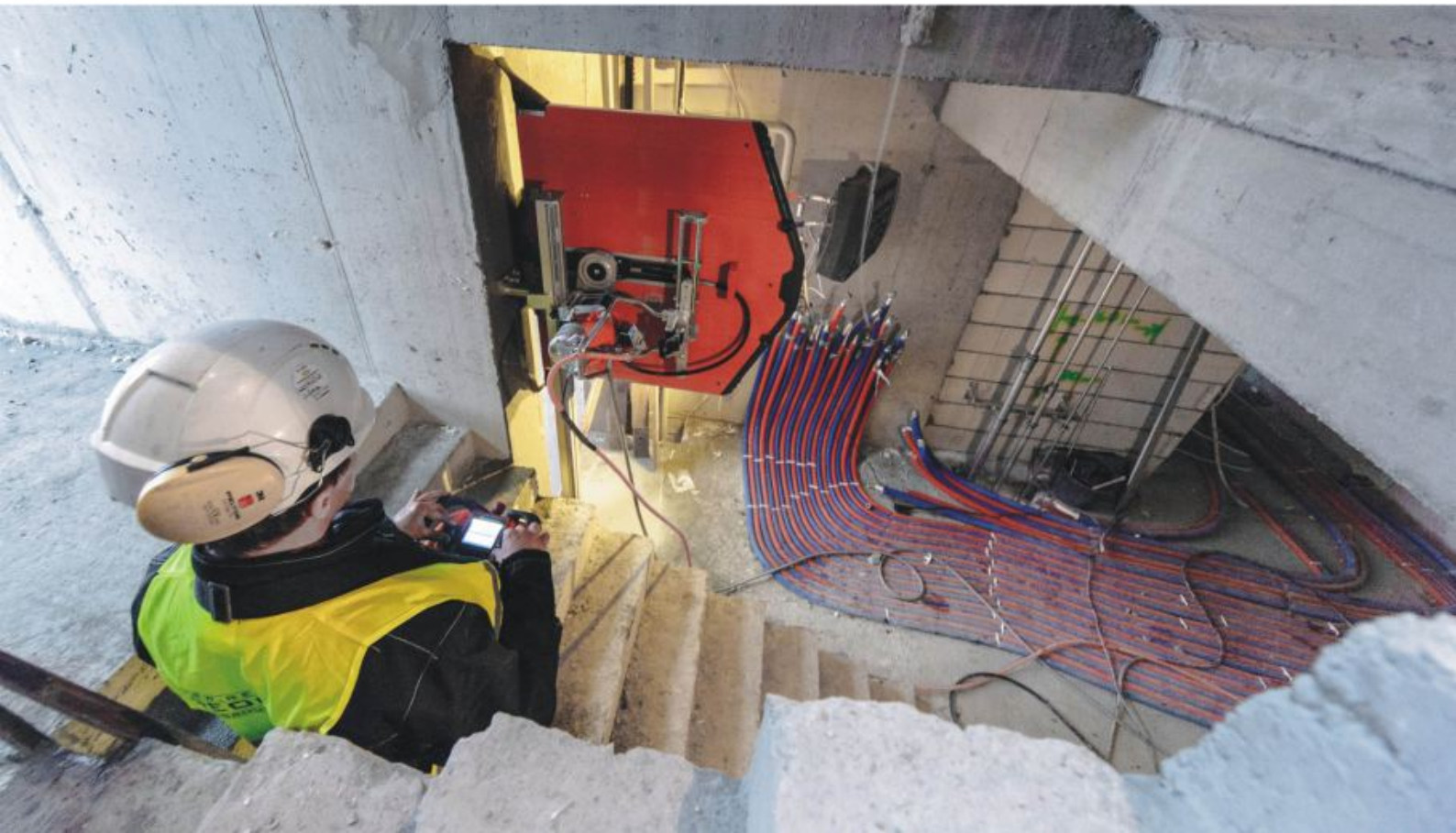
Concrete cutting may include:

- cutting out door, window and gate openings
- cutting out floor passages
- removing structural elements of a building
- cutting expansion joints
- executing channels in floors
- executing grooves for installations

The works are carried out with the use of diamond saws:

- electric wire saws
- electric and hydraulic wall saws
- electric and combustion road cutters
- electric and combustion handheld cutters

Diamond cutting eliminates vibrations and reduces concrete jackhammering noise. Thanks to the use of wireless saw control, the risk of injury to operators is reduced.



DIAMOND
CORING

Diamond coring can be performed in reinforced concrete, brick, stone and asphalt. Hole diameters range from a dozen millimetres to one meter, and the drilling depth - up to several meters. Drilling can be performed vertically, horizontally or at an angle - also drilling from the bottom of the element.

The advantages of diamond coring include:

- high speed and precision of drilling
- no dust, no strokes, no vibrations
- low noise level
- high aesthetics of holes and edges
- excellent work performance
- possibility of angled drilling
- reinforcing bars don't pose a problem

Diamond drilling applications:

- installation openings
- boreholes for anchoring and reinforcement
- "seam" cutting
- sampling
- determination of the structure and thickness of the element

Additional advantages of our solutions:

- the water collection and treatment system reduces splashes and the need for wiring
- drilling without anchoring the stand, using a vacuum base and a vacuum pump (interference in the structure is limited to drilling the hole)

CHEMICAL
ANCHORS

Chemical anchors are used during the repair and modernization of structures, and as structural connections in new buildings. They are executed in the form of threaded and reinforcing bars as well as anchors and system connectors. The connection is achieved with the use of resin-based injection mass.

Anchor holes can be drilled in the diamond or percussive technology. The anchors are executed in solid and hollow materials.

Chemical anchor applications:

- repair and modernisation of structures (rebar installation, fixing linings, anchoring of barriers, railings and handrails)
- replacement of incorrectly placed or missing rebar
- anchoring steel structural connections
- anchoring auxiliary steel structures

Chemical anchors achieve very good strength parameters even in weak substrates. They allow to mount heavy objects, exposed to dynamic loads, and are also characterized by high resistance to moisture and water.

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