

Report

Construction Materials Industry



Water as a tool
for a clean environment

In the construction materials industry - the manufacture of binding agents, glasses, ceramics, concrete, heat relief materials - cleaning processes significantly influence the process efficiency. The equipment that needs to be cleaned includes rotating kilns, mills, filters, coolers, agitating devices, containers and transport units. In rotating kilns for the sintering of cement clinkers, magnesite, dolomite, ores and lime, clinker rings occur over a length from 2 to 7 meters. These rings cause the reduction of the kiln cross section as well as an increase in the temperature. Other problems are mobile deposits in the kilns. Known as 'rollers' and 'mushrooms', they have diameters of more than 1 meter.

In the fixed parts of the kilns, such as preheater and bridging chutes of grate coolers, deposits are also generated. Solidified cement dust occupies the surface of ball mills and reduces the effect of the sprayed cooling water. Also, tempering vessels in the lime-malm-brick industry must frequently be cleaned because of inspection and testing purposes.

For the solution of these and other problems, high-pressure water jetting is state-of-the-art technique since many years. The WOMA high-pressure water jet technology is suitable for the following applications:

▶ Cleaning of engineering surfaces.

- ▶ Removal of coatings, paint systems and linings in processing units.
- ▶ Removal of rings in rotating kilns.
- ▶ Removal of 'rollers' and 'mushrooms' from kiln constructions.
- ▶ Cleaning of preheaters, coolers and others.
- ▶ Removal of deposits from tempering vessels.
- ▶ Removal of deposits and incrustations from autoclaves, containers, moulds, agitating devices and pipe systems.
- ▶ Cutting and trenching of engineering materials.
- ▶ Partial demolition of process engineering plants and equipment.



Removal of accretion rings in rotating kilns by water jet lances



Incrustation removal from a stirrer
upper: prior to cleaning, lower: after cleaning



Generation of
exposed aggregate
concrete by fan
water jets

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Why High-Pressure Water Jets? The Material Range

- ▶ Very wide range of tools and accessories.
- ▶ Small tool dimensions and low weight.
- ▶ Low reaction forces; thus, cleaning tools can be run automatically or remotely controlled.
- ▶ Combination of mechanical and thermal action; such as, for the removal of rings in rotating kilns.
- ▶ Minimum vibrations and body sound.
- ▶ Avoidance of any gas and slag.
- ▶ Very sensitive and selective removal of coatings, impurities and deposits.
- ▶ Applications possible during active production.
- ▶ Avoidance of chemical or abrasive additives.
- ▶ High efficiency even in areas of difficult access.

Using high-pressure water jets, among others, the following materials can reliably be removed: Bitumen, cement dust, corrosion protective coatings, deposits, incrustations, lacquers, paint systems, resins, rubbers, separation agents, hardened concrete, solidified deposits.

The Technique

WOMA offers stationary and mobile high- and ultra-high pressure water jetting systems with operating pressures up to 3,000 bar and water flow rates up to 1,679 l/min, consisting of electric or combustion drive, high-pressure plunger pump, guiding and control devices, water tools, and high-pressure accessory. Additionally, complete units for cleaning pipes, vessels, moulds and containers as well as hot water jetting systems with operating pressures up to 800 bar are available. The special high-pressure program for the construction materials industry also

includes the following components:

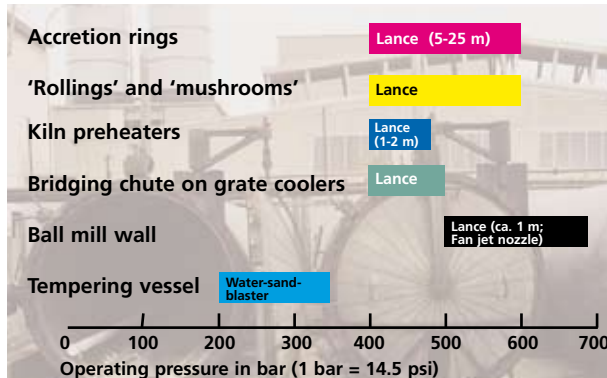
- ▶ Hand-held tools with extended lances for cleaning rotating kilns.
- ▶ High-pressure guns in modular design for cleaning, decoating and selective material removal.
- ▶ Self-driven and externally driven rotating nozzle heads for surface preparation.
- ▶ Cleaning heads for vessels, containers, agitating devices etc.
- ▶ Positioning devices and reel systems for cleaning heads and rotating nozzles.
- ▶ Pipe cleaning heads and -nozzles.
- ▶ Abrasive ultra-high pressure water jet cutting systems for the demolition of constructions and heavy equipment.
- ▶ Mobile systems for the cleaning of IBCs.
- ▶ Modular water treatment systems for the used jetting water.



Filter cleaning in the gas concrete production



Deposit removal from lime-malm-brick tempering vessels



Typical pressure ranges for construction material industry applications



Removal of solidified bauxite from pipes upper: prior to cleaning lower: after cleaning