

# Report

## Decontamination



Water as a tool  
for a clean environment

Decontamination is the reduction of hazardous materials - such as radioactive materials, heavy metals, chemical agents - up to permissible concentrations. Often, contaminants and base materials must be removed simultaneously. Base materials could be impurities, coating systems or sealing materials. Despite the nuclear industry, decontamination is required on industrial or military polluted areas.

In these areas, the WOMA high-pressure water jet technology is state-of-the-art.

WOMA has developed special systems for the following applications:

- ▶ Decontamination of nuclear plants and components.
- ▶ Removal of heavy metal containing coating systems.
- ▶ Removal of fibrous coatings and linings.
- ▶ Cleaning of oily and sooty concrete and masonry surfaces.
- ▶ Cleaning of PCB-contaminated buildings and devices.
- ▶ Washing of chemically contaminated soils and slurries.

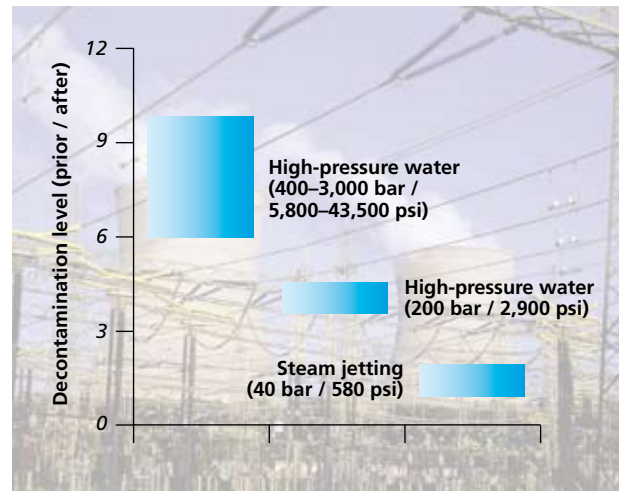
- ▶ Removal of explosives and propellants from shells and rocket motors.
- ▶ Demolition of contaminated constructions.

### Why High-Pressure Water Jets?

- ▶ Very wide range of tools and accessories.
- ▶ Small tool dimensions and low weight.
- ▶ Small reaction forces; cleaning tools can be run automatically or remotely controlled.



Emission-free removal of PCB-contaminated plasters



Decontamination of uranium rods (graphite)



Decontamination of phenol-contaminated soil with WOMA's high-pressure technique



Demolition of a contaminated steel wall tank by abrasive water jets

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- ▶ Minimum vibrations and body sound.
- ▶ Avoidance of any gas and slag.
- ▶ Very sensitive and selective removal of coatings, impurities and deposits without damaging the base materials.
- ▶ Applications possible during active production.
- ▶ Avoidance of chemical or abrasive additives; reduced disposal amount.
- ▶ High efficiency even in areas with difficult access.
- ▶ High cleaning quality and high degree of decontamination.

### The Material Range

Using high-pressure water jets, among others, the following materials can reliably be removed: contaminated coatings, paint systems and plasters, deposits, explosives, fiber-

reinforced linings, oils, propellants, radioactive sources, soot.

### The Technique

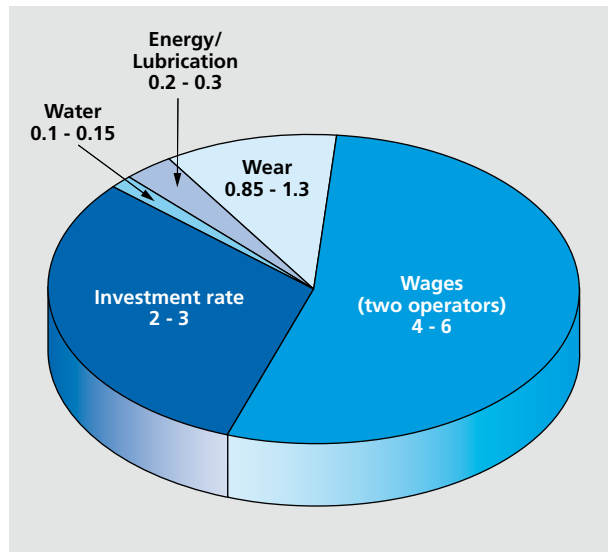
WOMA offers stationary and mobile high- and ultra-high pressure water jetting systems with operating pressures up to 3,000 bar as well as hot waterjetting systems with operating pressures up to 800 bar, consisting of electric or combustion drive, high-pressure plunger pump, guiding and control devices, water tools, and high-pressure accessory. They can be run mechanically or automatically. If required, vacuuming devices and water treatment systems are available.

The special high-pressure program for decontamination applications also includes the following components:

- ▶ High-pressure guns for surface treatment.
- ▶ Sealed water tools for emission-free treatment of vertical and horizontal surfaces.
- ▶ Pneumatically driven rotating nozzle carriers for selective material removal.
- ▶ Mobile tube cleaning systems with simultaneous suction.
- ▶ Mobile abrasive water jet cutting systems for on-site demolition.
- ▶ Suction devices for directly sucking off water, solids and contaminants.
- ▶ Modular water treatment devices for contaminated water.
- ▶ Specially designed water tools for treating complex shapes (corners, gussets)



Chromium oxide removal from heat barriers of a nuclear power plant



Cost structure for the decontamination of fire-damaged concrete including waste recovery (€/m²; status 2004)



Explosive removal from shells



Modular treatment system for contaminated water