

## MECHANICAL CLEANING



Brush cleaning systems in combination with wet chemical processes are an approved method to remove dirt, metal fines, oil and drawing lubricants.



GEO's mechanically-aided washing process is based on a combination of rotating brushes and a cleaning medium applied by nozzles. The number and type of brushes used are variable. The overall cleaning process depends on

the type and quantity of soiling to be removed from the product, production configuration, material line speed and the level of cleanliness required.

As a rule, the usage of this system is normally limited to lighter cleaning requirements. The cleaning performance can be increased when used together with high pressure nozzles and specially adapted cleaning chemicals.

GEO's ready-to-operate units are equipped with liquid cycles and filtration.

### Spiral Brushes



For lighter cleaning operations, inverted spiral brushes are recommended. The brushes are available in a broad range of sizes with a variety of filament types and galvanized or stainless channels. As a

rule, the bristles are directed inwards, extended and overlap. Customised inside diameters complete the range of this universal tool. Outer diameter and bristle diameter define the degree of hardness.

Synthetic filaments are ideal for the secondary- or pre-cleaning of surfaces, even of softer metals. They are commonly used in combination with acid or alkaline systems or to remove light scale, light coatings, dust and swarf.



Brass-coated steel filaments and stainless-steel filaments wipe back excess scale or remove lubrication residue and carrier coating on wire and rods.

## Cleaning Systems for Wire, Strip, Cable, Tubes, Rod & Bar

- ▶ High Performance Ultrasonic Cleaning
- ▶ Mechanical Cleaning
- ▶ High Pressure Cleaning



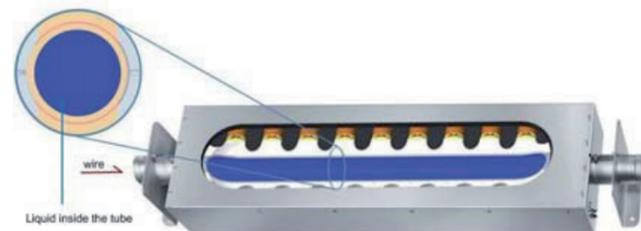
## HIGH PERFORMANCE ULTRASONIC CLEANING

Ultrasonic cleaning is recognised industry-wide as a highly efficient cleaning method for the surface treatment of wire- or band-shaped endless profiles, yielding excellent surface quality even at high processing speeds.

GEO-Reinigungstechnik have specialised in the latest innovations in ultrasonic cleaning technology using conventional immersible transducers, sonotrodes or tube reactors, depending on the application required. Whether the requirement is for a comprehensive "turnkey" system, an upgrade, or in addition to an existing process, GEO has numerous custom-designed solutions.

Tube reactors and the combination of powerful transducers and sonotrodes with both compact dimensions and variable capabilities are unmatched in terms of ultrasound and power density. The method is based on the effect of cavitation, concentrated in a tube or sonotrode flooded with cleaning liquid.

### Tube Reactor



Inside the pipe of the tube reactor, the cleaning fluid is exposed to a high-intensive ultrasonic field creating cavitation. The concentration across the entire tube cross-section and the distinctive focus zone inside the tube causes an intensive sonication which effectively removes soap, grease, oil, emulsions or particulate contaminants inline.

### Ultrasonic Transducer and Sonotrodes



Patented sonotrodes for the cleaning of endless profiles are set into mechanical vibrations by high efficiency ultrasound processors. The intense ultrasonic power created is concentrated in a minimal amount of liquid inside the bore of the sonotrode. This leads to extremely high power densities inside the fluid. The material is effectively cleaned by running through this intense cavitation field.

The new wire cleaning series (WCS) comprises four basic systems to cover a wide range of applications. The core of the system constitutes a high performance ultrasonic tube reactor, especially optimized for continuous industrial profile cleaning.

### Wire cleaning system WCS



The new wire cleaning series (WCS) comprises four basic systems to cover a wide range of applications. The core of the system constitutes a high performance ultrasonic tube reactor, especially optimized for continuous industrial profile cleaning.



Depending on cleaning requirements and target speed for the cleaning the number of ultrasound units as well as the modules necessary for rinsing and drying can vary.

The systems are designed to clean, rinse, and dry continuous lengths of single-line wire- or band-shaped endless profiles varying in size from a couple of micrometres up to 30 millimetres OD. WCS lines can be installed either in-line with a wire drawing machine in front of annealing operations, or can be used as a stand-alone unit where the wire is wound on spools.



By default, the compact design includes cleaning and rinsing circuits with heated and insulated liquid tanks, bag filter systems and a touch screen-based user interface and fault display. The design allows easy access to all internal and external components.

## HIGH PRESSURE CLEANING

The use of a high pressure system is especially suitable for cleaning at moderate speeds and when the surface is only slightly soiled.



The core of GEO's high pressure systems constitutes a compact high pressure nozzle especially designed for wire and tube applications. The nozzle type HDD ejects hot water via equal-spaced tapered bores at high speed onto the surface of the wire against the direction motion of the material.

The resulting pressure creates high pressure forces on the surface, effectively removing soap, grease, oil and emulsion residues inline.



Similar to our high performance ultrasonic equipment, the material to be purified passes through different sections. As a rule, the high pressure nozzles serve for cleaning and rinsing purposes. The ready-to-operate systems are usually equipped with heated tanks and bag filters.

The system performance can be modified by the number of nozzles and additional features like the pre-soaking bath and air wipes.

### SYSTEM FEATURES SERIES WCS:

- High-Performance Ultrasonic Unit(s)
- High-Pressure Rinsing Nozzle(s)
- Effective & Economical Air Wipes
- Insulated & Heated Tanks
- Stainless Steel Frame & Housing
- 316 TI Stainless Steel On All Wetted Surfaces

### OPTIONS:

- High-Grade Steel Centrifugal Pumps
- Bag Filter Filtration
- Operation Control Panel & System Control
- Soundproof Hood
- Catch Basin & Demister Unit
- Oil Separator / Oil Skimmer