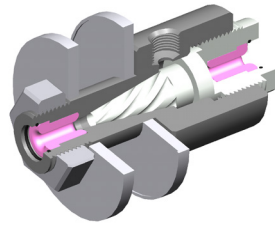


## DRYING NOZZLE



For the drying of wires and strands, GEO has developed a stainless steel nozzle that dries optimally with low air consumption even at very high process speeds. In the

nozzle, the air flow is rotationally guided through a helical teflon screw and blown onto the surface to be dried. The air flow causes a high shear impulse on the interface between the profile surface and the water, which exceeds the interfacial energy of the adhering liquid. In addition, the air is accelerated by the injector effect.

The stainless steel base body is resistant to aggressive media and can be completely disassembled. Defective or worn parts can be replaced individually. Thanks to their small dimensions and ease of assembly, the air nozzles can be integrated into existing production processes or supplemented to existing drying units with little effort.

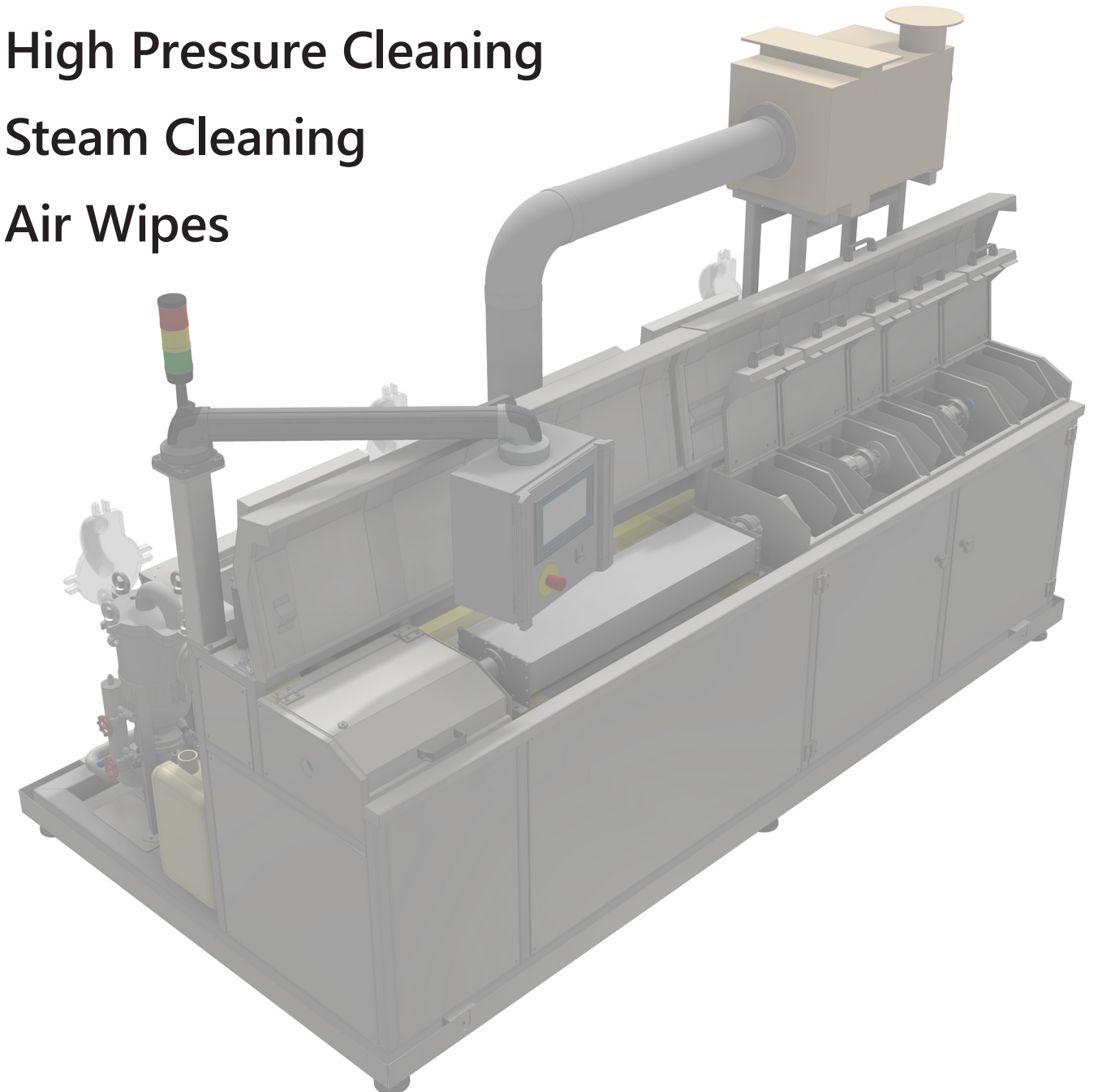


The nozzles are available in seven different versions for wire diameters from 0.5 to 17 mm. Drying nozzles for thin tubes and narrow strips as well as customer-specific designs in stainless steel or plastic complete the range.



## CLEANING SYSTEMS WIRE, TAPE, CABLE, TUBE

- ▶ Ultrasonic Cleaning
- ▶ High Pressure Cleaning
- ▶ Steam Cleaning
- ▶ Air Wipes



GEO Reinigungstechnik GmbH

info@geo-reinigungstechnik.de  
www.geo-reinigungstechnik.de



# HIGH-PERFORMANCE CLEANING SYSTEMS

## ULTRASONIC CLEANING

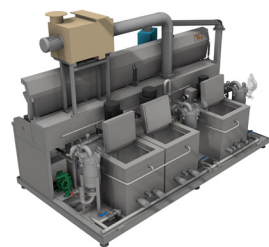
GEO Reinigungstechnik GmbH (GEO) has specialized in the manufacture of cleaning systems for wires, cables, strands, strips and tubes since 1995.

Whether in traditional wire drawing, medical device manufacturing, high temperature superconductors (HTS) and copper wires, strip cleaning for the production of precision stampings or high performance magnetic products, the quality requirements for surface cleanliness are achieved with GEO's proven high performance components.

### CLEANING SYSTEMS



Powerful ultrasonic modules, high pressure- / and steam nozzles, integrated in space-saving inline equipment with liquid management, guarantee outstanding results in non-contact and residue-free aqueous cleaning, both in single and multi-wire lines.

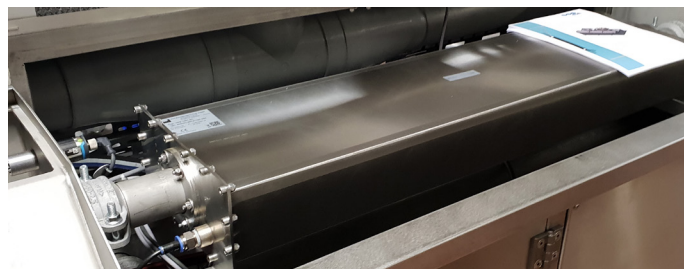


Tailored to individual requirements, the cleaning systems are combined with quality management systems, e.g. for bath monitoring and process data acquisition, as well as winding and unwinding equipment, depending on the requirements.

Mechanical systems with brushes or textile materials complement the options for optimizing surface quality.

## SINGLE LINE APPLICATIONS

In systems for continuous single-wire and profile cleaning from a few micrometers up to 30 mm material diameter, ultrasonic tube reactors form the heart of the systems.



Tube reactors are unsurpassed in terms of the power density achieved, while at the same time offering compact dimensions and variable application possibilities. The process is based on the effect of cavitation, concentrated in a tube flooded with cleaning liquid. In this tube, the material to be cleaned is exposed to a high-intensity ultrasonic field in a distinct focus zone over the entire cross-section of the tube. Soaps and oils are effectively removed, even from deeper surface defects, and pickling processes are supported.

## MULTI-WIRE APPLICATIONS

Ultrasonic immersible transducers are the first choice for multi-wire cleaning. In this case, the wires are guided in parallel above the ultrasonic units in a tank flooded with cleaning medium. If only a few wires are routed closely together, GEO's tubular reactor can be used.



## HIGH PRESSURE CLEANING

Cleaning with high-pressure nozzles is particularly suitable for moderate speeds and light surface contamination. In addition, the process is a space-saving and comparatively cost-effective system technology.



GEO uses compact high-pressure nozzles specially designed for industrial continuous profile cleaning in its high-pressure cleaning systems.

The nozzles apply a tempered cleaning medium to the surface at high speed against the direction of travel of the material. The pressure achieved causes high mechanical forces to act on the surface and detach the contamination. Special additives that dissolve the surface tension or adhesion increase the effectiveness of the process.



Similar to our ultrasonic systems, the material passes through various treatment zones. The ready-to-use units are equipped with one or more heatable, insulated tanks. A

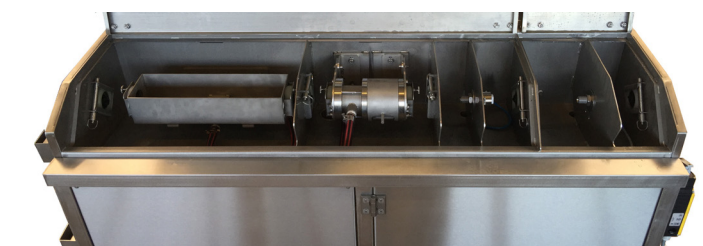
bag filter designed to match the operating pressure is integrated behind the high-pressure pump to protect the nozzle and ensure functional reliability. The system performance can be varied by the number of nozzles used and additional modules such as immersion baths and steam or blow-off nozzles.

## STEAM CLEANING



Steam is another option for generating oil-free material surfaces. The nozzles used in the process zone are used singly or often in combination with a high-pressure nozzle.

The steam generated in an electric steam generator is additionally heated to a temperature of 250 to 300 °C by means of a heat exchanger and then reaches the wire or profile surface via flow-optimized blast nozzles. Oily residues are reliably removed by the high temperature and kinetic energy of the steam jet. At the same time, the dry, superheated steam with its high heat transfer ensures rapid drying of water-wetted surfaces.



Since the nozzles used are very compact, this technology can be used to realize systems with a length of less than one meter.

In selected applications, the combination of ultrasonic and steam can significantly reduce residual hydrocarbon on the wire surface, even at high line speeds, thus optimizing surface quality.

### Features / Layout

- Tubular reactors or immersible transducers
- High pressure nozzles
- Efficient & economical air wipes
- Tanks insulated & heated

- Wetted parts in stainless steel 1.4571 / 316 Ti
- Stainless steel frame & cladding
- Corrosion resistant high performance pumps
- Filtration (Bag Filter / Belt Filter)

- Floor pan
- Sound insulation hood
- Stainless steel heating units
- Control panel

### Options

- Extraction / droplet separator etc.
- Oil separator / oil skimmer
- Sliding tanks
- Fluid management