

Smart solution for efficient precision cleaning

UCMSmartLine - highly flexible, modular ultrasonic precision cleaning system

In numerous industries and markets, companies are faced with increasing demands regarding the cleanliness of their parts. These can often only be met with precision cleaning processes tailored to requirements. For such applications, UCM has developed the new, cost-efficient ultrasonic cleaning series UCMSmartLine. Based on standardized modules, it includes integrated electrical and control systems for cleaning, rinsing, drying, loading and unloading processes, as well as a versatile transport system. The modules can be configured to create customized extendable systems for preliminary, intermediate and final cleaning.



Thanks to the modular concept of the UCMSmartLine, multi-chamber immersion cleaning systems can be individually designed for a wide range of applications. The electrical and control system is already integrated in each module.

The Swiss company UCM AG is a division of the SBS Ecoclean Group that specializes in fine and precision cleaning. With its newly-developed UCMSmartLine series of multi-chamber immersion cleaning systems, the company is responding to a trend that has been emerging for some time in a number of industries and which is increasingly gaining momentum. Due to new and higher product requirements, changing manufacturing, joining and coating technologies, as well as stricter regulatory requirements in some sectors, the demands on component cleanliness are constantly growing. Among others, companies from the medical device sector, watch & jewellery industry, optics, precision & micro technology, automotive & supplier industries, machine tool manufacture and the coating industry are faced with the challenge of meeting these stringent particulate and film cleanliness specifications

with reliable processes at competitive prices. A similar situation can also be observed in the MRO (maintenance, repair, overhaul) sector, and also when it comes to processing products from such industries as aviation, electronics, medical engineering, etc.

Optimum adaptability and extensibility for future-proof operations

Thanks to the cleverly-designed modular concept of the new UCMSmartLine, highly-compact ultrasonic multi-chamber immersion cleaning systems can be realized with three to nine cleaning and rinsing stages for preliminary, intermediate and final cleaning. As a result, the system can be individually configured for a wide range of applications and adapted to changing market conditions at any time. Twin and triple modules are available for the process steps “cleaning & rinsing”, or “cleaning, cleaning & rinsing” and can be combined as desired. With a further module, two-stage fine and precision rinsing processes can be integrated with cascaded osmosis or demineralized water.

The ultrasonic cleaning modules, which are heated and fitted with a filter circuit as standard, can also be adapted to suit a wide range of applications. This enables the use of mono (25, 40, 80 kHz), twin (25/50, 40/80 kHz) as well as multi-frequency ultrasonics (40/80/120 kHz). The ultrasonic transducers are placed at the bottom and/or on one side of the tanks measuring 370 x 420 x 390 mm (L x W x H). The parts are dried by infrared radiation heat, hot air or under vacuum. Depending on the application, these drying technologies can also be used in combination. The

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loading and unloading stations of the UCMSmartLine can be arranged either at the front or at the side, depending on the space available. These tasks can be performed manually or automatically.

For cleaning applications requiring an exceptionally clean environment, one or two HEPA filters can be installed on the top of the housing, depending on the length of the system. As a rule, two flow boxes are used; these create a cleanroom atmosphere from the last rinsing station to the unloading station. The UCMSmartLine can also be connected up to a cleanroom.

Designed for maximum process reliability as standard

Inside the system, the parts are conveyed by a standard automatic transport system with servo drive. This enables the transport speed to be adapted according to the parts being cleaned. As a result, the parts are handled extremely gently during processing.

In addition to preventing damage and scratches on sensitive workpieces, it also stops components from rising to the surface. If desired, speeds can be increased in most sections of the line to ensure a high throughput. A further advantage of the servo drive is the part-specific lift-out from the last rinsing tank for pre-drying the parts. This helps prevent stains forming during the subsequent drying process.

The standard version of the system has a static transport rack made of stainless steel that is designed for a maximum batch weight of 20 kg. In addition, transport racks that can be rotated horizontally are available for bulk items requiring increased part agitation. Another type of transport rack can be rotated vertically at 200 rpm during wet processes and up to 1,000 rpm during the dry process. These racks



The standard automatic transport system has a servo drive for exceptionally gentle workpiece transport and part-specific lift-out for pre-drying parts as they leave the last tank.



All wet-stage tanks of the system, which is entirely made from electro-polished stainless steel, have a two-sided overflow which ensures the immediate removal of detached particles and other contaminants. This minimizes the risk of recontamination when the parts are moved.

are used, among other things, to clean microlenses in optics.

If higher throughputs are required, the system can be fitted with a second automatic transport system.

The spill-over tank developed by UCM also guarantees consistently good cleaning results in line with demands: In all of the cleaning and rinsing tanks, the media are introduced from below and pumped to the top where they overflow on two sides. This creates a constant flow in the tanks and makes sure that the parts are thoroughly cleaned and rinsed.

The flow also ensures that detached particles and other residues are removed immediately from the tanks, thus minimizing the risk of parts becoming recontaminated when they are moved or lifted out. The tanks have been cleverly designed so that they can be drained quickly and completely, and that no pockets of dirt or contamination can form. The same applies to the piping of the cleaning system, which is designed for temperatures up to 70° C.

High flexibility through integrated electrical and control systems

The electrical and control technology is already integrated in each module of the new UCMSmartLine. This plug-and-play design plays a major role in reducing the amount of space required for the ultrasonic multi-chamber immersion cleaning system. It also dispenses with the need for a separate control cabinet. As a result, the systems can be put into operation quickly and extended at any time.

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Convincing design with health & safety and environmental benefits

In addition to its performance and adaptability, the fully-enclosed UCMSmartLine made from electropolished stainless steel also impresses with its design. The standard front panels are made of high-quality safety glass and are not just an optical feature. They also prevent vapours escaping from the system into the surroundings, which could pose a health risk depending on the cleaning agent used. Compared to the many open systems available on the market, the panels also reduce heat loss. This cuts energy consumption, as do the covered dryers. The latter also shorten drying times.

The system's PC-based controller can be integrated into higher-level Manufacturing Executive Systems (MES) via interfaces.

Due to its modularity and high flexibility both in terms of system configuration and process design, the new UCMSmartLine covers an extremely wide range of applications in high-tech industries as well as in the fields of MRO and processing. At the same time, the modern modular concept means that the cleaning system can be manufactured cost-efficiently with comparatively short delivery times.



Up to nine cleaning and rinsing steps can be integrated into the cleaning system and variably equipped for use with mono, dual and multi-frequency ultrasonics.



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The SBS Ecoclean Group develops, produces and markets forward-looking machinery, systems and services for industrial part cleaning and surface treatment applications. Its globally leading solutions help companies around the world in conducting efficient and sustainable manufacturing to high quality standards. The client base comes from the automotive industry and its suppliers in addition to a broad range of market sectors ranging from medical equipment, micro technology and precision devices through mechanical and optical engineering to power systems and aircraft industry. Ecoclean's, UCM's and Mhitraa's success is based on innovation, cutting-edge technology, sustainability, closeness to the customer, diversity and respect. The Group employs a workforce of over 900 at its 12 sites in nine countries worldwide.