AQUBE® MH9

Fully automatic state of the art PowerSpray® XXL "allround" cleaning system for all kinds maintenance cleaning

Fully automatic state of the art PowerSpray® XXL "allround" cleaning system for tools and maintenance cleaning

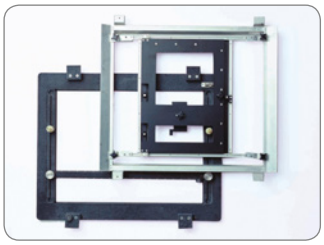
Capacity: 28 carriers up to 750 x 950 mm, 29.5" x 37.5" or up to four drawer baskets for small parts

Part number: 0905AQ9MH11 / 0905AQ9MH21 (HT version)

Certifications:
This system in its basic version was certified for its energy and water saving processing, for easy operability and for the standard integration of comprehensive safety features.

- Two tank system with triple circuit function
- Intelligent network connectivity for implementation in industry 4.0 smart factories
- Fully automatic 3step (optional up to 5Step): cleaning, rinsing (tap water), VMH®-Turbo evaporative drying
- Horizontal PTFE mounted rotor system with asynchronous spray rotors for thorough wetting (no blind spots)
- ClosedLoop reprocessing of cleaning and rinsing fluids as standard feature
- Process and service intervals PLC controlled
- Event issuing and software control via touch screen
- EDGELESS Design and VARIccess® service access: maximum capacity, easy maintenance on a very small footprint
- HT version for high temperature cleaning and rinsing up to 80 °C available

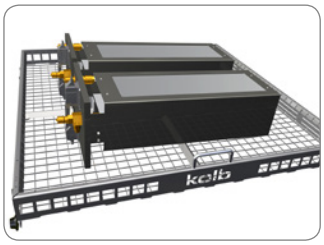
Key applications



Solder frames, carriers

ESD boxes, magazines

Machinery parts



Condensation filters

The new **kolb** AQUBE® series offer next-generation cleaning systems - even more efficient, even more compact, easy to handle and maintain, pre-equipped for extended water management and cyber-physically ready for the smart factory (SF ready).

AQUBE® MH9 is a XXL "allround" cleaning system with a super large process chamber or almost every requirement of tools and maintenance cleaning such as the cleaning of carriers, filters, containers and parts from flux residues, oil dust and grease.

The two-tank and up to three circuits configuration ensures short cycle times and makes this system the perfect economic choice for the maintenance cleaning in electronics production.

The cleaning system can be operated with all common electronics cleaning supplies (detergents / chemistry, etc.) which are approved by the manufacturer.

kolb Cleaning Technology GmbH • Karl-Arnold-Str.12 • D - 47877 Willich • Phone: +49 (0) 2154 9479 - 38 • Fax: +49 (0) 2154 9479 - 47 • e-mail: info@kolb-ct.com • www.kolb-ct.com

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Application overview

Optional suitable	Optional suitable	Most suitable	Most suitable	Optional suitable
Assembled PCBs	Stencils	Solder frames	ESD Boxes	Condensation traps
Hybrids	Screens, PumpPrints	Solder carriers	Containers	Filters
Misprints	Misprints	Solder masks	Magazines	Steel sheets

Optional suitable applications can also be optimally realized with the appropriate options.

Cleaning (key process 1): From the cleaning tank (A) the cleaner liquid is sucked by a magnetically coupled pump unit and routed with a controllable volume flow through a separate circuit into the PTFE mounted ASYNCHRO® stainless steel spray rotors with patented PUSHFORCE® nozzles. Their geometry ensures a comprehensive and thorough cleaning, even in inaccessible and critical aereas. After the washing procedure, the valve switchover of the process chamber undocks the cleaning circuit until the next process run.

MediumWipe® (optional intermediate process): The remaining cleaner is blown off from the clean products and blown out of the cleaner circuit and recirculated into the cleaning tank before the valve switchover closes.

Rinsing with tap water (key process 2): From the rinsing tank (tank B / C), the water is pumped through the separate second circuit into the spray rotors. Tap water has (compared to DI / DM water) the advantage of lower surface tension and thus flushes also critical points as low standoffs more efficient.

MediumWipe® (optional intermediate process): The remaining water is blown off from the products and blown out of the cleaner circuit and recirculated into the rinsing tank.

Clear rinsing with DI / DM water (optional process): The DI / DM water is produced from tap water in an integrated MB-cartridge and flushes conducting ions of the previous processes. This process is repeated automatically until the remaining amount of ions falls below the programmed value.

MediumWipe® (optional intermediate process): Blowing off and recirculating the remaining DI / DM water into the rinsing tank.

Drying (key process 3): The clean products are dried with the patented VMH® (Venturi Mixed Hot air) technology. A high volume flow of normal circulating air is blown into a venturi nozzle. The resulting differential pressure there (passively) sucks on a small amount of very high temperature air. The resulting air mixture provides for uniformly high drying temperature (adjustable between 45 and 100 °C) all over the process chamber. Further advantages are robustness and low cost of ownership. Energy is only needed for a fan and the heating of a very small amount of air; the rest is executed by pressure differences and air duct geometry.

Maintenance: The system has a VARIccess® maintenance access system with recessed, variable doors and removable panels. In the maintenance area among others are the pump-out set, the optional re-dosage unit with space for a 25 liter detergent and a 5 l additive container as well as the MB cartridge for DI / DM water processing. Tank levels as well as pressure values and maintenance cycles are monitored by the PLC and displayed on the touch screen.

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Main standard features

- PowerSpray® technology bundle: magnetically coupled XXL-Power pump unit, twofold ASYNCHRO® volume-spray rotorsysterm with low maintenance PTFE mounted stainless steel rotors with PUSHFORCE® nozzles, "Option100" software program (100 freely selectable programs)
- PolyPower® XL configuration with XL-Power pump unit
- EATON Programmable Logic Controller (PLC) with module extension for special programming and technology extensions
- Smart Factory ready: DNAccess® (standard) for remote control (see options) and traceability with retractable touch monitor and integrated industrial PC (see options)
- High resolution 10" (1.024 x 600 px) display with capacitive multi-touch and intuitive process view
- Electrically driven large double-wall airlock door: transparent or process-related with internal pane made of stainless steel
- Washing cart for solder frames, ESD-safe with grounding connection for the operator
- Fourfold alternating LED status light bar integrated in the system frame
- Full flow coarse filter (process chamber)
- VMH®-Turbo evaporative drying (control range approx. 45 - 100 °C)
- ClosedLoop reprocessing of cleaning and rinsing fluids
- HMA software and pre-equipping for HMA hardware (Heavy Metal Adsorber) for the cleaning circuit (see options)
- Spare space for MB / DI cartridge for deionized (DI) and demineralized (DM) water
- Exchange for rinse water and pump out unit
- Safety features: safety interlock on the process chamber door, overflow alarm for all tank sections, overheating protection for all heating and drying elements, end switches for all motor-driven valves and drives, personnel protection insulation
- VARIccess® service access with right and left-hinged side doors as well as unhinging possibility for side doors, front panel, and rear supply rail
- EDGELESS housing design. Doors, cover panels and hinges without edges, depot for traceability scanner and monitor in the right side panel
- Process sections made of electrolysis resistant elements

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Main options

□ AOSelection® bundle to separate mandatory disposable and plublic sewage network dischargeable rinse water
□ Automatic detergent concentration measurement / control
□ Automatic monitoring of ionic residues contamination and gauging of rinse water quality
□ Automatic XL-re-dosage unit for 25 l detergent and 5 l additive container
□ Automatic water change for cleaning circuit (only HT version)
□ Descaling unit to reduce the lime content in the rinsing water
□ Drawer inserts for container and machinery parts cleaning, ESD safe
□ Drip & storage reservoir
□ Exhaust unit
□ Fine filter for cleaning icuit
□ Heater for tank A (cleaning) only for HT version
□ HMA filter (Heavy Metal Adsober) unit for the cleaning circuit
□ HT Version for high temperature cleaning up to 80 °C
□ MB / DI cartridge for deionized (DI) and demineralized (DM) water
□ MediumWipe® unit for further optimization of detergent and rinsing fluid use
□ Optional lacquering (frame rack and coverings)
□ Permanent automatic rotor run control
□ Remote Control (remote monitoring, mailing, etc.)
□ Sediment filter (tank A)
□ Status light fivefold to display the current process state
□ Traceability unit with PLC data scanner and retractable touch monitor and industrial PC with Intel processor

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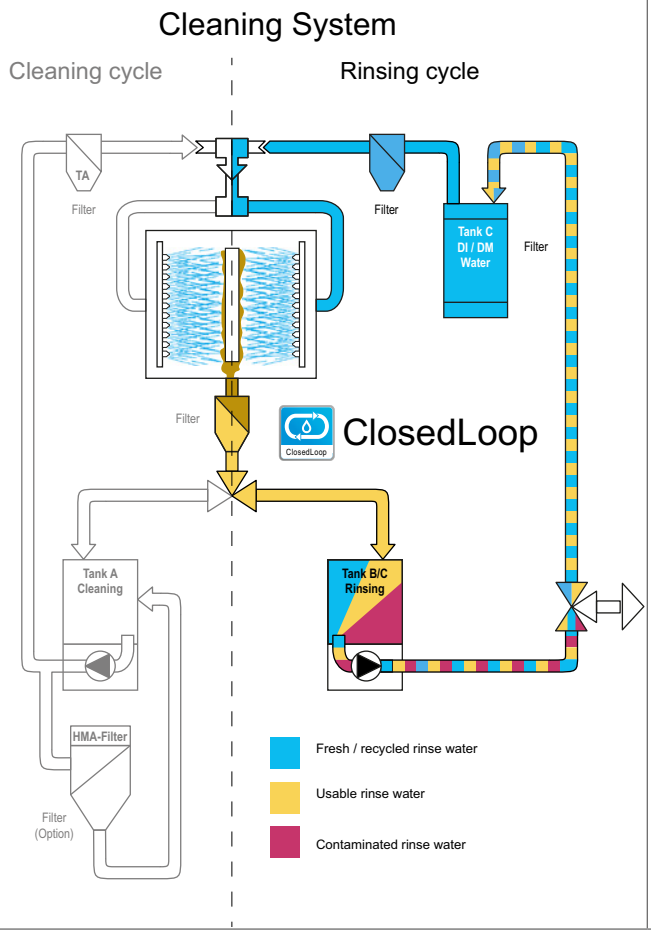
Internal rinse water processing (standard)



Options* for water management

AOSelection® unit
separates mandatory disposable sewage water from rinse water which can be discharged into a plublic sewage network.

WPSD IU SYMBIO-module
Processes mandatory disposable sewage water to be discharged into a public sewage network.

WPCL IUT2 SYMBIO-module
Recycles DI / DM water for recirculation and multiple reuse in the cleaning systems clear rinsing cycle.

* Operating companies of industrial cleaning systems are responsible for proper disposal of wastewater / rinse water and (wasted) cleaning detergent. Further information on wastewater management at www.kolb-ct.com/systems/water-management/, consulting requests to info@kolb-ct.com

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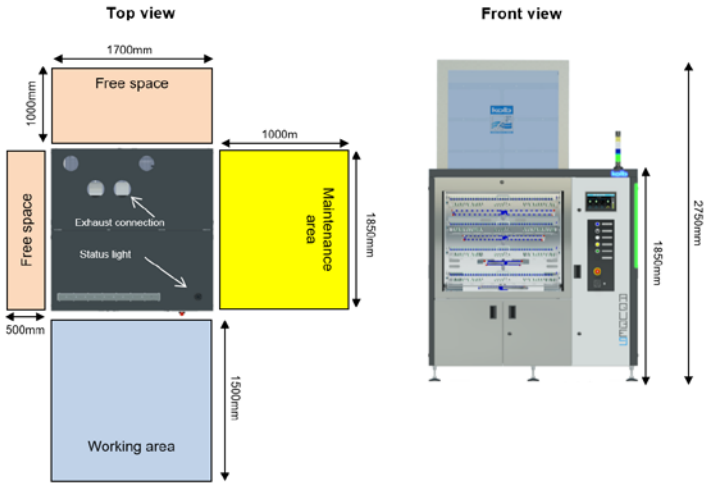
Technical data

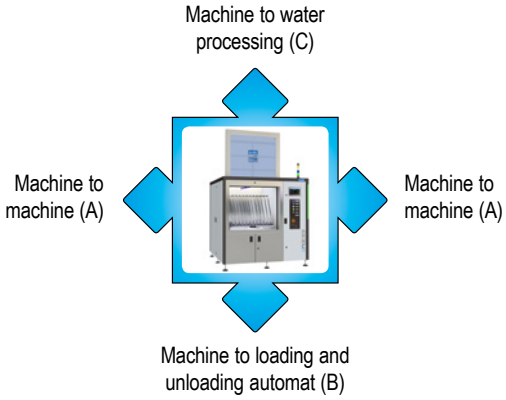
Technology base	**kolb** PowerSpray®
Capacity	28 carriers up to 750 x 950 mm, 29.5" x 37.5"
Process chamber dimensions	W 970 ▪ D 955 ▪ H 900 mm
Usable space lower drawer only	W 880 ▪ D 890 ▪ H 760 mm
Usable space utilizing four drawers	W 880 ▪ D 890 ▪ H 150 mm (four times)
Volume tank A (cleaning), B / C (rinsing)	approx. 100 - 125 l each
Power supply	400 V AC, 32 A CEE / 3PH / 50 or 60 HZ
Power consumption	approx. 7.5 kW - (with option heater tank A) 10 kW
Control system	PLC (EATON)
Temperature load	up to 55 °C (standard system), up to 80 °C (HT version)
Control range drying	approx. 45 - 100 °C
Filter system	up to four stage - 1. Full flow coarse filter < 2 mm, 2. Sediment filter inside the tank, 3. 20“ fine filter (1 - 100µm - process dependent), 4. HMA filter
Supply connection 1 (tap water)	3/4", hose connection 25 mm (prov. by customer: inlet water quality < 350 µS conductance value (< 10° dH) or option descaling unit)
Supply connection 2 (DI / DM water)	3/4", hose connection 25 mm (DI-net prov. by customer or bridging to tap water)
Supply connection 3 (compressed air)	6 - 8 bar (100 l / min) for HT version or optional MediumWipe® process
Rinse water drain connection	3/4", hose connection 25 mm with integrated pump out system
Exhaust connection	Ø 160 mm, exhaust capacity 800 to 1.200m³ / h
Operating condition room temperature	20 - 35 °C
Operating noise	63 dB (A)
Footprint / Empty weight	1.700 x 1.720 mm / 920 kg

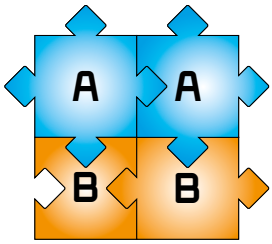


kolb CleaninGrid® Technology

AQUBE® MH9 systems are suitable for use in a **kolb** CleaninGrid® plant. The **kolb** CleaninGrid® technology is an intelligent combination and integration of cleaning, loading, water treatment and control systems to large-scale facilities for the efficient mass cleaning of assemblies, tools and machine parts. The CleaninGrid® technology is completely flexible, constructively easy to execute and based on three connection availabilities:

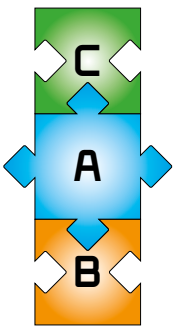
- Machine (A) to machine (A)
- Machine to loading / unloading automat (B)
- Machine to water processing system (C)





Example configuration:
Two AQUBE® MH9 systems, two loading and unloading units.
Capacity:
Approx. 900 solder carriers (per 24 hour operation)

Large installations and comprehensive washing plants
From just connecting two systems together to fulfill moderately growing volume requirements to building a complete washing center for quantities of multi-thousands of boards per day und evaporator water processing, the mutable **kolb** CleaninGrid® technology leaves all options.



Example configuration:
AQUBE® MH9 system with loading and unloading unit and **kolb** vacuum distiller for 100% recycling of rinse water.
Capacity:
28 solder carriers per cycle

The main advantages of the kolb CleaninGrid® technology:
- ✶ Very high throughput
- ✶ Very short cycle times.
- ✶ Extremely lower power consumption compared to any system or installation on the market with a comparable capacity.
- ✶ Significantly lower operating costs compared to any conventional inline system with a comparable capacity.
- ✶ The complete installation out of one hand.

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