AQUBE® LH7

Fully automatic state of the art PowerSpray® XL fine cleaning system for mass cleaning of assembled PCBs

Cleans PCBs, hybrids and misprints from flux residues, resin, copper, oxide and soldering support substances

Capacity: up to 540 equals 8.6m² (92.5 sf²) in up to three variable drawer baskets

Artikelnummer: 00900AQ7LH21

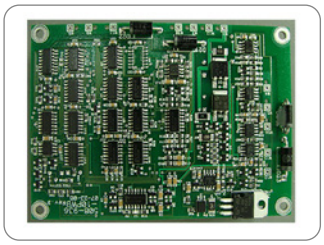
Traceability · DNAcces · Smart Factory ready PREMIUM · PowerSpray® · VMH®Drying · ClosedLoop · PulseFlow® · RoHS Compliant

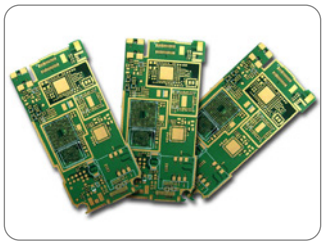
ENERSAVE · WATERSAVE · EASOTECH · SAFEGAR

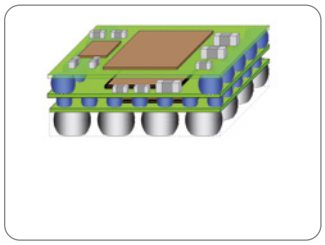
Certifications:
This system in its basic version was certified for its energy and water saving processing, for easy operability and for the standard integration of comprehensive safety features.

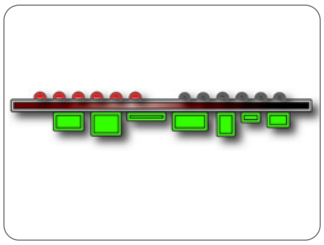
- Two tank system with triple circuit function
- Smart Factory ready: DNAccess, remote control, traceability (PLC data scanning and memorizing)
- Fully automatic 4step process: cleaning, rinsing (tap water), DI-water rinsing, VMH®-TurboDigital hot air evaporative drying
- 10 seconds relative cycle time for the cleaning, rinsing and drying one eurocard
- Horizontal PTFE mounted rotor system with up to eight asynchronous spray rotors for thorough wetting (no blind spots)
- Heater cleaning tank A, automatic water change for the rinsing circuit, DI water system, mixing-blending unit, water measuring unit (ion contamination measurement), ion exchanger and fine filter system as standard
- Processes 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
- Suitable for high temperature cleaning and rinsing up to 80 °C (176 °F)

Key applications


Assembled PCBs


Hybrids (HDIs)


Hybrids (SiPs)


Misprints

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® LH7 is a completely German engineered and manufactured fully automatic high volume PCB cleaning system with an XL process chamber with a capacity of up to 540 (8.6 m²) eurocards and a relative cleaning time of 10 seconds per card. Except **kolb** AQUBE® and PSE 9 types there are no batch systems with a comparably large chamber size available worldwide. With up to 80° (176 °F) cleaning and 120° (248 °F) drying temperature also ideally suited for parts cleaning of medical equipment and use in the production of medical electronics. The two-tank, three-circuit configuration ensures short cycle times and makes this system the perfect economic choice for the precision mass cleaning of assembled PCBs.

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

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Application overview

Most suitable	Optional suitable	Optional suitable	Optional suitable	Not suitable
PCBAs, Hybrids	Stencils	Solder frames	ESD Boxes	Condensation traps
Power electronics	Screens	Solder carriers	Containers	Filters
Misprints (mounted)	Misprints (bare boards)	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 (TA) 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 B/C (TB/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 (TB/C).

Clear rinsing with DI / DM water (key process 3): 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 (TB/C).

Drying (key process 4): 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 120 °C (113 - 248 °F), 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 re-dosage unit with space for a 25 liter detergent container and an optional re-dosing unit for 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 XL-power (tank A) and S-Power (tank B/C) pump units, lower VA drawer basket, twofold ASYNCHRO® volume-spray rotorsysterm with low maintenance PTFE mounted stainless steel rotors and PUSHFORCE® special nozzles, "Option100" software program (100 freely selectable process programs)
■	PolyPower® configuration with 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 integriated industry PC (see options)
■	High resolution 10" (1,024 x 600 px) display with capacitive multi-touch and intuitive process view
■	Fourfold alternating LED status light bar integrated in the system frame
□	Function package PCBA Cleaning (incl. option automatic water change for rinsing circuit / tank C with lfting unit, option heater cleaning tank (TA), function package DI water system (incl. DI / DM water measuring unit (residual ion contamination measurement), mixing-blending unit, ion exchanger cartridge, cartridge deaerator)
□	Full flow coarse filter (process chamber)
□	ClosedLoop reprocessing of cleaning and rinsing fluids
□	Automatic re-dosage unit for 25 l detergent container
■	VMH® TurboDigital hot air evaporative drying (control range approx. 45 - 120 °C / 113 - 248 °F)
□	ESD grounding point for the operating personnel
□	Exhaust air and vapor extraction 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

■ = AQUBE®-exclusive components (vs. **kolb** PSE Economy series)

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Main options

□	Function package High-Temperature Application (incl. process chamber heat insulation and VapourStop temperature stabilization)
□	Function package Fine Filter System Tank A (incl. upgrade to XXL-Power pump unit for the cleaning circuit, fine filter system and sediment filter for the cleaning tank A (TA)
■	Function package AOSelection® - for separate discharge of rinsing water rinsing water that must be disposed (incl. automatic wastewater changer for rinsing tank B (TB), 1000 liter IBC empty container, overfill protection for empty container).
■	Function package Online Cleaner Regulation (incl. brix monitor for refraction measurement, automatic re-dosing of the cleaner, flow meter, dosing ball valve)
■	Function package WPSD IU Wastewater Treatment Unit (incl. WPSD IU5/7 SYMBIO® module, pH-lowering unit with pH measuring probe, pH re-dosing, control valves, two heavy metal adsorber cartridges, two cartridge deaerators)
□	Function package Traceability "Basic" (incl. SPC data scanner, data backup in CSV file, backup via SD card (via slot in the PLC)
■	Function package Traceability "Comfort" (incl. PLC data scanner and retractable touch monitor and industrial PC with Intel processor)
□	Function package QuickChange (incl. SlideIn quick-loading feeder unit, upper wash basket with PTFE-mounted ASYNCHRO® TopDown stainless steel double rotors with PUSHFORCE® special nozzles and SpeedLoad cart to accommodate of two feeder units)
□	Automatic re-dosage unit for 5 l additive container
□	Decalcification unit for reducing the lime content in the rinsing water (tap water) circuit / rinsing tank B (TB)
□	Air filter unit for filtering the drying air according to filter class F7
□	MediumWipe® unit for further optimization of detergent and rinsing fluid use
□	Upper VA drawer basket with PTFE mounted ASYNCHRO® stainless steel TopDown-double rotors with PUSHFORCE® special nozzles
□	Permanent automatic rotor run control
□	QuickConnect rotor quick-clamping system for fast insertion or removal of the rotors
□	Remote control (browser-based control / monitoring via mobile device or PC)
■	RMA Remote Maintenance Assistance (factory controlled maintenance support)
□	Paint of choice (frame rack, covering and hood)
□	XXL-Power pump unit (for tank A)
□	XL-Power pump unit (for tank B)

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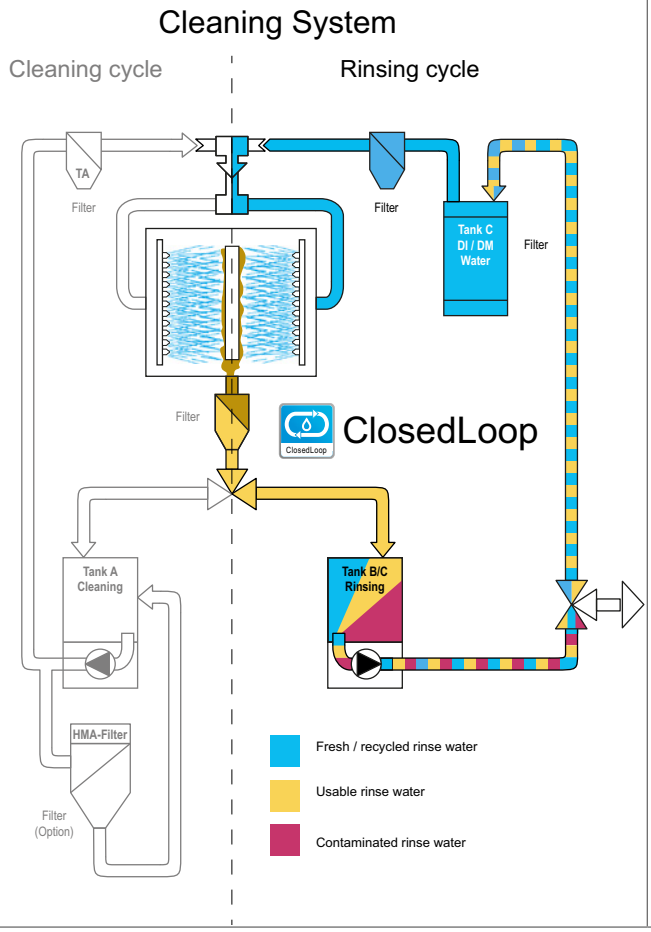
Internal rinse water processing (standard)



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.

* 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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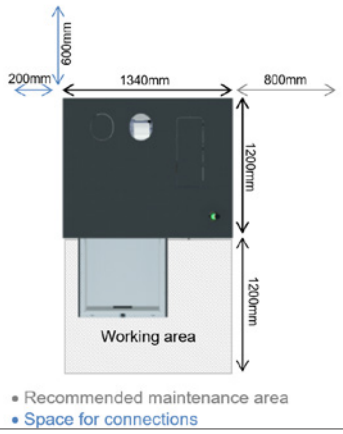
Technical data

Technology base	**kolb** PowerSpray®
Capacity	540 (8.6 m^2 / 92,5 ft^2) eurocards
Process chamber dimensions	W 700 ▪ D 720 ▪ H 710 mm (W 27.55" ▪ D 28.34" ▪ H 27.95")
Usable space lower basket only	W 610 ▪ D 625 ▪ H 625 mm (W 24.21" • D 24.6" ▪ H 24.6")
Usable space utilizing three baskets	W 610 ▪ D 625 ▪ H 140 mm (W 24.21" ▪ D 24.6" ▪ H 5.51") - three times
Volume tank A (cleaning),	55 l
Volume tank B / C (rinsing)	35 l
Power supply	400 V AC, 16 A, CEE plug / 3 Ph / 50 or 60 Hz
Power consumption	approx. 8 kW
Control system	PLC (EATON)
Temperature load	up to 80 °C (176 °F)
Control range drying	approx. 45 - 120 °C (113 - 248 °F)
Filter system	up to four stages - 1. Full flow coarse filter < 2 mm (0,08"), 2. Sediment filter, 3. 20“ fine filter (1 - 100µm - process dependent), 4. HMA filter
Supply connection 1 (tap water)	> 18 °C,1/2" hose with 30µm water filter (on-site inlet water quality, pressure 3 - 4 bar, < 250 - 350 µS conductivity (< 10° dH) or descaling unit option. Do not use a softening / soft water system in the inlet)
Supply connection 2 (DI / DM water)	> 18 °C, 1" hose with 30µm water filter (DI-net provided by customer or bridging to tap water)
Supply connection 3 (compressed air)	6 - 8 bar (87 - 116 psi) - 100 l / min for options HT-version or MediumWipe®, connection for 8 mm (0.31") compressed air hose
Rinse water drain connection	(with integrated pump out system) connection for 1" hose
Exhaust connection	Ø 160 mm (6.3"), exhaust capacity 200 - 300 m^3 / h (7063 - 10,595 ft^3 / h)
Operating condition room temperature	20 - 35 °C (68 - 95 °F)
Operating noise / Foot print / Empty weight	63 dB (A) / 1,200 x 1,340 mm (47 1/4" x 52 3/4") / 480 kg (1,058 lbs)

Top view



Front view

• Recommended maintenance area
• Space for connections