TECHNICAL INFORMATION

AQUBE® LH6

Fully automatic ultra-fine cleaning system for assemblies/printed circuit boards

AQUBE® LH6

Fully automatic standard ultra-fine cleaning system with PowerSpray® technology

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

Capacity: up to 264 equals 4,2 m² (45,2 ft²) eurocards in up to three variable drawer baskets

Part number: 0900AQ6LH-2

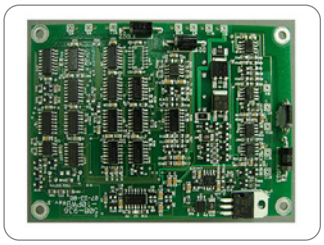
SafeDrain · Traceability · Smart Factory ready PREMIUM · PowerSpray® · PolyPower · ClosedLoop · VMH® Drying · QuickChange

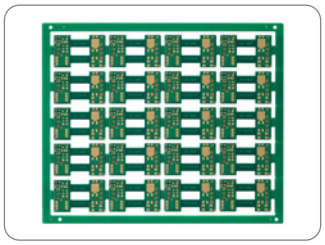
ENERSAVE · WATERSAVE · EASOTECH · SAFEGAR

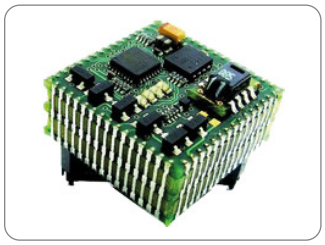
Certifications:
This system in its basic version is certified for its energy and water saving processing, for easy operability and for the standard integration of comprehensive safety features.

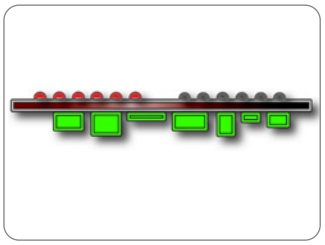
- Two-tank system with triple circuit function
- Average process time: 65 min/cycle = approx. 15 s per eurocard
- Smart Factory ready: remote control, traceability (PLC data scanning and memorizing)
- Fully automatic 4-step process: cleaning, rinsing (tap water), DI-water rinsing, VMH® TurboDigital hot air evaporative drying
- Horizontal PTFE-mounted rotor system with up to six ASYNCHRO® 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 with event issuing and software control via touch screen
- Suitable for high temperature cleaning and rinsing up to 80 °C (176 °F)
- High capacity on a small footprint, fast and easy maintenance

Key applications


Assembled PCBs


Hybrids (HDIs)


Hybrids (SiPs)


Mounted misprints

The AQUBE® LH6 is a fully automatic standard ultra-fine cleaning system for assemblies/printed circuit boards/PCBAs, hybrids, SiPs etc. and single-side mounted misprints with a capacity of up to 264 (4,2m²) eurocards and a relative cleaning time of approx. 15 seconds per card per per cleaning cycle.

The configuration with two tanks and triple circulation function and up to 80 °C cleaning temperature and up to 120 °C drying temperature ensures short cycle times and makes the AQUBE® LH6 the perfect choice for the qualified cleaning of assembled PCBAs/circuit boards.

The compact, easy-to-operate and easy-to-maintain system is Smart Factory ready and pre-equipped for extended water management.

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	Not suitable	Optional suitable	Optional suitable	Not suitable
PCBAs, Hybrids	Stencils	Solder frames	ESD Boxes	Condensation traps
Power electronics	Screens	Solder carriers	Containers	Filters
Misprints	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 special nozzles. Their geometry ensures a comprehensive and thorough cleaning, even in inaccessible and critical areas. 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. For information: 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 recessed removable panels for quick and easy maintenance. 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 S-Power (Standard) pump units (tank A, tank B), lower VA drawer basket, twofold ASYNCHRO® volume-spray rotor system with low maintenance PTFE-mounted stainless steel rotors and 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 Premium: for remote control (see options) and traceability with retractable touch monitor and integrated industry PC (see options)
■	High resolution 10" (1,024 x 600 px) display with 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 B/C with lifting 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
□	Integrated VaporStop in the exhaust air 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
□	Removable side doors for quick and easy maintenance
■	Doors, cladding and hinges enclosed without edges, depot for traceability scanner and monitor in the side wall recessed
□	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) In-VaporStop temperature stabilization)
□	Function package Fine Filter System Tank A (incl. upgrade to XL-Power pump unit for the cleaning circuit, fine filter system for the cleaning tank A (TA)
■	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 IU 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 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 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)
□	XL-Power pump unit for cleaning circuit/cleaning tank A (TA)

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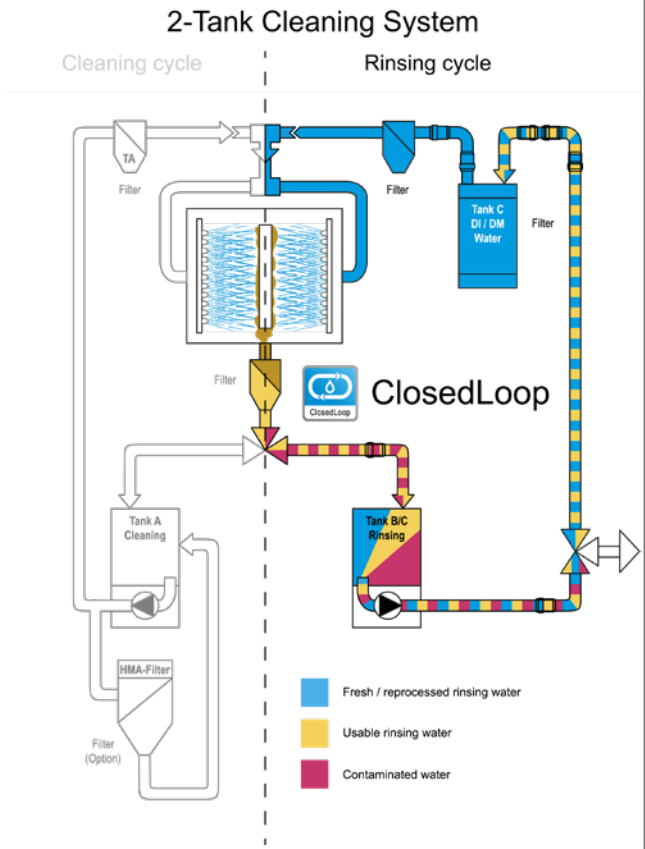
Internal rinse water processing (standard)



Option for water management*

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	264 (4,2 m²/45.2 ft²) eurocards
Process chamber dimensions	B 540 ▪ H 710 ▪ T 590 mm (W 24.26"▪ H 27.95" ▪ D 23.23")
Usable space lower basket only	H 500 ▪ T 470 mm (H 19.68" ▪ D 18.5")
Usable space utilizing two baskets	H 270 ▪ T 470 mm (H 10.63" ▪ D 18.5") (two times)
Usable space utilizing three baskets	H 150 ▪ T 470 mm (H 5.9" ▪ D 18.5") (three times)
Volume tank A (cleaning), B/C (rinsing)	95 l/65 l
Power supply/Power consumption	400 V AC, 16 A, CEE plug - 3 Ph - 50 or 60 Hz/8.3 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	1. Full flow coarse filter < 2mm (0.08"), 2. 20“ fine filter (1 - 100 µm - process dependent)
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 option 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 m³/h (7063 - 10,595 ft³/h)
Operating condition room temperature	approx. 20 - 35 °C (68 - 95 °F)
Footprint/Empty weight/Operating noise	1,400 x 1,240 mm (55.12" x 48.82")/ 410 kg (904 lbs)/63 dB(A)