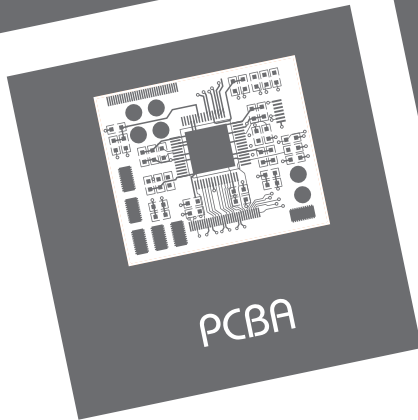
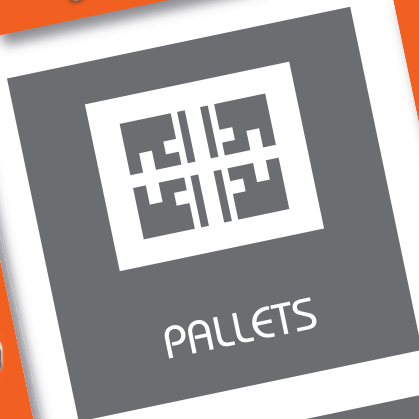
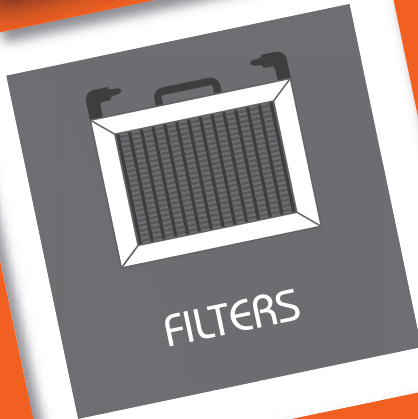
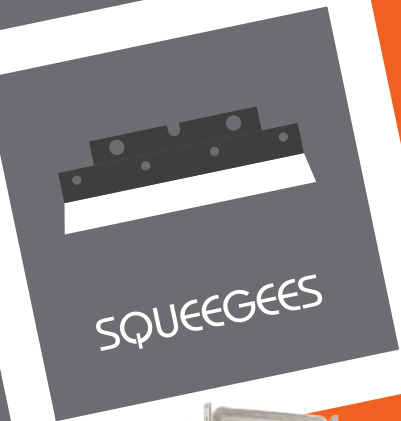
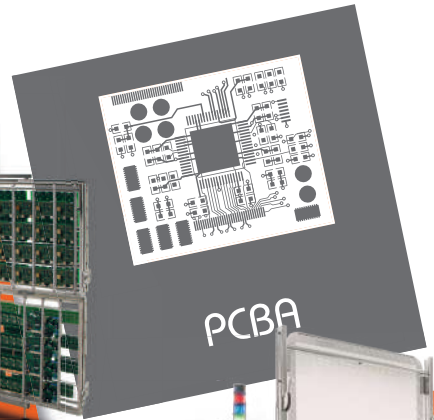
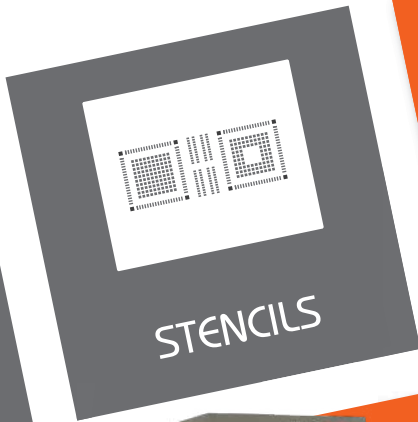
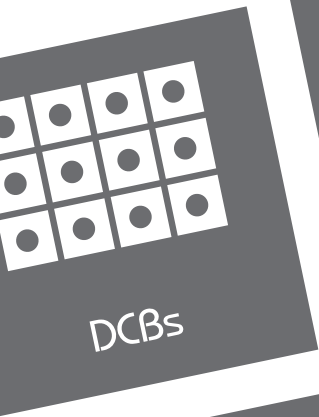




# CLEANING SYSTEMS

## PRODUCT CATALOG

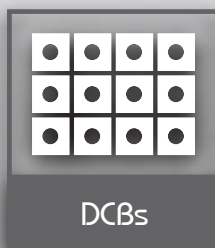
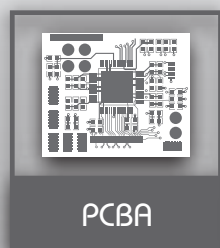




**COMBO**  
Expanded Capacity  
in 3 Baskets



**TWINGO**  
Large & Complex  
Boards in 2 Frames

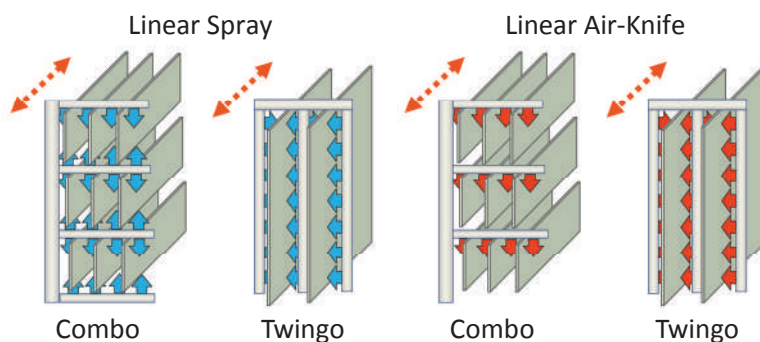


- P** 2 machines in 1
- P** Flexible interchangeable setups
- P** Quick & Easy loading
- P** Complete automation option
- P** Rapid wash & rinse
- P** Fast drying
- P** Stable cleaning results
- P** Simple maintenance
- P** Low drain or Zero drain
- P** Compact dimensions



## CONTROL FEATURES

- P** Adaptive rinse water quality control
- P** AAD Automatic adaptive cleaner dosing with concentration sensor Zestron Eye or Kyzen Analyst integrated in machine OS
- P** Intuitive touchscreen interface with Windows OS
- P** Complete datalogging, LAN connectivity
- P** XML online traceability, MES connectivity
- P** Multi language selection



# FLEXIBLE & POWERFUL DEFLUXING

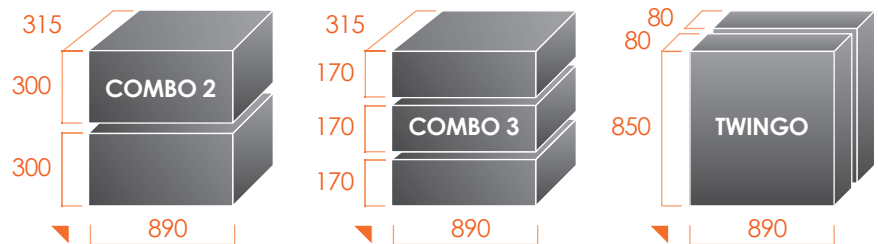
## MACHINE TYPE

- ◆ **HyperSWASH III** Wash + 1. Rinse + 2. Rinse + Drying

PCBA after soldering, before coating,  
Power electronics, Micromechanics

## CHAMBER CONFIGURATION

- ◆ COMBO – multi-level basket
- ◆ TWINGO – double frame
- ◆ Easy exchange between Combo and Twingo configurations



## CLAMPING OPTIONS

- ◆ Wide range of standard fixtures and adaptors for any types of PCBAs
- ◆ Customization is available for any clamping fixtures

Multi-level basket



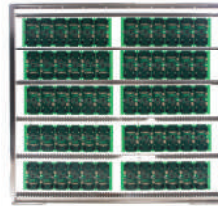
Multi-level basket



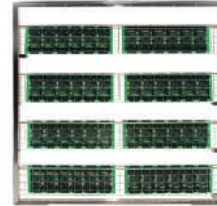
Double frame



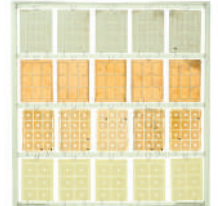
Horizontal bars



Baskets

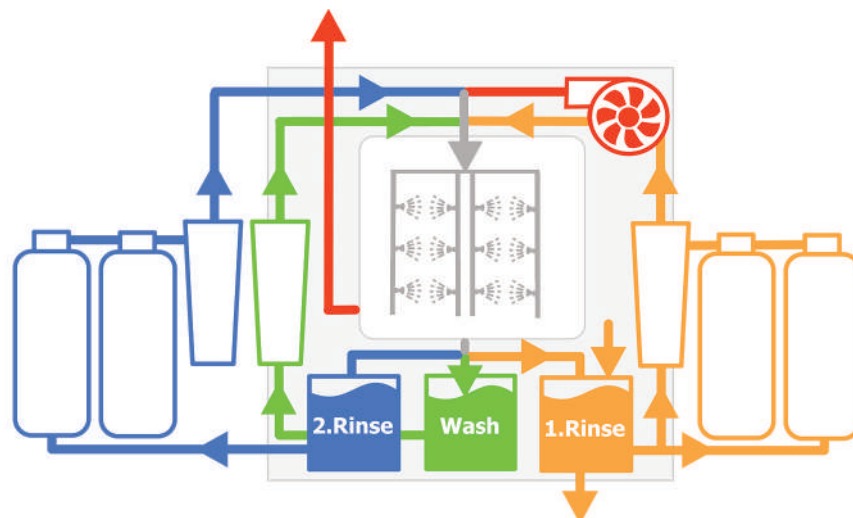


DCB Holder



## RINSE CONFIGURATION

- ◆ **Zero drain** – closed loop
- ◆ **Low drain** – semi-open or open loop
- ◆ Special filtration strategy for the highest flow
- ◆ First rinse filtration fully separated from second rinse filtration
- ◆ External carts with up to 39 L of mixed bed and 39 L of active carbon



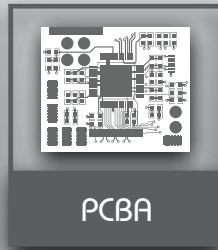
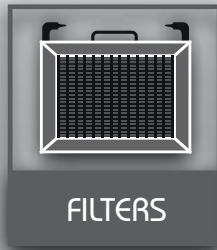
HyperCLEAN II LONG video



HyperCLEAN II SHORT video



HyperCLEAN III video



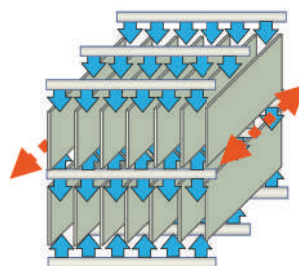
- P** Large chamber for high capacity
- P** Short cycle time
- P** Quick & easy loading
- P** Single basket or double basket
- P** Rapid wash and rinse
- P** Fast drying
- P** Basket oscillation
- P** Low operational costs
- P** Convenient maintenance



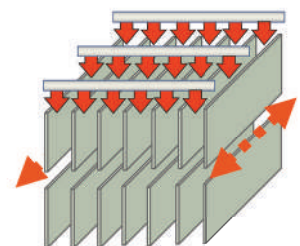
## CONTROL FEATURES

- P** PLC control system
- P** Intuitive touchscreen interface with Windows OS
- P** Complete datalogging
- P** 2D code traceability
- P** Multi language selection

Uniform Spray



HighFlow Dryer



# HIGH-CAPACITY MAINTENANCE CLEANING

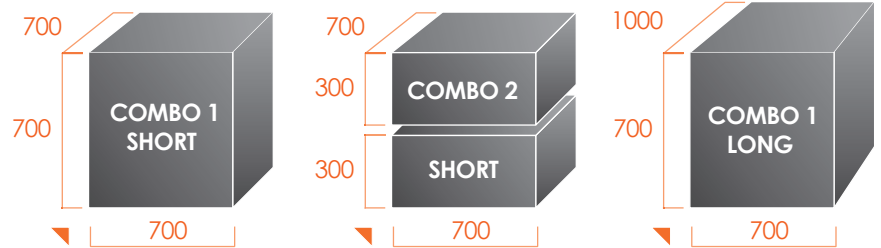
## MACHINE TYPE

- ◆ **HyperCLEAN II** Wash + Chemical stop + Rinse + Drying
- ◆ **HyperCLEAN III** Wash + Chemical stop + 1. Rinse + 2. Rinse + Drying

**Soldering pallets, Filters, SMT magazines**  
**PCBA after soldering, before coating**

## CHAMBER CONFIGURATION

- ◆ COMBO 1 – single-level basket
- ◆ COMBO 2 – double-level basket
- ◆ SHORT – short basket
- ◆ LONG – long basket



## CLAMPING OPTIONS

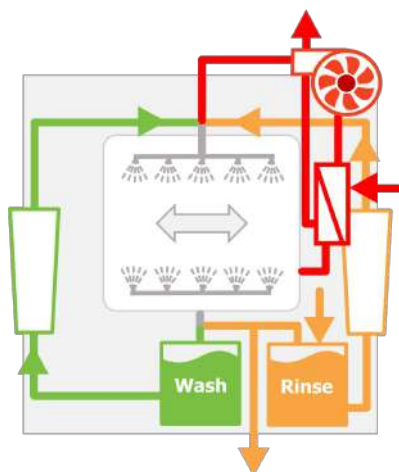
- ◆ Basket with separators for pallets, filters, SMT magazines
- ◆ Customization available



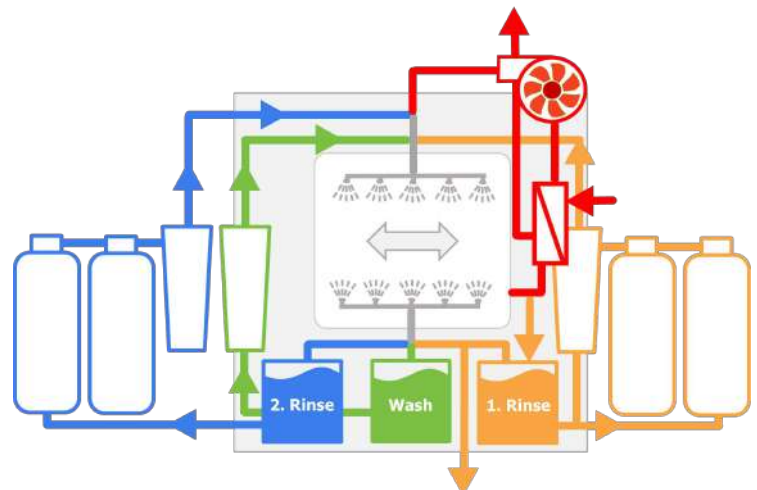
## RINSE CONFIGURATION

- ◆ Chemical Stop reduces cross contamination by flushing off contamination after washing, directly from chamber
- ◆ Rinse tank dilution by fresh water after chemical stop, keeping rinse tank always fresh

**HyperCLEAN II**



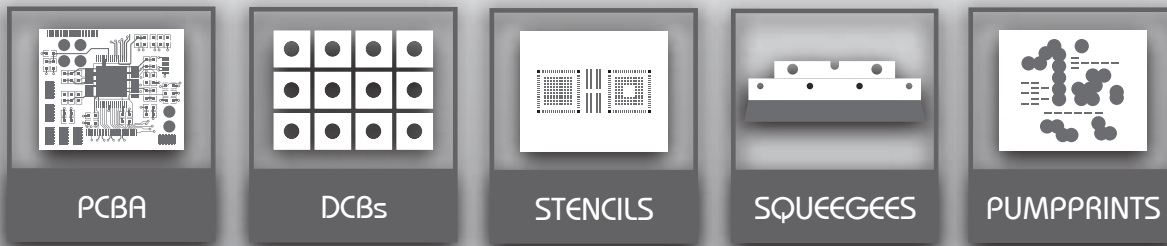
**HyperCLEAN III**



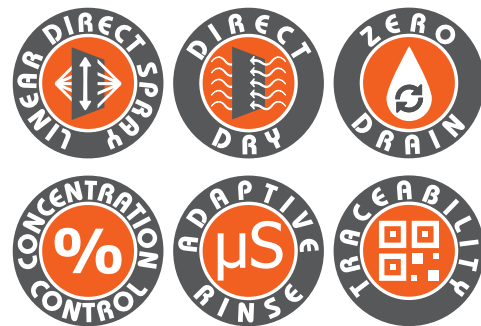
SuperSWASH II video



SuperSWASH III video

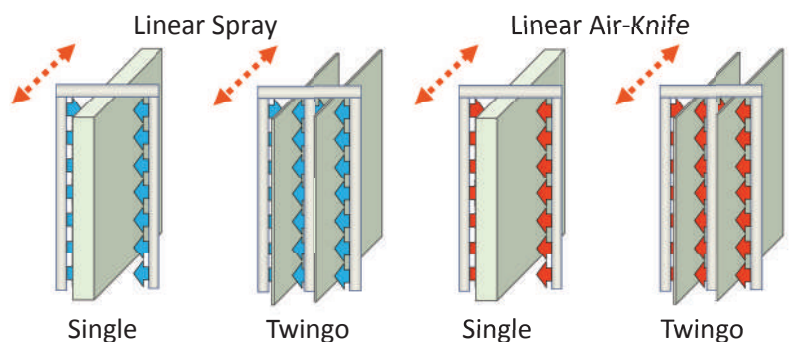


- P** Twingo = double capacity
- P** Precise wash & rinse
- P** Direct spray & Direct drying
- P** Low drain or Zero drain
- P** Wash concentration control
- P** Illuminated chamber
- P** Quick reloading frame stand
- P** Simple maintenance



## CONTROL FEATURES

- P** Adaptive rinse water quality control
- P** AAD Automatic adaptive cleaner dosing with concentration sensor Zestron Eye or Kyzen Analyst integrated in machine OS
- P** Complete datalogging, LAN connectivity
- P** XML online traceability
- P** Intuitive touchscreen interface with Windows OS
- P** Multi language selection



# HIGH PERFORMANCE CLEANING

## MACHINE TYPE

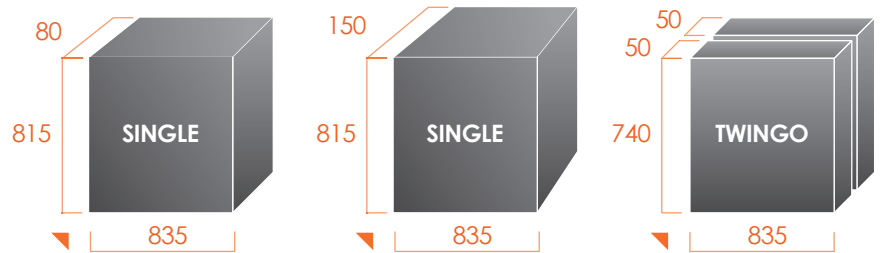
- ◆ SuperSWASH II Wash + Rinse + Drying
- ◆ SuperSWASH III Wash + 1. Rinse + 2. Rinse + Drying

Stencils, Squeegees, Misprints, PumpPrints

PCBA after soldering, before coating, Power electronics

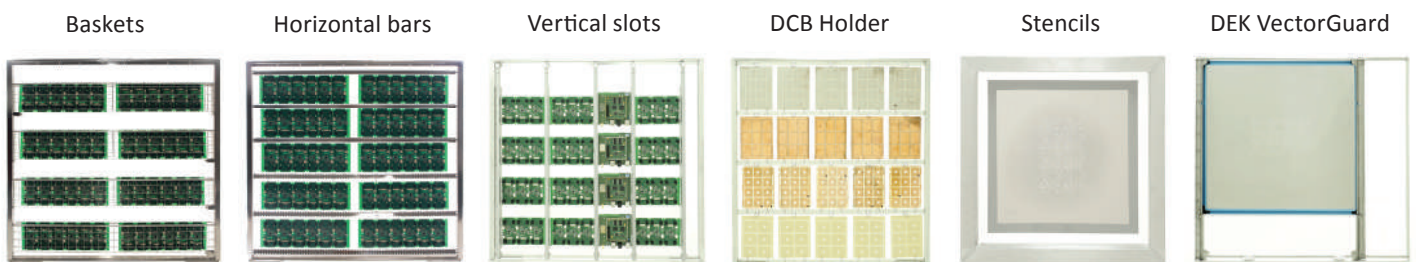
## CHAMBER CONFIGURATION

- ◆ SINGLE – single frame
- ◆ TWINGO – double frame
- ◆ Easy exchange between Single and Twingo



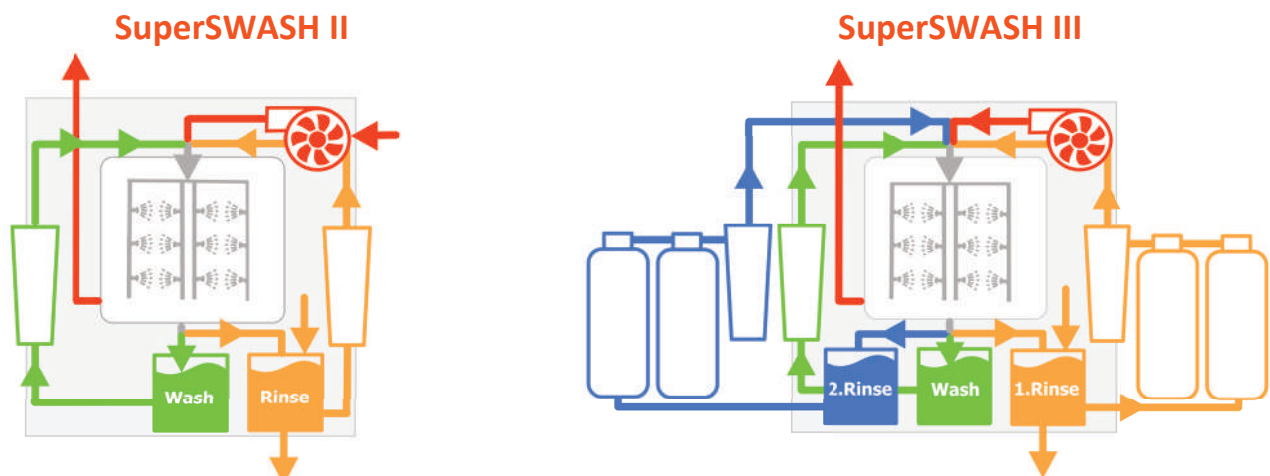
## CLAMPING OPTIONS

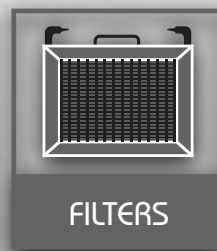
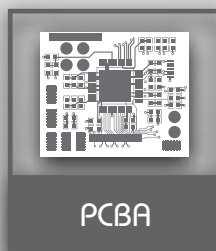
- ◆ Wide range of standard fixtures and adaptors for any types of PCBAs and stencils
- ◆ Customization is available for any clamping fixtures
- ◆ Framed stencils fit right into the machine chamber



## RINSE CONFIGURATION

- ◆ First rinse filtration fully separated from second rinse filtration
- ◆ Integrated 16L chemical filters filled with mixed resin and active carbon
- ◆ External carts with 39L chemical filters
- ◆ Possibility to connect to external water source for refilling the rinse tank





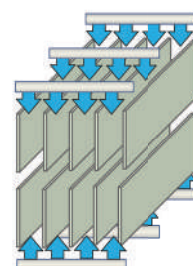
- P** Small footprint
- P** Single basket or double basket
- P** Easy loading
- P** Basket oscillation
- P** Uniform tangent spray
- P** Shadow mitigating system
- P** Adaptive rinse
- P** Closed or open loop
- P** Low operational costs



## CONTROL FEATURES

- P** Adaptive rinse water quality control
- P** AAD Automatic adaptive cleaner dosing with concentration sensor Zestron Eye or Kyzen Analyst integrated in machine OS
- P** Complete datalogging, LAN connectivity
- P** 2D code traceability
- P** Intuitive touchscreen interface with Windows OS
- P** Multi language selection

Uniform Spray





# COMPACT BATCH CLEANING

## MACHINE TYPE

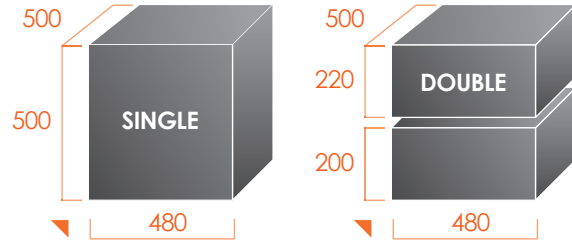
- ◆ **CompaCLEAN II** Wash + 1. Rinse + Drying
- ◆ **CompaCLEAN III** Wash + 1. Rinse + 2. Rinse + Drying

Soldering pallets

PCBA after soldering

## CHAMBER CONFIGURATION

- ◆ SINGLE – single basket
- ◆ DOUBLE – double basket



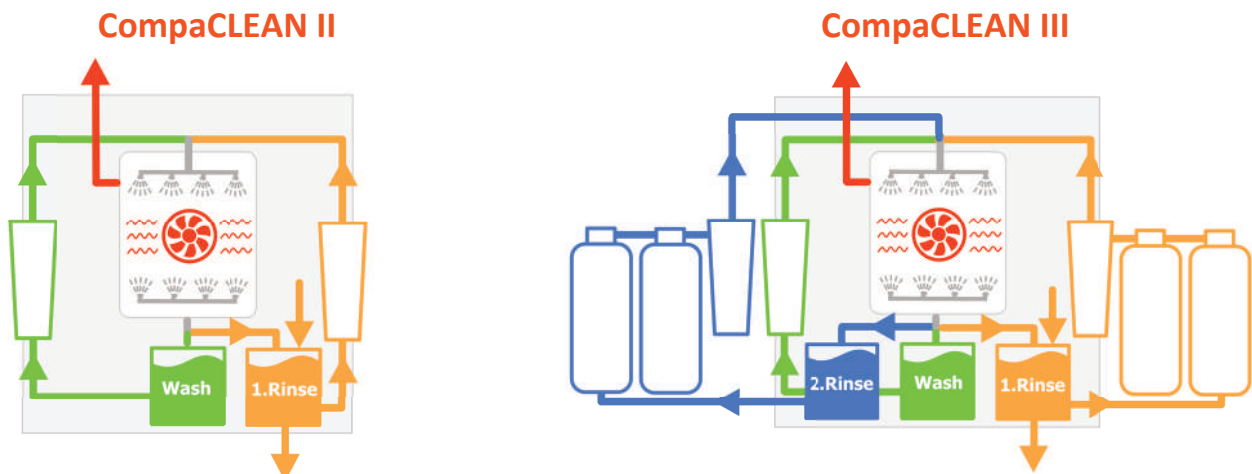
## CLAMPING OPTIONS

- ◆ Wide range of standard fixtures for any types of PCBAs, electronic assemblies and soldering pallets
- ◆ Customization is available for any clamping fixtures



## RINSE CONFIGURATION

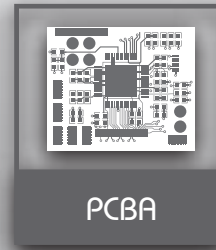
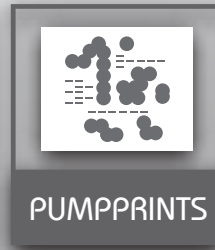
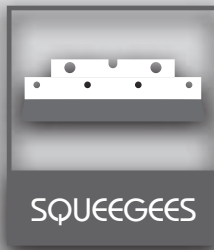
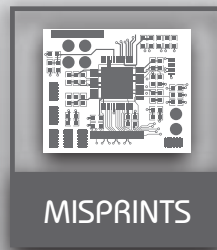
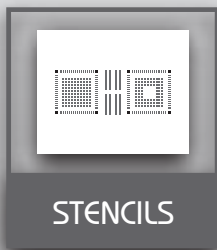
- ◆ Integrated 16L chemical filters keep the machine footprint as small as possible
- ◆ First rinse filtration fully separated from second rinse filtration
- ◆ External carts with 39L chemical filters filled with mixed resin and active carbon
- ◆ Optional cascade filtration from second to first rinse tank
- ◆ Possibility to connect to external water source for refilling rinse tank



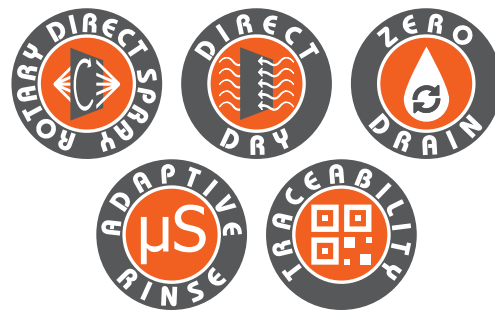
MiniSWASH II video



MiniSWASH III video



- P** Small footprint
- P** Single-chamber system
- P** Direct Spray-in-Air
- P** Air-knife fast drying
- P** Synchronized spray bars
- P** Closed or open loop
- P** Rinse control
- P** Low operational costs
- P** Easy to move

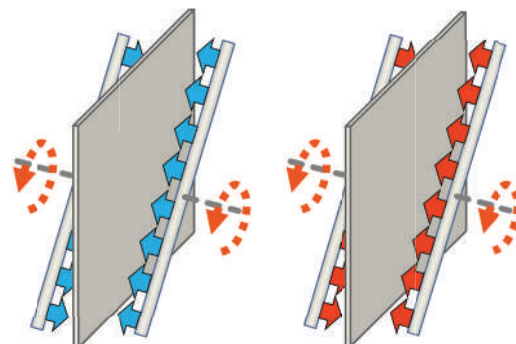


Rotating Spray

Rotating Air-Knife

## CONTROL FEATURES

- P** PLC control system
- P** Intuitive touchscreen interface
- P** 2D code traceability, LAN connectivity
- P** Adaptive rinse process control
- P** Multi language selection



# ENTRY-LEVEL CLEANING

## MACHINE TYPE

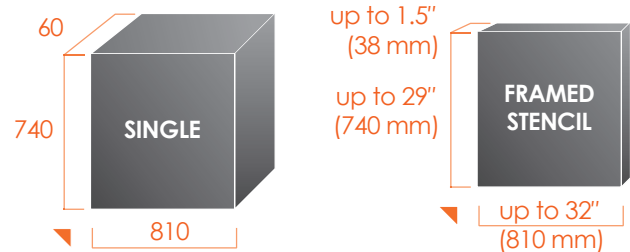
- ◆ **MiniSWASH II** Wash + Rinse + Drying
- ◆ **MiniSWASH III** Wash + Double Rinse + Drying

Stencils, Squeegees, PumpPrints

Misprints, PCBA after soldering

## CHAMBER CONFIGURATION

- ◆ SINGLE FRAME
- ◆ FRAMED STENCIL



## CLAMPING OPTIONS

- ◆ Conventional framed stencils and screens fit directly into the built-in adjustable clamping
- ◆ Wide range of standard fixtures and adaptors for other types of stencils and PCBAs
- ◆ Customization is available for any clamping fixtures

Framed stencils

Plain stencil holder

DEK VectorGuard

Squeegee Holder

Baskets

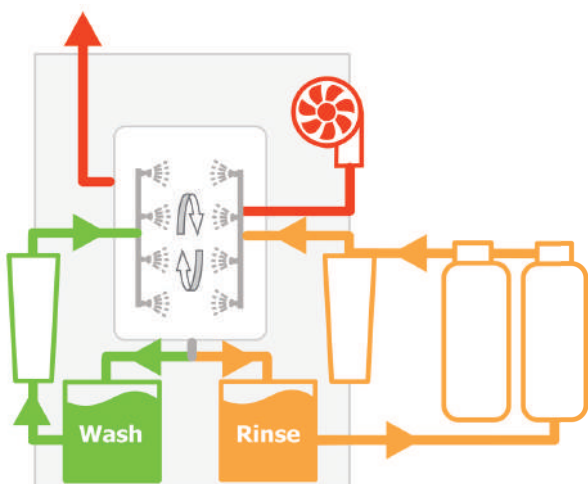
Horizontal bars



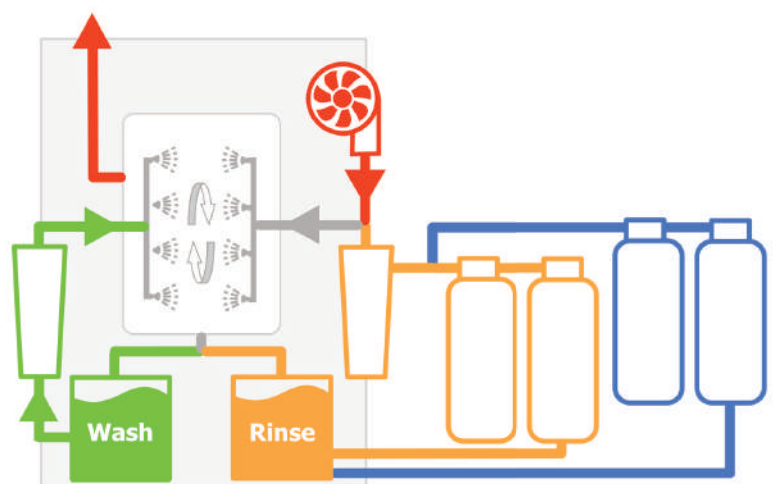
## RINSE CONFIGURATION

- ◆ Easily connected to water supply and drain
- ◆ External filter carts with 25L chemical filters
- ◆ Double rinse filtration (MiniSWASH III)

MiniSWASH II



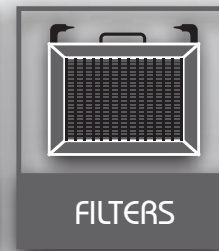
MiniSWASH III



FluxCLEAN video



- P** Small footprint
- P** Multi-chamber system
- P** Manual operation
- P** Air-bubbling wash
- P** Air drying
- P** Low operational costs



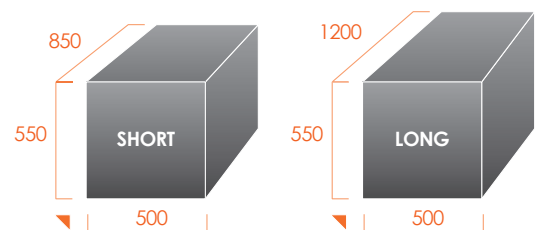
### MACHINE TYPE

- ◆ FluxCLEAN Wash + Rinse + Air Drying

Solder pallets, Filters, Condensation traps, Coolers

### CHAMBER CONFIGURATION

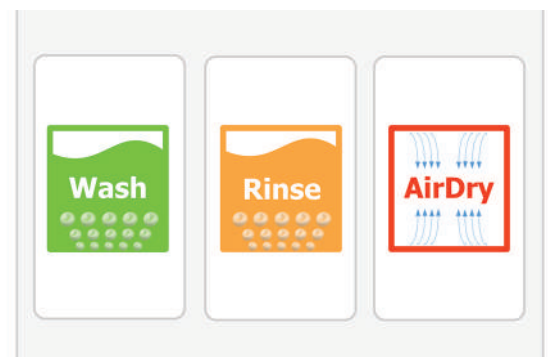
- ◆ Polypropylene baths WASH – RINSE – AIR DRYING
- ◆ Air-Under-Immersion agitation – bubbling process in washing and rinsing baths



### CLAMPING OPTIONS

- ◆ Three individual chambers equipped with stainless steel holders
- ◆ Customization available

### TANK CONFIGURATION



# UNIQUE FEATURES OF OUR SYSTEMS



- ◆ Vertical spray bars
- ◆ Linear movement
- ◆ The highest orthogonal spray impact
- ◆ Balanced spray
- ◆ No shadows
- ◆ No blind corners
- ◆ No stencil bending
- ◆ Best for low stand-off components



- ◆ Closed loop wash system
- ◆ Instant filtration
- ◆ Fully separated processes
- ◆ No drain after cycle needed
- ◆ Low drag-over
- ◆ Low liquid consumption



- ◆ Vertical spray bars
- ◆ Synchronized rotation
- ◆ Constant speed
- ◆ Orthogonal spray impact
- ◆ No stencil bending
- ◆ No shadows
- ◆ Mitigated blind corners



- ◆ Closed loop rinse system
- ◆ Continuous water regeneration
- ◆ Filtration by Carbon and Mixedbed
- ◆ Cleanliness control by resistivity
- ◆ Short rinse time



- ◆ Horizontal spray bars
- ◆ Parts swing between bars
- ◆ Tangent spray impact
- ◆ Uniform cleaning of entire area
- ◆ High volume cleaning



- ◆ Online concentration measuring
- ◆ Dosing from concentrate
- ◆ Automatic concentration adjustment
- ◆ Automatic care of tank level
- ◆ Stable chemical process
- ◆ Operator influence eliminated



- ◆ Vertical heated air knife
- ◆ Linear movement or rotation
- ◆ Orthogonal blow-off effect
- ◆ Constant speed
- ◆ No stencil bending
- ◆ Rapid drying of complex parts



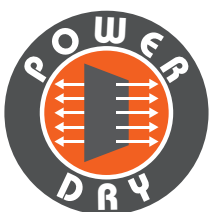
- ◆ Data logging of all parameters
- ◆ 2D code reader
- ◆ LAN connectivity
- ◆ Full traceability of each single part



- ◆ Harmonic basket oscillation
- ◆ Uniform spray
- ◆ Accelerated wash and rinse



- ◆ Air distributed by pattern of nozzles
- ◆ Soaking of heavy contaminated parts
- ◆ Gentle alternative to ultrasonic



- ◆ Heat exchanger
- ◆ High airflow drying
- ◆ Rapid drying of complex parts



- ◆ Short initial pre-rinse
- ◆ Minimising cross-contamination
- ◆ Prolongs chemical filters lifetime



# CLEANING MACHINES OVERVIEW

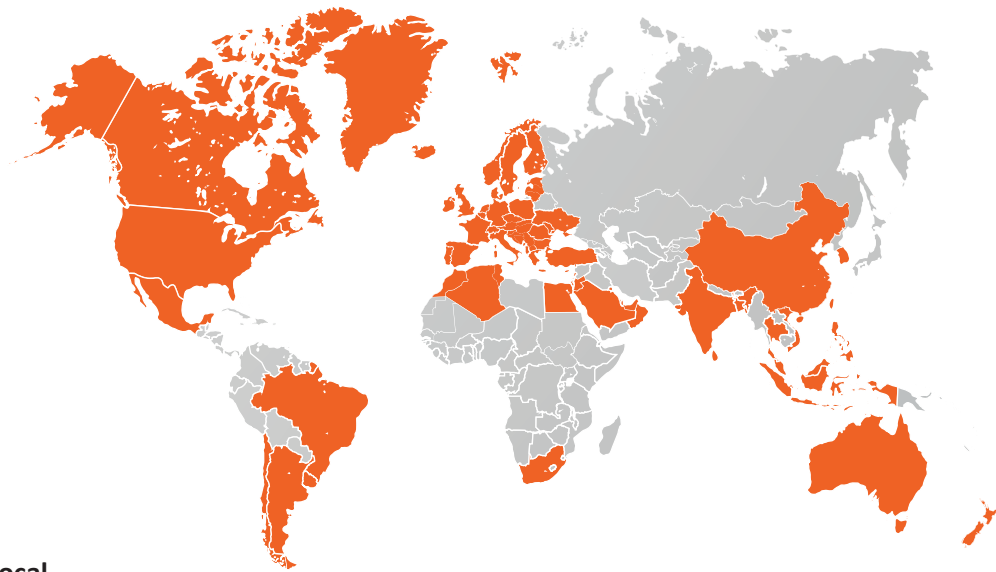
	HyperSWASH		HyperCLEAN
	Twingo	Combo	
Usable chamber size: W × L × H [mm] (W = left-right, L = front-back, H = height)	2 × 890 × 80 × 850	2 × 890 × 315 × 300 or 3 × 890 × 315 × 170	780 × 1200 × 810
Usable space for standard clamping: W × L × H [mm] (W = left-right, L = front-back, H = height)	2 × 740 × 80 × 695	2 × 788 × 278 × 300 or 3 × 788 × 278 × 165	Combo 1 Short: 700 × 700 × 700 Combo 2 Short: 2 × 700 × 700 × 300 Combo 1 Long: 700 × 1000 × 700
PCBA, HDI, DCB, BGA, PoP, SiP, CSP, BTC, QFN, MELF hybrids, etc.	✓	✓	✓
Eurocards (100 × 160 mm) [pcs per cycle]	40	112/168	128
Cycle time [minutes]	20–40	20–40	40–60
Metal & plastic stencils (paste, glue)	✓	✗	✗
Stencils [pcs per cycle]	2	✗	✗
Cycle time [minutes]	7	✗	✗
Maintenance parts from soldering process (solder pallets, filters, carriers, etc.)	✗	✗	✓
Solder pallets [pcs per cycle] 500 × 500 × 40 mm (other sizes optional)	✗	✗	11–22
Cycle time [minutes]	✗	✗	35–60
Cleaning agent volume (Ready-to-use)	80 L	80 L	114 L
Max. cleaning temperature	60 °C	60 °C	60 °C
Max. rinsing temperature	40 °C	40 °C	60 °C
Max. drying temperature	110 °C	110 °C	110 °C
Machine dimensions W × L × H [mm] (W = left-right, L = front-back, H = height) * height with opened door	2010 × 2075 × 2615	2010 × 2075 × 2615	Short: 1700 × 3200 × 2500 Long: 1700 × 3510 × 2500 (incl. pushcart)
Machine weight without liquid	1000 kg	1000 kg	1200–1500 kg

SuperSWASH		CompaCLEAN	MiniSWASH	FluxCLEAN
Single	Twingo			
835 × 80 × 815 or 835 × 150 × 815	2× 835 × 50 × 740	480 × 500 × 500	810 × 60 × 740	500 × 850 × 550 or 500 × 1200 × 550
740 × 80 × 772 or 740 × 150 × 772	2× 740 × 50 × 695	430 × 490 × 500 or 430 × 490 × 2× 200	740 × 60 × 695	500 × 850 × 550 or 500 × 1200 × 550
✓	✓	✓	✓	✗
20	40	140	20	✗
20–40	20–40	30–60	20–40	✗
✓	✓	✗	✓	✗
1	2	✗	1	✗
7	7	✗	10	✗
✗	✗	✓	✗	✓
✗	✗	6	✗	2–4
✗	✗	20–40	✗	40
80 L / 57 L (II / III)	80 L / 57 L (II / III)	71 L	62 L	310 L / 425 L (PP 850 / PP 1200)
60 °C	60 °C	60 °C	60 °C	ambient
40 °C	40 °C	40 °C	40 °C	ambient
110 °C	110 °C	110 °C	90 °C	ambient
1700 × 1500 × 2450	1700 × 1500 × 2450	1100 × 1700 × 2220	Open loop: 1600 × 850 × 1200/1600 Closed loop: 1600 × 1400 × 1200/1600 (w/wo signal tower)	PP 850: 1800 × 1210 × 1150 PP 1200: 1800 × 1560 × 1150
570–630 kg	570–630 kg	455–485 kg	250–450 kg	175–215 kg





**GLOBAL SUPPORT | WORLDWIDE REPRESENTATION**



**Think global, act local.**

That is why we work with distributors and representatives. We support and provide our colleagues in many countries worldwide not only with technical information about machine details, but also with highly-valued knowledge of the whole cleaning process.

We can help you to choose the optimal cleaning solution and verify it by trials.

We supply spare parts and consumables as well as provide service and consulting on a global scale.

[www.pbt-works.com](http://www.pbt-works.com)



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