EVOLUTION SERIES

EVO PCB

EVO Sonic

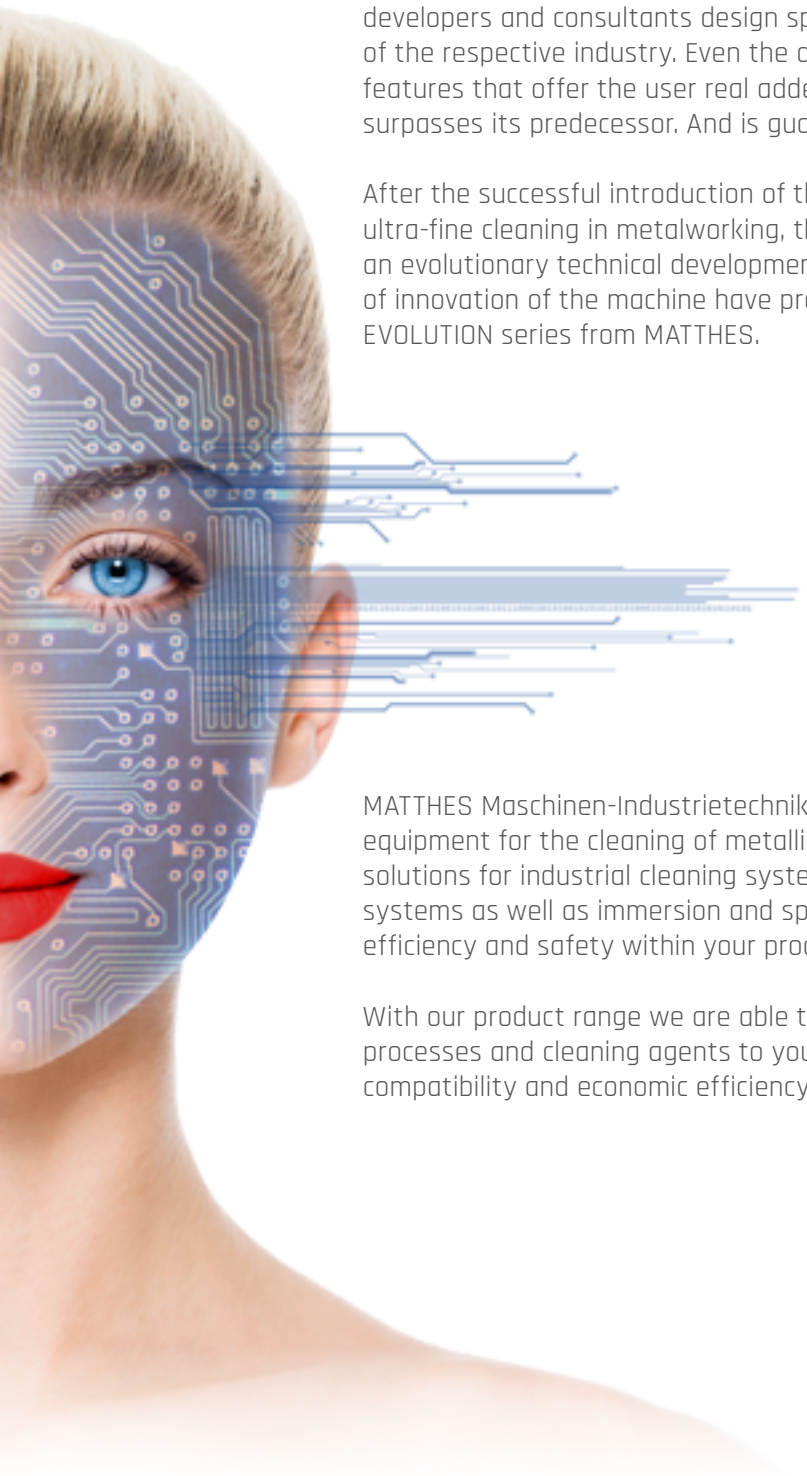
EVO SBC

EVO MC

Technical evolution is taking place. MATTHES.

The EVOLUTION series from MATTHES is based on innovative engineering achievements in the field of industrial cleaning. Entirely in line with the concept of evolution, our engineers, developers and consultants design special solutions that are optimally adapted to the needs of the respective industry. Even the development process is evolutionary: only product features that offer the user real added value are taken into account. Each model series surpasses its predecessor. And is guaranteed to be Made in Europe.

After the successful introduction of the EVO M for cleaning electronic assemblies and for ultra-fine cleaning in metalworking, the stencil cleaning machine EVO SBC is the next step in an evolutionary technical development. Here too, the high demands on quality and the degree of innovation of the machine have prevailed. Further specific industry solutions will follow: the EVOLUTION series from MATTHES.



powered by

MATTHES Maschinen Industrietechnik

MATTHES Maschinen-Industrietechnik GmbH has been supplying systems and process equipment for the cleaning of metallic and non-metallic workpieces for 50 years. We offer solutions for industrial cleaning systems on an aqueous basis, such as ultrasonic cleaning systems as well as immersion and spraying systems, which sustainably increase the efficiency and safety within your process chain.

With our product range we are able to optimally adapt the possibilities of plant technology, processes and cleaning agents to your needs – always keeping the environmental compatibility and economic efficiency of the cleaning processes in mind.

EVO PCB

Ultra-fine cleaning in electronics production

The cleaning systems of the EVO PCB series are compact single-chamber systems for ultra-fine cleaning of electronic assemblies and components.

This generation of cleaning systems combines highly efficient Miele industrial machines with our proprietary MATTHES Recycling System (MRS) to create a precise and cost-effective overall solution.

Permanent, fully automatic measurement, control and re-dosing of cleaning media guarantee maximum process reliability and quality

MADE IN GERMANY

MATTHES Maschinen Industrietechnik

EVO PCB

Reproducible cleaning quality

Especially for high-quality assemblies in the medical, automotive, defence and aerospace industries, optimum cleaning results are absolutely essential to avoid rejects in production and malfunctions in use.

The thorough removal of flux residues, resins and other production residues on printed circuit boards serves as ideal preparation for subsequent processes such as bonding, coating or lacquering.

Optimal cleaning of misprints (misprints) helps you to save valuable resources and costs.

With the precision cleaning systems of the EVO PCB series, you are perfectly prepared for the constantly growing demands which the cleaning of assembled and unassembled PCBs brings with it.

Key features

Capacity
(euro cards 100 × 160 mm): 76 pieces with standard upper and lower basket O500 (37 pieces) / U500 (39 pieces)

Due to their more compact design, the cleaning machines of the EVO PCB series can be optimally integrated into existing process environments.

PROFITRONIC+
Control of the automatic cleaning machine Industry 4.0 ready, Ethernet interface / RS 232 interface

PerfectTouchControl
Chemical-resistant glass surface of the operating and programming unit

PerfectSpeedSensor- Spray arm monitoring
Reliable cleaning performance by monitoring the spray arm speed

PerfectFlow
Media and temperature independent ultrasonic dosing volume control, reproducible cleaning quality through precise dosing of all media

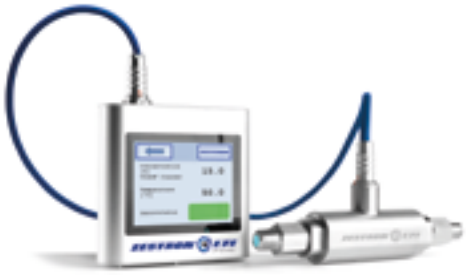
PerfectPureSensor
Integrated conductivity measuring module for monitoring the final rinse phase

PerfectHepaDrying
Optimum drying results, free from unwanted particles and suspended matter from the room air

TOP feature of the EVO PCB PREMIUM

PerfectLiveControl powered by ZESTRON EYE

Digital real-time concentration measurement, live monitoring and automatic re-dosing in the media inlet. Process-related fluctuations which lead to a reduction in the concentration of the cleaning bath are compensated fully automatically. Water and cleaning concentrate are supplied in real time and ensure optimum process reliability.



Additional Features

- Steam vapour condenser (free of exhaust air)
- Siemens control with SIMATIC HMI touch panel*
- Complete stainless steel piping of the MRS module (Matthes Recycling System)
- Drawer for 4 × 5 l canister
- Sensor system for automatic basket/trolley detection
- Programme Failure Protection
- 2 redundant sensors for temperature control and monitoring
- Miele Waterproof System to protect against leakage damage
- Remote serviceable

* Feature of EVO PCB PREMIUM

Medium canister

PerfectSpeedSensor Spray arm monitoring

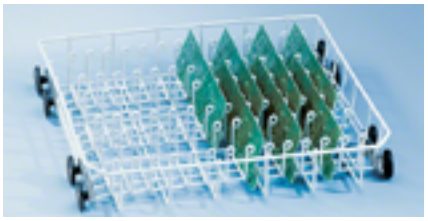
Trolley detection

EVO PCB

Optional features

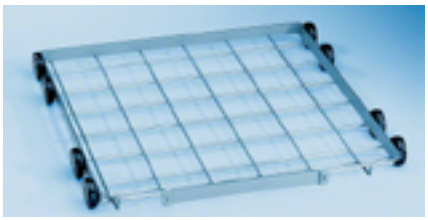
PerfectDoc
Seamless logging and documentation of all cleaning processes means maximum security for process tracking

Upper Conveyor O500



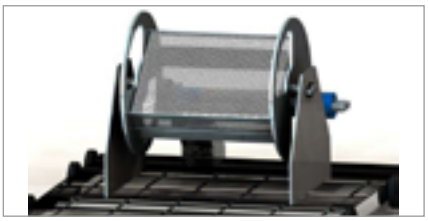
Lower Conveyor U500

Upper Carriage O188



Lower Carriage U874

VE Cartridge



Carriage with rotating basket

Customised holders can be manufactured.

Technical Data	EVO PCB PRO / EVO PCB PREMIUM
	Ultra-fine cleaning systems for assemblies (unassembled and assembled printed circuit boards), misprints (misprinted circuit boards)
Technology Matthes	Matthes EVOLUTION
Cleaning capacity per process	(euro cards 100 × 160 mm): 76 pieces with standard upper and lower basket (37 + 39 pieces)
Tank capacity 1	60 litres
Tank capacity 2	– (fresh water system for reproducible rinsing results)
Power supply	3PH 400V 32A CEE 50 Hz PE/N
Power consumption	4 kW
Control system	Miele Profitronic+ / Siemens LOGO controls
Heat output tank 1	3 kW Control range 0-80 °C
Drying unit	blower 0.3 kW / heating coil 2.3 kW / air capacity 55 m3/h
Hepa filter class	H14 – Separation efficiency (according to DIN EN 1822) 99.995 %
Filter system washing tank	coarse filter with 25□ filter cartridge / fine filter with 5□ filter cartridge
Supply connection 1 (Tap water)	3/4"
Supply connection 2 (DI water)	3/4"
Supply connection 3 (compressed air)	5 bar 0.2 NL control pressure
Drain connection (rinsing medium)	DN 50
Exhaust air connection	Steam condenser
Machine dimensions	W 1.565 mm × D 735 mm × H 1.460 mm (with signal lamp 1.700 mm)
Installation dimensions with base tray	W 1.990 mm × D 800 mm × H 1.462 mm (with signal lamp 1.702 mm)
Operating noise EN ISO 3746	< 65 dB(A)
Tare weight	440 kg

MATTHES Maschinen Industrietechnik

EVO Sonic

Ultrasonic cleaning, thorough and gentle

The cleaning of printed circuit boards, wafers, soldering frames and machine parts by immersion is an extremely powerful and gentle cleaning method. The agitation required for thorough cleaning is achieved by using ultrasound and/or Jet turbulation.

Particularly in the case of complex assemblies with difficult geometries or low standoffs as well as large quantities, EVO SONIC ultrasonic systems are able to exploit their advantages through the optimum division of process steps such as washing, rinsing and drying.

powered by FinnSonic

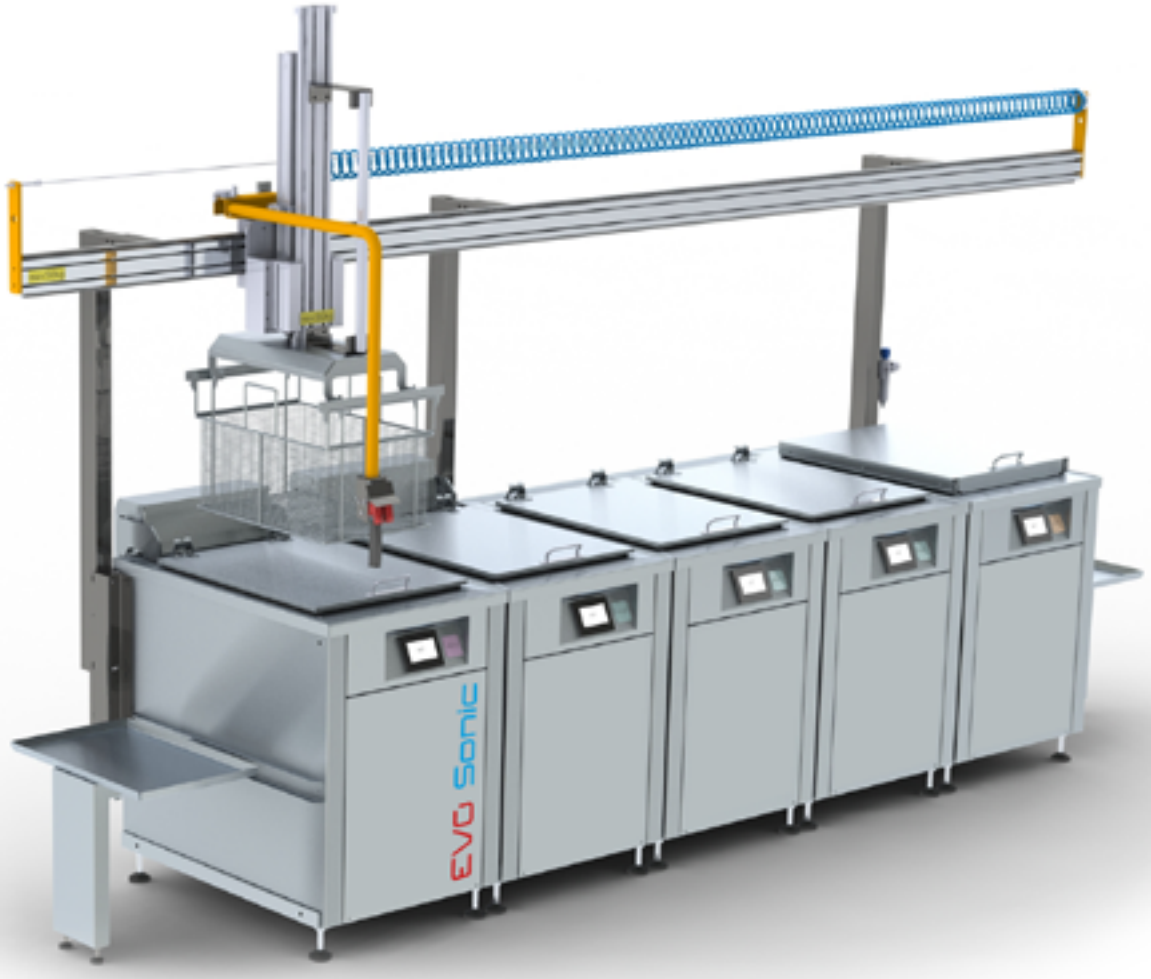
MATTHES Maschinen Industrietechnik

EVO Sonic

Advantages of ultrasonic cleaning

Ultrasonic cleaning offers superior advantages compared to other cleaning methods.
Sometimes it is even the only practical cleaning option.

- **Fast** – short circulation times
- **Efficient** – effectively cleans even the toughest dirt
- **Penetrating** – cleans all surfaces that water can reach, even complex structures with holes and channels
- **Accurate** – removes even the smallest particles down to 1 micron
- **Versatile** – tolerates a wide range of chemicals
- **Environmentally friendly** – uses energy efficient water-based process



EVO Sonic

Optimum cleanliness, reliable products

Large-volume precision cleaning must normally be carried out in several stages and automatically. A higher particle cleanliness can be achieved in multi-stage cleaning systems, as large particles do not get stuck in the last, clean stages of the cleaning process, in contrast to single-chamber cleaning systems, which give a poor cleaning result due to the accumulation of particles in the washing chamber

Dirt particles can be removed from the workpiece surface by effective cleaning techniques. Cleaning and rinsing agents are filtered, keeping the wash basin clean and minimising the consumption of liquids. Only with ultrasonic cleaning can even the smallest particles be removed, which would stick with other cleaning techniques. The actual cleaning process with washing, rinsing and drying phases is defined according to the degree of cleanliness required by the customer and the throughput requirements.

EVO SONIC systems can be operated manually or integrated fully automatically into your process environment.

EVO Sonic

Features

The switchable ultrasonic generators with 40 kHz and 132 kHz offer the possibility of a powerful and gentle ultrasonic cleaning for e.g. assemblies with low stand-off and wafers.

EVO SONIC ultrasonic cleaning systems set new standards in system design. Well thought-out details in the area of the guidance of the cleaning medium, agitation and process control ensure a flexible and energy-efficient process sequence in line with requirements.

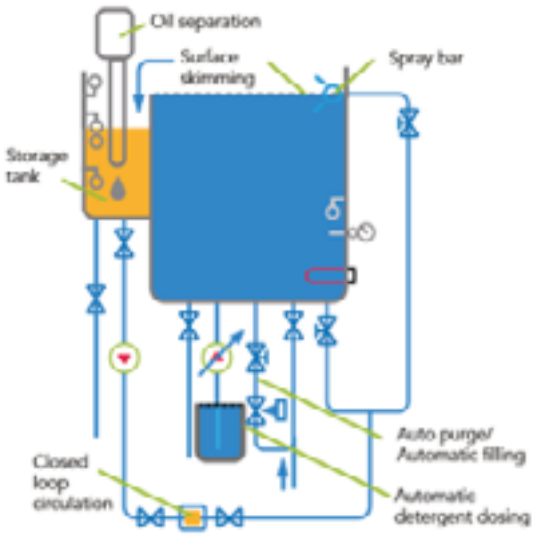
Cleaning procedures

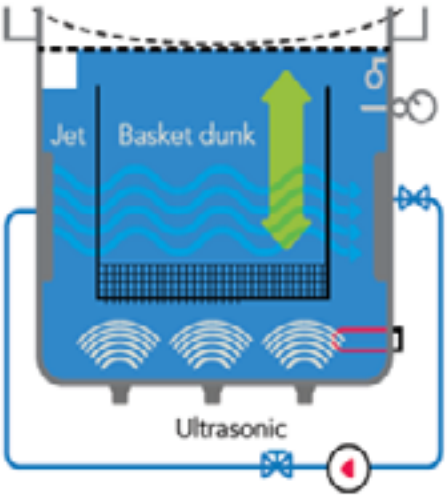
Processes that can be flexibly designed lead to optimum cleaning results.

U'SONIC	Cleaning module with ultrasonic agitation
SONICJET	Treatment module with unique SonicJet technology – combined performance of ultrasonic cleaning and pressure flooding
SPRAY	Oscillating spray cleaning modulesSonicJet technology – combined performance of ultrasonic cleaning and pressure flooding
JET	Washing and rinsing modules with pressure flooding
RINSE	Treatment module for immersion rinsing to remove particles and detergent residues
DRY	Hot-air dryer with powerful fan and heater – for fast drying

Optionen

- Particle filtration
- Oil separation
- Filter blockage alarm
- Various buffer tanks
- Surface skimming
- Automatic water refill
- Automatic detergent dosage
- Automatic regulation of the detergent concentration
- Bath monitoring (pH value, conductivity)
- Oscillating washing basket



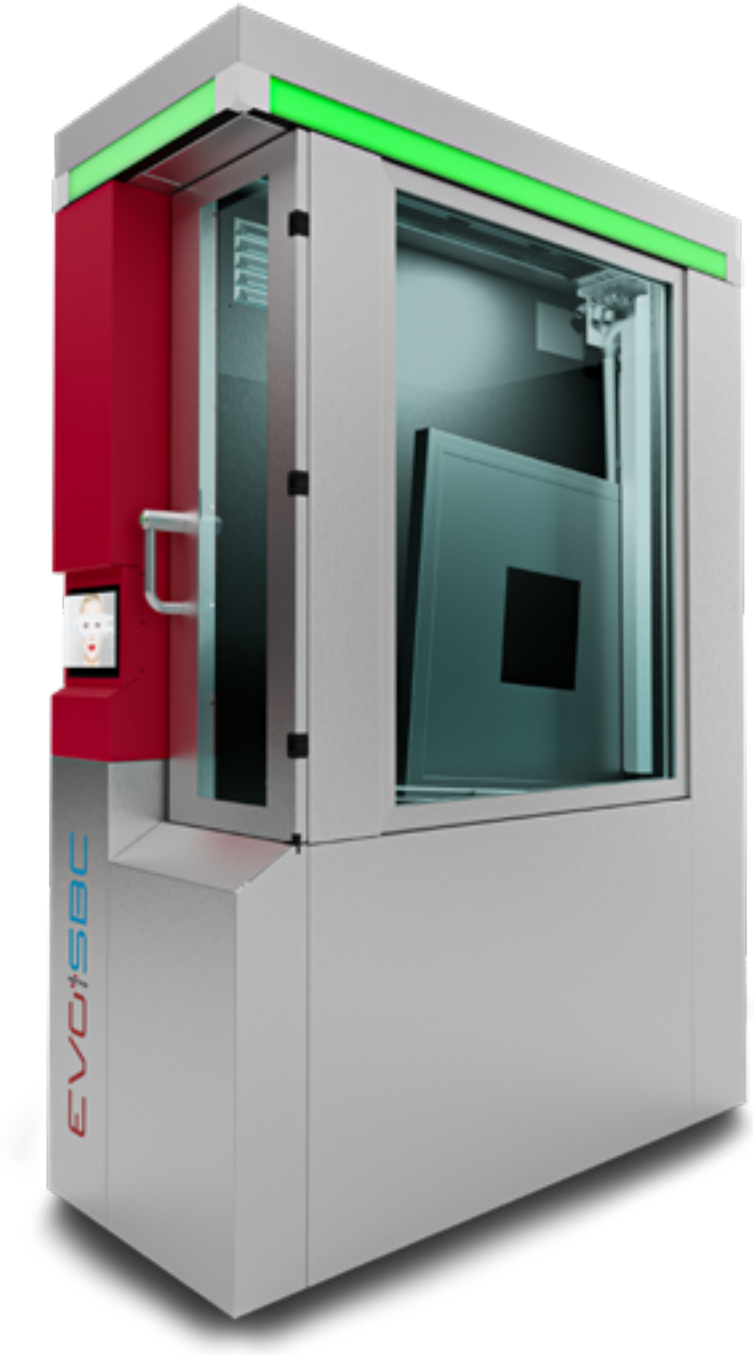


TECHNICAL DATA	Versa Genius+ 50	Versa Genius+ 120	Versa Genius+ 180
Internal basket dimensions (mm)	W 267 × D 367 × H 206	W 367 × D 567 × H 315	W 430 × D 610 × H 395
Load weight (kg)	10	26	39
External tank dimensions (mm)	W 549 × D 971 × H 968	W 653 × D 1174 × H 968	W 723 × D 1217 × H 968
Filling volume (l)	46	120	180
Heating capacity (W)	2000	3000	5000
Ultrasonic power nom./peak (W)	600 / 1200	1200 / 2400	2400 / 4800
Ultrasound frequencies (kHz)	37 / 132	37 / 132	37 / 132

EVO SBC

The most compact spray cleaning system for stencils on the market

The process chains of the electronics industry are designed for the highest precision. Thanks to intelligent features, the EVO SBC fits seamlessly into these processes. Stencil cleaning systems, which are tailored to the requirements of the industry in every respect, are produced in our factory to order and by incorporating numerous manual work steps. Housing, internals and piping of the EVO SBC are made of stainless steel. The design meets the highest demands – even beyond functionality



MADE IN GERMANY

EVO SBC

SLIMLINE construction
Where slim dimensions have real size

When implementing the device peripherals in electronics production, not an inch is usually wasted. We know that. That's why we have placed great emphasis on the most compact dimensions when developing the EVOLUTION series. As a result, the stencil cleaning machine EVO SBC requires a footprint of only 0.8 m^2 – and that, with integrated drip tray.

This means that it offers one thing above all else: maximum performance in the smallest possible space.

Width	600 mm
Depth	1345 mm
Height	1980 mm
Weight	approx. 400 kg
Stencil size	up to 1000 × 1000 × 40 mm

MATTHES Maschinen Industrietechnik

Works economically and is good for the environment

Sustainability is not our choise, protecting the environment and resources is our duty.
For this reason, we have consistently put all processes that cause energy costs and burden the environment to the test. The development work has paid off. The results are innovative solutions that make the EVO SBC work more efficiently than other stencil cleaning machines on the market. Due to the significantly shortened process times, the EVO SBC ultimately also consumes significantly less energy. Also in this point the EVOLUTION series is the right decision – and your energy cost balance is no longer a big issue.

This makes EVO stencil cleaning so economical and efficient:

ÖKO effizient

Eco system

- Environmentally friendly, closed loop system
- Proven short process times and low consumption values (water / cleaner / energy)
- System operates completely without compressed air

Defogger

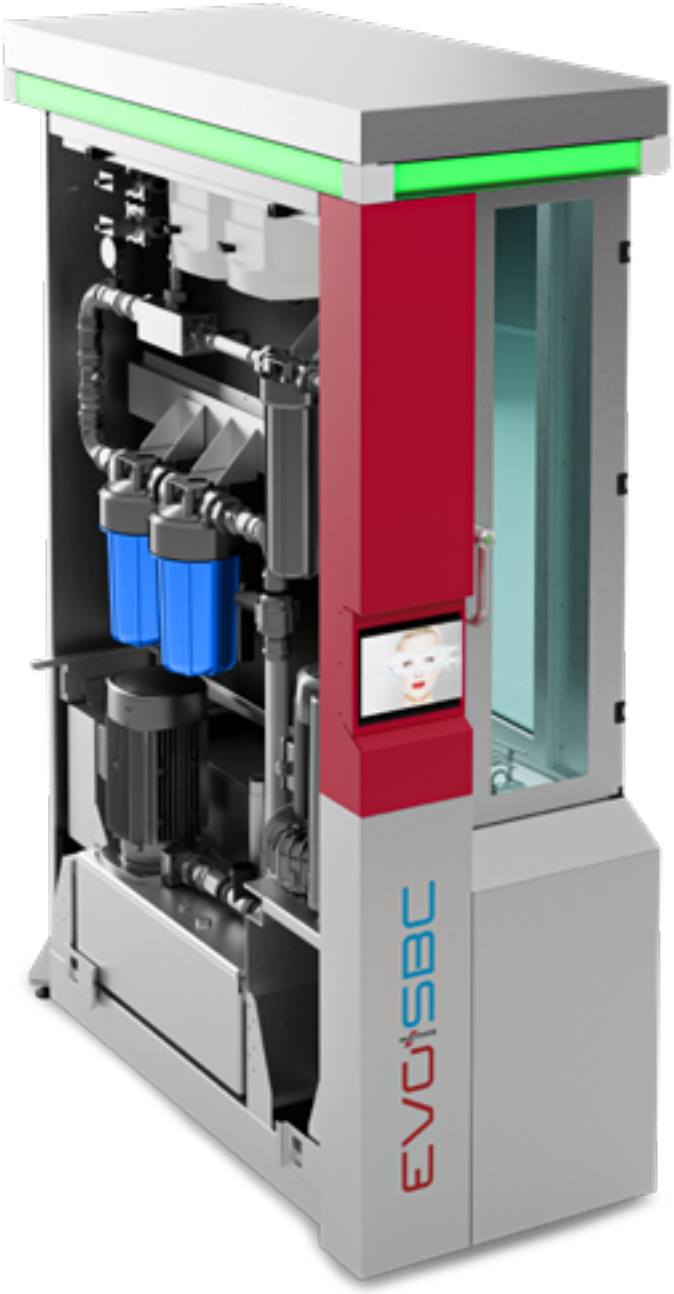
- Accelerated drying through dehumidification of the washing chamber and optimised consumption values through condensate
- No connection to an external extraction system necessary

SSP Start-Stop-Positioning

- Horizontal movement of the washing and drying unit adjustable to the respective stencil size – saves time and resources
- Further optimisation is possible with the SNA “Selective-Nozzle-Actuation” option

EVO SBC expansion stages
Choose in accordance with your requirements

Our cleaning machine EVO SBC is available in four expansion stages. That's good – because that way you decide to what extent you want to use the EVO stencil cleaning system in the long term. So you have the choice and receive a machine system which is adapted to your requirements.



EVO SBC BASIC

Cleaning of stencils

- 1-tank system
- 2-step process (wash / dry)

EVO SBC ADVANCED

Cleaning of stencils and misprints with reproducible, smear-free drying

- 1-tank system with deionised water supply
- 3-step process (wash / rinse with deionised water / dry)

EVO SBC PRO

Cleaning of stencils with low smear drying

- 2-tank system
- 3-step process (wash / rinse with medium from tank 2 / dry)

EVO SBC PREMIUM

Cleaning of stencils, assemblies and misprints with reproducible, smear-free drying

- 2-tank system heated (tank 2 additionally with deionised flow heater)
- 4-step process (wash / rinse from tank 2 / rinse with deionised water to discard / dry)

Extra Features
Comfortable handling is not an option. It is a must

We know the requirements for optimal cleaning processes in the electronics industry. And we know what the process periphery looks like on site. Based on this knowledge, we have equipped the stencil cleaning system EVO SBC with details as standard, which increase both safety and convenience during handling.

Mehr Sicherheit, mehr Handlingskomfort:

Glass door with automatic locking
The cleaning process takes place in front of your eyes, the side panel with safety glass viewing window makes it possible.

Wash chamber interior lighting
Nothing escapes you. Even with limited ambient light, every cleaning step is visually traceable

All-round LED status indicator
The dimmable indicator light below the top of the housing ensures visibility from a long distance. Your employees can thus see at all times whether the cleaning process is running smoothly.

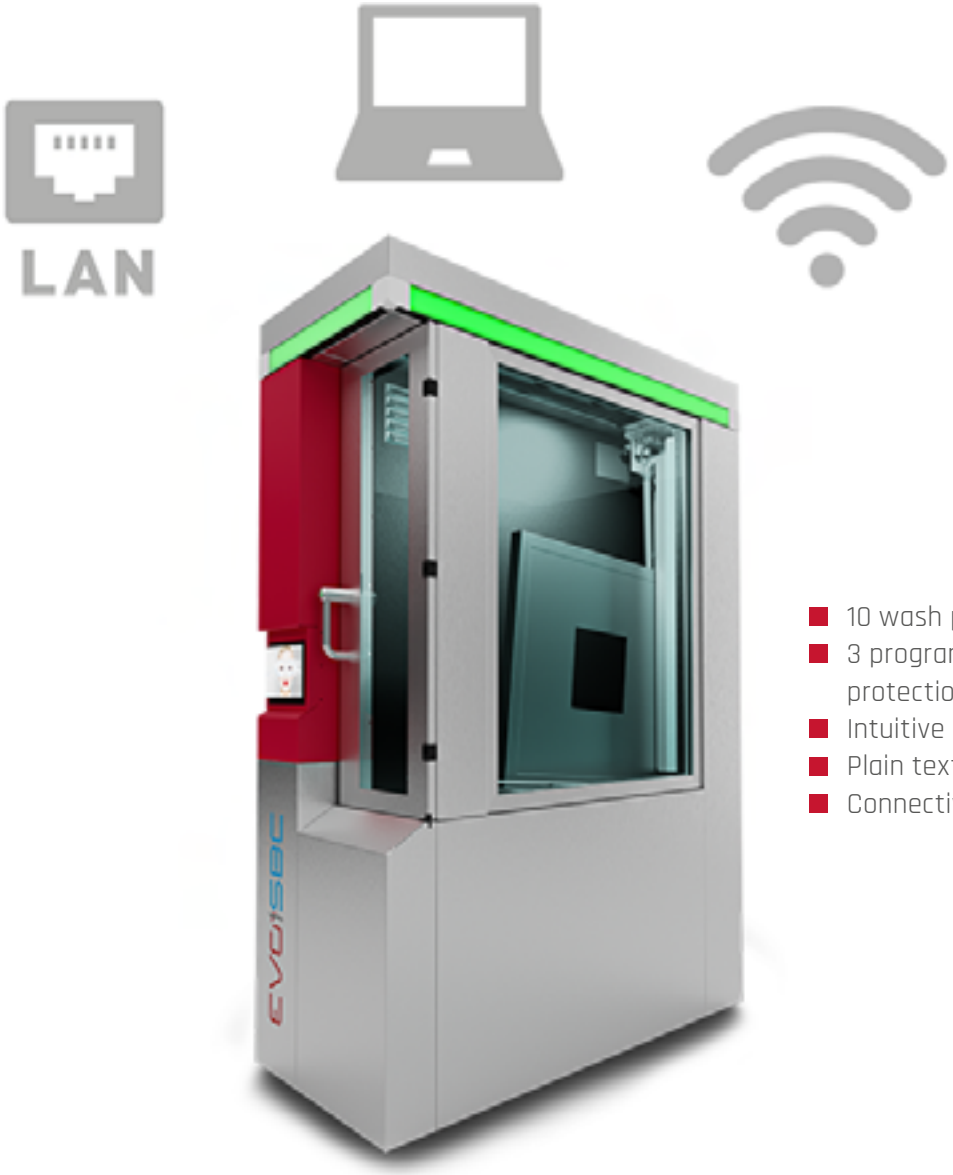
Touch display
The integrated 7" colour display with touch screen is embedded flat in the system housing. The glass display can be operated with gloves.

Ergonomic design
The system can – depending on the device periphery – also be operated while seated. In this way, EVO SBC supports accessibility at the workplace and can in many cases be subsidised by the employers' liability insurance association.

EVO SBC

Smart Control Panel
Optimally networked. More possibilities

The EVO SBC brings stencil cleaning to a completely new level of precision and safety. An essential component is the smart system control, which can be easily integrated into existing company networks. Cleaning status, operating status and availability can thus also be called up decentrally. Even remote maintenance is – if desired – simply possible.



- 10 wash programmes can be stored
- 3 programme levels with password protection (operator / supervisor / service)
- Intuitive menu navigation
- Plain text error outputs
- Connectivity: Ethernet RJ 45 / WLAN

MOST IMPORTANT FEATURES

SLC Slim-Line Construction
Design-oriented, ergonomic design with extremely small footprint.
With dimensions (H) 1980 × (W) 600 × (D) 1345 mm (0.8 m2), the EVO SBC is the spray cleaning system for stencils with an especially small footprint.
The base tray is integrated into the housing construction!

Eco-System
Environmentally friendly, closed loop system.
Proven shortest process times and consumption values (water / cleaner)
System operates completely without compressed air, therefore low operating costs!

Defogger
Accelerated drying through dehumidification of the washing chamber and optimised consumption values through condensate recovery. No connection to external air suction necessary!

SSP Start-Stop-Positioning
Horizontal movement of the washing and drying unit adjustable to the respective stencil size – saves time and resources. Further optimisation is possible with the option SNA "Selective nozzle control".

High-Efficiency-Drying
Highly efficient drying process enables shortest drying times.

PPC Pump-Pressure-Control
The spraying pressure can be regulated in the range from 0 to 3.5 bar.
Protects sensitive stencils and assemblies.

FPC Fan-Pressure-Control
The blower pressure can be regulated in the range from 0 to 235 m3/h.
Protects sensitive stencils and assemblies.

Further equipment features

- Housing, internals and piping completely made of stainless steel
- Glass door with automatic locking
- Side panel with large viewing window made of safety glass
- LED interior lighting of the washing chamber
- RGB LED status indicator, all-round, below top of housing
- Integrated base tray – holds all process liquids from both tank systems
- Control: Eaton SPS – user-friendly, intuitive menu navigation and programming with plain text error output
- 7" colour touch screen with chemical-resistant glass surface that can be operated with gloves
- 10 washing programmes can be stored
- 3 programme levels with password protection (operator / supervisor / service)
- Connectivity: Ethernet RJ 45 / Wireless Lan
- Remote maintenance possible
- Optimised for MPC® cleaning media

Options

Zestron-Eye
Digital real-time concentration measurement.

SNA Selectiv Nozzle Actuation
Individual segments of the 3-part nozzle frame can be switched on or off as required.
Water and cleaning agent are only sprayed in the required working area, the consumption of valuable resources is optimised.

Accessories

EVO SSH-29	Single size holder 740 × 740 mm (29")
EVO MSH	Multi-size holder for frameless stencils up to max. 1000 × 1000 mm (39.4")
EVO SH	Squeegee holder
EVO CBH	Holder for assemblies (PCBs)

Customised holders can be manufactured.

EVO SBC

Technical data	EVO SBC BASIC	EVO SBC ADVANCED	EVO SBC PRO	EVO SBC PREMIUM
	1-Tank-System	1-Tank-System with DI-Water-Rinsing	2-Tank-System	2-Tank-System with DI-Water-Rinsing
Technology	Matthes EVOLUTION	Matthes EVOLUTION	Matthes EVOLUTION	Matthes EVOLUTION
	Stencils / Screens / Squeegees	Stencils / Screens / Squeegees / Misprints	Stencils / Screens / Squeegees	Stencils / Screens / Squeegees / Misprints / PCBs
Capacity per process	Stencils, Screens, up to effective 1000 × 1000 × 40 mm (39,4 × 39,4 × 1,6")	Stencils, Screens / PCB-Carrier up to effective 1000 × 1000 × 40 mm (39,4 × 39,4 × 1,6")	Stencils, Screens up to effective 1000 × 1000 × 40 mm (39,4 × 39,4 × 1,6")	Stencils, Screens / PCB-Carrier up to effective 1000 × 1000 × 40 mm (39,4 × 39,4 × 1,6")
Capacity Tank 1	70 litres	70 litres	70 litres	70 litres
Capacity Tank 2	–	–	20 litres	20 litres
Drip tray	integrated 90 litres	integrated 90 litres	integrated 90 litres	integrated 90 litres
Power supply	3PH 400V 16A CEE 50Hz PE/N	3PH 400V 16A CEE 50Hz PE/N	3PH 400V 16A CEE 50Hz PE/N	3PH 400V 32A CEE 50Hz PE/N
Power consumption	4 kW	4 kW	4 kW	22-31 kW
Control system	EATON SPS	EATON SPS	EATON SPS	EATON SPS
Heating capacity tank 1	0-80 °C steplessly adjustable3 KW	0-80 °C steplessly adjustable3 KW	0-80 °C steplessly adjustable3 KW	0-80 °C steplessly adjustable3 KW
Heating capacity tank 2	–	–	–	DI-water flow heater 20 – 60 °C18-27 kW
Drying	from 0 to 235 m^3/h	from 0 to 235 m^3/h	from 0 to 235 m^3/h	from 0 to 235 m^3/h
Filter system wash tank	Coarse filter (washing tank) with 25µ cartridge filter	Coarse filter (washing tank) with 25µ cartridge filter	Coarse filter (washing tank) with 25µ cartridge filter	Coarse filter (washing tank) with 25µ cartridge filter
Rinsing tank filter system	–	–	Fine filter (rinsing tank) with 5µ cartridge filter	Fine filter (rinsing tank) with 5µ cartridge filter
Supply connection 1 (Tap water)	–	3/4" connection	–	3/4" connection
Supply connection 2 (DI-Water)	–	3/4" connection	–	3/4" connection
Supply connection 3 (compressed air)	compressed air-free operation	compressed air-free operation	compressed air-free operation	compressed air-free operation
Drain connection (rinsing medium)	X	connection DN 50	connection DN 50	connection DN 50
Exhaust connection	Steam condenser	Steam condenser	Steam condenser	Steam condenser
Installation dimension	D 1345 mm x W 600mm x H 1980 mm	D 1345 mm x W 600mm x H 1980 mm	D 1345 mm x W 600mm x H 1980 mm	D 1345 mm x W 600mm x H 1980 mm
Noise levelEN ISO 3746	< 65 dB(A)	< 65 dB(A)	< 65 dB(A)	< 65 dB(A)
Dry weight	400 kg	420 kg	440 kg	460 kg

EVO MC

Proven toploader with excellent cleaning results

During the manufacturing process, many residues such as flux residues, gas condensate and soldering residues are produced. Therefore, maintenance and tool cleaning has an important influence on the safety of the process chain.

Only by regular cleaning of solder frames, solder carriers, condensate traps, filters, process interruptions or too high a reject rate can be avoided.

With the EVO MC Toploader series, workplace systems have been specially developed for industrial parts cleaning in production and maintenance.

As systems for spray cleaning with aqueous cleaning media, they are based on the proven basic concept of rotating cleaning media and a fixed nozzle tube system and provide excellent cleaning results. The wide range of models with numerous extras is characterised by simple operation and achieves top values in terms of heat output, load capacity and operational reliability.

Thanks to their stable, robust construction and all components in contact with the media made of stainless steel, they offer a cost-effective solution for individual parts and small series cleaning.

EVO MC

Facts

- Aqueous-based spray cleaning system
- Workstation with vertically rotating mesh basket
- Simple operation
- Space-saving
- Environmentally friendly
- Robust construction
- Reliable and durable
- Low procurement and operating costs

Equipment features

- Holder for 8 or 13 solder frames EVO MC 80 / 100
- Steam extraction
- Level control
- System insulation
- All components in contact with media are made of stainless steel
- Vertically rotating mesh basket
- Motor-driven cleaning basket
- High load capacity (max. 350 kg payload)
- Siemens Logo Control / Display Logo TD
- Highly efficient, powerful Grundfos pump IE3/IE4
- Dry run protection
- Tank cover

Options

- Fine filter in the pressure line, mounted after the washing pump
- Circulating air drying system with side channel compressor and air heater
- Additional rinsing stage on discard, with drain control

Technical data	EVO MC 80	EVO MC 100	EVO MC 120
Mesh basket round	800 mm	1.000 mm	1.200 mm
usable height	450 mm	500 mm	700 mm
Width	1,120 mm	1,320 mm	1,520 mm
Depth	920 mm	1,120 mm	1,320 mm
Hight closed	1,000 mm	1,200 mm	1,400 mm
Load capacity	200 kg	250 kg	350 kg
Tank capacity	135 l	300 l	430 l
Peak pressure at the nozzle	3.0 bar	3.5 bar	3.5 bar
Circulation capacity	4.8 m^3/h	12 m^3/h	12 m^3/h
Pumpmotor	0.85 kW	2.2 kW	2.2 kW
Electric heating power	4.5 kW	6.0 kW	9.0 kW
Electrical connected load	6.0 kW	8.5 kW	11.5 kW
Maximum power consumption	10.0 A	14.5 A	20.5 A
Treatment temperature infinitely variable	0–85 °C	0–85 °C	0–85 °C
Tank heating time	approx. 1.5 hours	approx. 2 hours	approx. 2 hours

- since 1897

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