

Electrovert

Electronic Assembly Equipment

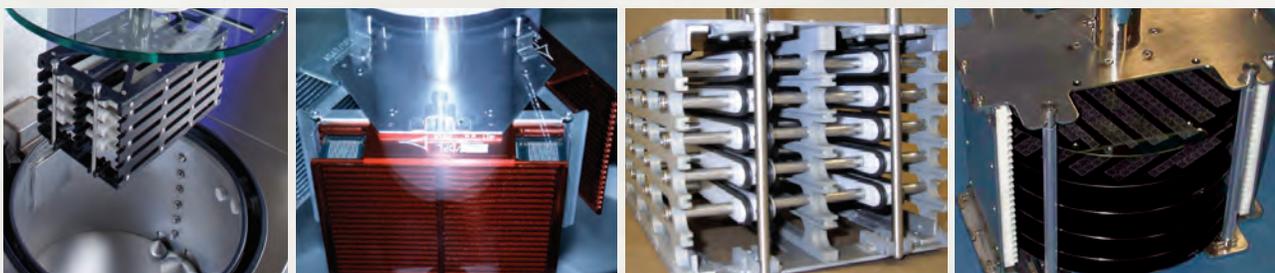
TW EAE

MicroCel Centrifugal Cleaning System



The first technology to use centrifugal energy to clean electronic circuit assemblies, precision parts, and semiconductor packages. The system offers unparalleled penetration, solubilization, and contaminant removal.

Incomparable Cleaning Technology



Electrovert MicroCel

MicroCel:

The centrifugal energy, generated when parts are rotated in a sealed process chamber, produces results unattainable through any other available technology.



High Performance Centrifugal Cleaning System

The MicroCel Centrifugal Cleaning System provides incomparable cleaning of electronic circuit assemblies, precision parts, medical devices, bumped wafers, and advanced packages, such as flip chips, MCMs, SIPs, BGAs, CSPs and hybrid circuits. Centrifugal energy, produced when parts are rotated inside a sealed process chamber, provides unparalleled penetration, solubilization, and contaminant removal when coupled with appropriate cleaning chemistries. The complete three-step cleaning process achieves washing, rinsing, and drying results unattainable through any other technology available.

The patented MicroCel system is an industry-first for cleaning in the electronics and semiconductor packaging industries. It bears no resemblance to other cleaning systems, but employs concepts, technologies, and qualities most often found in semiconductor processing equipment.

New Productivity-Enhancing Features

For flexibility and ease-of use, the MicroCel system now offers a new enhanced operator interface. It can store and retrieve up to 50 recipes and has adjustable programming, configurable alarms, and the option to manage recipes remotely via an Ethernet link. The new graphical user interface enables flexible recipe generation and the performance of 20 operational steps. These steps include immersion wash, spin-off, immersion and spray rinse, dry and cool - in any order - with adjustable parameters of spin RPM, cycle time, and number of cycles. Additional enhancements to the process chamber include the introduction of level control monitoring and a pre-mixing feature that recirculates the wash tank to keep chemistries from separating.



Electrovert MicroCel

Features and Benefits:

Fixturing

Products cleaned in the MicroCel system are held in place and secured to the head using either universal adjustable fixtures, standard fixtures, or custom fixtures specific to your product type. Standard fixtures are available for smaller circuit modules, wafers, singulated packages, Auer® boats, magazines, cassettes and JEDEC trays. All custom fixtures are designed by Accel for each customer application, considering part size, weight, UPH, inertia, operator friendliness, fluid dynamics, and long term robustness. Loading of product types into fixtures can occur off-line during the MicroCel unit's semiautomatic sequence. Fixtures are mounted to the heads for universal coupling in seconds and are easily interchanged by actuating a single release mechanism.

Performance Features and Benefits

Solvent Versatility

With today's uncertainty about tomorrow's solvents, the risk in buying a cleaning system is substantial. Expensive new equipment may quickly become obsolete when a change is made in the choice of cleaning solutions. MicroCel is the only system currently available that can handle most cleaning solutions, including H₂O, saponified solutions, semi-aqueous solutions, detergents, alcohol-based solvents, and terpenes. With the MicroCel system, you can meet your needs today and tomorrow.

Incomparable Cleaning

By any measure — ionic, SIR, or visual — cleaning results produced by MicroCel technology far exceed all others. Ionic contamination of 0.00 micrograms/inch², surface insulation resistance greater than 10¹⁴ ohms/inch² and no visible residue at 45X magnification upon component removal are typical cleaning results.

Zero-Discharge

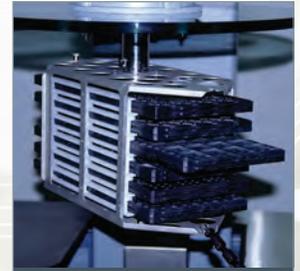
The MicroCel zero-discharge system is an automatic, on-board, closed-loop, fully integrated waste water treatment system. When using solvents that separate from water, the zero-discharge system automatically removes them from the used rinse water and returns the wash solvent to the wash reservoir for reuse. The used rinse water is then processed through a four-stage purification process, including microbial control, 5-micron filtration, carbon adsorption, and mixed-bed deionizing resin to restore the rinse water to its original purity level. No drain or waste water treatment systems are required.

Complete Drying

The MicroCel system uses centrifugal energy and heated flowing air to completely dry complex products in seconds. No other technology can produce 100% dry, spot-free results as efficiently. With the MicroCel unit, blowers and bake out ovens are unnecessary.

Compact Size

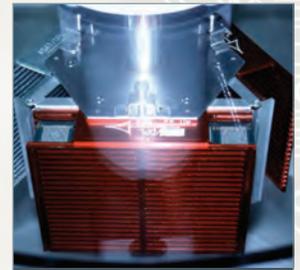
The MicroCel system delivers more performance per square foot of manufacturing floor space than any other cleaning technology. All washing, rinsing, drying, and product preparation is performed in 18 square feet. And with the zero-discharge feature, the complete separation, filtration, and reclamation of all solvent and rinse water occurs inside the standard cabinet.



JEDEC Fixture



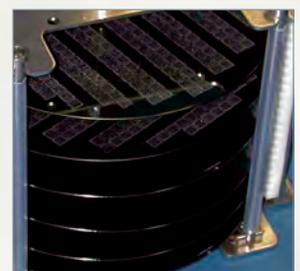
Adjustable Fixture



Magazine Fixture



Auer Boat Fixture



Wafer Fixture

MICROCEL SPECIFICATIONS

CLEANING	0.0 to 2 μ gr NaC ₁ /in ² (0.0 to 0.31/cm ³), resistivity of solvent extract testing per DOD-STD-2000-1
DRYING	100%, no moisture remaining on product, 60% relative humidity in process chamber
CHEMISTRIES	Aqueous, Bio T200A, Axarel 36, Ionox HC, Ionox FCR, Ionox 2302, Armakleen, Bioact EC-7R, Bioact EC-15, Zestron FC

PROCESS TIME

Wash	0.5 to 2.0 minutes typical
Rinse	1.0 to 2.0 minutes typical
Dry	2.0 to 3.0 minutes typical

PRODUCT SIZE

41 cm (16 in) Process Chamber	34cm (13 in) diagonal measure
61 cm (24 in) Process Chamber	54cm (21 in) diagonal measure

PROCESS TEMPERATURES

Wash material	Ambient to 180°F (82°C)
Rinse material	Ambient to 140°F (60°C)
Drying media	Ambient to 400°F (204°C)

FILTRATION

Wash material	99.99%, 100 microns
Rinse material	99.99%, 5 microns
Drying media	99.99%, 0.1 micron

CAPACITY

Wash reservoir	28 gallons (106 litres) <i>Process chamber filled from and drained to wash reservoir</i>
Rinse reservoir	7 gallons (26.5 litres) <i>Replenished by facility supply line</i>

ROTATION

Speed range	0 to 999 RPM with adjustable acceleration and deceleration
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G-LOADING

41 cm (16 in) Process Chamber	at maximum radius, 60 G @ 600 rpm
61 cm (24 in) Process Chamber	at maximum radius, 100 G @ 600 rpm

FACILITIES

Electrical	208/230 VAC, 60 Hz, 3 PH, 35 AMP service, 14 KVA peaks; alternate voltages and frequencies available
System air (or N ₂)	70 psig (4-9 Kg/cm ²), 0.13 cfm (0.004m ³ /min) pneumatics only
Nitrogen	30 to 90 psig (2.1-6.3 Kg/cm ²), 3 cfm (0.09 m ³ /min)
DI water (rinse)	60-100 psig, (4.2-7 Kg/cm ²), 0.02 gpm (0.076 lpm) maximum, intermittent flow
Cooling water	0-2 gpm (0-7.6 lpm) intermittent flow
Discharge	none, with chemistries indicated above
Drying air (or N ₂)	5 cfm (0.12 m ³), 15 cfm (0.45 m ³ /min) peak
Vent	2 in (51mm) diameter, static pressure

FOOTPRINT

Machine Width	1920 mm (75 in)
Machine Depth	9650 mm (38 in)
Machine Height	1700 mm (67 in)
Floor Load	574 kg (1250 lbs)



Process Knowledge and Support

At ITW EAE, we deliver world-class products, performance, and unparalleled service and support programs. With the MicroCel comes the proficiency of our Electrovert process experts that allows us to solve real-world applications issues. *Knowledge in Process* for superior performance.

ITW EAE is a division of Illinois Tool Works, Inc. It is a consolidation of all of its Electronic Assembly Equipment and Thermal Processing Technology. The group includes world-class products from MPM, Camalot, Electrovert, Vitronics Soltec and Despatch.