


Industry Guide

3D Component Cleaning

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What Are 3D Components?

Complex-shaped plastic and moulded parts with pockets, recesses and multi-angled surfaces, such as caps and closures, automotive lighting/trim. For example, components that are handled in bulk, moved fast, and loaded densely create multiple points for contamination to build up and transfer.



The Issue and Why It Matters?

Cleaning is a quality-enabling step, not just a finishing touch. It protects the product, the process and the end user. Ultimately it reduces production costs over time. Effective cleaning helps achieve fewer rejects and less rework, it reduces maintenance and downtime and improves yields in high value manufacturing. Proper cleaning at the right stage avoids repeating the process or rework.



What Does Meech Do?

Meech combines design and manufacturing expertise in ionisation and advanced airflow management to deliver exceptional, high-level 3D component cleaning. From entry-level ionising and blowing to specialised, complex systems, Meech offers a full range of solutions to suit different challenges and budget requirements. This includes cleaning for flat/web surfaces, cap-closure 3D parts, and systems built for demanding manufacturing environments.



Why Meech Technology Matters?

Meech delivers consistent, repeatable cleaning even across complex 3D shapes. This leads to fewer defects in sealing, assembly, coating, and inspection. By capturing and extracting contamination rather than recirculating it, Meech ensures a cleaner and more controlled production flow.

Meech Static Control Range

Solution for Industrial to Clean-room Environments

Product Overview

When it comes to manufacturing high precision components, controlling static and removing loose contamination is essential. The **Meech Static Control Range** provides solutions designed to clean components across industrial and clean-room environments. From conveyors to intricate 3D parts, the range includes: **959IPS Ionising Air Curtain, 261v2 Ionising Nozzle, 251 Pulsed DC Ionising Gun**. These systems ensure components are ready for high-quality assembly or processing, helping manufacturers reduce defects, cross-contamination, and rework.



Feature	Benefit
Ionised airflow for combined cleaning and static control	Neutralises static charges that attract and bind, dust and particles.
Low air consumption	Economical use of compressed air with Ionising Meech air technology.
Rapid ionisation	Fast decay times, making them effective in high-speed applications.
Adjustable outputs (using DC technology)	Output voltage, frequency and balance can be adjusted to optimise for a range of applications.
Non-contact cleaning	Especially useful for sensitive 3D components.

Using 261v2 Nozzle to Clean Plastic Containers Before Batch Code Printing

Problem: Dusty or statically charged products can cause issues when date- or batch-coding, using ink-jet printers. If the print surface is dusty, the dust will prevent the ink from adhering to the product.

Typical issues could include:

- Unreadable print due to misting
- Repeated print head blockage
- ESD damage to the print head circuit board

Solution: By using a 261v2 Ionising Nozzle static charges are removed from the surface. Releasing the contamination, which is then removed by the air that is blown from the nozzle. Spot cleaning of dusty or statically charged surfaces. Ensures reliable ink adhesion and protects print heads. Resulting in a higher-quality end product and reducing the need for machine maintenance. Waste is reduced, therefore savings are created.



Image1: Dust contamination on print surface with surface cleaning application



CyClean™

Non-Contact Shallow Tray Cleaning Solution

Product Overview

CyClean has been tremendously successful in hundreds of web cleaning applications. Meech **CyClean** design makes it an extremely versatile product and can also be used to clean shallow complex shapes such as trays. When it comes to tray cleaning, keeping them clean is essential in industries like food and pharmaceuticals where cross-contamination is a serious concern. Meech **CyClean** system uses powerful air movement to lift and remove loose, dry contamination as trays pass through the line. It ensures trays of different depth, size and shape are contamination-free and safer for use.



Feature	Benefit
Static control	Neutralises static charges to optimise cleaning performance and prevent recontamination.
Compact design	Flexible positioning and easy installation.
Unique shape	Powerful vacuum and blowing air disturbs the contamination and removes it from the surface. The vacuum slots can be amended to increase airflow depending on the tray shape.
Flexible design	Use of a hood that can enhance CyClean cleaning effectiveness creating a closed cleaning loop.
Meech Air Handling Unit	Allows complete control of the bias between the blowing and vacuum airflows and effectively traps the contamination.

Using CyClean Manifold to Clean Trays in Food Packaging

Problem: In ready-to-eat food production, shallow trays used to transfer products easily collect dry particulate contamination from ingredients and packaging. Particles become trapped along raised rims and corners, while manual or wet cleaning methods slow production and increase the risk of cross contamination.

Solution: CyClean is a dry, close range tray cleaning system designed for continuous food production lines. CyClean uses integrated ionisation to eliminate static charges, it then uses positive and negative airflows to disturb and remove the contaminants into the Air Handling Unit. By ionising, blowing, extracting, and re-ionising, CyClean removes and captures unbonded dry contamination from open and closed trays without water or chemicals, allowing trays to be reused immediately in high-hygiene environments.



Image2: Contamination on a food tray with tray cleaning application

CyClean™-R

Non-Contact Cap/Closure Cleaning Solution

Product Overview

Bottle caps and lids for all industries, such as food/beverages, pharmaceutical, beauty products often collect contamination in corners and along edges. This may include plastic swarf, dust, or paint chippings. Meech offers a compact, proven, and fully bespoke solution. The Meech **CyClean-R** cleaning manifold, with a central ionised positive air slot and two vacuum air slots, delivers consistent, reliable, and high quality cleaning in fast paced production environments.



Feature	Benefit
Integrated static control	Neutralises static charges to optimise cleaning performance and prevent recontamination.
Unique design	Positive ionised airflow enters from the central chamber and negative pressure generated by the two outer chambers collect the airborne contamination.
Meech Air Handling Unit	Allows complete control of the bias between the blowing and vacuum airflows and effectively traps and contains the contamination.
High airflow precision	The positive pressure is set using a combination of the AHU pressure settings, AHU bleed valve and the more sensitive throttle valve in the ducting.

Using a Bespoke CyClean-R to Bottles, Caps and Lids

Problem: In food and beverage, pharmaceutical, and beauty product manufacturing, plastic caps and closures can retain fine particles and debris generated during moulding and assembly. Any contamination trapped inside closures poses a direct risk to product quality and brand reputation, especially on high-speed bottling lines. In addition, these microplastics may enter the bottles and be consumed, creating potential health risks for consumers.

Solution: By integrating two circular DC ionising bars into the positive air spigot, the CyClean-R delivers a powerful stream of ionised airflow. Two vacuum slots then extract the released contamination and capture it within the fan-driven air-handling unit. The CyClean-R is positioned off-centre, ensuring the cleaning action runs diagonally across each cap as it travels along the manifold. Paired with a Mini AHU, the system allows the positive pressure to be adjusted according to cap orientation and depth.

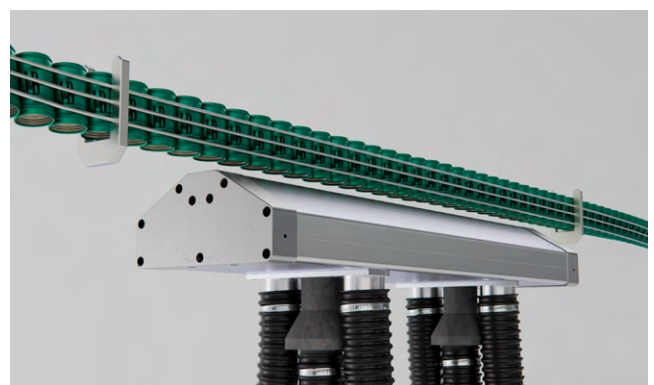


Image3: Contamination trapped inside closures poses with cap closure cleaning application

IonRinse™

Ionised Air Rinsing Technology for Containers & Bottles

Product Overview

When it comes to container and bottle cleaning, traditional water-based systems can be costly, slow, energy-intensive and difficult to manage to a high standard. Meech **IonRinse** system provides a dry, efficient alternative using fan-driven, ionised airflow to remove loose contamination without the need for water. Ideal for preforms, containers and cans, it delivers effective cleaning while helping customers reduce energy use and improve environmental performance.



Feature	Benefit
Stainless steel construction	High quality and suitable for use in wash-down environments.
Teflon airflow distributor	Customised to suit the container size and low friction speed to ensure maximum performance. Teflon material allows the container to run in contact with the surface.
DC Ionising Bar	Built-in 924IPS Ionising Bar to generally enhance contamination removal.
Dry, fan-driven cleaning	No water costs, no water/chemical residue, no compressed air cost, no chemical costs, no effluent costs.

Using IonRinse to Clean Containers

Problem: In beverage packaging, cleaning preforms, containers, and cans-reducing traditional water-based systems is energy-intensive, costly, and difficult to control.

Solution: The Meech IonRinse system provides a dry, water-free alternative for container cleaning. Using fan-driven, ionised airflow, IonRinse effectively removes loose contamination from preforms, containers, and cans-reducing energy consumption, simplifying operation, and helping beverage producers improve environmental performance.



Image4: Contamination trapped inside containers with IonRinse application

IonWash™

Exceptional 3D Component Cleaning from Industrial to Clean Room Zones

Product Overview

When it comes to high-spec industrial 3D components, dust and small particles settling on surfaces can lead to quality issues, higher costs and production delays, especially in automotive manufacturing. The Meech **IonWash** system provides a faster, automated way to remove dry contamination when transitioning from an industrial to a clean room zone. Meech offers a reliable and cost-effective solution that improves cleanliness and helps manufacturers maintain high-quality output.



Feature	Benefit
Repeatable, consistent cleaning	The IonWash offers a consistent approach to cleaning when transitioning from an industrial to a more clean room environment.
Time efficient and effective	IonWash runs at an optimised set cycle time, which will effectively clean each component consistently. Cycle times are programmed during setup and can be adjusted in increments of 1 second.
Reduced reject rate	The thorough component cleaning offered by the IonWash means that the reject rate caused by poor manual cleaning can be significantly reduced.
Short payback period	Current users report a 4 month payback period for the IonWash. The short payback period is due to a combination of factors including fewer rejects and increased productivity.

Using IonWash to Clean Car Headlights

Problem: In automotive manufacturing, high-spec 3D components such as interior trim, housings, and structural parts easily attract dust and fine particles. Contamination on complex surfaces leads to defects, rework, production delays, and rejection rates increasing overall manufacturing costs.

Solution: The Meech IonWash is a fully integrated system that incorporates powerful 12kVDC ionisation. High-volume blown, ionised airflow is delivered through multiple (up to 36) manoeuvrable nozzles, which are directed at the target component to neutralise static charge and remove contamination from the 3D component. The IonWash incorporates a fully enclosed cleaning chamber with high-volume, blown ionised airflow and negative vacuum airflow, which undergoes advanced filtration.



Image5: Contamination on high-spec 3D components with IonWash application



JetStream™

Non-Contact Energy Efficient Solution

Product Overview

The Meech **JetStream** system provides fast, non-contact cleaning by directing ionised air across the surface to neutralise static and remove loose contamination. Whether used before container decoration or to prepare 3D parts like bumpers for painting, **JetStream** delivers consistent, reliable cleaning that prevents dust from re-settling and ensures a smooth, high-quality finish.



Feature	Benefit
Energy efficient	The JetStream system is blower driven and requires dramatically less energy to run than a comparable compressed air system. Energy savings of 70-90% are commonplace.
Unique design	Large plenum ensures even delivery of the airflow along the length of the air knife. Inner profile gives a highly efficient airflow.
Flexible design	Adjustable air exit slot (standard 3mm). Option for Ionising/ Non Ionising and ATEX compliant systems. Choice of extraction: Re-circulating, Non Re-circulating or Non Re-circulating with extraction. Profiling options: Fixed, Position Profiling or Real Time profiling.
Rapid return on investment	Energy savings and productivity improvements deliver a rapid payback (usually much less than 12 months).

Using JetStream to Clean Car Bumpers Prior to Painting

Problem: After arriving from injection moulding, bumpers are covered in particles and other manufacturing deposits left over from the process. To compound the problem, the static charge that is inherent in plastic products causes more dirt to be attracted to the surface. Bumpers need to be thoroughly cleaned and neutralised before undergoing painting.

Solution: The Meech JetStream ionising air knife system is installed at the start of the bumper paint procedure to clean and neutralise the bumpers before they undergo the primer application stage. The air knives move over the total component shape at approximately 100 -150mm distance from the surface to provide the best possible static neutralisation and contamination removal. The unique design of the JetStream system ensures that dirt does not re-circulate and re-contaminate painted bumpers.



Image6: Contamination on bumper with JetStream application



Meech Air Technology

Non-Contact Compressed Air Solution

Product Overview

Compressed air is widely used by many industries to clean 3D components. When it comes to drying jars, containers and other 3D components, many production lines rely on compressed air, but this approach is expensive and noisy. The range includes: **Energy Saving Nozzle**, **Energy Saving Safety Blowgun**, **Energy Saving High Thrust Jet**, **Energy Saving Air Amplifier**, **Energy Saving Air Curtain**, which are all designed to utilise ambient air to boost the output compressed air, Meech Air Technology offers all the benefits of compressed air but at a lower cost.

Feature	Benefit
Energy saving	Meech Air Technology can cut compressed air demand by up to 70% and reduce running costs.
Noise reduction	Up to 30dBA noise reduction.
Innovative design	Offers Air Amplification at a ratio up to 25:1.
No moving parts	No maintenance- easy to install.

The Meech Air Technology (MAT) range is designed to reduce energy costs by entraining ambient air into the compressed airflow, resulting in the use of less compressed air to achieve the same results.

Cost comparison shows that by simply fitting 5 x safety nozzles onto existing 6mm open pipes you can save over £5,000 per year in energy cost.

The Meech MAT range for 3D component cleaning includes:



Energy Saving Nozzle



Energy Saving Safety Blowgun



Energy Saving High Thrust Jet



Energy Saving Air Amplifier



Energy Saving Air Curtain



Working With You

Our mission is to design and manufacture innovative solutions to optimise our customers' productivity

Helping Your Business

At Meech, we value your project and want to help you achieve better efficiency and improved quality output. If you are designing a pilot or scaled up your production line, or have existing contamination or static charge related challenges, please get in touch with one of our industry experts.

Global Presence

With offices covering 3 continents and a network of approved distributors across the world, we are well placed to provide exceptional local support. Our Meech 3D component cleaning manufacturing support team are available to meet you and discuss your application either face-to-face or via remote video-call.

Get in Contact

If you have a 3D component cleaning manufacturing project you would like to discuss with our team and industry experts, then please get in touch.

We look forward to working together to make your goals a reality.



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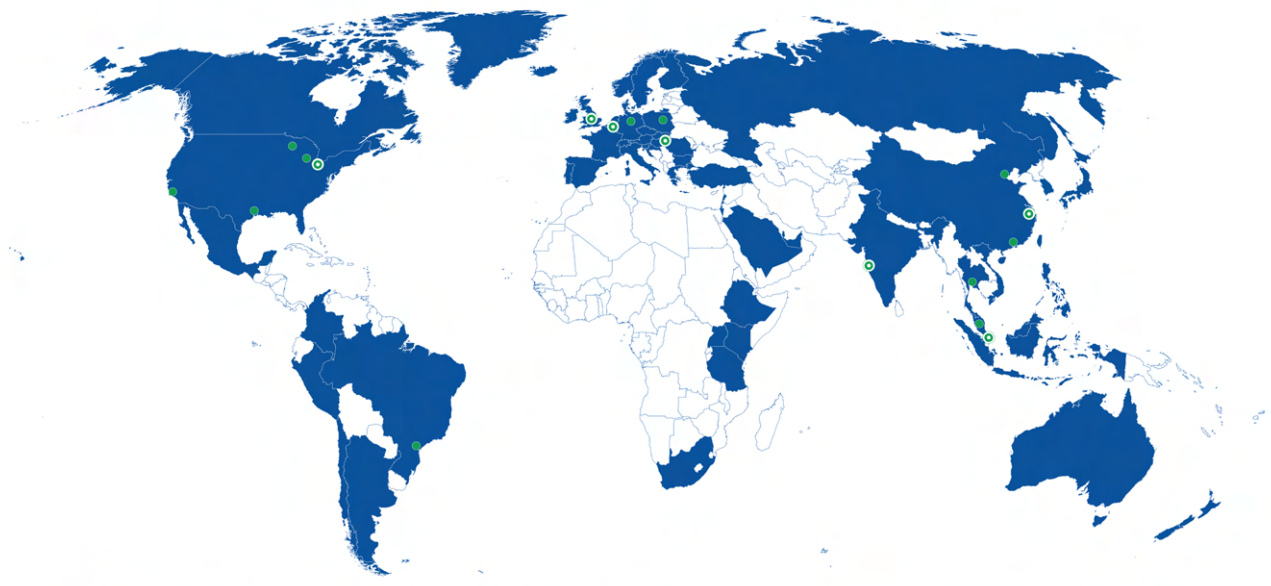


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