



June 2017

**IonWash™**

The revolutionary  
component cleaning system

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Meech International manufactures five interrelated product ranges:

- Industrial static and dust control equipment
- Electronics and cleanroom (ESD/ESA) static control equipment
- Surface cleaning systems- IonWash™, IonRinse™, JetStream™
- Web cleaning systems- contact and non-contact
- Compressed air energy saving and vortex cooling products

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## We've got the world covered

Wherever you are in the world, you'll find Meech hard at work, providing a wide range of businesses with technical expertise. From our headquarters and technical centre in the UK, our manufacturing subsidiary in the USA and sales offices in Belgium, Hungary, China and India; we've got the world covered. In fact, our distribution network now covers over 50 countries, providing easy access to fully trained, carefully selected Meech distributors, who can provide in-depth support, wherever you are based.

## Outstanding quality as standard

We always work to the highest possible quality standards in everything we do: manufacturing, customer support and technical know-how. Our quality management system is certified by BSI to ISO9001:2008. Products manufactured by Meech are appropriately certified to international standards. They carry markings including CE and UL/CSA (CUL), as well as ATEX and UL "EX" approvals. With so much to offer, it is no wonder our global user list has grown to in excess of 7,000 companies.





# IONWASH™ : AN INTRODUCTION



## A Market Pioneer

Meech developed IonWash™ in response to a need in the marketplace for fast and consistent component cleaning and ionisation. Due to the complexity of some three-dimensional components, ionisation and contamination removal by hand was time-consuming and inconsistent.

Our R&D team designed IonWash™ as the ultimate solution. From conception, the IonWash™ had both the user and the objective in mind. Developed to incorporate extremely powerful ionisation, alongside important safety features to ensure perfected usability.

## Exceeding Existing Methods

Cleaning of 3D components was typically undertaken as a manual operation, using a standard or 'ionising' air gun, or through the use of a compressed air powered unit that is foot switch controlled. The major downfall of both of these approaches is that they are heavily reliant on operator attention, leading to inconsistent results.

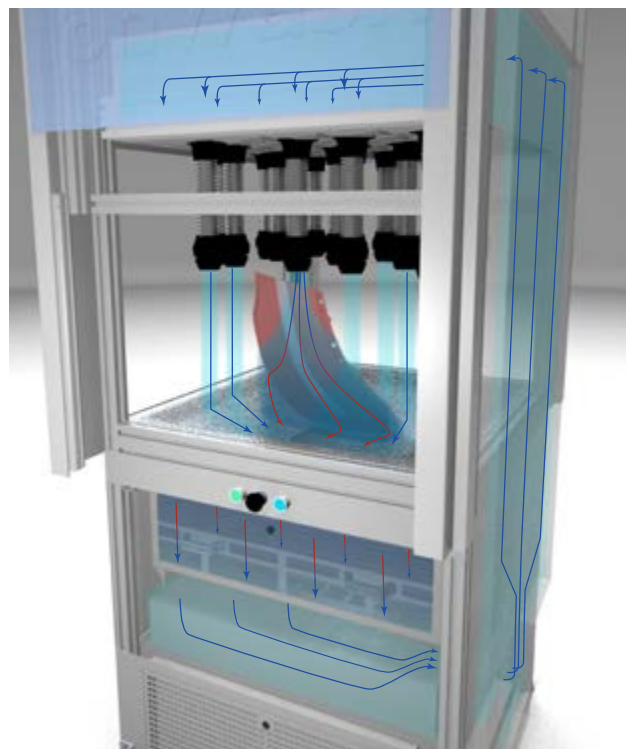
### Manual Air Gun and Compressed Air cleaning method weaknesses:

- Inconsistent cleaning between operators, in terms of exposure time and surface coverage.
- Contamination is blown into the atmosphere and may re-contaminate the components.
- High compressed air consumption.
- High compressed air noise levels.
- Components may be contaminated by dirty or wet compressed air supply.

## How IonWash™ Works

The unrivaled cleaning performance of IonWash™ is the result of four critical processes:

- Powerful ionisation within the nozzles allow static charges on the components to be neutralised, thus loosening the contaminants.
- High pressure (blown) air simultaneously flows through the multi-directional nozzles, towards the component, removing the contamination.
- Low pressure (vacuum) air then pulls the contamination into the vacuum chamber/filter media (inside the AHUv3).
- Meech designed the AHUv3 with the ability to provide instant high and low pressure air, allowing the cycle time to be reduced.
- Intelligent systems allow all ionisation and air flow to be monitored. If any problems occur, the system will alarm, informing the operator. This ensures that thorough cleaning can be maintained and the IonWash™ can continue working to it's full potential.



## The IonWash™ Advantage

- **Multi-directional ionising nozzles** – achieves total ionising airflow coverage of complex components.
- **Programmable cycle time** – the cycle time can be programmed through a password protected screen, which means IonWash™ can be set to provide the optimum level of contamination removal.
- **Extraction** – by extracting contamination from the cleaning zone, the cleaning efficiency is enhanced as the potential for re-contamination is reduced.
- **Auto doors** – the doors to the cleaning zone open and close automatically at the start and end of each cleaning cycle. This means the operator cannot remove the parts before the end of the cycle, ensuring cleaning efficiency is optimised and consistent.
- **Fan powered** – low running cost and low noise level (no expensive compressed air).
- **High quality filtration** – the system can be supplied with HEPA or ULPA filter media.
- **Filter condition monitoring** – the condition of the filter media is monitored and the operator is alerted when it needs to be changed, thus maximising the filter's efficiency.
- **Automatic Pressure Control** – ensures a consistent level of cleaning is achieved for the full filter life, resulting in a consistent end product.



# TECHNICAL EXCELLENCE



## Developed for Industry

IonWash™ can be utilised to improve the quality of many, typically 3D parts, that require a contamination free surface and are part of a manual process. Examples of applications where the IonWash™ would prove beneficial include:

Industry	Application Example
Automotive	<ul style="list-style-type: none"><li>■ Vehicle lighting units</li><li>■ Internal components, such as speedometer covers, gear levels etc.</li></ul>
Medical	<ul style="list-style-type: none"><li>■ Medical devices</li><li>■ Optics</li></ul>
Electronics	<ul style="list-style-type: none"><li>■ Static sensitive assemblies</li><li>■ Clean room assemblies / Phones / LCD screens</li><li>■ Camera lens assemblies</li><li>■ Robotics</li></ul>
Aerospace	<ul style="list-style-type: none"><li>■ Optical displays</li><li>■ Aircraft systems</li><li>■ Avionics - Flight Deck Controls</li></ul>

## Thorough, Adaptable Cleaning

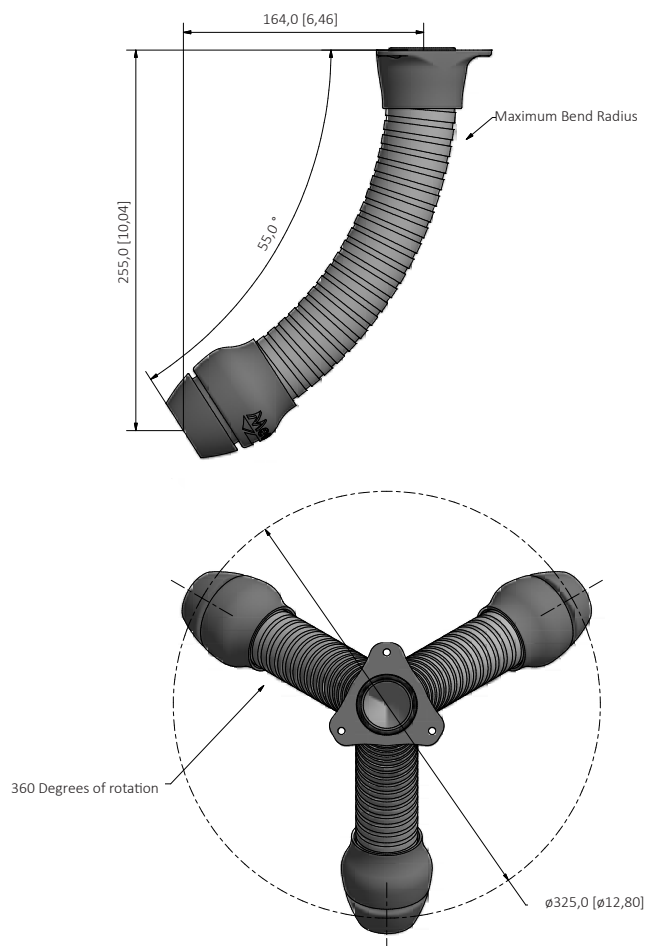
To achieve the high quality cleaning of IonWash™ it is critical for the system to:

1. Allow the ionising airflow to be directed at the multiple surfaces of the parts to be cleaned.
2. Provide a high volume airflow.
3. Instantaneously neutralise static charges.
4. Extract and trap contamination.

Should the system not perform all of these tasks, the highest level of cleaning efficiency will not be achieved. Through the combination of all four, IonWash™ is able to offer exceptional, reliable and consistent cleaning.

### Multi-Directional Ionising Nozzles

Meech developed the revolutionary multi-directional ionising nozzles that are key to the IonWash™ system. The nozzle outlet direction can be manually adjusted to suit the shape of the component to be cleaned. The output airflow of each nozzle can be moved through 55°.

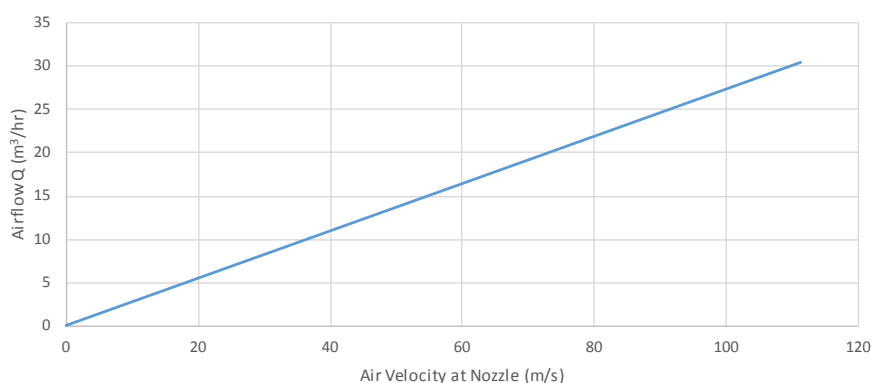


### High Volume Ionised Airflow

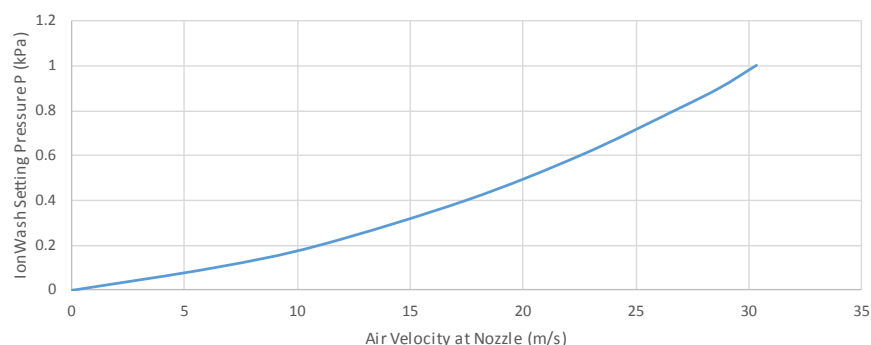
IonWash™ is powered by Meech Air Handling Unit (AHU) technology. Optimal cleaning levels are achieved by flowing a high volume of relatively low pressure ionised air over the surface of the parts.

The high volume ionised airflow dislodges the contamination and carries it to the system's filtration. IonWash™ provides a maximum airflow of 2200m³/hr at a pressure of 1kPa.

**IonWash Air Velocity at Nozzle vs Airflow per nozzle**



**IonWash Setting Pressure vs Air Velocity at Nozzle**

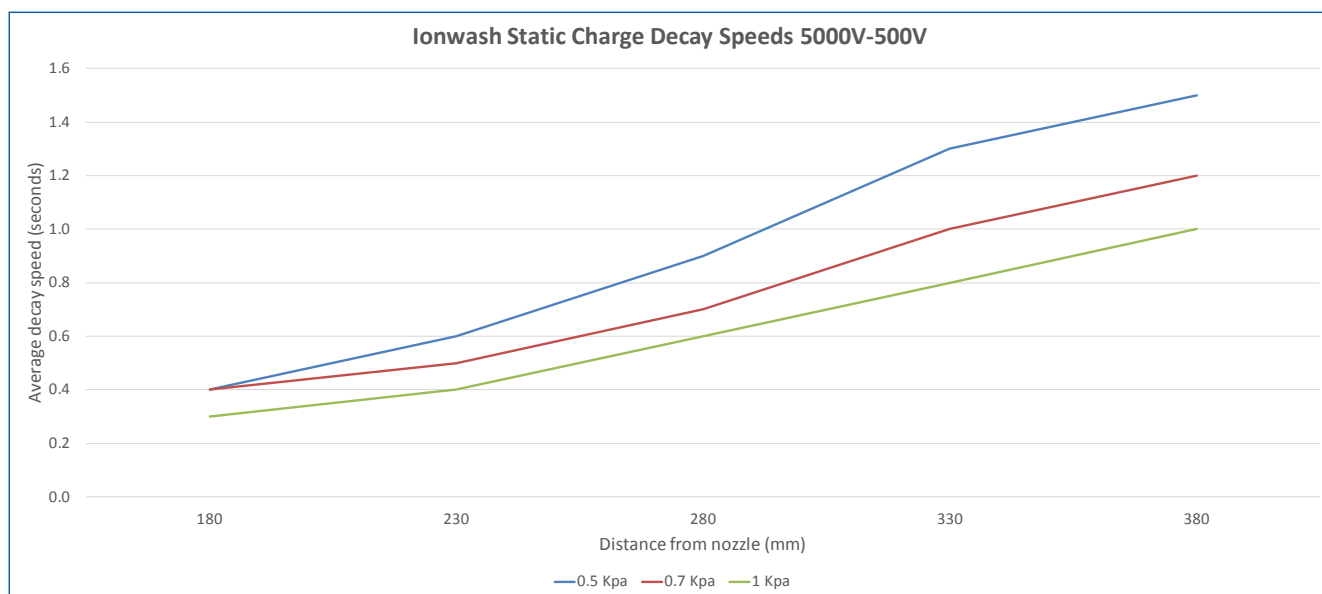


## Static Neutralisation

A static charge will most likely be present on the components. Static charges on 3D components are typically generated through friction or by cooling after a previous application such as moulding. Until neutralised, a static charge will trap and hold contamination on the surface of the component. A static charge will also attract ambient airborne contamination to the component. Therefore, to achieve excellent cleaning, it is vital that the static charge is removed as part of the cleaning process. A static charge can be either positive or negative in polarity. Many 3D components are plastic, which

will generally have a negative charge. IonWash™ incorporates a powerful Meech DC ionising system that will neutralise both polarities of charge simultaneously. The ionisation performance of IonWash™ has been tested using a standard industry decay speed test; this measures the time taken for the ionising nozzle to reduce a static charge from 5,000 to 500 volts.

The graph below shows the impressive decay speed at various distances from the nozzle outlet to the surface of the components at various air pressures.



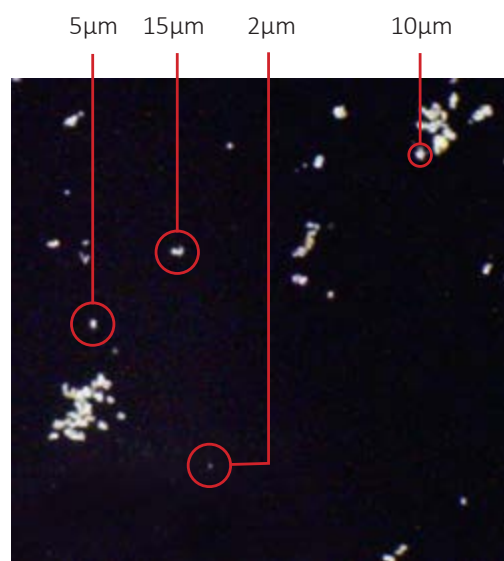
## Extract and Trap Contamination

During the cleaning cycle, IonWash™ is a closed loop airflow system. The entire volume of air blown over the surface of the components is extracted, including the contaminants within it. This is then passed through two stages of high quality filtration, before being reused.

## Types of Contamination

IonWash™ is designed to remove various types of dry and unbonded contaminants from the surface of components. Some typical contaminants include:

- Hair
- Fibres
- Ambient dust
- Insects – mosquitoes etc
- Swarf from previous machining operations



*x75 magnified view of surface contamination.*



# INGENUITY & INNOVATION

## Multi-Directional Ionising Nozzles

The multi-directional ionising nozzles are key to the IonWash™ system. The nozzles can be manually adjusted to suit the unique shape of the parts to be cleaned. IonWash™ can therefore be used for ever-changing production requirements.

## Nozzle Airflow Adaptors

The nozzles are supplied as standard with a circular airflow outlet. A range of clip on airflow adaptors is also available to tailor the airflow profile, maximising the cleaning effect on the component; this option may be beneficial when cleaning complex items. IonWash™ includes multiple nozzle attachment positions, allowing the system to be configured to best suit the components to be cleaned.

## Safety Features

IonWash™ has been designed with user safety at its core and for use in a busy industrial environment:

- Light guard sensors on both entrances automatically stop the unit from closing when the sensor is interrupted.
- The operation indicator beacon on the side of the IonWash™ inform users of any issues. This is accompanied by an alarm which will sound if the red warning light is triggered for any reason.
- Emergency stop buttons are located on either side.

## Advanced Filtration

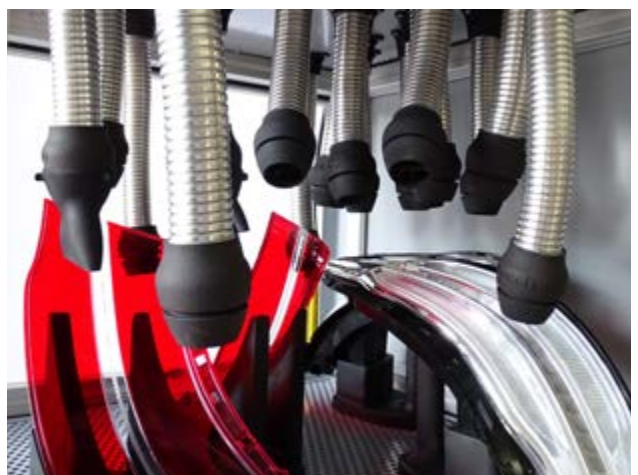
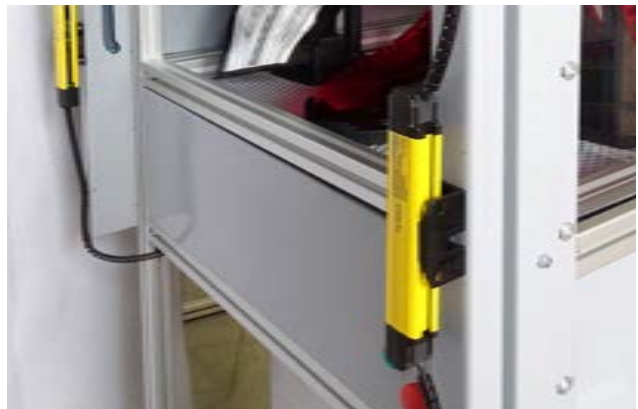
IonWash™ has a high level of standard filtration which comprises an F8 grade bag filter with a 2m<sup>2</sup> surface area and an efficiency of 90-95% at 0.4 micron, or 100% at 1 micron. This is combined with a H14 grade HEPA filter with a 7.5m<sup>2</sup> surface area and an efficiency of 99.997% at 0.3 micron. The level of filtration can be upgraded further by changing the HEPA filter to a U15 ULPA filter which has an efficiency of 99.995% at 0.12 micron.

## IonWash™ System Cleaning Zones

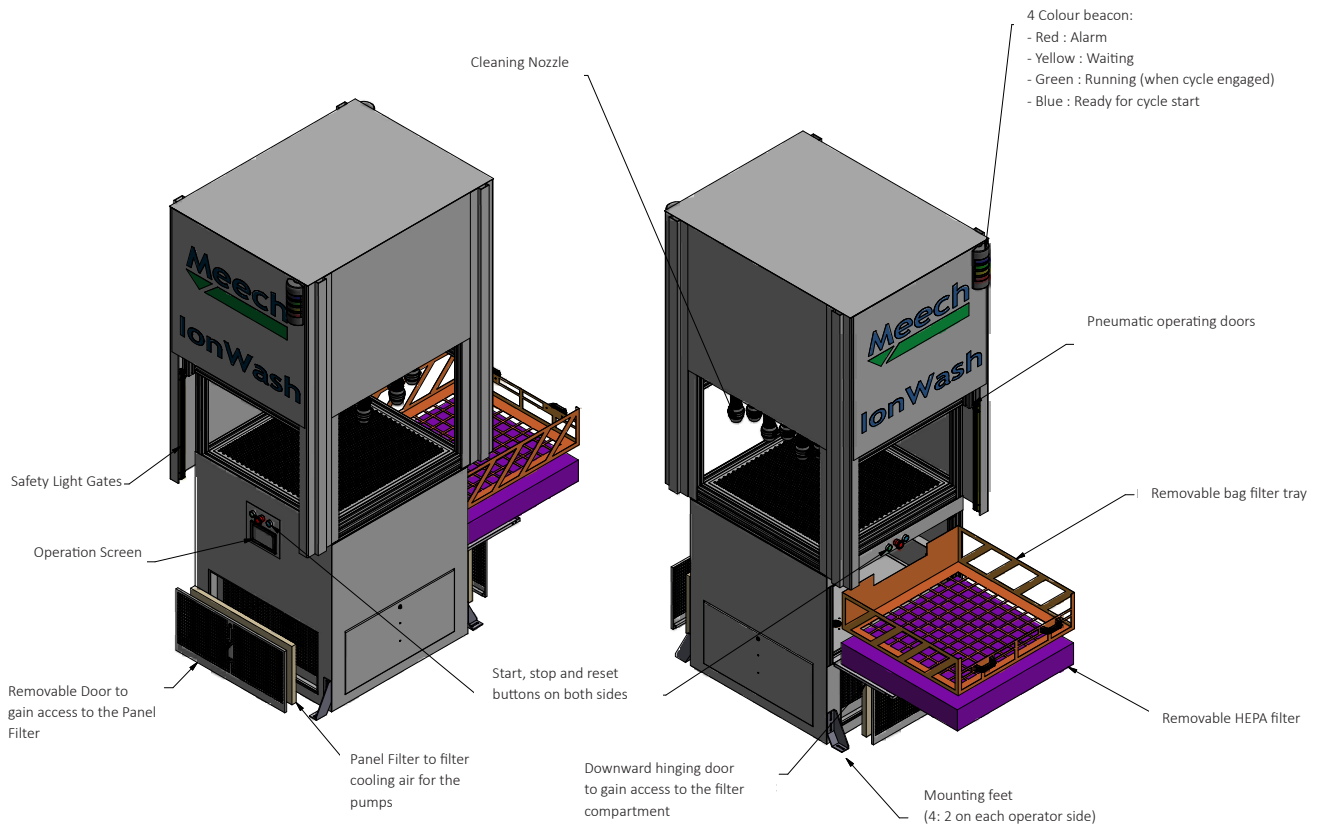
IonWash is available with two standard cleaning zones:

- 710 x 710 x 330mm (W x D x H)
- 820 x 770 x 350mm (W x D x H)

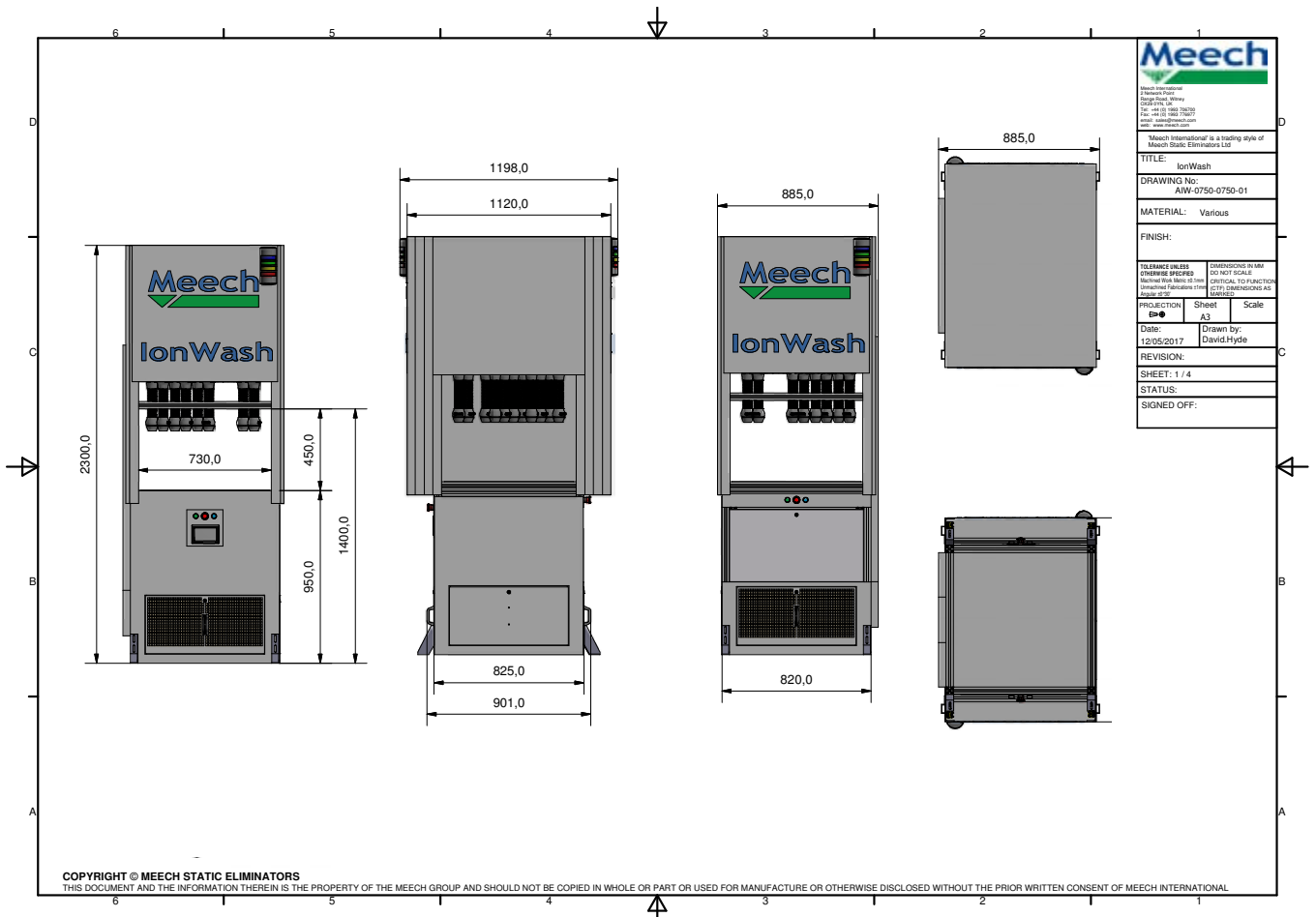
Parts access to the cleaning zones can be via one or two sides. This allows a single IonWash™ system to be installed dedicated to a single line, or centrally between two lines, where it is utilised by two operators. Should your components not fit in the standard cleaning zones, Meech is able to manufacture custom design IonWash™ systems to suit your requirements.



## IonWash™ Design Features



## IonWash™ Technical Drawing







## All you need, from the best in the business

Meech is also a leading provider of:

- Industrial Static Control Systems – Eliminating unwanted static or creating a controlled static charge in industrial processes can increase productivity, reduce waste and enhance quality.
- ESD – High sensitivity static control for electronic cleanroom environments to prevent ESD damage and reduce failure rates.
- Web Cleaning Systems – Typically used within the printing and packaging industries to remove contamination, improve print quality and increase productivity.
- MAT Air Efficiency Range- Industrial compressed air products that are energy efficient, reduce noise levels and cut costs.
- Surface Cleaning Systems- IonRinse and JetStream Air Knife Systems – Energy efficient 3D surface cleaning systems that are used for contamination and surface moisture removal.

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