

March 2018

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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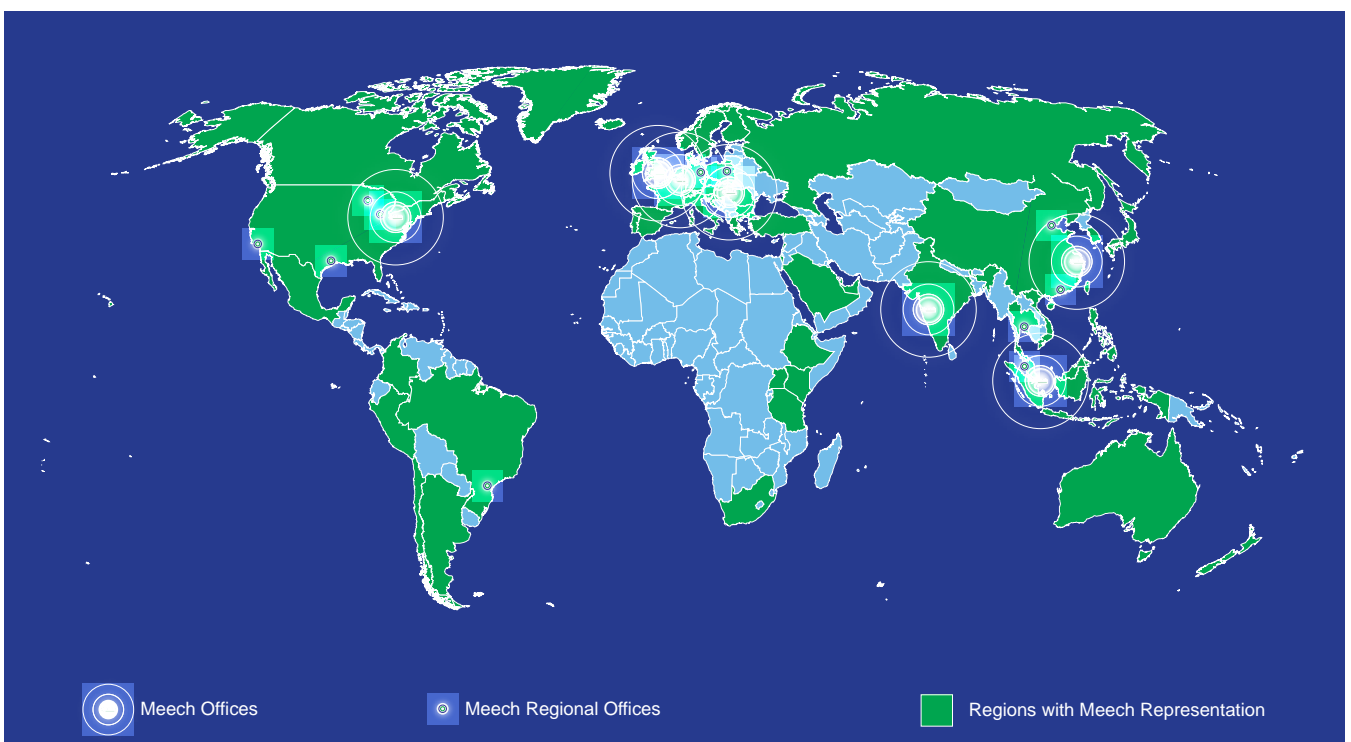


We've got the world covered

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, India and Singapore; 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 3D component cleaning.

Due to the complexity of some 3D components, ionisation and contamination removal by hand is time-consuming and inconsistent.

Our R&D team designed IonWash as the ultimate solution for contamination removal from 3D components. From conception, the IonWash had both the user and the objective in mind. It has been developed to incorporate extremely powerful ionisation and blowing and vacuum airflows, alongside important integrated safety features that ensures consistent, reliable results.

3D Component Cleaning

Historically, the cleaning of 3D components is typically undertaken as a manual operation, using a standard or 'ionising' air gun, or through the use of a compressed air powered unit controlled by a foot switch. Both of these approaches 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 and noise levels.
- Components may be contaminated by dirty or wet compressed air supply.

Benefits of IonWash

Repeatable, Consistent Cleaning:

The IonWash offers a consistent approach to cleaning; the same high level of cleaning is applied to each component, with every cleaning cycle.

High Quality Finish:

As production techniques have advanced, so have customers' quality expectations. Now suppliers are looking for more ways to set themselves apart from their competition. The outstanding performance of the IonWash means that more contamination is removed from the components surface, which in turn, means the quality of finished goods improves significantly.

Time-Efficient and Effective:

IonWash runs at an optimised set cycle time, which will effectively clean each component consistently.

Reduced Reject Rate:

Thorough component cleaning offered by the IonWash means that reject rate as a result of poor cleaning is significantly reduced.

Short Payback Period:

Current users report a 4 month payback period for the IonWash. Combined with the reduced reject rate, over time, the IonWash will prove an asset to the business.

Tailored Design:

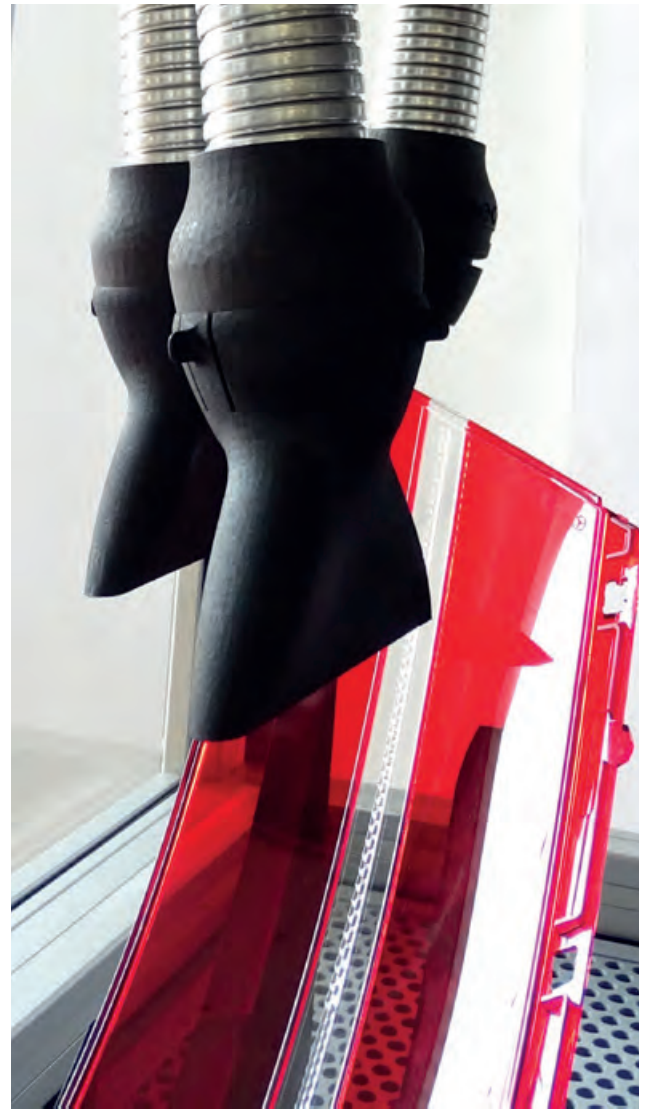
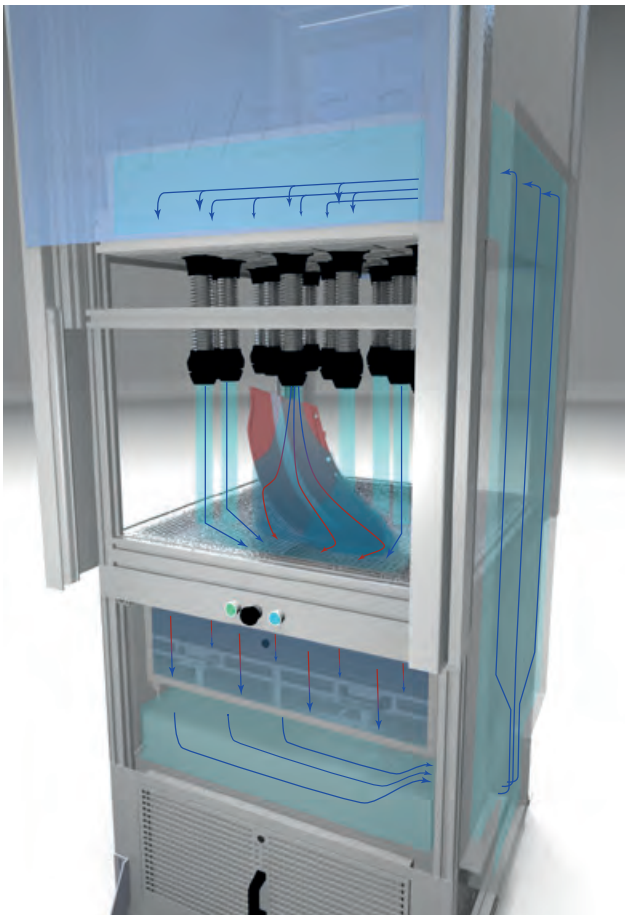
The IonWash cleaning system can be adapted to suit your specific application for easy incorporation within your production line.



How IonWash Works

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

- Powerful ionisation neutralises static charges on the components, loosening the contaminants.
- High volume (blown) air flows through the multi-directional nozzles, towards the component, removing the contamination.
- High-volume negative (vacuum) air then pulls the contamination into the vacuum chamber/ filter media.
- IonWash provides instant high volume (blown) and high volume negative (vacuum) 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.



Critical Design Characteristics

Our R&D team identified 4 critical factors that are required to achieve peak cleaning performance:

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.

Through the combination of all four factors, IonWash uniquely offers exceptional, reliable, consistent and cost-effective cleaning.

TECHNICAL EXCELLENCE



Developed for Industry

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

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

IONWASH NOZZLES

Nozzle Design

Multi-Directional Ionising Nozzles

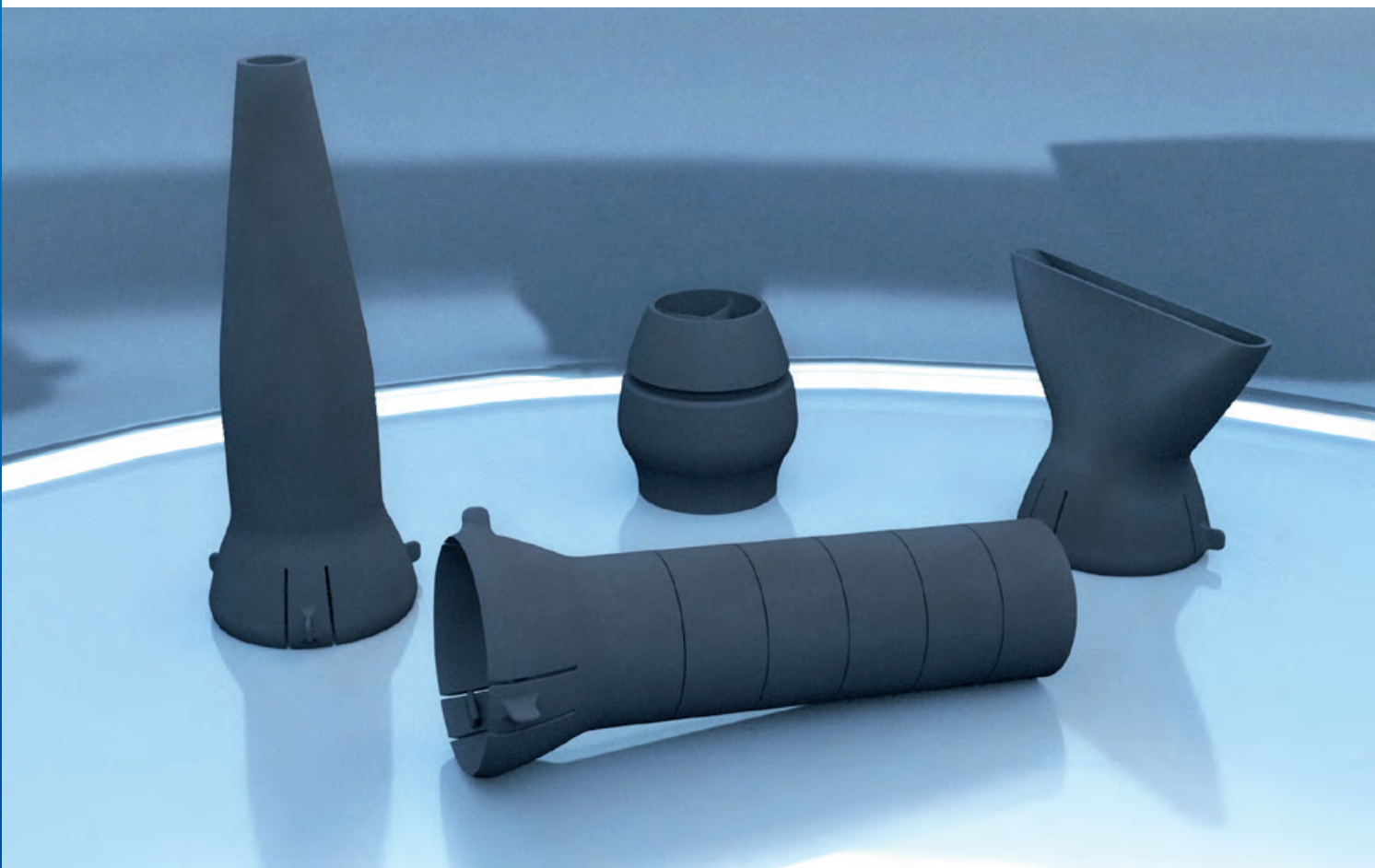
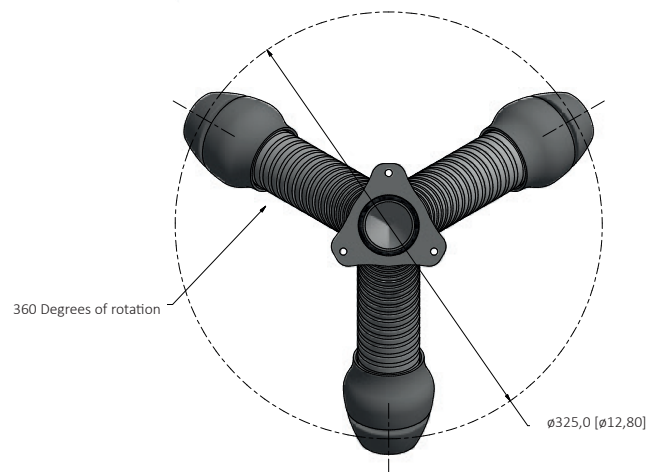
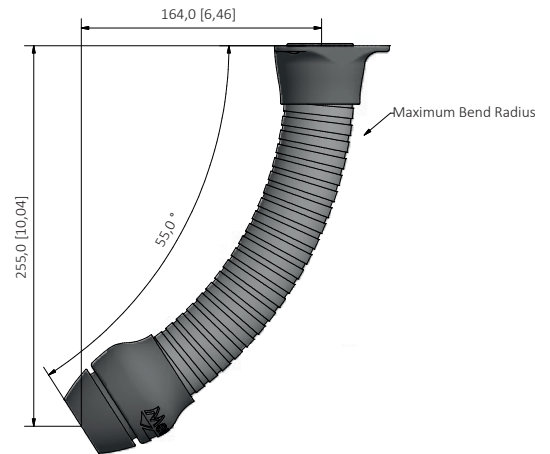
Meech developed the revolutionary multi-directional ionising nozzles that are key to the IonWash system. The nozzle outlet direction can be manually adjusted through 55° to suit the unique shape of the component to be cleaned. IonWash can therefore be used for ever-changing production requirements.

Nozzle Airflow Adaptors

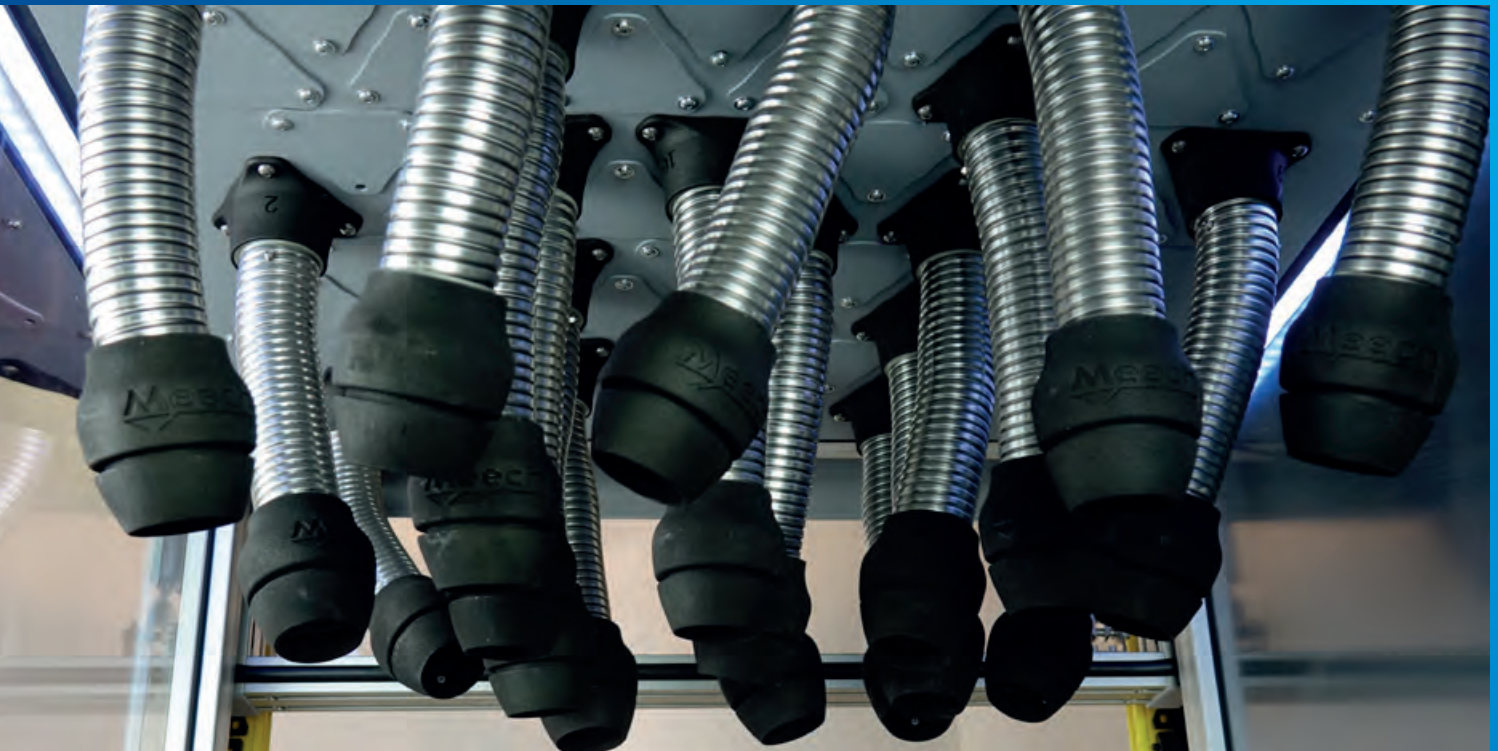
IonWash nozzles are supplied as standard, with a circular airflow outlet. A range of clip on airflow adaptors are also available to tailor the airflow profile, maximising the cleaning effect on the component. The adaptors can prove beneficial when cleaning complex items in order to effectively cover the entire three-dimensional surface of the component.

Optimised Positioning

IonWash has been designed to provide 40 different nozzle placement possibilities. This ensures that up to 16 nozzles can be expertly positioned to fully cover all surfaces of the three-dimensional component, for maximised effectiveness.



INBUILT STATIC CONTROL

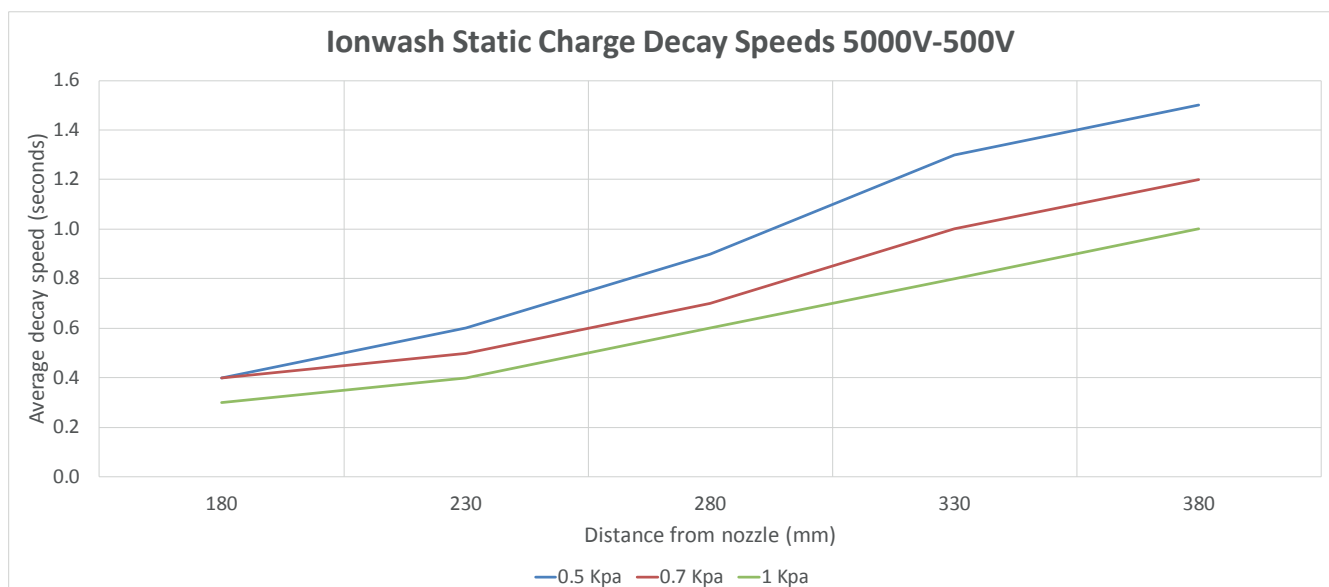


Static Neutralisation

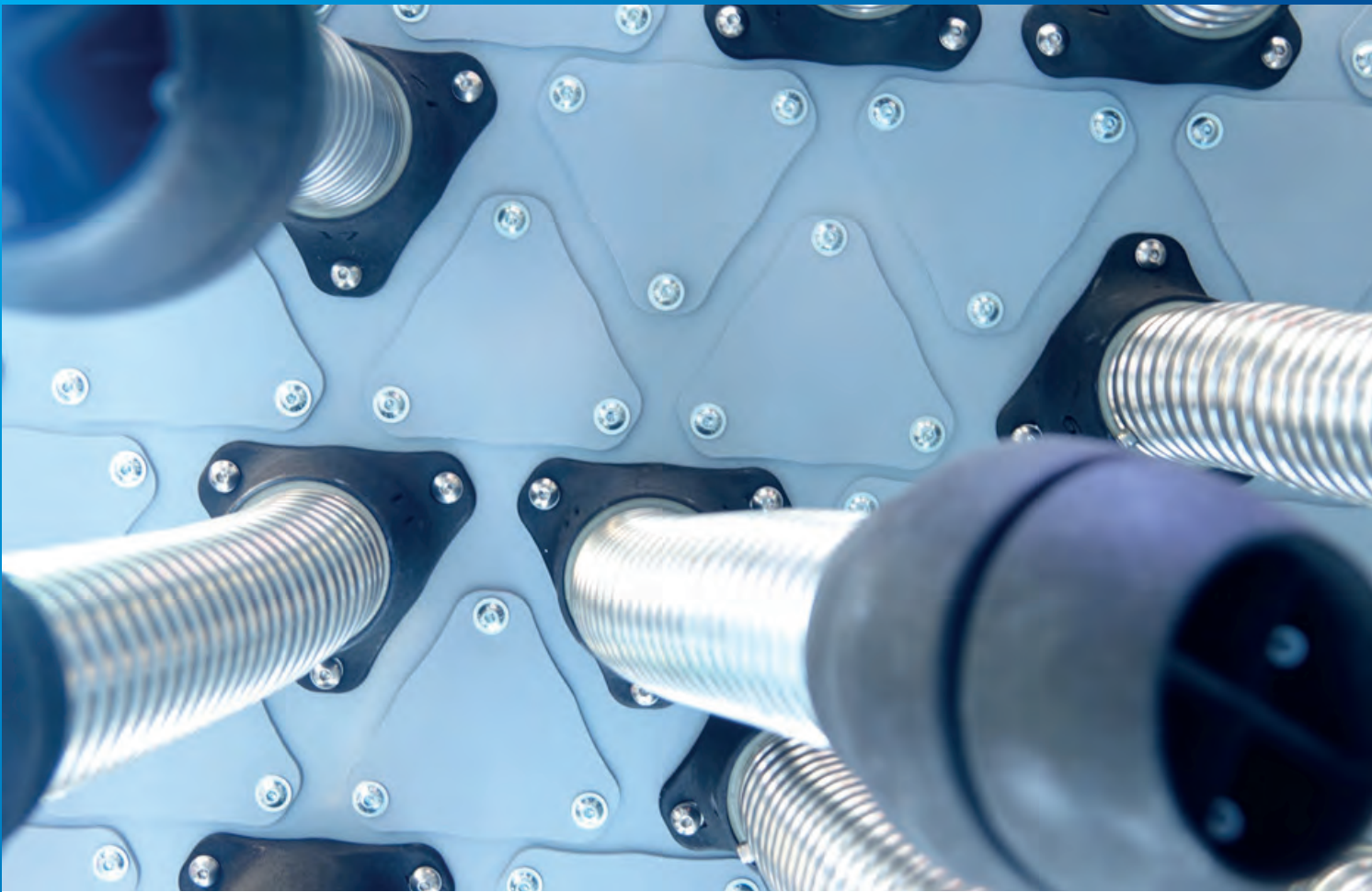
A static charge will most likely be present on the components. Static charges on 3D components are typically generated through friction or by cooling after a previous application such as moulding. Until neutralised, a static charge will trap and hold contamination on the surface of the component. A static 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.



ADVANCED AIRFLOW



IonWash Airflow System

Extract and Trap Contamination

During the cleaning cycle, IonWash has 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 recycled through the IonWash.

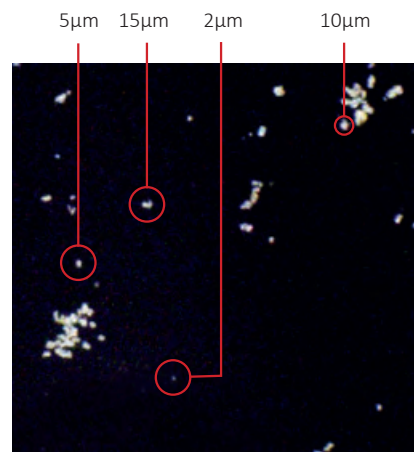
Types of Contamination

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

Advanced Filtration

IonWash has a high level of standard filtration which comprises an F8 grade bag filter with a 2m² 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 7.5m² 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.

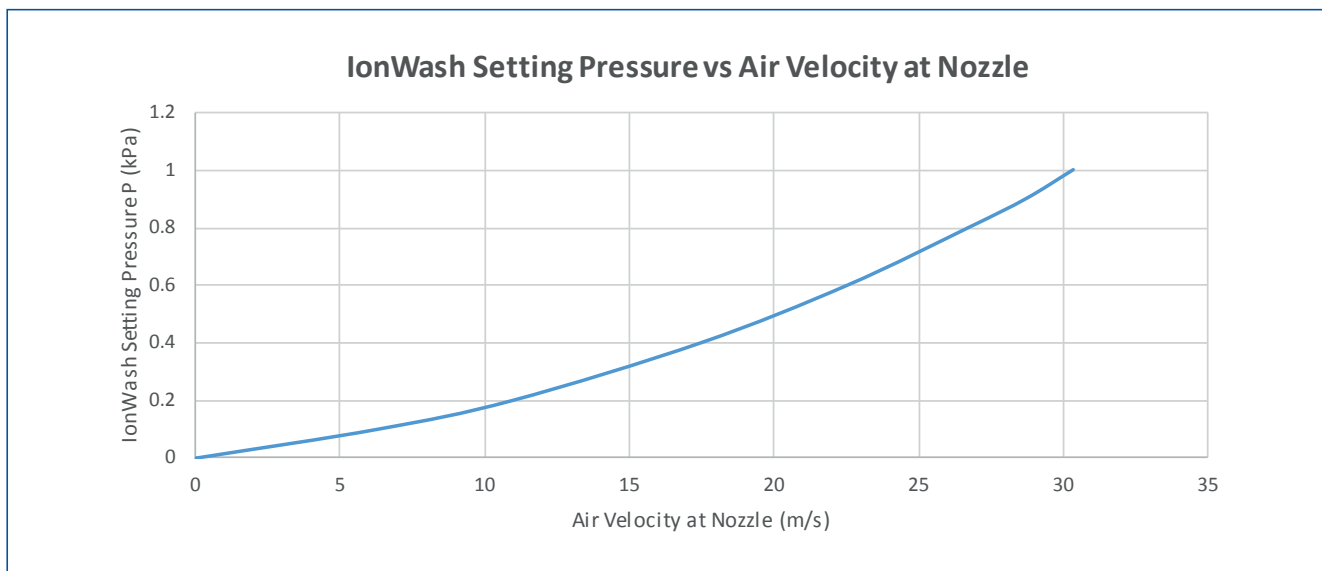
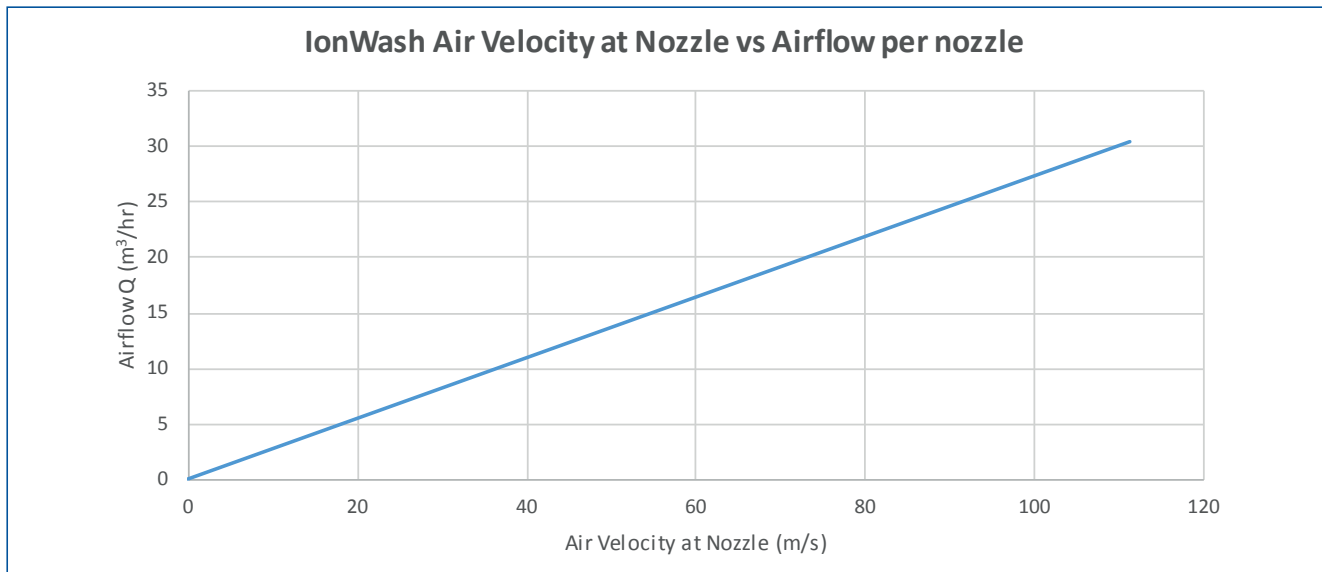


x75 magnified view of surface contamination.

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.



DESIGN & SAFETY FEATURES

IonWash Cleaning Zones:

IonWash is available as standard, with the following sized cleaning zones:

1. 710 x 710 x 330mm (W x D x H)
2. 950 x 710 x 330mm (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.

Responsive Double Operator Function:

When the IonWash is in double-operator mode, both 'start' buttons must be pressed in order to begin the cleaning cycle. When the second button has been pressed, the doors of the IonWash will automatically close.

Touch-Screen Control Panel:

The IonWash is fully controllable through the use of an in-built touch-screen panel, which is located on the front of the unit. This can be password protected to allow administrator use only.

Operation & Warning Indicator:

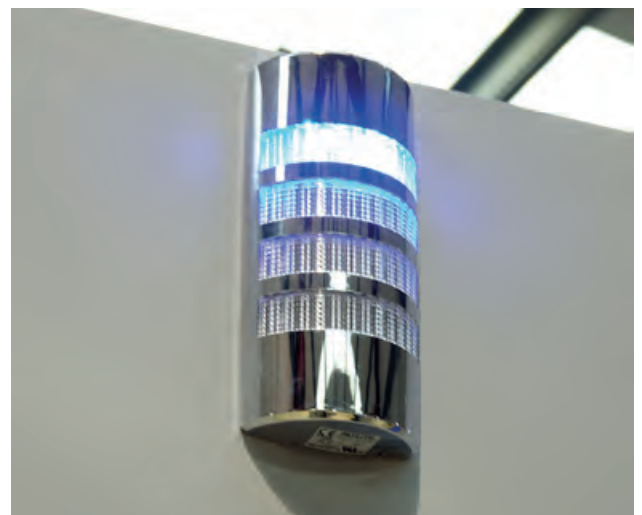
The operation indicator beacon on the side of the IonWash informs users of any issues. This is accompanied by an alarm which will sound if the red warning light is triggered for any reason.

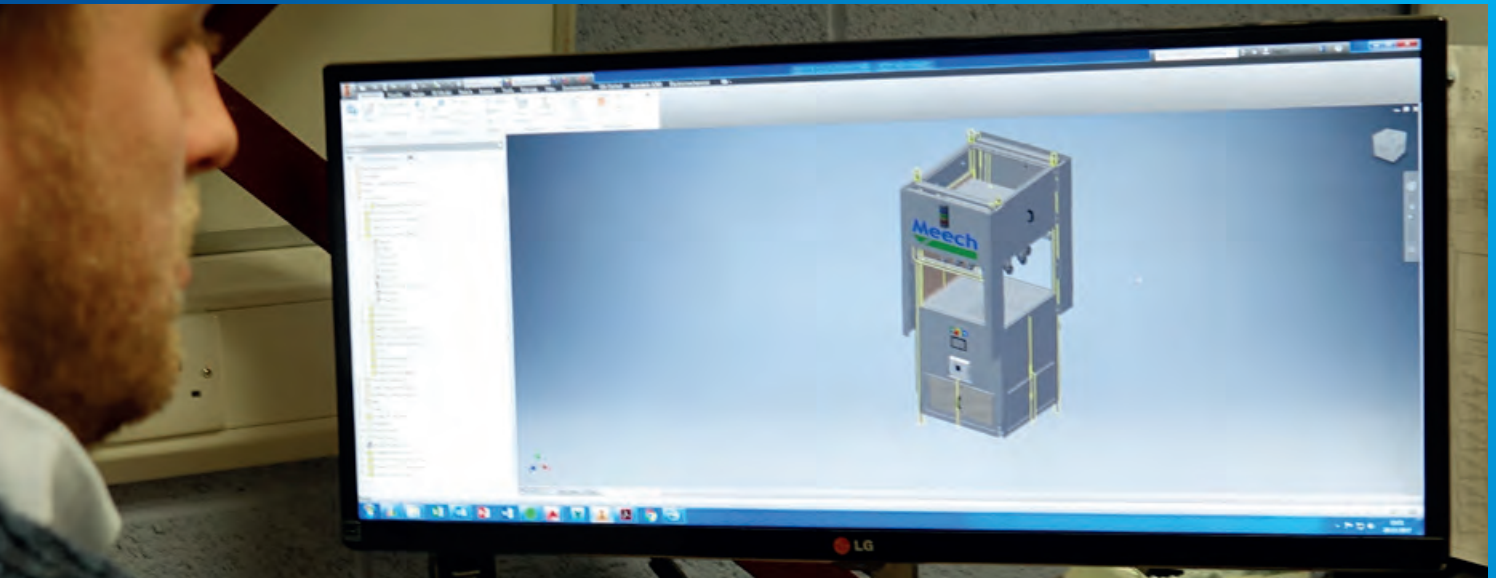
Light-Guards on Doors:

Light-guard sensors on both doors automatically stop the unit from closing when the sensor is interrupted, ensuring the safety of the operator.

Emergency Stop:

Emergency stop buttons are located on either side of the IonWash in the case of an emergency situation.





IonWash: Custom Design & Service

Due to the varying natures of the customers we serve and the industries which they belong to, the needs of the IonWash may vary considerably. For this reason, we are pleased to offer advanced service and support, which begins at the design stage and continues through engineering and manufacture, all the way to delivery.

Design

Our expert design team are able to adapt your IonWash in order to perfectly suit your application needs. With the customer's cooperation, Meech are able to specifically design the IonWash nozzle positioning to achieve maximised performance.

The IonWash unit is available in two standard sizes. However, should the standard unit sizes not suit your needs, we are able to design the systems to fit seamlessly into your production line.

Service

The IonWash is delivered as a 'plug-and-play' unit, ready to install easily within the production line, meaning no time is lost in achieving consistent cleaning and improved quality.

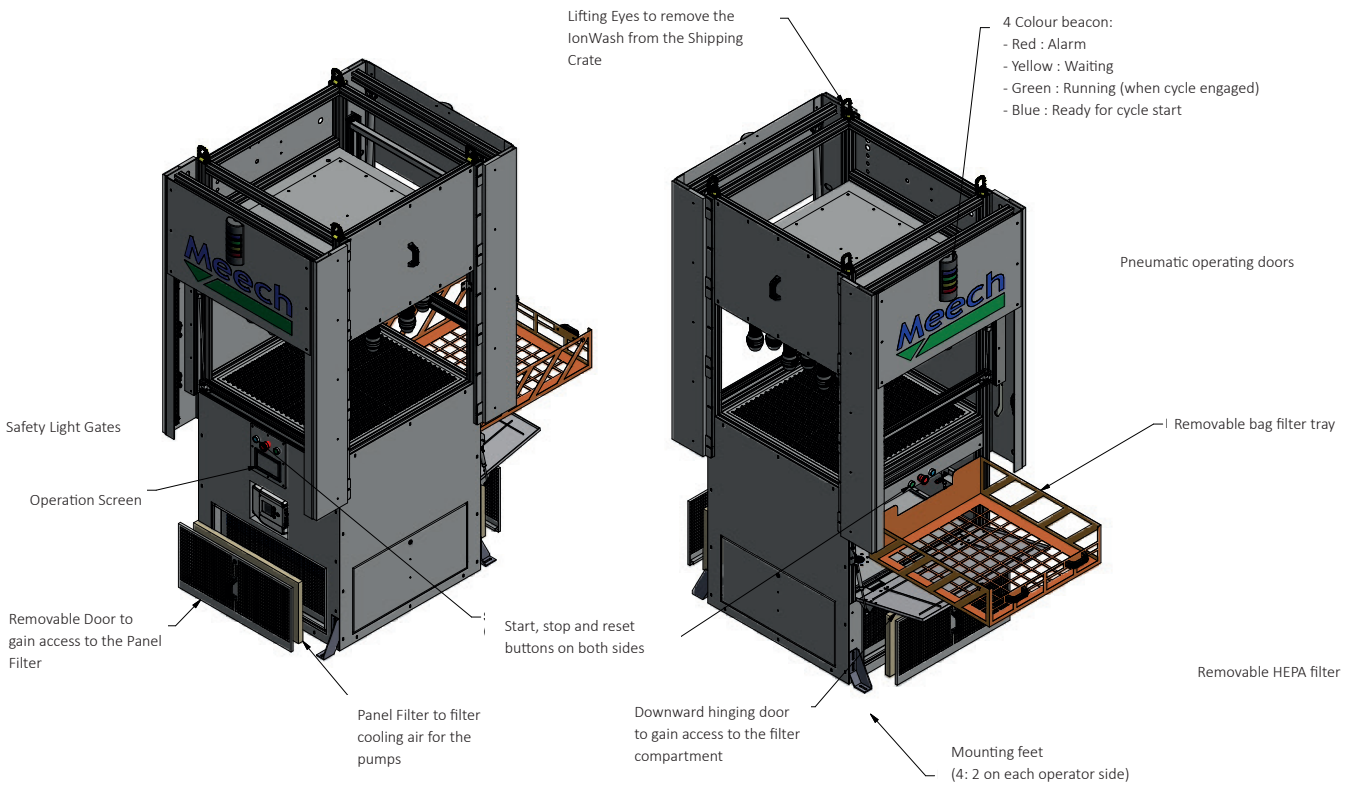
Meech offer continued support, following the installation of the IonWash and are on hand to provide practical, applicable advice, which will ensure improved productivity.

Conveyor IonWash Systems

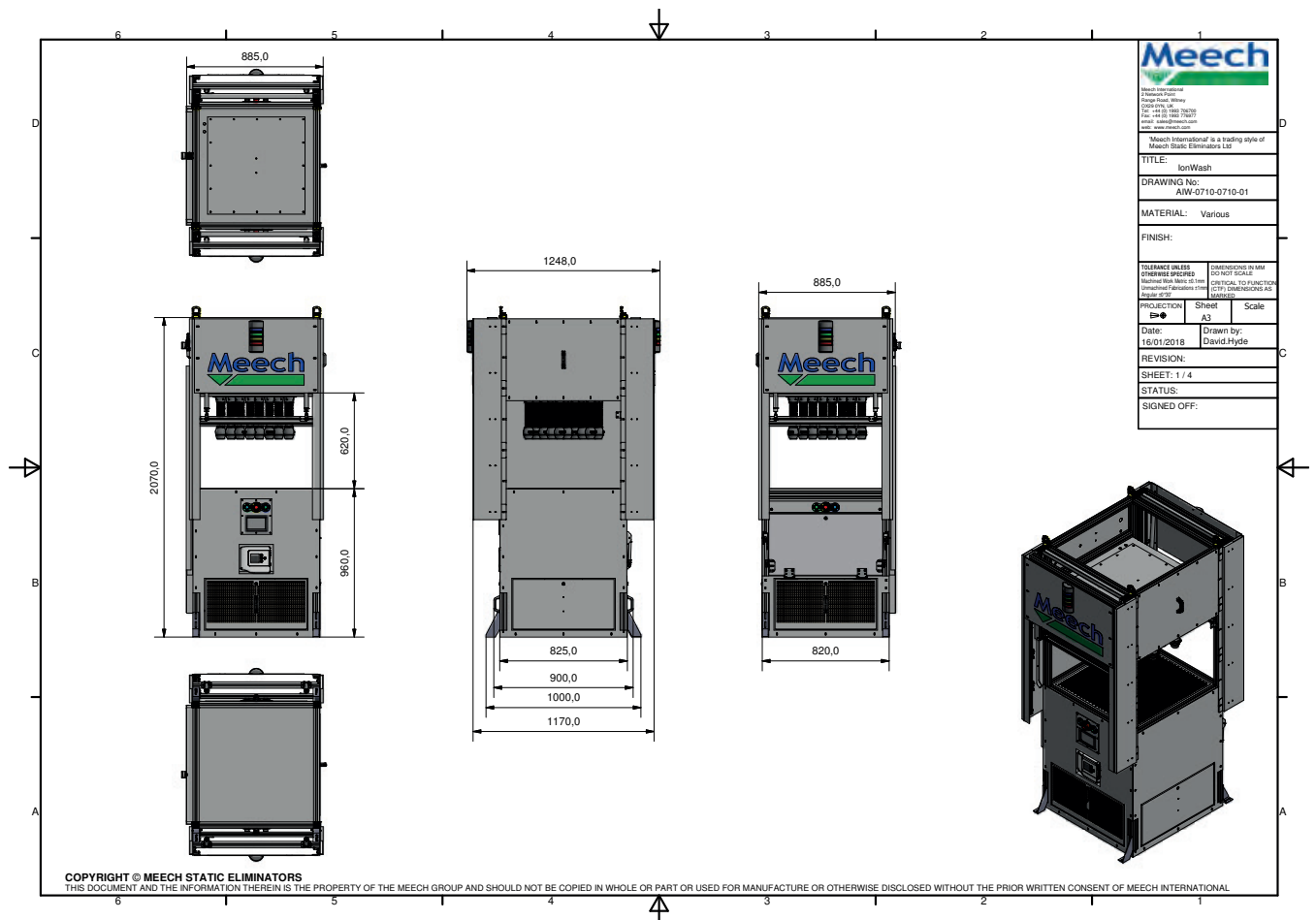
The incorporation of the IonWash into a conveyor production line offers advanced automation, with uninterrupted work-flow.



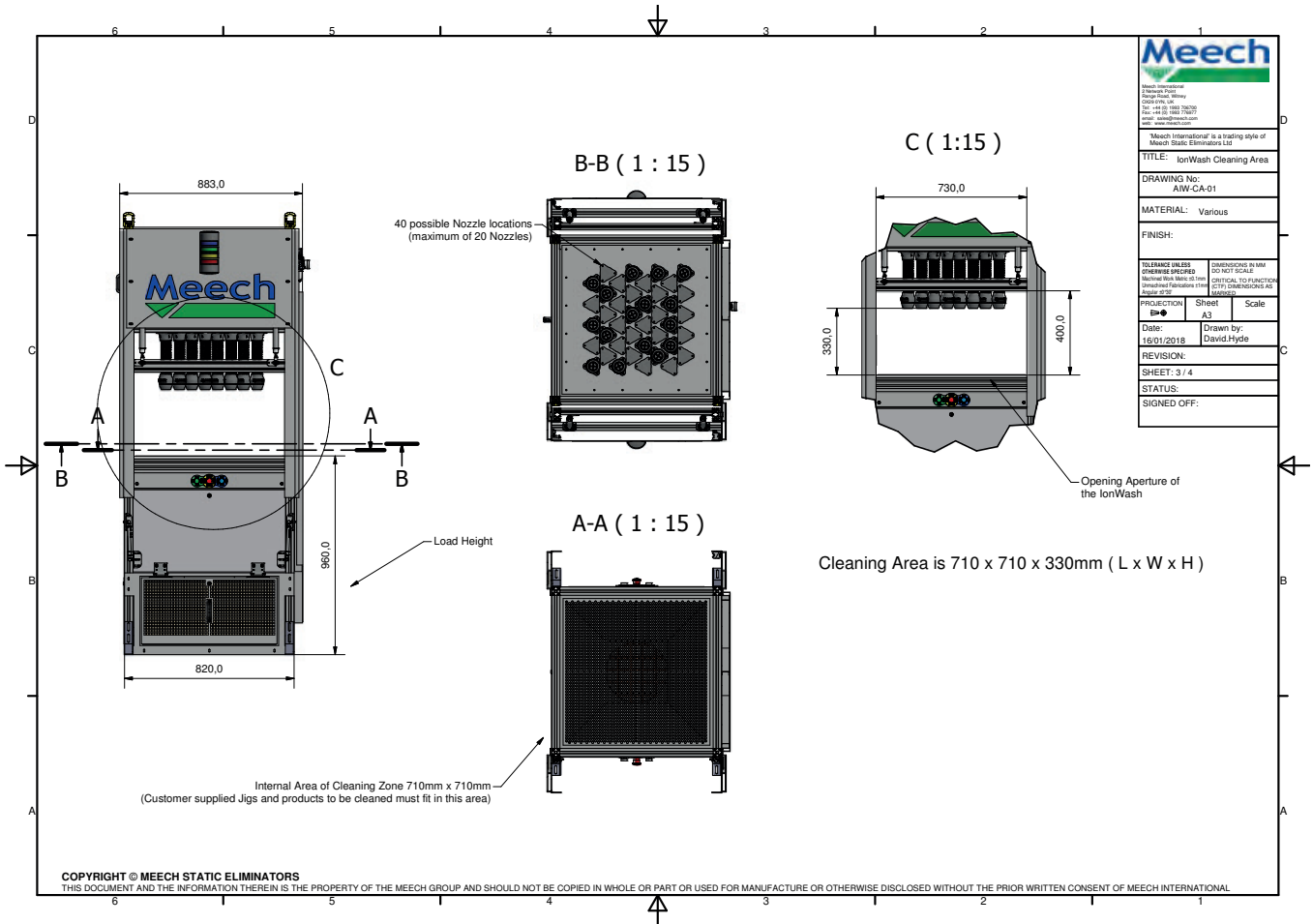
IonWash Design Features



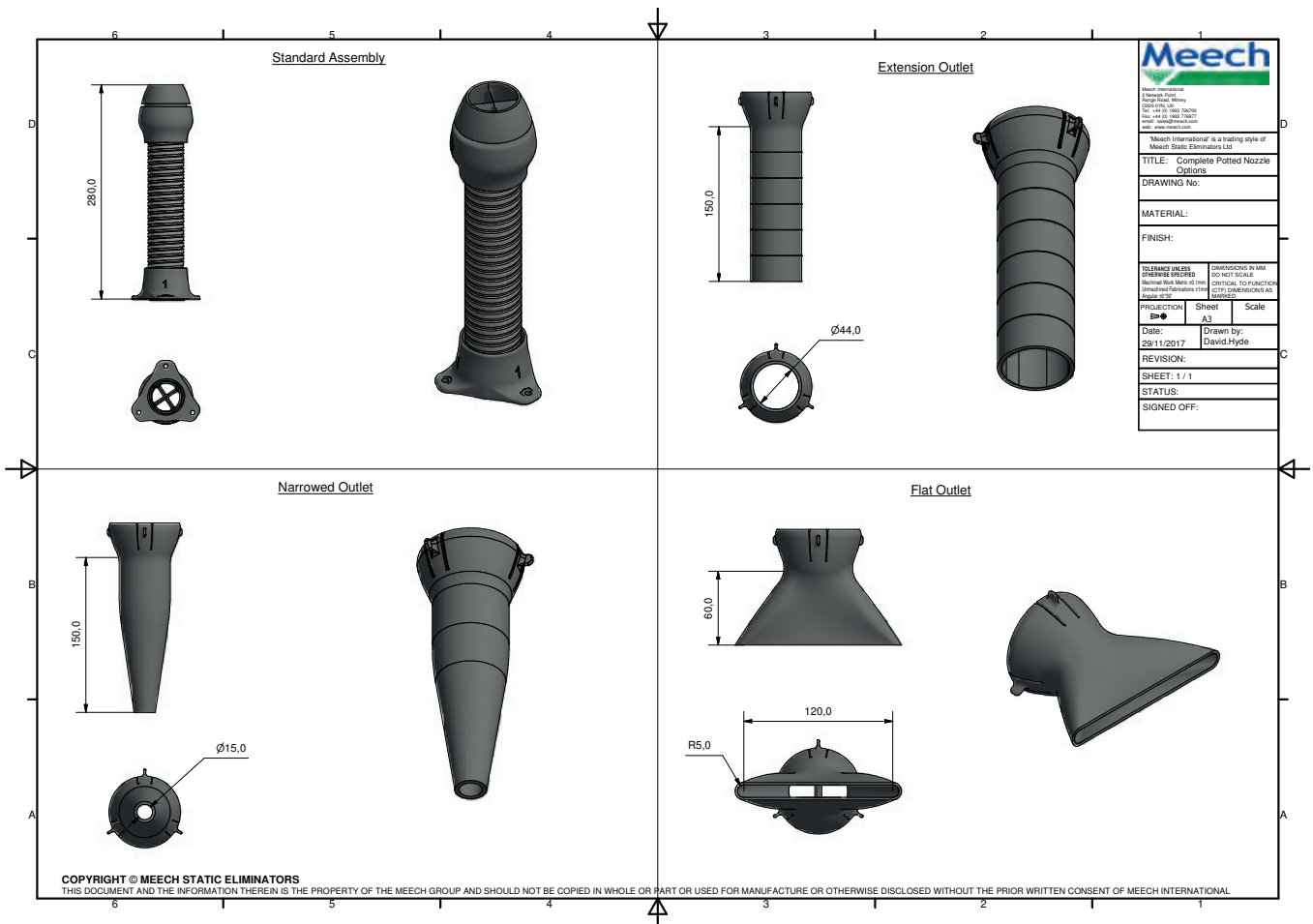
IonWash Technical Drawing



IonWash Cleaning Zone Technical Drawing



IonWash Nozzles 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.

Meech International

2 Network Point
Range Road, Witney
OX29 0YN, UK

Tel: +44 (0)1993 706700
Fax: +44 (0)1993 776977
email: sales@meech.com

Meech Static Eliminators USA Inc

1298 Centerview Circle
Akron, OH 44321
USA

Tel: +1 330 564 2000 / 1 800 232 4210
Fax: +1 330 564 2005
email: info@meech.com

Meech Elektrostatik SA

Kaiserbaracke 166
B-4780 St.Vith
Belgium

Tel.: +49 (0)6555 3733 399
+32 (0)80 670 204
Fax: +32 (0)80 862 821
email: mesa@meech.com

Meech CE

Gábor László utca 2
Budapest 1041
Hungary

Tel: +36 1 7977039
+36 30 2803334
email: ce@meech.com

Meech Static Eliminators (Shanghai) Co. Ltd

7G, 7F, LP Tower
#25 Xiangfeng Road
201103 Shanghai
China

Tel: +86 400 820 0102
Fax: +86 21 6405 7736
email: china@meech.com

Meech Shavotech

29/2, Kharadi
Off Pune-Nagar Road
On Old Kharadi Mundhwa Road
Pune : 411014 , Maharashtra
India

Tel: +91 (0)703 093 8211 / +91 (0)741 000 4817
Fax: +91 (080) 28395963
email: india@meech.com

Meech International (Singapore) Pte. Ltd.

7 Temasek Boulevard
12 - 07 Suntec Tower One
Singapore
Singapore
038987

Tel: +65 65918859
email: singapore@meech.com