

The background of the top half of the page is a photograph of industrial machinery, specifically large rollers or drums, with a blue color overlay.

SOLVING PRODUCTION PROBLEMS IN **PACKAGING**

Putting you in charge of **static**
Let us help...

FROM QUALITY AND PRODUCTIVITY TO HEALTH AND SAFETY - **STATIC CHARGES** CAN PLAY HAVOC

In the past, some may have just learned to live with it. Others meanwhile, made do with makeshift solutions. But at a time when quality, speed and waste reduction are all increasingly important to consumers and brands alike, packaging companies looking to stay competitive need to bring static firmly under control. Untreated, countless issues arise that impact on the production process and in order to achieve maximum efficiency, it is vital to first understand static's impact on the converting process and how to prevent it.

The dangers of static charges

The presence of static on a web can attract nearby and airborne particles to its surface, which can cause multiple problems during and after production. One such example is sub-standard product quality, and as businesses compete for shelf space for their products, there is ever-greater importance placed on the production of high quality labelled and packaged products that can stand out from the crowd.

Contaminated labels and packaging can negatively impact on final presentation, with print work appearing faded or even dirty. In fact, static's presence on a web can even impinge on the performance of ink, repelling it away from the surface of a label, significantly compromising quality.

Many sectors, especially those that work with food and medical equipment, have stringent laws on hygiene and any packaging or product with any contaminants will be discarded, increasing wastage and disrupting production.

However, it is not just the web itself that can suffer the consequences of contamination – machinery that the tainted web passes by or through can pick up dust and dirt, which can lead to clogs and breakdowns and subsequent maintenance call outs. This causes delays to production and incurs a cost to the company both in maintenance costs and in lost business.

Static can also pose a potentially serious health and safety risk to staff – while the initial shock itself may not cause significant pain, involuntary reactions can lead to sudden impact to nearby equipment or other workers. Severe static can also cause sparking and pose a fire risk.





UNDERSTANDING CONTAMINATION

SO, WHAT'S THE SOLUTION?

There are two main reasons a web attracts dust, dirt and assorted particles – the boundary layer created by any moving web, and the generation of static charges.

The boundary layer is caused by the ambient air that the web drags along when in motion. It draws contamination to the substrate, trapping it either beneath the layer or onto the web's surface — or holding it within the layer. The slower the web is moving, the thinner the boundary layer; as the speed increases, so does the layer's thickness.

Static charges meanwhile, can be generated on packaging and printing lines in a number of ways; via fast moving web rolls that interact with equipment parts causing friction, by the separation of the roll as it unwinds, or through induction from surrounding machinery.

Investing in technology to counter these issues is vital to production and business profitability.

Static control and web cleaning systems can play a vital role in the production of high quality, eye-catching flexible packaging. Their advanced capability in removing contamination from webs, preventing production and waste-related issues, is essential to the delivery of high-quality packaging and printed products.

Identifying the right solution for your business is crucial as there are a huge range of factors to consider. The type of material used, the speed of the production line, the purpose of the packaging, the level of cleanliness of the work environment – all will have a bearing on what solution is likely to work best.

No matter what specific problems static is causing for your business, Meech has both the expertise to recommend the best solution package from its portfolio, and the expertise to integrate that solution quickly and seamlessly into your existing workflows.





The problem:

PRODUCT REJECTION DUE TO CONTAMINANTS ON WEB SURFACE

The first and probably most obvious problem caused by the absence or ineffectiveness of static control solutions, is the way in which this frequently leads to quality control issues and an unacceptably high rate of product rejections. Static charges generated through the rapid winding or unwinding of a web, for example, attract nearby and airborne particles to the surface, which can lead to sub-standard product quality. As businesses compete to get their products noticed by fickle consumers, achieving consistently high levels of quality has never been more important. As well as being wasteful and environmentally problematic – these issues are also extremely costly and time-consuming as products have to be re-produced.

The solution:

TAILORED STATIC CONTROL AND WEB CLEANING PACKAGE

Meech's Hyperion ionising bars, used in tandem with the appropriate web-cleaning device for the material in use is the most effective way to ensure a spotless web and end products of the highest quality. The precise arrangement best suited to ensure the best results will vary from company to company, and from production line to production line. Meech's decades of experience and expertise make it ideally placed to advise on the most effective solution in any given situation.



CASE STUDY

BRINGING CONTAMINATION AND OPERATOR SAFETY UNDER CONTROL

Donkuk, South Korea

One of Donkuk's most commonly produced packaging types, blister packaging, is found throughout the pharmaceutical, food, beverage, electronics and consumer goods sectors.

The process in which the blister packaging



is formed requires thick plastic film to be unwound from its original roll format. The separation of this film can then generate static electricity on the surface of the web material, which attracts contamination from the surrounding area onto the film's surface. These foreign objects are then fixed permanently to the plastic film once it

is heated to form the blisters. However, once the film cools, the levels of static increase further, which can attract even more debris from operators and machinery within its vicinity.

With strict quality control in place for many sectors, contaminated blister packs are discarded, increasing company wastage levels and hindering the flow of production.

Donkuk has looked to Meech's static control bars to counter these issues, with impressive results – now, as material passes under the installed 929IPS bar (information on page 10), ionisation neutralises the static charges while a sensor mounted beyond the ionising bar continuously monitors the web.

Any charges left on the packaging after its forming are detected and measured by the sensor. If a positive or negative charge is detected, a signal is fed back to the 929IPS bar, automatically adjusting the \pm balance to compensate for the imbalance. A 5V signal is simultaneously sent to a PLC or data logger, recording the level of any static charges which allows static levels to be analysed for quality control purposes.

In the event charges exceed a specified level, the PLC can be programmed to stop the process line, allowing the operator to investigate and correct the problem. This ensures product quality is maintained and customer satisfaction is kept to a high level.

"Previously, we had been using an anti-static cord and a domestically manufactured anti-static bar to keep static charges under control," says a spokesperson at Donkuk. "But we found that our operators often received electric shocks from the bar and the cord had no effect at all, as its effective range was too limited.

"We were looking for a better quality solution to this challenge when Withlab (a Meech partner in South Korea) contacted us to introduce us to a shock-free, anti-static bar manufactured by Meech: the 929IPS bar. With a much greater effective range than the cord we had been using, and no risk of shocks to operators, it also has the added benefit of automatically, and continuously, adjusting the positive and negative ion charges as required. We deal with a huge range of different shapes, sizes and types of plastic thermoformed products – so having this kind of flexibility has been hugely beneficial."

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The problem:

STATIC AFFECTING PRODUCTION MACHINERY

One common problem that arises when static is allowed to build up on production lines is malfunctioning machinery. This can include anything from damage to electronic sensors and checkweighers, to printing heads, metal detectors and control systems.

In severe instances, this can result in complete machinery failure or even in fires – causing irreparable damage.

Even in mild cases, static charges can lead to erroneous weights and measurements being recorded, to the triggering of false alarms, or to machinery running slowly or erratically.

These subtler effects can often prove even more disruptive in the long term as they can go undetected – and therefore unresolved – for very long periods of time.

Investing in a comprehensive and reliable static control solution is essential to ensure the smooth and reliable running of production line

The solution:

TAILORED STATIC CONTROL PACKAGE

Meech Hyperion static control bars and ionising nozzles can minimise static build-up and ensure that it never gets to levels that affect machinery operation.

No two production lines are quite the same – and the precise solution mix will vary depending on a huge range of contributing factors.

As production speed continues to grow – having a reliable static control solution to maximise machine productivity has never been more important.

Hyperion
971

CASE STUDY

KEEPING 'STATIC-FREE' PRODUCTION FLOWING

Major flexible packaging manufacturer, Canada

For one of North America's leading producers of high-quality flexible packaging products for perishable foods, keeping production lines static-free is vitally important to maintain product quality and consistency.

With a particular focus on the production of flexible packaging using barrier films, the company works hard to ensure consistent manufacturing processes and to meet continual high demand for its flexible packaging products.

Eight Meech Hyperion bars (four of each the 929IPS and 971IPS-15) and 56 Bulkhead Nozzles (see page 10)) have been successfully removing static from the company's flexible packaging lines since 2016.

With barrier films forming such an integral part of its flexible packaging range, consistent production is essential in the factory and the generation of static poses a very real threat to this: "Our Central Trim System is a critical process that supports production," says a company spokesperson. "The presence of static in our separators and balers can trigger false alarms by covering photo-eyes that automate baler cycles or high-level diverters with material.

"Static may also cause trim to stick to a screen located inside the separator, disrupting air flow and performance. Continuous operation is necessary to keep work centres running, so proper static elimination plays a key role.

The installation of Meech's anti-static bars and bulkhead nozzles has kept our sensors and screens free of debris."

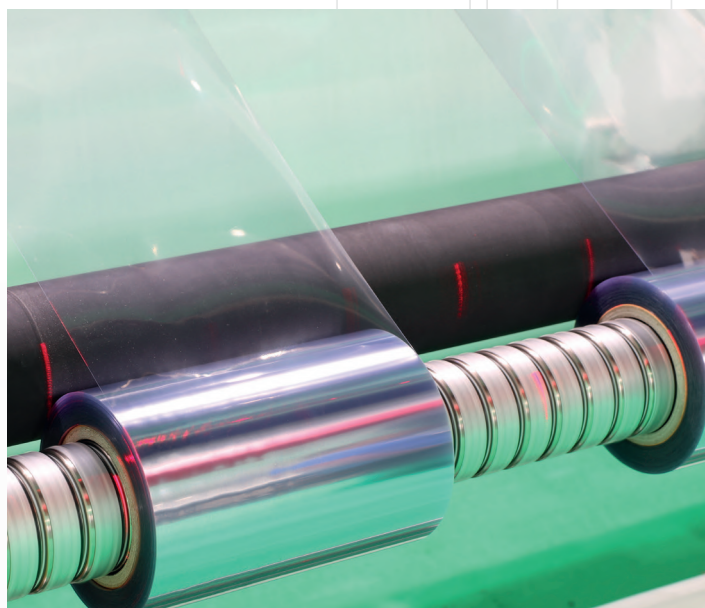
The Meech Hyperion Range of ionising bars and power supplies are the latest, revolutionary, industrial static control products offered by Meech.

Meech's Hyperion Range of ionising bars have been engineered to include several key characteristics such as Ion Current Monitoring (ICM) technology, clean pin alerts, and adjustable output voltage, frequency, and balance.

The 929IPS Mid-Range Pulsed DC Ionising Bar and the 971IPS-15 Long-Range Pulsed DC Ionising Bar (see page 10) provide the manufacturer with a solution to keep necessary production areas clean and free of debris, while ensuring production is kept flowing.

The spokesperson concludes: "Meech was able to recommend the right static elimination solution for our specific needs and when it came to the installation they were able to strategically place the equipment in the best locations to keep our trim system operating to its full potential.

Not only that, their ongoing product support and service has been excellent, and has given us confidence that we are getting maximum utility and maximum value out of the investment."



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The installation of Meech's anti-static bars and bulkhead nozzles has kept our sensors and screens free of debris."



The problem:

STATIC SHOCKS TO OPERATORS

Static shocks to operators may often be dismissively thought of as a mere annoyance or inconvenience – but repeated, severe shocks can be much more than irritating – they can pose a serious health and safety risk to workers as well as negatively impacting on overall business productivity.

This is especially true in cooler, drier climates in which static charges develop to much greater strengths before releasing due to the lack of moisture in the air.

Business owners have a legal and moral duty to provide a work environment that is as safe as possible – so control of static, to allow staff to go about their responsibilities safely and efficiently, is vital.

The solution:



TAILORED STATIC CONTROL PACKAGE

Meech's range of Hyperion ionising bars (see page 10) brings static on production lines firmly under control and allows operators to work without fear of unpleasant electric shocks while going about their duties.

As important as it is to ensure smooth running machinery and high quality products – creating a safe and contented workforce is arguably even more important still.

Meech's range of static control solutions is designed with all three of these challenges in mind and no one is better placed to advise on the perfect solution package to safeguard workers.

■ CASE STUDY

NO COMPROMISES ON HEALTH AND SAFETY

Berry Global, USA

“We take health and safety very seriously so we decided to standardise Meech Hyperion bars across all bulk equipment, even if a hazard was not reported. The products were very easy to order and install, and our static issue has been completely eliminated.”

Headquartered in Evansville, Indiana (USA) Berry Global is a world leader in packaging and protection solutions. With 131 facilities and more than 23,000 employees across the globe, the company manufactures and sells plastic consumer packaging, non-woven specialty materials and engineered materials to more than 2,500 clients, including Walmart, Coca-Cola, and Procter & Gamble.

With a proven history of excellence in packaging manufacturing and an ever-present, demanding, high-profile customer base, Berry Global is committed to its mission of ‘always advancing to protect what’s important.’

In 2014, to maintain and improve health and safety and efficiency in production, the company invested in Meech’s Hyperion 929IPS and 971IPS pulsed DC ionising bars.

After experiencing static charge build up on bulk packaging equipment and being aware of the negative effects that it can have on safety, cleanliness, and production, Berry Global recognised the need for an effective anti-static solution.

Michael Hunt, Environmental Health and Safety Coordinator at Berry Global explains: “In our injection moulding process, products are processed through various forms of packaging, including plastic containers and corrugated gaylords. We found that, in cooler months, static on some of the products became an ongoing issue”.

The company enlisted Meech Static Eliminators to address the problem – the Hyperion 929IPS and 971IPS bars were installed 12 -14 inches above the containers in these collection areas, where food-grade caps and containers are collected and packaged.

Hunt continues: “We secured the static bars above the containers with P-Chain, so they were not ridged and wouldn’t cause injury to our employees. We take health and safety very seriously so we also made the decision to standardise the Meech Hyperion bars across all bulk equipment, even if a hazard was not reported. The products work especially well for our injection moulding operations.”

Meech’s Hyperion range contains revolutionary, industrialised static control products including anti-static bars and power supplies. The 929IPS Pulsed DC Ionising Bar provides powerful mid-range ionisation, whereas the long-range 971IPS Pulsed DC Ionising Bar has an integrated Power Supply (IPS), making it the most powerful bar in this range. Both bars feature Meech’s Ion Current Monitoring (ICM) technology, which ensures performance is maintained by providing local and remote alerts to operators whenever the bar needs cleaning.

According to Hunt, the positive change since the installation has been substantial.

“Meech’s products were very easy to order and install, and we are delighted that our static issue has been completely eliminated. Safety concerns have been resolved, and Meech integrated the bars seamlessly into our production lines so that the machinery operation was not affected in any way.”

Meech's product range

The right product, or precise mix of products, best suited to overcoming the particular challenges each packaging company faces, will naturally vary.

Meech manufactures and supplies a wide range of electrostatic products covering the following areas:

- Anti-static
- ESD protection and measurement
- Static generation
- Electrostatic control and elimination

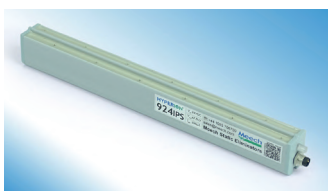
We've seen it all and whatever your specific challenges with static, we have both the product portfolio and the expertise to help you to overcome them.

STATIC CONTROL

The Meech Hyperion Range is the latest, revolutionary, industrial static control products offered by Meech.

Developed by our engineers in conjunction with distributors and end users, the Hyperion range offers new levels of technical superiority for industrial static control.

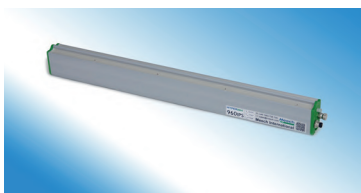
The range has been engineered to include a number of key characteristics such as Ion Current Monitoring (ICM) technology, clean pin alert and adjustable output voltage, frequency and balance. IP66 construction makes the bars suitable for harsh environments.



HYPERION 924IPS SHORT-RANGE PULSED DC IONISING BAR

The Hyperion 924IPS is suitable for short range applications, such as web paths on converting machinery, printing presses or applications that have traditionally used AC equipment.

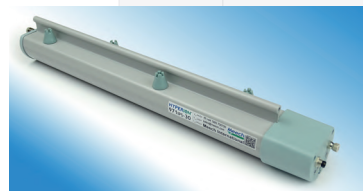
At just 22mm (W) x 32mm (H), it will fit into tight installations. The bar is also designed to give full performance over its entire length. Meech Ion Current Monitoring (ICM) technology detects when the 924IPS needs to be cleaned. The LED on the bar alerts operators of the need for cleaning. This ensures peak performance is maintained.



HYPERION 960IPS

A compact pulsed DC ionising bar with integrated high-voltage power supply, the Hyperion 960IPS delivers powerful ionisation for mid-range applications.

With compact dimensions of just 30mm x 45mm, the 960IPS is easy to install on printing and converting machinery. With class-leading performance, this static bar is ideal for installation with target distances from 150mm to 600mm.



HYPERION 971IPS-30 EXTRA LONG RANGE DC IONISING BARS

The most powerful ionising bar in the Meech range, the Hyperion 971IPS-30 provides excellent long range ionisation at operating distances of 450-1200mm.

The range of the 971IPS-30 can be increased to 1500mm, using the integral air boost via the 6mm push-fit air fitting. The 971IPS is designed to be easily installed and eliminates the need for high voltage cabling.



HYPERION SMARTCONTROL™ REMOTE MONITORING AND CONTROL

Hyperion™ SmartControl allows for remote monitoring and performance adjustment of Meech's innovative Hyperion static control range.

Available as a single unit, or as a touchscreen system, SmartControl allows quick and easy changes to connected devices, as well as fast, accessible monitoring leads to advanced productivity and quality control on production lines.

Remote monitoring and control can be accessed through mobile devices – allowing control wherever you are.

Up to six pieces of Hyperion equipment can be directly connected and monitored remotely through either the built-in screen, a smart phone, tablet, or PC. Further devices can also be monitored via an expansion unit (sold separately).



IONISING NOZZLES

Using compressed air to neutralise static charges and remove dust, Meech's ionising nozzles come in both AC and DC form.

Their compact size makes them easy to fit into tight spaces and onto various stages of the production line.

WEB CLEANING

Controlling static is one thing – but a static-free web can still be contaminated by dust or other particles in the atmosphere. To maximise product cleanliness, static control devices are best used in tandem with the appropriate web cleaning solution.

Non-contact systems

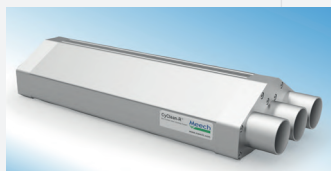
Utilising an airflow combination or roller airflow technology, all products in Meech non-contact web cleaning range incorporate the latest shockless AC static control, crucial for comprehensive contamination removal, and will remove particles as small as 0.3 micron.



CYCLEAN™

Compact, flexible and easy to install, Meech's CyClean incorporates fluid dynamics to break the boundary layer and remove contaminants from the surface of the web.

With no consumables required, CyClean has low cost of ownership and because it does not physically make contact with the web surface, there is no risk of surface marking or damage, or interference with web tension or tracking.



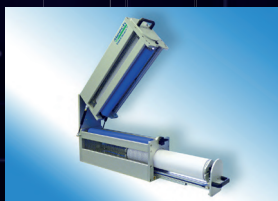
CYCLEAN-R™

Available to suit wide, mid and narrow web formats, CyClean-R is Meech's solution to meet the need for an advanced web cleaning system that can be used on a low-tension web that sits around a roller.

Utilising advanced computational fluid dynamics, CyClean-R is designed to be positioned on the roller, where the web tension is at its highest, and delivers excellent results using the engineered CyClean cleaning technique.

Contact systems

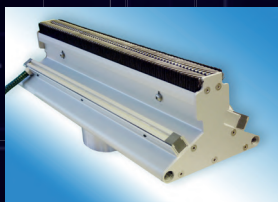
Providing exceptional contamination removal for a wide range of applications, contact web cleaners utilise either tacky roller or vacuum cleaning technology.



TAKCLEAN™

Utilising twin elastomer rollers for double sided web cleaning, the TakClean is designed primarily for use in the label and narrow web markets to remove dry, unbonded contamination from a moving web.

The TransTak contact cleaning rollers and perforated adhesive rolls physical pick up and remove debris from the web surface – a second roller removes the contamination from the first roller, preventing re-contamination.



VACCLEAN™

VaClean utilises turbulence to break the boundary layer of the web's surface, sending debris airborne which is then sucked up and removed. Brushes present at the entry point of the cleaner also help disrupt and lift contaminants off of the web's surface.

Capable of working on double-sided webs, Meech's contact web cleaning systems incorporate shockless AC static control for comprehensive contamination removal, eliminating particles as small as 0.5 micron.

Ionising Air Rinsing System



IONRINSE™

The IonRinse combines powerful DC ionisation, a custom designed airflow system and high quality inline filtration, to provide the ultimate in ionised air rinsing.

Ideal for the cleaning and rinsing of bottles and cans, the IonRinse out-performs water-based cleaning systems in many areas; notably in the energy savings and sustainability it offers customers.



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