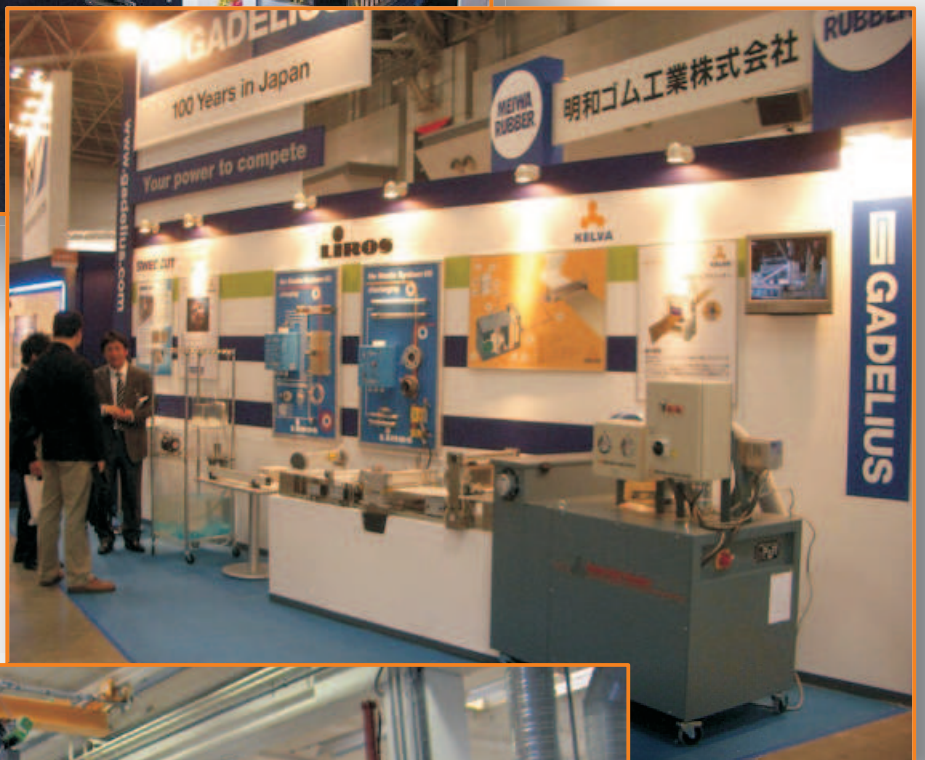


No static with No Static![®]



Worldwide in electrostatics

LIROS
No Static Systems





KEEP STATIC ELECTRICITY UNDER CONTROL

What causes static electricity?

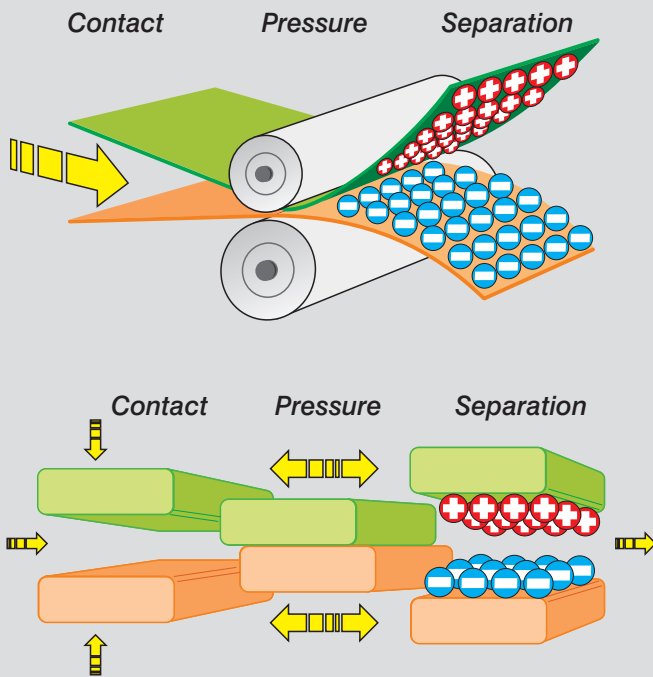
The surface layer of an isolated material like plastic, paper or synthetic textile is usually not electrically charged. However, when they are rubbed together or pulled apart i.e.

Friction when the surface of a material is rubbed against a material of the same or different kind.

Pressure when the material is run through two rollers.

Separation unwrapping of plastic foil from a roll.

These processes are examples of handling that can result in an imbalance in the material's electric charge. One surface becomes positively charged, the other one negatively. Because the material is isolating, the charge cannot be conducted away by the material itself and the charge is now said to be static. The characteristics of electric charges to attract charges with opposite polarity or to repel those with identical polarity can cause immense problems during production.



An ion is an atom or molecule of air which possesses an excess or shortage of electric charge. The charged surface of a material can be neutralized by "ionizing" the air, charging molecules of air with positive and negative polarity. The negatively charged air molecules can then pass an electron to a positively charged particle in the surface of an isolating material, resulting in the neutralization of both the air molecule and the surface of the material. Accordingly, the positively charged air molecules are neutralized by the negatively charged particles in the surface of a charged material.

⊖ Production and production capacity

The presence of static electricity often causes interruption and malfunction during production. As a result machines cannot operate at their highest speed, resulting in lower production levels.

⊖ Quality

Electrostatic binding of dust and dirt is a major problem in quality sensitive industries, resulting in defective products and waste material.

⊖ Personnel safety

Employees can receive shocks during production. They are mostly harmless and unpleasant however these shocks might ultimately lead to accidents at work.

⊖ Damage in guidance systems and components

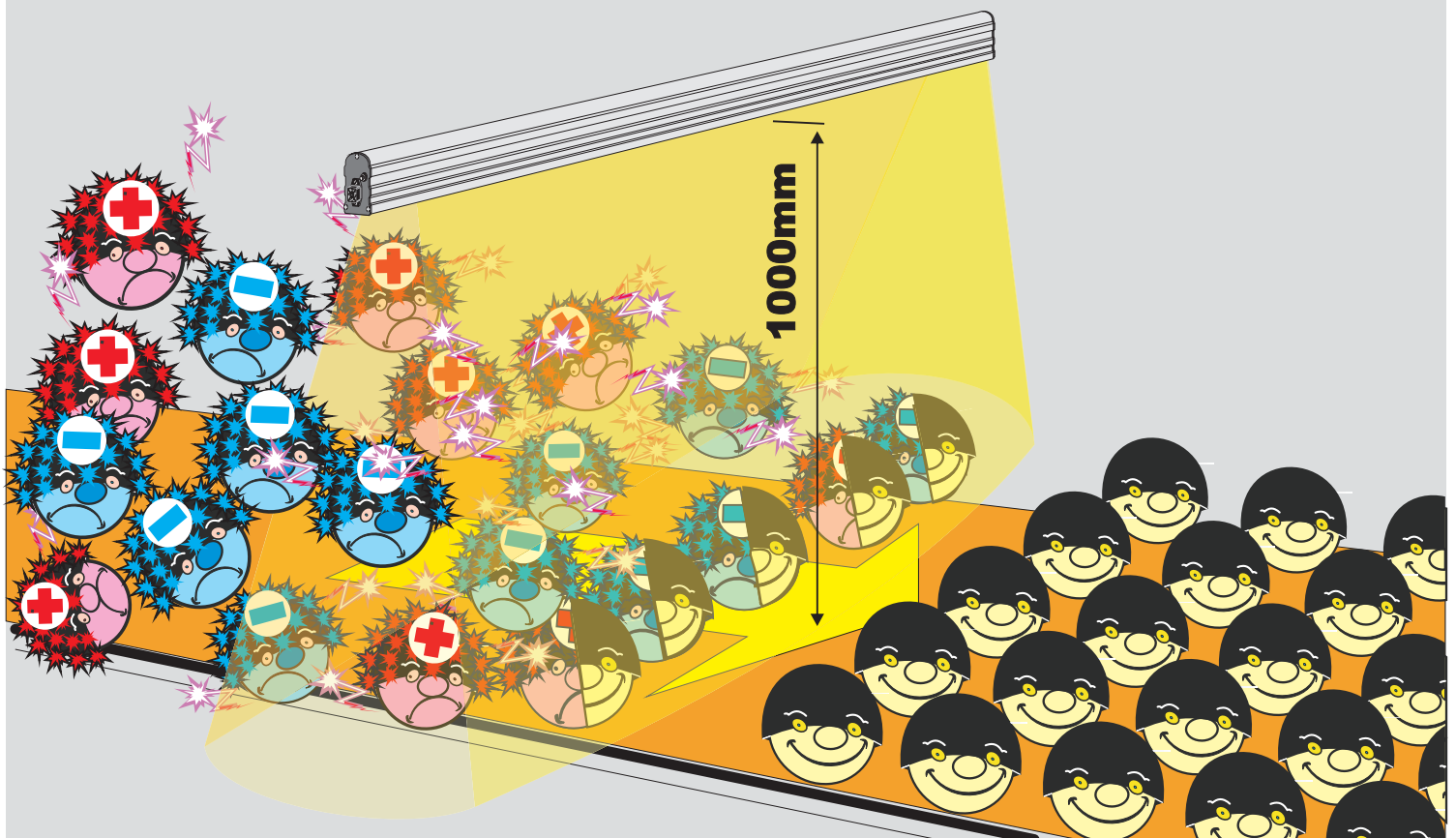
Static discharge causes damage to sensors, control scales, printers, metal detectors, and similar equipment which is positioned close to a statically charged material.



INDUSTRIES

All industries handling non-conducting material, will at some point in time, have problems with, and are affected by static electricity.

- Plastic** Production and handling of plastic products in machines and material flows often causes immense disruption due to static electricity. Plastic foil, plastic bags, form-spraying and form-moulding of car parts, packaging, etc.
- Packaging** Machine packaging is used to transport, demonstrate, decorate, and protect other products. Packaging machines use plastic foil or other material such as laminate, which is looped through the machine and generates static problems.
- Graphics** Printing on paper, plastic film, and other products requires a clean surface to ensure that the desired printing quality is obtained. A statically charged surface attracts dust and particles which makes high print quality almost impossible. The material can also become charged while being run through the machine and cause mechanical problems.
- Pharmaceuticals** Handling extremely expensive products that are to be packaged by exact weight. Statically charged packaging renders this impossible as the product sticks together, i.e. the filling of inhalers.
- Paper** Static electricity generates immense disruption in the production of tissue and non-woven material. Optical systems and other equipment for quality testing can also be damaged or give faulty readings.
- Food** Filling dry products in tube filling machines. The product is statically drawn to the plastic foil and sticks to the welded rim, resulting in leaky packaging.
- Textiles** Carding, warping and winding textile, printing, and quality control generates immense problems.
- Car industry** When producing plastic car parts it is of utmost importance to neutralize the static charge before painting.

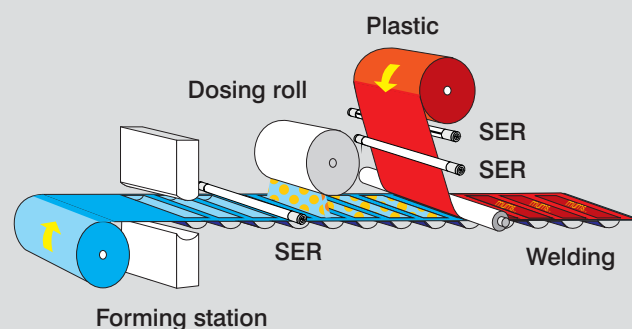




NO STATIC SYSTEMS FOR STANDARD APPLIANCES WITH SHORT DISTANCES TO A CHARGED PRODUCT

No Static 09

Central unit with 3 connections for Liros' standard range of ionizers. Featuring an anodised, aluminium housing and adjustment for setting the optimal ionization effect



Model:	NO STATIC 09
Housing:	Aluminium profile
Outputs:	3 ionizers
Input voltage:	230V 50-60Hz (standard) 115V 50-60Hz (after switching)
Output voltage:	27,5kV~2,8kHz max. 2mA
Energy consumption:	max. 30VA
Effect:	Adjustable
Safety class:	IP54
Dimensions:	H=246, W=180, D=100mm

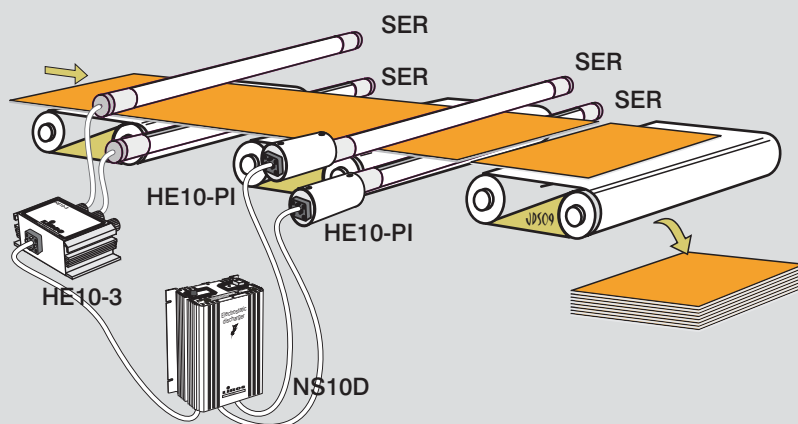
No Static 10 D

Central unit with connection for separate high voltage unit, plug-in or unit with 3 outputs (see below). The connection between the central unit and the high voltage unit only requires a standard cable, which eliminates the losses associated with the use of a high voltage cable. 100% of the system's effect can then be used to neutralize the static electricity problem. There is a controller for adjusting the optimal ionisation effect, as well as a frequency controller with 8 positions to synchronise the +/- switch with the production speed of the machine.



Remote output (AC and DC). 4 outputs for high voltage components.

Model:	NO STATIC 10 D
Housing:	Aluminium profile
Outputs:	4 outputs for HS-units
Input voltage:	230V 50-60Hz
Output voltage:	Pulsating DC, $U^{\wedge} = 350V$
Pulse width:	ca. 10m/s
Frequency:	Adjustable 170Hz-440Hz
Energy consumption:	max. 50VA
Safety class:	IP54
Dimensions:	H=280, B=180, D=100mm



High voltage unit Plug-in HE10-PI

Can be directly connected (plugged in) to Liros' anti static bar series SER.

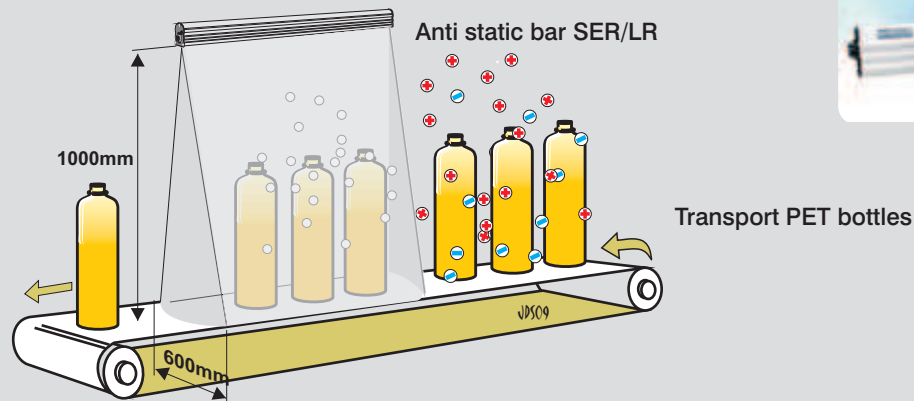
High voltage unit with 3 outputs HE10-3

Can connect the entire Liros standard range of ionizers through a short high voltage cable. To be mounted as close to the machine as possible. The ionizer is to be connected via a short high voltage cable.



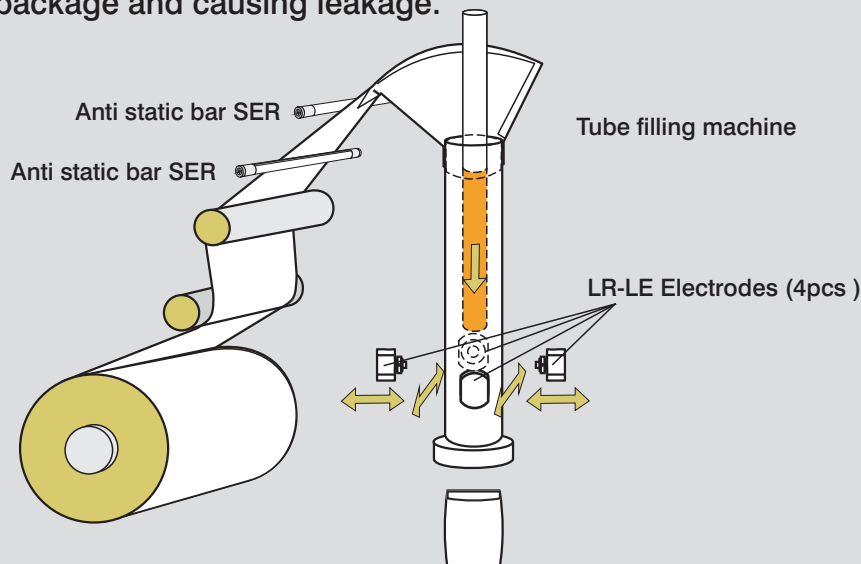
NO STATIC LONG RANGE (LR) THE SYSTEM WITH UNIQUE POSSIBILITIES

- ⊕ The **LR system** can be used as a pure anti-static system with unique range and spread properties. The maximum range is over 1000mm, and at this distance the spread is 600mm.



There are 3 different frequencies available to synchronise the system with the speed of the production machines. The high voltage unit is mounted in the anti static bar, enabling it to utilise 100% of its effect directly at the problem area without any loss of effect that a high voltage cable running alongside the machine would suffer. The voltage in the cable connecting the central unit and the high voltage unit of the system is only 24V.

Small separate electrodes which can be connected to a separate high voltage unit are available for targeted ionization in a machine with limited space, or for mounting within a pipe system for transporting products such as plastic granulate. These electrodes can also be used in applications including tube filling machines to prevent the product from getting caught in the welding of the package and causing leakage.



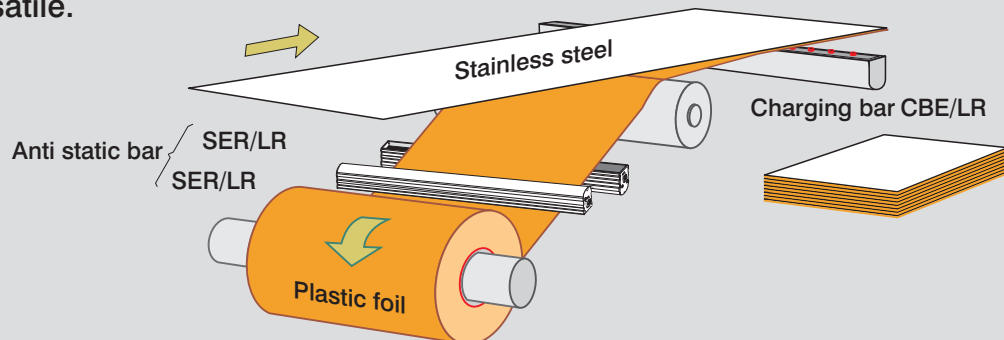
- ⊕ The **LR system** can even be used as a complete Static charge system, with the central unit supplying either a charging bar with integrated charging generator or a charging unit which can connect separate charging electrodes.

A Static charging system is used to hold something in position without the use of adhesive eg. coating a piece of stainless steel with a protective plastic film. Other uses include positioning details in advertising samples, static welding of plastic film instead of heat welding, pulsed adhesion of the final loops of plastic bags in a machine for rolling plastic bags, etc.



NO STATIC LONG RANGE (LR) THE SYSTEM WITH UNIQUE POSSIBILITIES

➤ The **LR system** has one unique function. The same central unit can be used to connect 2 outputs for anti static applications and 2 outputs for charging applications. The ability to run both static removal and static charging operations from one system is unique and extremely versatile.



The process of coating sheets of stainless steel with a protective plastic foil to avoid scratches when piling or rolling the sheets requires 2 outputs from the central unit to discharge the plastic foil with an anti static bar on each side. This station ensures that the plastic foil always has the same charge (neutral) when it approaches the charging station. This ensures a repeated, optimal charge against the steel sheet at every cycle.

Discharging static from a product which at a later stage is to be statically fixed in a certain position ensures properly functioning automated production. An innate charge within the product does not disturb the charging process, which can then be repeated with the same charge every time.

Technical specification	Housing	Outputs	Input voltage	Power consumption	Effect	Safety class	Dimensions
Central unit No Static CCU/LR01	Aluminum	4 for anti static bars or high voltage units	230V 50-60 Hz	Max 40VA	Non adjustable	IP 54	H=180, B=215, D=105 mm
Central unit No Static CCU/LR03 with control & relay function	Aluminum	4 for anti static bars or high voltage units	230V 50-60 Hz	Max 40VA	Non adjustable	IP 54	H=180, B=215, D=105 mm
No Static LR/HVLE External high voltage unit	PVC	2 negative and 2 positive outputs	24V			IP 54	H=145, B=125, D=50mm
Central unit No Static CCU/LR04	Aluminum	4 for charging bars or external charg. generators	230V 50-60Hz	Max 40 VA	Adjustable	IP 54	H=180, B=215, D=105mm
Central unit No Static CCU/LR05	Aluminum	2 for anti static bars or high voltage units 2 for charging bars or external charging generators	230V 50-60Hz	Max 40 VA	2 charging outputs adjustable	IP 54	H=180, B=215, D=105mm
No Static CGP-LR External charging generator	Aluminum	2 positive outputs	24V			IP 54	H=145, B=125, D=50mm
No Static CGN-LR External charging generator	Aluminum	2 negative outputs	24V			IP 54	H=145, B=125, D=50mm

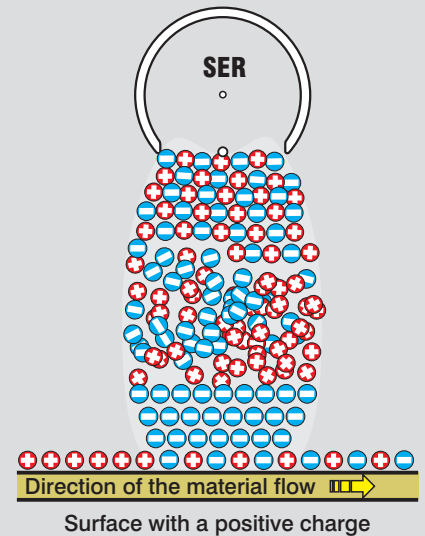


IONIZERS FOR LIROS NO STATIC SYSTEMS

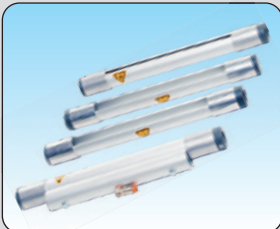
⊕ Ionizers for the No Static 09

The following ionizers can be connected to the No Static 09 system. To achieve the maximum neutralization effect it is important to choose the right ionizer for each application. Anti static bars are manufactured in exact lengths to match the application and neutralize across the complete width of the material.

To increase the ionization range further it is possible to connect compressed air to one type of the SER series. The ionizing air nozzles are used to ionize smaller areas and the compressed air connection makes it possible to introduce ionization where it is needed with pin-point accuracy. Ionizing rings to be integrated in transportation systems for granulate and powder, in the plastics-, medical- or food-industry. The ionizing ring is mounted directly with flanges in the tube system and the granulate or powder is neutralized when it passes through the ring. The ionizing ring can also be mounted around the plastic tube in a filling machine.



This is the standard Liros programme of ionizers for applications that only require a short range. In those applications when the standard programme is not an optimum solution, Liros can offer a tailor-made ionizer solution.



Anti-static bar SER with profile wire. (Range 10-150 mm)

SER 52 (Standard)	Length 0-5000 mm
SER 92 (air connection)	Length 0-5000 mm
SER 62 (perforated back)	Length 0-5000 mm
SER 82 (mounted in U-profile)	Length 0-5000 mm



Air nozzles JBT (Range 150-300 mm)

JBT20/60	(Ø20 mm, length 60 mm)
JBT20/100	(Ø20 mm, length 100 mm)
JBT20/250	(Ø20 mm, length 250 mm)
JBT30/100	(Ø30 mm, length 100 mm)
JBT30/250	(Ø30 mm, length 250 mm)



Air nozzle Jonjet (Range 150-300 mm)

Jonjet1	(1 module)
Jonjet2	(2 modules)
JonjetX	(3-8 modules)



Ionizing rings SEC (Range 300-400 mm inside diameter)

SEC ionizing ring.	Inside diameter 50-400 mm
Options	- divisible
	- flange connection, single or double
	- air connection



IONIZERS FOR LIROS NO STATIC SYSTEMS

⊕ Ionizers for the No Static 10 D

The programme of ionizers for the No Static 10 D system is the same as for the No Static 09. The difference is that the high voltage unit is separated from the central unit, either as a plug-in unit for the SER anti static bar series or as a unit with 3 outputs to connect the rest of the ionizers via a short high voltage cable.



High voltage unit HE10-Plug in

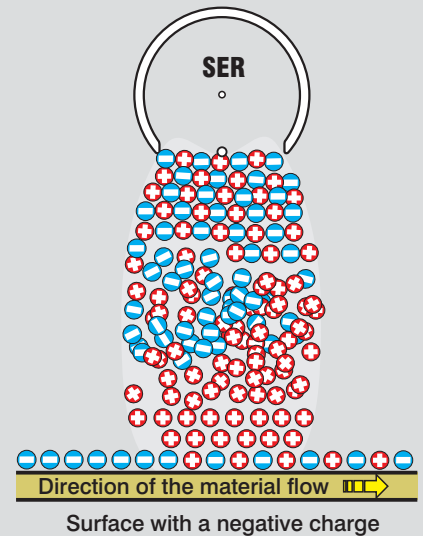
A high voltage unit to connect SER anti static bar series directly plug-in. A 100% of the effect capacity can be used in the bar, in it's position in the machine.



High voltage unit HE10-3 with 3 outputs

High voltage unit for connection of all ionizers via a short high voltage cable.

HE10-3 is placed near by the ionizer in the application.



⊕ Ionizers for the No Static LR system

The ionizers for the LR-programme are either the LR anti-static bar with a high voltage unit built-in, or separate electrodes connected via a separate high voltage unit. The LR charging system is configured the same way. Either with a charging bar with a high voltage generator built-in, or separate charging electrodes connected via a separate charging generator.



The LR anti static bar SER/LR

Anti-static bar in PVC with a high voltage unit built-in
Range over 1000mm, with a scattered ionization field of 600 mm.
Length after order 350-4000 mm.



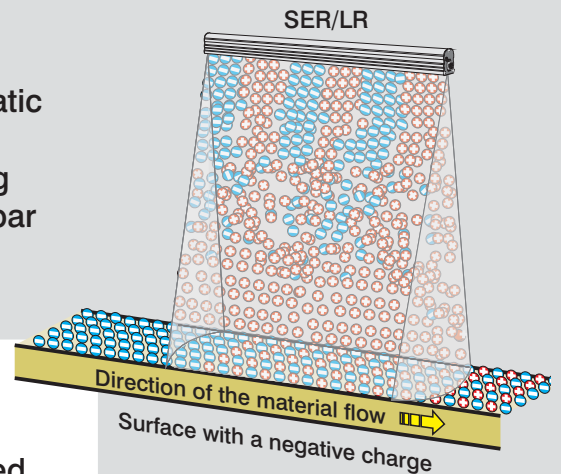
LR separate electrodes LR-LE

LR-LE connected via a separate high voltage unit two by two.
One electrode to the positive side and one to the negative side of the high voltage unit.



Separate high voltage unit LR-HVLE.

2 + outputs and 2 - outputs for separate electrodes LR-LE.
This system can also be used in a tube-system for transport of granulate, or around the plastic tube in a filling machine.





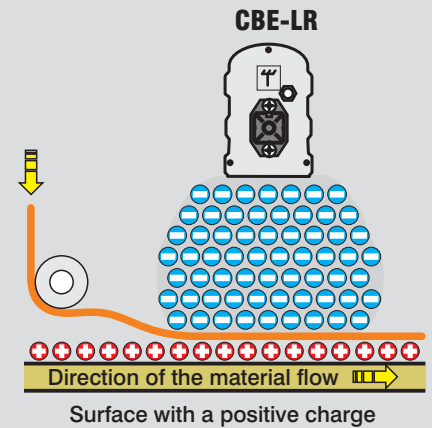
IONIZERS FOR LIROS NO STATIC SYSTEMS

⊕ Charging bar and charging electrodes for No Static LR

The LR charging system can be used as a separate charging system or as a complete combination with 2 outputs for anti static use and 2 outputs for charging use, connected to the same central unit.

In a charging application used for adhering a product, for example securing a protective foil on stainless steel, it is important that the foil has the same charging status on every charging occasion

To obtain that, a neutralizing station should be mounted in a position to remove the potential charge from both sides of the foil. When the foil then reaches the charging station, the same charging result is achieved every time.



Charging bar CBE-LR-P and CBE-LR-N

PVC charging bar with a built-in charging generator in a positive (+) or a negative (-) version.

Length after order 350-2000 mm



Charging electrode HSE-04

Electrode for point charging products e.g static welding.



Charging electrode HSE-06PG21

Threaded electrode Ø28 for point charging.

Option: Insulating plate.



Separate Charging generator for separate electrodes CGP and CGN

To connect to a LR central unit for separate charging electrodes.

The unit has 2 outputs and is available in a positive (+) or a negative (-) version.

THE UNIQUE THING WITH LIROS NO STATIC LR SYSTEM IS THAT YOU TO THE SAME CENTRAL UNIT CAN CONNECT BOTH A ANTI-STATIC STATION AND A CHARGING STATION.



