

MB CONVEYORS SOLUTIONS

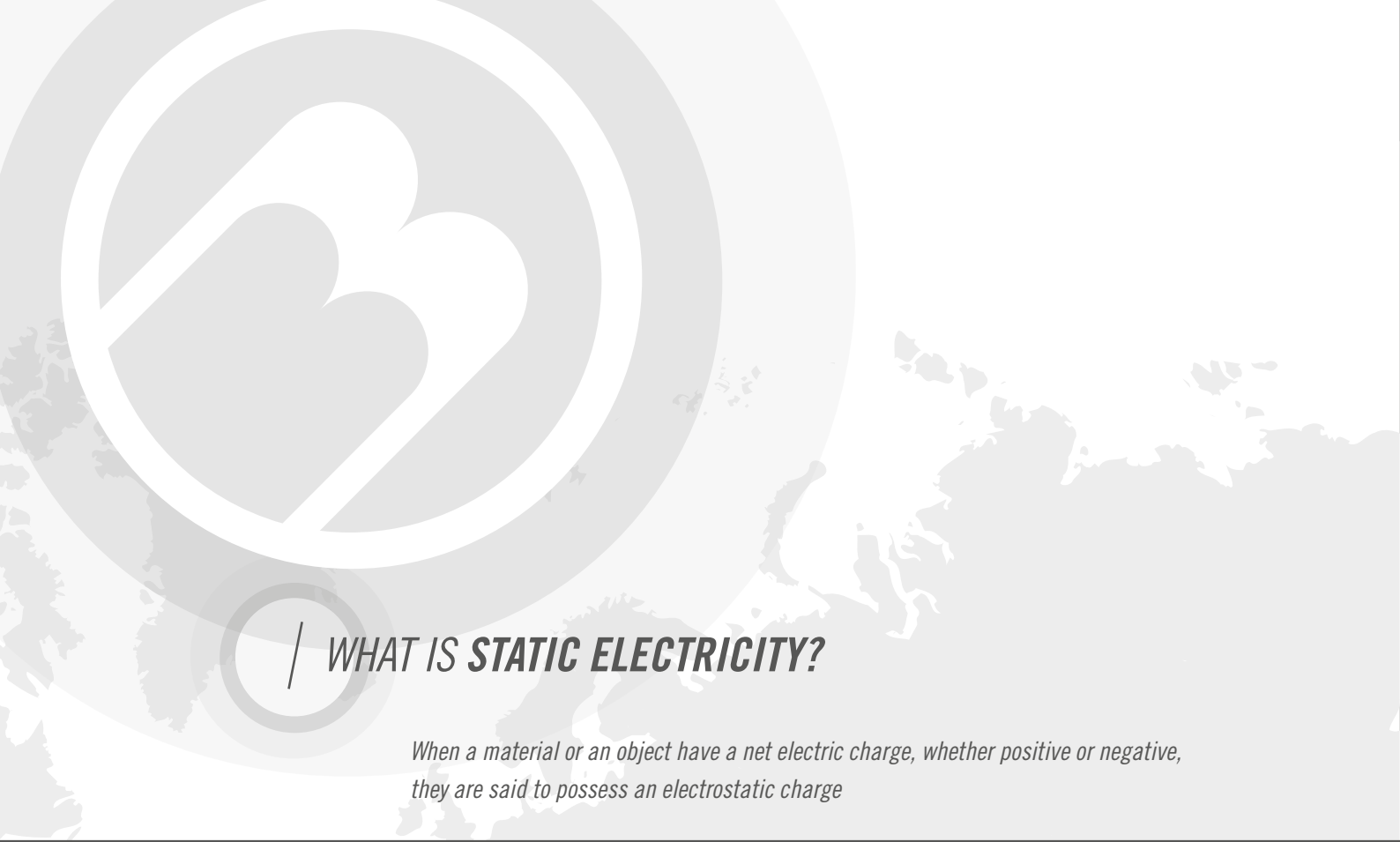


*ELECTROSTATIC
CHARGES*



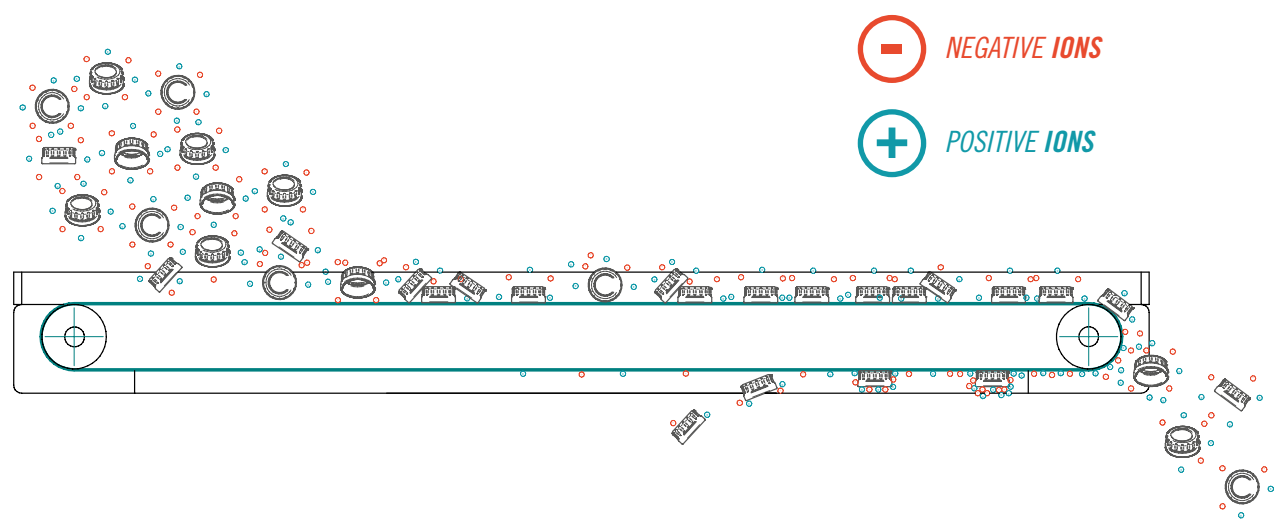
mbconveyors.com





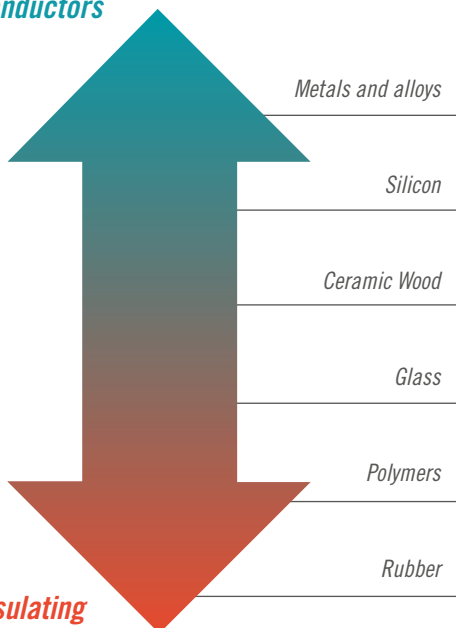
WHAT IS *STATIC ELECTRICITY*?

When a material or an object have a net electric charge, whether positive or negative, they are said to possess an electrostatic charge



STATIC CHARGES TEND TO DIMINISH OVER A CERTAIN PERIOD OF TIME, THE LENGTH OF WHICH DEPENDS ON THE RESISTIVITY OF THE MATERIAL.
 THE VOLTAGE ON A MATERIAL DEPENDS ON TWO FACTORS:
THE ENTITY OF THE CHARGE ON THE MATERIAL AND THE INSULATING CAPACITY OF THAT MATERIAL

Conductors



- Generally speaking, metals have very low resistivity values and tend to be good conductors: they will therefore accumulate very low voltages
- On the other hand, plastic materials generally possesses very high resistivity values and insulating capacities, thus a small charge can produce significant voltages.
- Although MB conveyors DO NOT produce electrostatic charges as they operate, the presence of such charges can be caused by different factors, such as moisture, the type of material, repetition, temperature changes, etc, and can lead to certain problems when the conveyors are used, such as:

SUCTION EFFECT

The product “sticks” to the belt in the under-belt part of the conveyor until the charges run out, after which it is released, often beyond the storage container.

ATTRACTION EFFECT

Meaning an attraction for dust and dirt: the dust is attracted by the charges and normally settles on the belt or on the accessories with which the conveyor may be equipped, thereby creating built-up dirt

BRIDGE EFFECT

This occurs when the products are stored in large containers and the modest surface charges of each individual piece add together until they reach such levels that, were an operator to come too close, he would create a discharge channel towards earth and receive a “shock”.

ELECTRO-EROSION EFFECT

This phenomenon leads to erosion of the section of the drive shaft or the housing of the driving key. This is because, as they attempt to find a way to discharge to earth, the electrostatic charges direct themselves towards the reduction gear / drive roller shaft coupling, thereby creating a bridge that produces the same effects as electrical discharge machining.

POSSIBLE CONSEQUENCES OF THE EFFECTS OF ELECTROSTATIC CHARGES ON CONVEYORS

ELECTRO-EROSION



The photo highlights the harmful effects that electrostatic charges can have on the drive roller: the drive key housing is completely damaged



This photo highlights the harmful effects that electrostatic charges can have on the conveyor drive roller shaft



This photo shows a drive roller shaft damaged by electrostatic charges

PROPOSED SOLUTIONS FOR REDUCING THE EFFECTS OF ELECTROSTATIC CHARGES

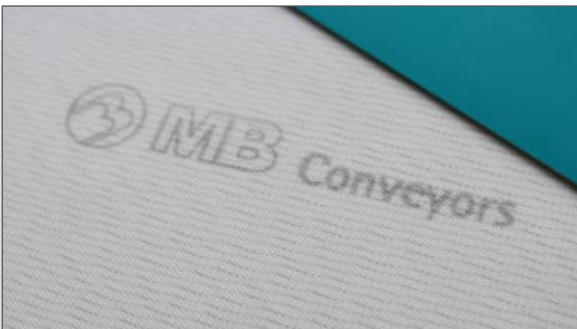
Thanks to the experience acquired by MB, we are able to propose several technical-construction-related solutions that reduce and strongly limit the effects of electrostatic charges:

1. MB CONVEYOR WITH PLASTIC BELT:



Conveyor with MB plastic belt: thanks to its special compound, the MB plastic belt is able to considerably reduce electrostatic charges by opposing less resistance to their passage and facilitating their dispersal.

Completion of the inclined section with a flat upper section: this enables the force of gravity to overcome the attracting effect of the charges



2. CONVEYOR BELT:

As standard practice, MB Conveyors installs belts provided with antistatic characteristics thanks to the carbon filaments included in their structures.

3. IMPROVED EARTHING OF THE DRIVE UNIT: this is done by connecting the earth terminal in the motor base to the structure, using a copper cable. The structure of MB conveyors is usually made of aluminium section metal, which is an excellent conductor



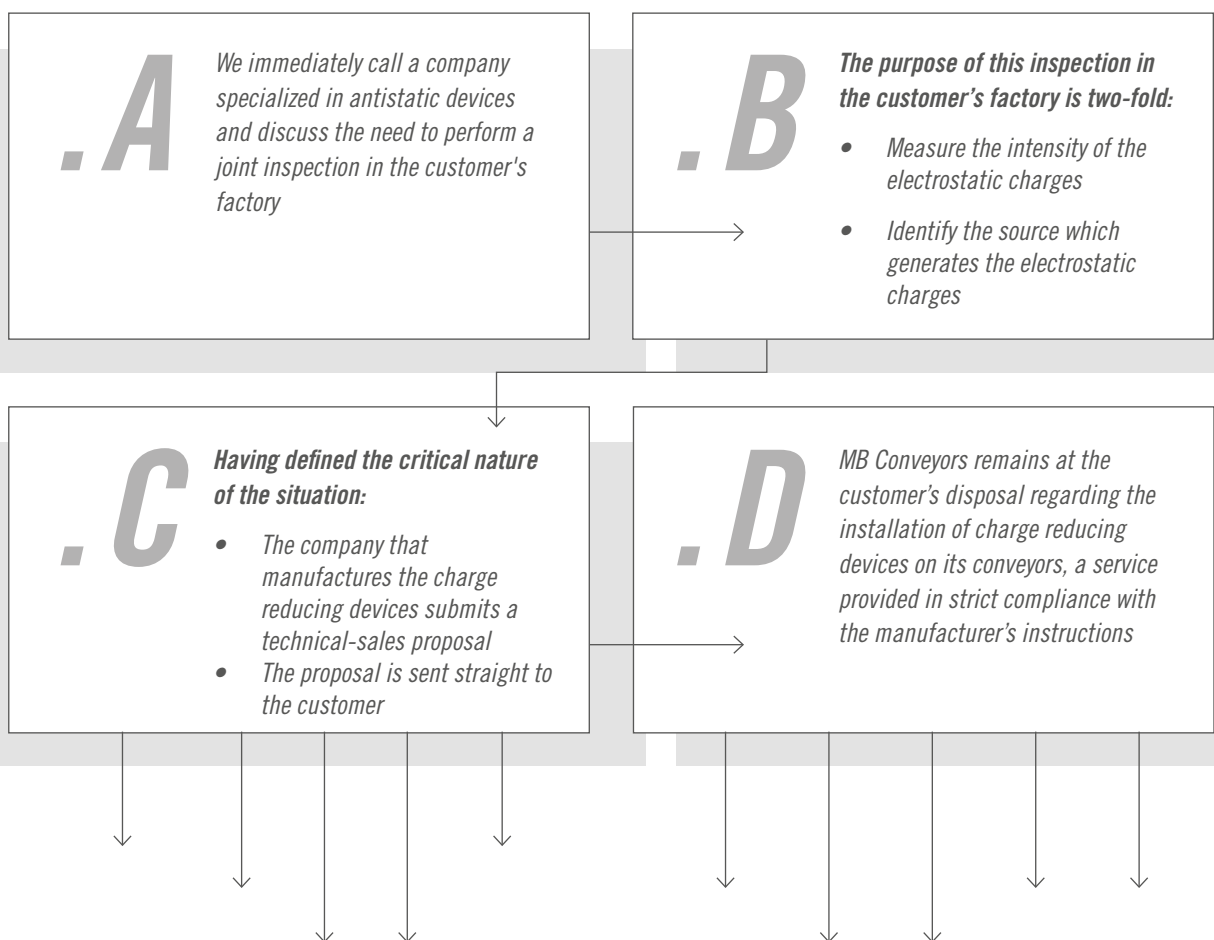
Example of an earthing system: the copper cable, with its specific yellow-green sheath, must be fastened with a ferrule and metal screw



Example of earthing on mod. SR-SM separators: Installation of copper multistrand wire to connect the drum to the structure of the separator

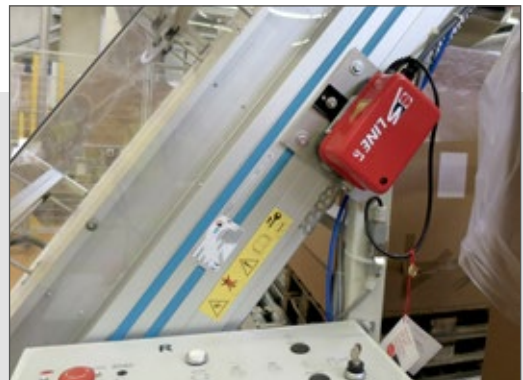
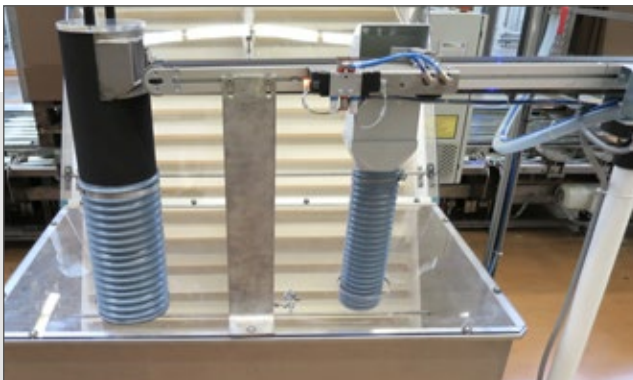
REPORTING FAULTS INVOLVING ELECTROSTATIC CHARGES: THE MB APPROACH

If a customer reports a fault that could be due to the effect of electrostatic charges, MB tackles the problem in the following steps:



If, on the other hand, a customer informs us of the presence of electrostatic charges as a critical factor to be taken into due consideration when **NEW conveyors are designed/ built**, we will discuss the matter with the company specialized in antistatic devices in order to establish the most functional solutions for each specific case.

APPLICATIONS WITH DEIONIZERS



MB CONVEYORS SOLUTIONS



MB CONVEYORS SRL

Via della Scienza, 7 - 36070 Brogliano (VI) - Italy
T: +39 0445 444555 - F: +39 0445 444599

sales@mbconveyors.com

mbconveyors.com

