



Effect of static electricity

The unpleasant effects of static electricity are well known. People get shocks, materials cling together, a spark damages materials or even causes a fire. A electrostatic charge can also be very useful ! Materials can be charged deliberately to make them bond temporarily. Static charge can be an invisible helping hand in your production process. This method is already used in many processes in various industries.

Some examples are:

- ⊕ Block a stack of paper or magazines to prevent shifting during transport or packaging.
- ⊕ Fix an address label to a brochure before the brochure is packed in a wrapping film.
- ⊕ Keep the last bag of a roll (ie.Garbage bags) fixed to the roll to make packaging in a carton easier
- ⊕ Bond a small section of a film during winding on a roll to prevent the roll from telescoping.

Many products we use daily are produced with the help of an electrostatic charge without us knowing it.



A perfect example is packaging of food products and many plastic products for domestic use. Many products are produced with the aid of a static charge. Instead of printing directly or placing a sticky label onto

the product, the print is achieved with a pre-printed plastic label. The pre-printed label is positioned into the injection mould and kept in place by a static charge. This way the label will be moulded together with the product shape and come out as a finished product.



A spectacular application of static bonding is keeping together large objects. Stacks of brochures or flooring laminate can be held together with a static charge to prevent them from shifting during transportation. This demonstrates the enormous force that can be generated by an electrostatic charge. Extraordinary, but not obvious applications of using static charge appear regularly. Applying a homogeneous static charge to a surface has a very positive effect in processes where fluids need to be dispersed across the surface. A common application is the production of DVD discs. Each DVD disc consists of two thin plastic layers that are glued to form the finished disc. A electrostatic charge is induced on one surface which causes the glue the disperse much more evenly.



Do any ideas spring to mind on how to use a static charge in your production process?

SIMCO (Nederland) B.V. has outstanding capabilities to develop ideas and implement solutions with static electricity that can simplify and optimise your process. A broad range of products are capable of performing tasks that go beyond your imagination.

How?

A static charging system consists of a high voltage generator and an electrode. The high voltage generator supplies the high voltage needed to create a static charge. This can vary from 3 to 60 kVolts. The charging electrode comes in different shapes to enable an optimum result for each specific application.

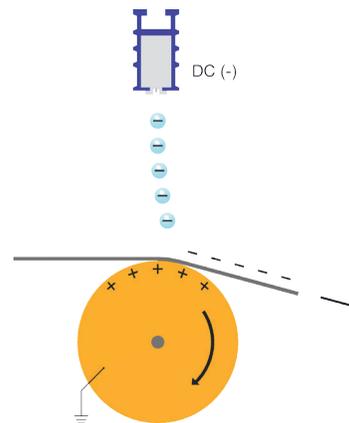


Charging generator



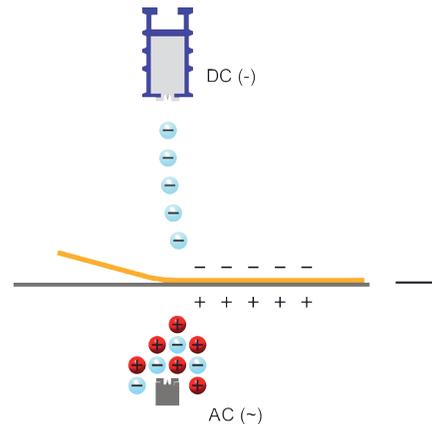
Charging bar/electrode

Charging techniques



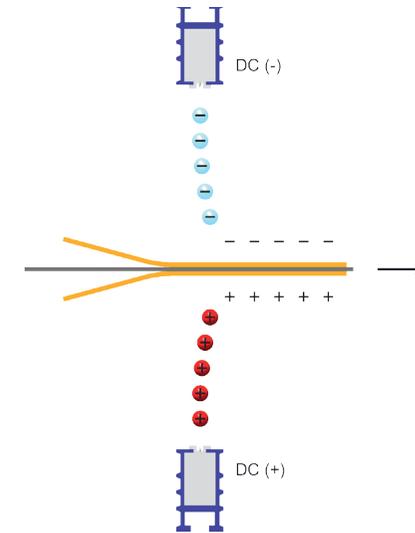
Direct voltage opposite earth

The charging electrode is located opposite an earthed plate or roller. Because of the electrostatic field the material web will temporarily adhere to the reference earth.



Direct voltage opposite an AC anti-static bar ("virtual" earth)

There are also conditions without reference earth. Ions of different polarity attract each other, this causes an isolator (e.g. film) to adhere temporarily to a material with a different polarity, in this case an isolator as well.



Bipolar direct voltage

This is the most effective method.

The negative ions of the upper electrode attract the positive ions of the lower electrode, thus creating maximum adhesion between the top/bottom layer and the intermediate carrier.

Which technology suits your application?

It depends;

- + ⊕ What is your problem?
- + ⊕ What is the desired result?

Consult a Simco-Ion representative near you or
Download the whitepaper: Ionisation selection.

Contact: www.simco-ion.co.uk/contact
Whitepaper: www.simco-ion.co.uk/wpisg