electrostatic innovations

Trouble-free processes through powerful discharge

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Industries and applications

Electrostatic energy: once a problem, now a solution.

Charging and discharging bodies with static electricity is a phenomenon based on simple laws of physics. As these laws are universally applicable, static electricity is present in every area of industry. Spontaneous and uncontrolled discharges can cause substantial problems, as they impair production processes and thus incur unnecessary costs.
Our systems and concepts help you neutralize electrostatic energy or even use it in a targeted manner, thus turning it from a nuisance to a benefit.

Some of the industries that use such systems successfully are:

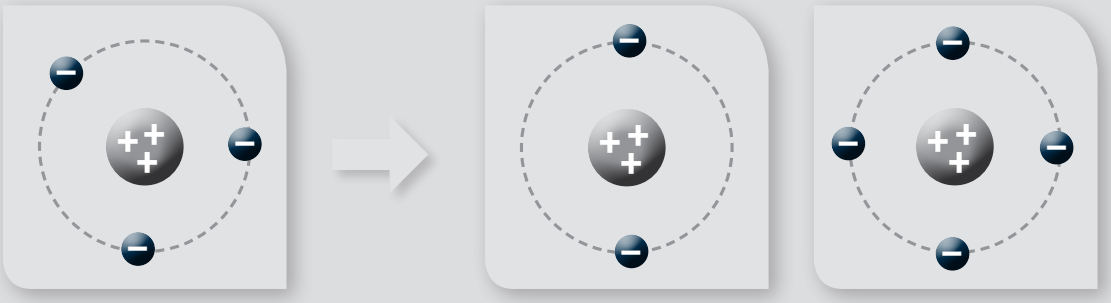
- the plastics industry, in which electrostatic energy can help to prevent quality defects
- the printing industry, in order to attain higher quality in ink transfer, targeted introduction of moisture and finishing
- the packaging industry, in which the entire work process is improved
- the chemical industry, which relies on electrostatic systems in manufacturing ink, varnish, explosives and pharmaceutical products
- the IT industry in manufacturing microchips and components that require the smallest tolerances
- the automotive industry, in optimizing vehicle painting Electrical engineering, to counteract unwanted charging of components
- the electronics and film industry, in which microscopically pure products are required
- the ceramic, glass, textile, metal and wood industries, in which work processes are made safer, faster and thus more cost-effective

The range of applications for electrostatic systems is unlimited, and so is our dedication to their continuous further improvement. Improving production processes is our task – optimizing quality, productivity and profitability for our customers is our goal.

Physical basics

Tiny differences

Electrostatic energy can be traced back to the smallest building blocks of the material world: atoms. These consist of protons in the nucleus and electrons in the cloud. Electrons have a negative charge, protons a positive one. If the number of these two particles is equal, the entire atom is electrically neutral.



Charging takes place, for example, when two boundary layers are suddenly separated, if electrons jump from one body to the other.

Only contact results in a charge

A contact charge always involves two bodies. One of them must form a capacitor, i.e. an insulated body which is capable of charging up electrostatically.

If two atoms and their clouds meet each other, make contact briefly (for example) and then are quickly separated, electrons jump from one body to the other. This process, which results in an imbalance in the electrically neutral state, is called charging. The atom has a positive or negative charge depending on whether the electrons or protons predominate. Too few or too many electrons inherently search for a balanced outlet, that is, by discharging.

Preventing and controlling discharges

Provoking discharge

Some conditions are highly conducive to uncontrolled discharge. Products with low moisture or rooms with low humidity, materials that can be charged electrostatically (because they have high insulation performance) and a high contact coefficient ensure that frequent and strong charges can take place. Slippage on webs, dielectric fluids at pipe bends or friction at smooth surfaces are additional factors that are conducive to electrostatic energy – and, quite likely, trigger uncontrolled discharges.

Control is better

To prevent problems, a controlled discharge must be induced. For our example of plastic film, this can take on the following form: the film is neutralized in a targeted manner using active discharge electrodes. This discharge cloud, which surrounds the electrodes, neutralizes the charge on the material and thus prevents spontaneous discharges.

Electrostatic energy in a double role

To disrupt …

For electrostatic charging, in addition to the material and its insulation value, the critical factor is how quickly the materials are moved. The higher the speed, the stronger the electrostatic charges will be. In most production processes, the objective is to manage the greatest possible quantities of material at the highest possible speed. Electrostatically clinging materials and uncontrolled discharges are thus inevitable. As described above, unless the charge is controlled and eliminated, its spontaneous, uncontrolled discharge can lead to faults, delays and dangers in the production process.

… and serve

However, if we know the laws of electrostatics, we can put this energy to creative and productive use. In the plastics industry, for example, “neck-in” can be eliminated with targeted use of point charging bars. The result: no necking of the film and an increased production volume.

In the printing industry, where long dryers are required to compensate for the moisture loss from the paper web, the web can be charged so that it attracts water aerosols. These then penetrate effectively into the fiber structure of the paper, where they provide moisture efficiently.

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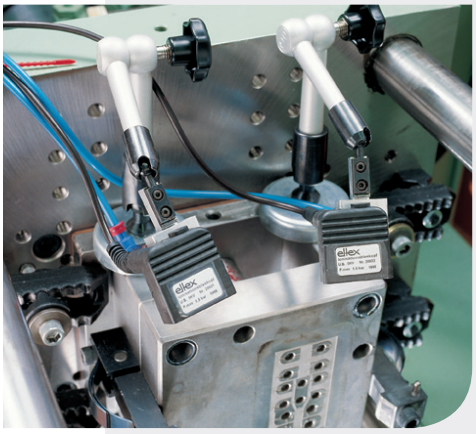
The optimum choice for many applications

Top-Class Discharging

Ever faster manufacturing cycles and industrial processes require the highest possible accuracy. Discharging static electricity plays a key function in meeting today's productivity and safety demands.

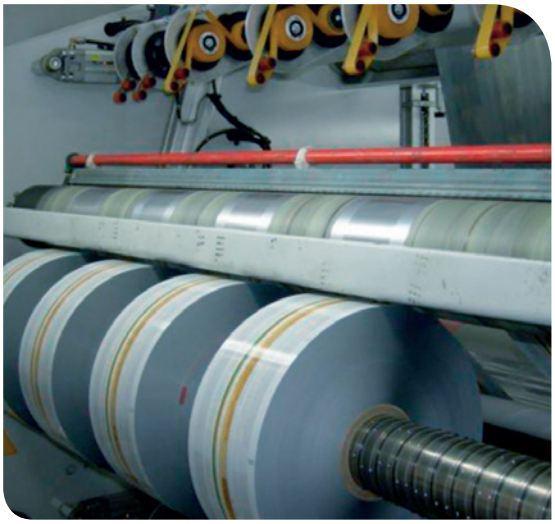
High process speeds and a growing machine complexity intensify the challenges faced by discharging systems. Conventional solutions soon meet their capacity limits. Complex machine geometries, in particular, rarely allow the discharging equipment to be installed at the desired location. For this reason discharging must also be effective across greater distances and in high-speed applications.

This is precisely the advantage of Eltex' discharging technology compared to others. Eltex discharging systems meet the most stringent requirements and have successfully been in everyday use for several decades, both by machine manufacturers and by users in all industries.



The Eltex discharging technology is suitable for a wide variety of discharging tasks in many industries, e.g. in printing, plastics, optical and packaging for:

- separating and fanning paper and film piles
- the production, processing and converting of plastics and textiles
- cleaning moving and non-moving surfaces (e.g. optical lenses)



Target groups and customers

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Why do you need Eltex?

Primarily if you are a company whose workflows may experience interference from unidentified electrostatic energy or can be improved by its use. If you want to make your production faster, safer and more cost-effective, we help you do just that with our systems and expert advice.

As a mechanical engineering company, you need Eltex in order to equip your products with factory-installed systems to offer your customers higher safety, reliability and quality.

As a plant designer and consultant, you need Eltex if you would like to use Electrostatic systems as a beneficial part of the design and construction of production facilities.

As an engineer, technician and developer, you need Eltex in order to develop new process and product ideas using electrostatic energy.

Maybe you need Eltex and don‘t even know it yet.

Learn more about the various applications and industries in which Eltex eliminates the undesirable side effects of electrostatics or shows how it can be used to good effect.

Together we achieve more

Only together with you we can identify the possible problems, which can be solved by the use of electrostatic systems. The first step towards finding the solution for your tasks and problems is always to identify and define them accurately. The best way to do this is in a personal conversation. Get in touch with us by e-mail or telephone. Our employees at the headquarters in Weil am Rhein, Germany, our application consultants or our more than 50 worldwide representatives are at your disposal.

You can find your contact at **www.eltex.com**.

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