Industries Concerned With Static & ESD

Static Electricity is a problem in many industries. Static is the cause of two main problems: Electrostatic discharge and Electrostatic Attraction.

Electrostatic Discharge is commonly referred to as ESD is the sudden transfer of an electric charge from one conductive surface to another. ESD can burn tiny holes into sensitive electronic components like circuit boards which can cause a catastrophic failure or worse a latent failure - a failure that happens after the device is in the consumers hands - which causes increased warranty claims and a lack of confidence in a brand.

Electrostatic Attraction is when a surface becomes charged and it creates a pull to nearby molecules. Static attraction is responsible for the vast majority of particle contamination in many industries. Static can also slow production in high speed manufacturing, cause lockups, and sticking and lower throughput.

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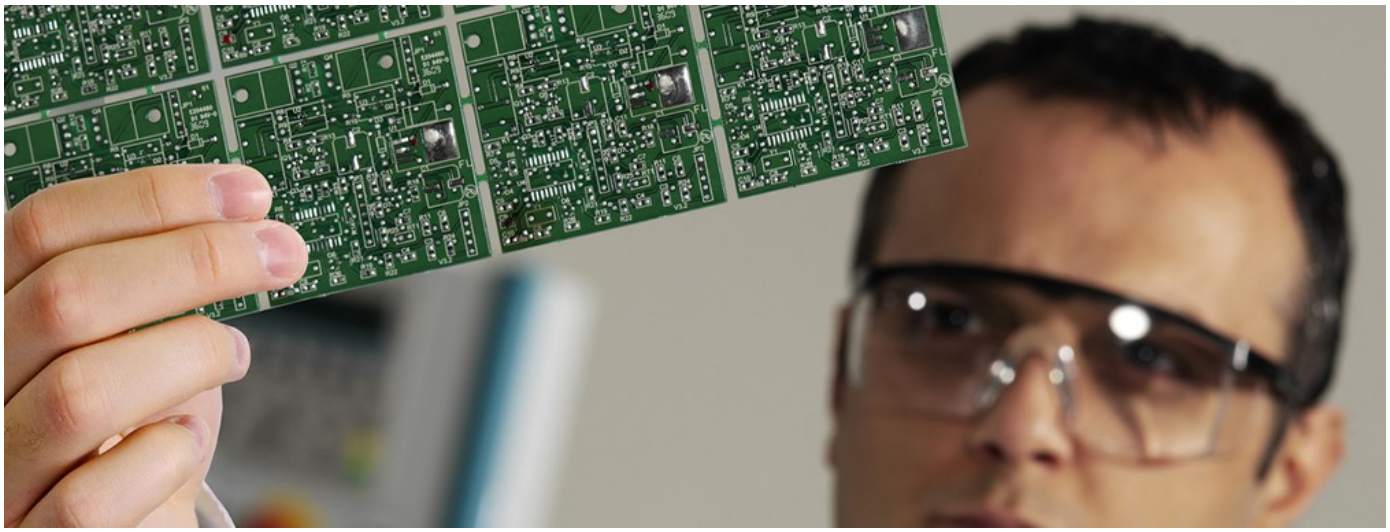
The industries Concerned with Static:

Electronics Manufacturing



Electronic devices such as computers and cell phones are becoming smaller and faster every year and more at risk to ESD damage. Companies manufacturing electronics require ESD protection in their quality programs in order to eliminate the catastrophic and laten failures.

The global Electronic Manufacturing Services (EMS) market size is projected to grow from $534.62 billion in 2023 to $USD 856.20 billion by 2030.

Semiconductors

In semiconductor manufacturing, the electrostatic discharge can damage chips, cause particulate contamination, and damages equipment. When static control is implemented, product quality and yields increase. Air ionization is needed to neutralize static charge in a process where insulators and isolated conductors are found and related processes such as Thin Film, Photomask, Reticles, Die Bonding, and Wire Bonding

The global semiconductor market size surpassed USD 591.8 billion in 2022 and is projected to reach around USD 1,883.7 billion by 2032

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Medical Device

When it comes to medical applications, there is no room for error. Medical device manufacturers are committed to quality and micro contamination is a significant challenge which can cause biological contamination, product performance issues, or even latent failure. Even in the most stringent cleanrooms, static charge attracts particulates from people, processes and equipment, so it is important to take appropriate measures to ensure static is kept to a minimum, if not completely eliminated.

The U.S. medical device manufacturers market size was valued at USD 243.4 billion in 2023 and is projected to grow at a compound annual growth rate (CAGR) of 5.8% from 2024 to 2030.

Automotive

Automotive manufacturing is affected by static at every stage of production from contamination of components such as dash boards, and windshields, to ruining paint jobs and process errors in high-speed assembly. Electronics integrated into automobiles require the same care and ESD protection as the electronics manufacturers who produced them. Electric Vehicles equipment such as the battery pack is especially prone to static damage during manufacturing, assembly, and installation

The automotive manufacturing industry generated approximately 2.52 trillion U.S. dollars in revenue in 2022, and is expected to grow in 2023.

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Cleanrooms

Dust and contamination are two of the biggest nightmares for anyone working in a cleanroom environment. Unfortunately Static Electricity is one of the largest contributors in attracting airborne contaminants, therefore a static build up in a clean room production environment can be a disaster.

The global cleanroom facility market was valued at $63.5 billion in 2022 and is projected to reach $103.72 billion by 2028

Laboratory, Research & Pharma

In laboratory and pharmaceutical environments, electrostatic discharge severely disrupts accuracy and material handling when measuring lightweight materials. This can have huge financial and safety implications. While it is easy to see the impacts it can have, static is often overlooked as the cause of these situations.

The global pharmaceutical industry was valued at 1.48 trillion in 2022

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Critical Environments

Neutralizing Static in Hazardous Areas where explosive materials or chemicals are handled is crucial. One spark from a static charge could in many cases result in fire or explosion and serious injury or death.

Global Critical Infrastructure Protection Market Size To Surpass USD 254.51 Billion by 2032

Printing and Painting

Static electricity can cause a wide range of issues in printing applications. From statically charged substrates, to dust attracted to the static charge. Ink fly, hidden voltage and a number of other static problems across all types of print. Static charge is a major cause of paint film contamination, however all these other problems can also be caused by static: Non-consistent lay down of metallic, blending/color matching problems, un-even application of material, dark edges, patchiness.

The global commercial printing market was valued at USD 466.64 billion in and the global paint and coatings industry was estimated to be valued at some 160 billion dollars in 2021

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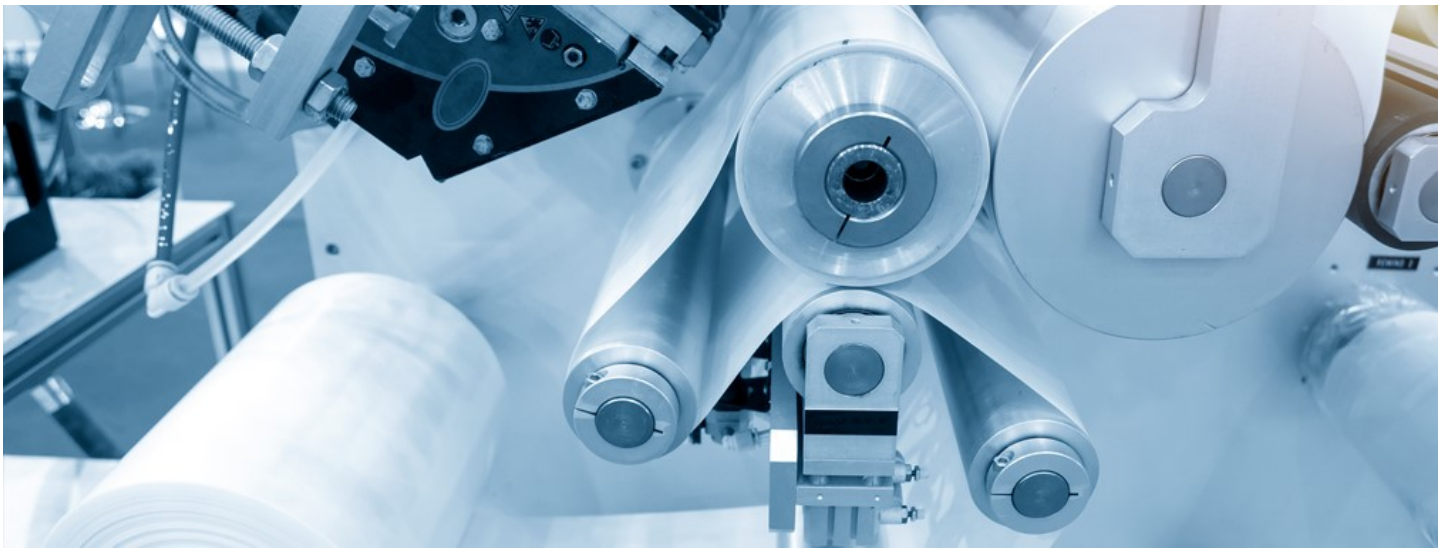
Plastics

Static electricity and plastic are intrinsically linked and there are few plastic manufacturing processes that do not suffer adverse effects from the build up of a static charge. Static effects Injection molding, blow molding, thermoforming, rotational molding, parts conveying and collection and assembly processes and many more. Static causes dust attraction and contamination, product rejection, process errors and operator safety concerns.

The global plastic market size was estimated at USD 609.01 billion in 2022 and is expected to reach USD 627.29 billion in 2023

Packaging



Static issues in packaging can be costly and time consuming. Static can prevent packages from filling correctly, forcing product to misbehave. Static can also cause sealing issues and can create numerous problems with label printers, shrink wrappers, containers and webs.

The global packaging market value is approximately $1,175 billion, calculated on the value of finished products

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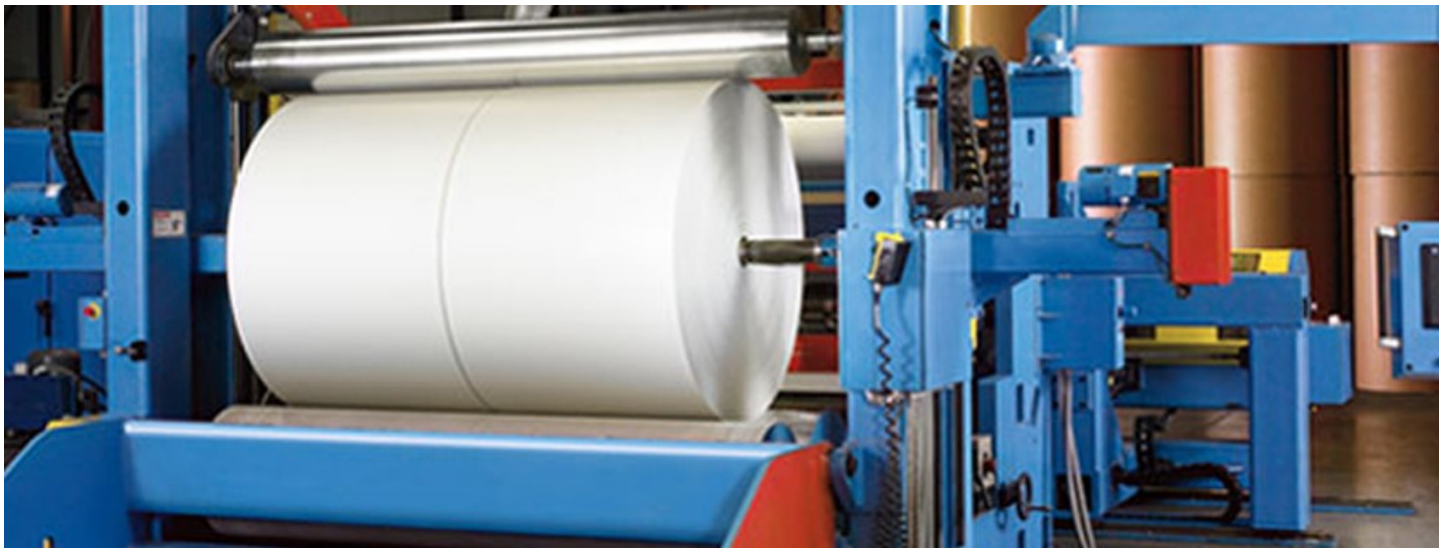
Converting



Eliminating static in a converting process is essential. Due to the nature of converting, high levels of static electricity are often generated by the fast moving web passing over rollers and through slitters. The challenge facing converters often involves finding the balance between the process speed and capability of the static control equipment.

Converting Market was valued at US$ 40.85 Bn. in 2022

About Transforming Technologies

Since 1998, Transforming Technologies has helped electronic manufacturing facilities to protect their products and processes from the many serious problems associated with static electricity.

Transforming Technologies offers a wide range of unique and outstanding products to detect, protect, eliminate and monitor electrostatic charges. Our products are integral components of an effective static control program.

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