



Surface cleaning

A clean surface of the manufactured product is often a necessary condition requested by your customers. Production processes such as the cutting of rolls and sheets, bag production, injection moulding and other processes used for paper, film and plastic materials creates particles or attracts particles that contaminate the product. If the product is transported through the production process, contact between the products and separation of products causes static electricity that results in the electrostatic adhesion of contaminants to the surface. The faster the production process, the more complicated the problems described above will become. Contaminated surfaces cause errors in the printing process, uneven coating, laminating etc. which results in quality problems, high costs, and ultimately customer dissatisfaction.

Solution

Simco-Ion offers a wide range of surface cleaning systems. All systems comprise of ionisers that neutralise static charges and prevent attraction of contaminants to the product.

Why is ionisation important for removing dust particles?

Static electricity plays a crucial role in the removal of dust particles. Dust particles and surfaces may be charged with static electricity.

A charged dust particle is attracted and retained by a neutral surface or a surface with an opposite charge (see figure 1 and figure 2).



Figure 1

A neutral particle is attracted and retained by a charged surface (see Figure 2).

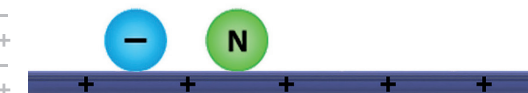


Figure 2

The specific weight of a dust particle is very low, so even a small charge produces a huge attraction.

Clean with air

Removing dust particles from a surface without ionised air is very ineffective. Air causes friction so that the static charge and therefore the force attracting dust particles is increasing. Much more air and power is needed to bring the dust particles in motion. Next to that, dust particles escaping from the airflow will easily be attracted back to the surface (see Figure 3). Effect: the dust is moved only but not removed (see Figure 4).

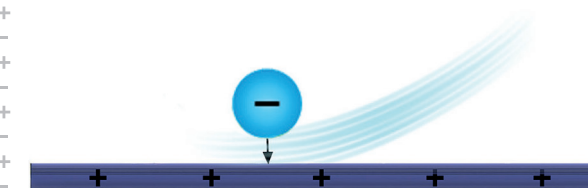


Figure 3



Figure 4

Cleaning with ionised air

By using ionised air during the removal of the dust particles, static charges on the dust particles and the surface to be cleaned will be neutralised. Subsequently, there's no electrostatic attraction between the surface and the dust particles. The dust particles are carried along with the air and are effectively removed from the surface (see figure 4). The surface remains neutral and doesn't attract dust any more (see figure 5).

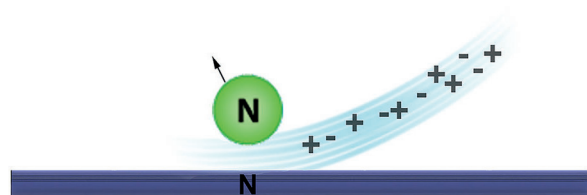


Figure 4

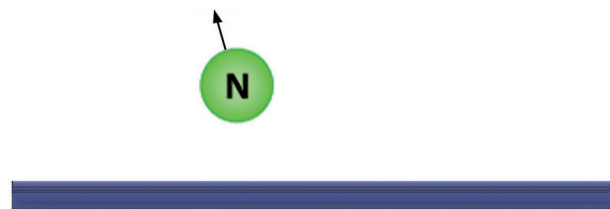


Figure 5 Result when cleaning with ionised air

There are various methods of surface cleaning available

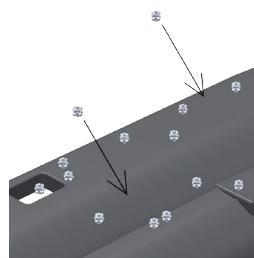
Blow off

- + With compressed air, nozzles, gun or air knife
- + With blower powered air knife

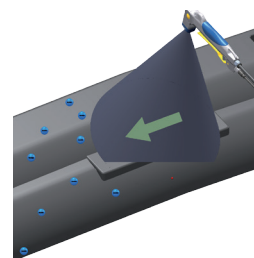
Vacuum (surface cleaning)

- + With a vacuum system
- + A vacuum system in combination with air stream

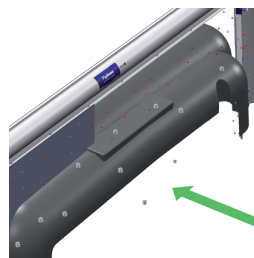
Blow off



Dust attraction



Compressed air nozzles, gun or air knife



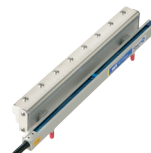
Blower powered air knife



HE ionising air nozzle



Top Gun ionising air gun

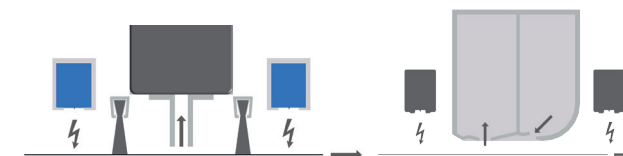


Airknife with anti-static bar



Typhoon with EP-Sh-N anti-static bar

Web cleaning



Vacuum system

Vacuum system in combination with air stream

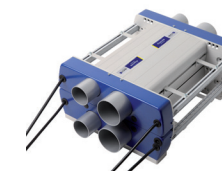
CleanION web cleaning systems are designed to neutralise static electricity and at the same time to remove dust particles, even at higher speeds. Each CleanION system is designed for specific applications. We offer a wide selection of hoods – with and without contact (brush) – and dust extractors, so that optimum results can be achieved for each specific application, with the hood configuration being adapted to the specific application.

Two basic principles are applied:

- 1) High vacuum / low volume, contact cleaning (CleanION DD)
- 2) High vacuum / high volume, non-contact cleaning with air support (CleanION SE)



CleanION DD web cleaner



CleanION SE 80 vacuumhood

The hood is fitted with a special shaped suction opening. Prior to entering the suction opening, the material is neutralised by an anti-static bar. This ensures that the adhesion force caused by the static charge is eliminated, resulting in an ideal base for cleaning. Systems which permit contact use a soft brush to dislodge the dust particles from the substrate for cleaning.

Systems without contact and systems with contact with air support use

an air stream blowing against the direction of the material web, forcing the dust particles into the suction opening. Contactless systems use a closed-loop blower for vacuum and air stream. The material web is held in balance by the double-sided hoods. For every specific system a dust extractor is available in order to ensure the most efficient cleaning. All dust extractors are equipped with a durable (400 V) three-phase AC motor.

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