



Crystall Electronic Air Filters

KLINGERBERG

Crystall

The air becomes safer.

Electrostatic filtration is currently considered one of the most advanced systems for capturing particles in an air stream, capable of ensuring high and lasting efficiency with major benefits in terms of quality/price ratio, considering their longer life compared to any other type of filter.

Cost analysis should also take into consideration

Environmental Well-being

What is it that gives us a feeling of well-being when we are in a confined environment, whether our home, an office or a meeting place for having fun?

A definition of well-being, or better yet environmental comfort, is pertinent not only to these places, could be: 'subjective sensation of a pleasant material life, where the expression 'state of well-being', in the science of environmental control, refers to the ideal levels of factors that influence the liveability of a confined space, such as: air temperature, radiant temperatures of surfaces, relative humidity in the air at ambient temperature, concentrations of pollutants present, air speed, etc...'

These factors must fall within pre-set limits, so that the people inside a given space for a reasonably long period of time (in general over an hour) can feel comfortable, without any negative sensations of heat, cold, unpleasant odours or the presence of substances considered hazardous to health. Naturally, the sensation of environmental comfort has changed over time. A few decades ago, the primary, and at times the only requirement, was to stay in a heated environment during the winter months, and it was not important what source of heat was used or where it was situated.

Over time these aspects were improved through the introduction of heat sources that were not dangerous, or positioned in dedicated spaces, reducing ventilation with external air to a minimum in order to remove or dilute the harmful substances produced inside of inhabited areas. Not so long ago, the need to cool these same areas during the summer months to improve the sensation of well-being for the entire span of the year, as opposed to only during the winter months, also emerged.

The market has continued to develop ever more complex, high performing equipment to respond to the new demands, and

the very low pressure drop rate and reduced running costs, thanks to the simple washing of the filters with water and detergent.

Their high filtration efficiency combines with considerable bacterial disinfection and viral inactivation, bringing the treated air to the highest quality levels defined by the relevant standards.

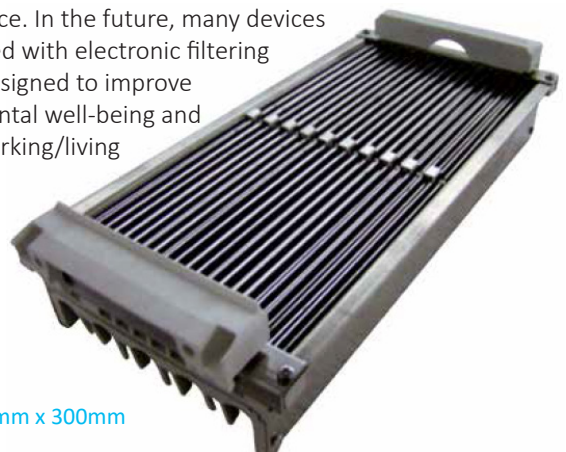
the simple term "heating" has evolved to become the more complex expressions "climatizing or conditioning".

Over the last several years, another fundamental need has arisen, one that was taken for granted and underestimated in the past- the need for air quality inside of confined spaces. This new demand stems from the need to avoid inhabiting spaces where the presence of hazardous substances dispersed in the air could cause risks to human health. This is why some of today's air handling equipment are built or installed in combination with innovative filtering systems, designed to improve air quality by drastically reducing harmful substances and pollutants, thus also reducing health risks and further improving the sensation of well-being for the inhabitants.

Crystall Electronic Air Filter

The Crystall electronic air filter was specifically designed to improve indoor air quality and to protect the health of the inhabitants.

They can be applied to many air handling units complimenting them with its very valuable function without any reduction in performance. In the future, many devices will be fitted with electronic filtering systems designed to improve environmental well-being and healthy working/living conditions.

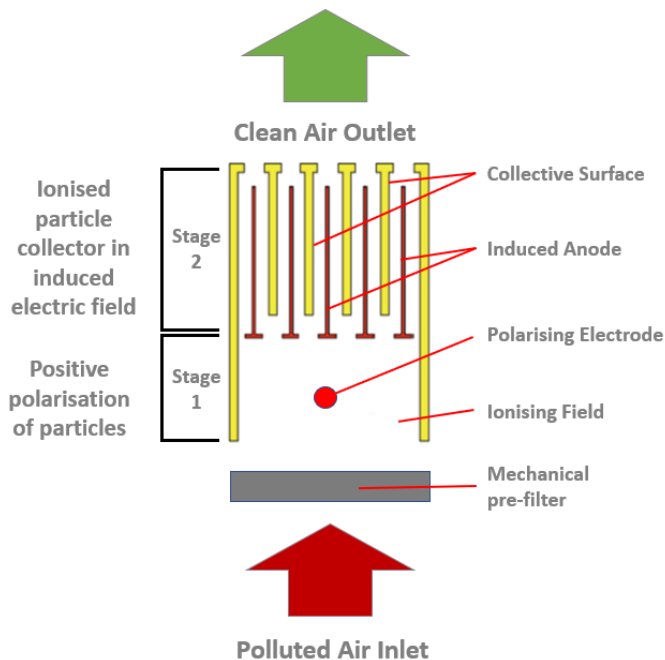


Typical 150mm x 300mm section

How It Works

The Crystall electronic air filter is based upon the principle of separation of particles in the air through electric polarisation of the particles and subsequent capture on opposing metallic surfaces with opposite polarity.

The filter consists of thin multiple intense electric fields. The pollutant particles that transit through the blades get charged by a special electrode and are attracted as if by tiny magnets, and then trapped on the opposing blade surfaces.



Construction is from metallic materials and is easy to clean using water and common detergents, giving it significant durability.

Benefits

Providing conditioned air into a building can consume a lot of energy, both thermal and electrical, which ultimately affects the efficiency of the plant at a time when focus on efficiency is becoming more demanding. Whilst distribution ducting is unlikely to see any significant improvements on pressure drops, it falls upon the AHU and/or its components to provide the desired increase in operating efficiency and reduced energy consumption.

With regards to air filtration, it is evident that flow resistance is proportional to the efficiency of the installed filters. This efficiency is determined by the desired indoor air quality along with the quality of the air being introduced into the AHU system.

It should be noted that the quality standards for indoor air are becoming more stringent with an increased focus on fresh air quantity and reduced airborne pollutants entering the ventilation systems.

The Crystall electronic air filter represents a valid solution capable of meeting the aforementioned needs, as it offers high

efficiency and low pressure drops throughout its entire life as well as offering the ability to filter particulate matter.

Filtration of particulate matter is critical in maintaining indoor air quality as it contains microscopic solids or liquid droplets that are so small that they can be inhaled and cause serious health problems. Some particles less than 10 microns in diameter can get deep into the lungs and some may even get into the bloodstream. Of these, particles less than 2.5 microns in diameter, also known as fine particles or PM2.5, pose the greatest risk to health.

Crystall electronic filter offers filtration efficiencies of 99.5% on PM1 fine particles and 98.5% on 0.1um particles (Covid-19 diameter).

Due to the way in which air is passed over the Crystall electronic filter large deposits do not create significant obstacles for the airflow, thus ensuring consistently low air resistance. Also, since there is a negligible difference in pressure drop between clean and dirty, there is no need to install dedicated devices to indicate dirty filter condition.

Power consumption for systems utilising mechanical filters will always be higher as calculations must take into account a nominal pressure drop allowance for when they are dirty.

Application

When using Crystall electronic air filters it is imperative that a mechanical pre-filter (panel type) is fitted within the AHU prior to the Crystall filter. This is to ensure that large items within the air stream are removed allowing the Crystall unit to operate correctly.

Crystall filters are available in a number of different configurations and offer an efficient alternative to bag filters especially when re-furbishing air handling equipment.



Front withdrawal version



Side withdrawal version

The electrostatic filters consist of 2 main elements:

- A filter module
- Power and control electronic equipment

Therefore consideration must be given to allow space for the power and control panel.

Features & Benefits

- Easy to install
- Ideal replacement for bag filters
- Improved indoor air quality
- High filtration efficiency even for 0.1um particles
- Very low pressure drop even when dirty, resulting in reduced energy consumption and running costs for AHU



Air is our element

KLINGENBURG

energy recovery our passion

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