

Clean Air for Spray Drying Processes



**Energy efficient waste air filter system
for environmental protection**

Sanitary product recovery of powder

KMA
AIRMAXX[®]
ESP

Keep your environment clean and recover your valuable product



New answers for new challenges – energy efficiency and cost savings

Spray dryers in the food, dairy and pharmaceutical industry need highly efficient dust filters in order to prevent fine dust particles escaping to the outside.

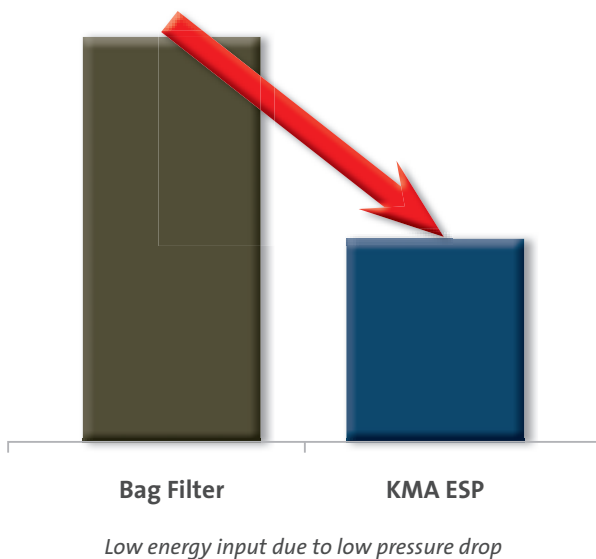
Traditional filter solutions like cyclones, followed by police bag filters, are able to do the job, but need high energy input and require long downtimes for filter washing after product changes in the spray dryer.

In addition, the bag filters need to be changed frequently for sanitary reasons. In this regard, KMA AAIRMAXX[®] ESP is a highly effective and cost-saving alternative.

Process Advantages:

- Sanitary dust filtration ensures product recovery and hence increases plant yield
- Energy efficient filtration process: low pressure drop, hence minimal energy input
- CIP (cleaning-in-place) system for quick and sanitary filter cleaning
- The open tubular design prevents clogging of the filter device
- Automatic dust discharge system
- Compliancy with common environmental regulations
- Optional heat recovery available
- Full stainless steel construction assures low wear and long lifetime

Pressure Drop



Design



Perfectly matched – the extraordinary design enables short downtimes and particularly effective product recovery

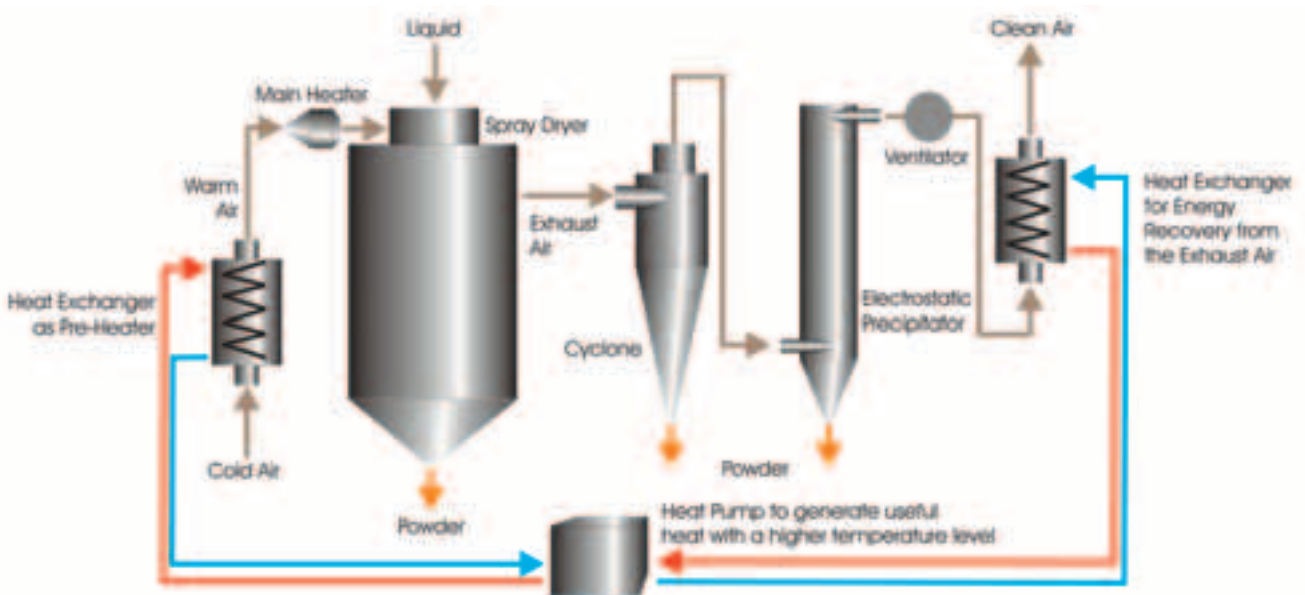
KMA AAIRMAXX[®] ESP is designed in accordance with the high standards for food processing machines.

The exhaust air coming from the spray dryer and the cyclone(s) enters into the AAIRMAXX[®] filter at the bottom. The filter is made of a group of stainless steel tubes. The number of tubes depends on the required exhaust air capacity.

In the centre of each tube there is a stainless steel laser cut ionization electrode. During the operation of the filter it creates a powerful electrostatic field, making the dust in the airstream move to the walls of the tubes. Hence the inside walls of the tubes act as a dust-collector.



AAIRMAXX[®] ESP filters with discharge airlocks and tubes for transport of discharged powder



Spray drying process with optional heat recovery

CIP (Cleaning-in-Place)



Benefit from a yet unknown flexibility for product changes

Product changes in the spray dryer and frequent cleaning of the system for sanitary reasons need a quick and efficient cleaning system. KMA AAIRMAXX[®] ESP has a unique CIP-system which has been designed in co-operation with leading European food processing companies in accordance with highest sanitary standards. The walls of the collector tubes are equipped with a number of jets for highly efficient filter cleaning.

The jets are made in special sanitary design and ensure a quick and thorough cleaning of all parts of the collectors and the centre electrodes. The optimised and echelon formed configuration of the jets prevents the creation of spray shadows. The CIP-system is designed as an automatic operation without need of manual cleaning time. Water feed is usually supplied by the central washing system of the spray dryer unit.

The rinsing process with brine and acid requires only a couple of minutes. Furthermore the subsequent drying process needs only a little time, as the only parts that need to dry are metal walls of the tube. In this way, even multiple product changes per day are possible.

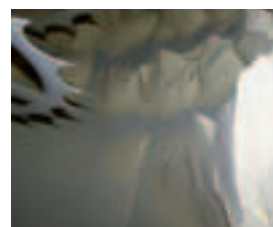


Pneumatic impactor on the outside of the filter tube

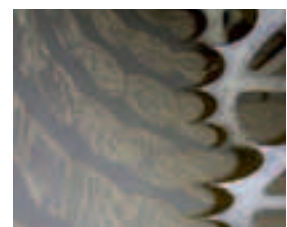


The CIP jet nozzles are optimised for the complete and sanitary cleaning of the interior of the filter

For frequent removal of the dust, each tube is equipped with pneumatic impactors. The dust flows down from the walls into the hopper underneath the tubes and passes a discharge airlock. The recovered dust flows to the central dust discharge and collector system.



Before knocking off dust



After knocking off dust

Plant Safety



System components where explosive dusts are processed require appropriate safety functions. In the event of an impending explosion, the operating personnel and the equipment need to be protected.

KMA AAIRMAXX[®] ESP filters are designed to allow for an installation of an explosion suppression system provided by well-established qualified suppliers. This serves to prevent dust explosions whilst processing and filtering dusts with explosive potential. An impending explosion is detected by pressure sensors and the flames get extinguished by extinguishing powder within milliseconds.



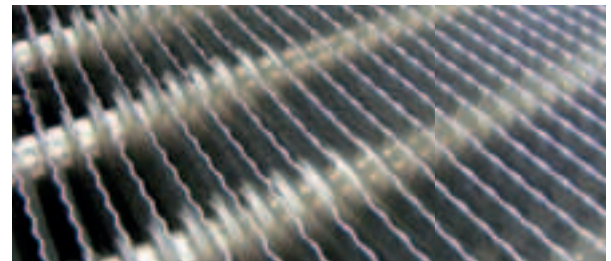
Additional safety through an explosion suppression system for explosive dust

Heat Recovery



In times of energy shortage and rising energy prices, the effective heat recovery is an issue of increasing importance in the planning and operation of technical equipment. The exhaust air still contains a very high temperature level, especially during the spray drying process.

In a system with integrated energy recovery, the heat gets transferred to the supply air of the spray drying process by means of a hydraulic circuit system. This is achieved with two independent multi-plate heat exchangers in the exhaust and supply air current.



To increase the energy efficiency of the system, it can be enhanced when combined with an Ambitherm[®] Heat Pump.



Ambitherm[®]-Heat Pump

AAIRMAXX[®] ESP for plant retrofit



Up to date - Upgrade your existing systems and save costs on a sustained basis.

KMA AAIRMAXX[®] ESP filters can be used for replacing bag filters or as a final filter behind a cyclone in order to retrofit and upgrade an existing spray dryer plant. The replacement offers impressive benefits and a short amortisation period due to extra plant yield, caused by product recovery, reduction of energy costs and lower cleaning downtimes.

Consequently KMA AAIRMAXX[®] ESP filters allow for a short payback period due to:

- reduced energy costs
- shorter setup and downtime periods
- product recovery

KMA has a pilot filtration system available for extensive trials. This allows you to test the filter systems on site during the engineering phase.



Worldwide service is made by KMA and authorized KMA sales and service partners



Insertion of a filter tube into a factory building

KMA – your reliable partner for modern filter technology



**Our environment is our future.
We will be happy to inform and
advise you about our innovations.**

What can we do for you?

We are happy to provide you, free of charge, with a proposal for a system configuration which is exactly adapted to your needs. Using comprehensive equipment descriptions and detailed operating cost comparisons, we develop an economically optimal solution for you.

Our service package includes:

- Consulting
- Applications concerning environmental legislation
- Delivery of complete air filtration systems
- Service

Give us a call, send us a message
or visit us on our website.
We look forward to your request.

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KMA-Filter – committed to the environment

The company KMA is characterised by people who, above all, are convinced that producing energy-efficient air purification systems makes an active contribution to the protection of the environment and reduces the greenhouse effect. This is in all of our interests; and will benefit future generations.

**Protecting the environment
while saving energy and costs.
No problem with KMA emission control systems.**



Our environment is our future



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