



**ENERGY-EFFICIENT
EXHAUST AIR FILTRATION**

Opportunities for improving air quality

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Why should companies care for better air quality in their factories?

- ✓ Comply to regulations / laws by the government
- ✓ Clean factory
- ✓ Safety in the factory
- ✓ Worker's health protection
- ✓ Keep the expensive machines clean and in good condition
- ✓ Improving product quality

Opportunities for improving air quality



Companies hesitate to spend money on air filters

- ✓ High investment
- ✓ Regarded as a waste of money

... but this does not take into consideration the possible big *energy savings* of modern and advanced air filtration systems!





EXAMPLES



Practical Examples

Die Casting Foundries




Example: Energy efficient exhaust air filtration in foundries



Comparison of operating costs:

We assume a foundry in Changchun / China,
with 20 typical (medium and large) die casting machines

Daily operating time in hours	24 h
Work days per week	6
Working weeks per year	48
Average outdoor temperature during the heating season	-4,4 °C
Duration of the heating season in winter	28 weeks
Desired temperature inside the plant	17 °C

A photograph of a large industrial exhaust air filtration system installed in a factory. The system is a complex structure with a blue and white color scheme. It features a large white cylindrical component at the top, likely a cyclone separator, and several large rectangular filter units below it. The entire system is mounted on a sturdy metal frame. The background shows a typical industrial setting with a concrete floor and a steel structure.

Example: energy efficient exhaust air filtration in foundries



	Method of air treatment	Description	Energy costs (annually)	CO ₂ emissions (annually)
1.	Conventional ventilation system	<ul style="list-style-type: none"> regularly exchange the entire air in the factory by fresh air from the outside volume of air exchange: roughly 780,000 m³/h 	approx. 2,490,615 RMB	approx. 3,500 t
2.	Central air filtration system with heat recovery	<ul style="list-style-type: none"> collecting fumes with hoods (reduction of relevant air volume) filtration of the exhaust air in combination with energy recovery by heat exchangers Air volume 215,400 m³/h 	approx. 553,750 RMB	approx. 1000 t
3.	Individual air filtration systems (1 filter per machine) and air circulation (air stays inside)	<ul style="list-style-type: none"> collecting fumes with hoods highly efficient air filtration with double stage electrostatic precipitator Air circulates in the plant and has no heat loss Air volume 215,400 m³/h 	approx. 143,649 RMB	approx. 416 t

over 90 % energy saving!

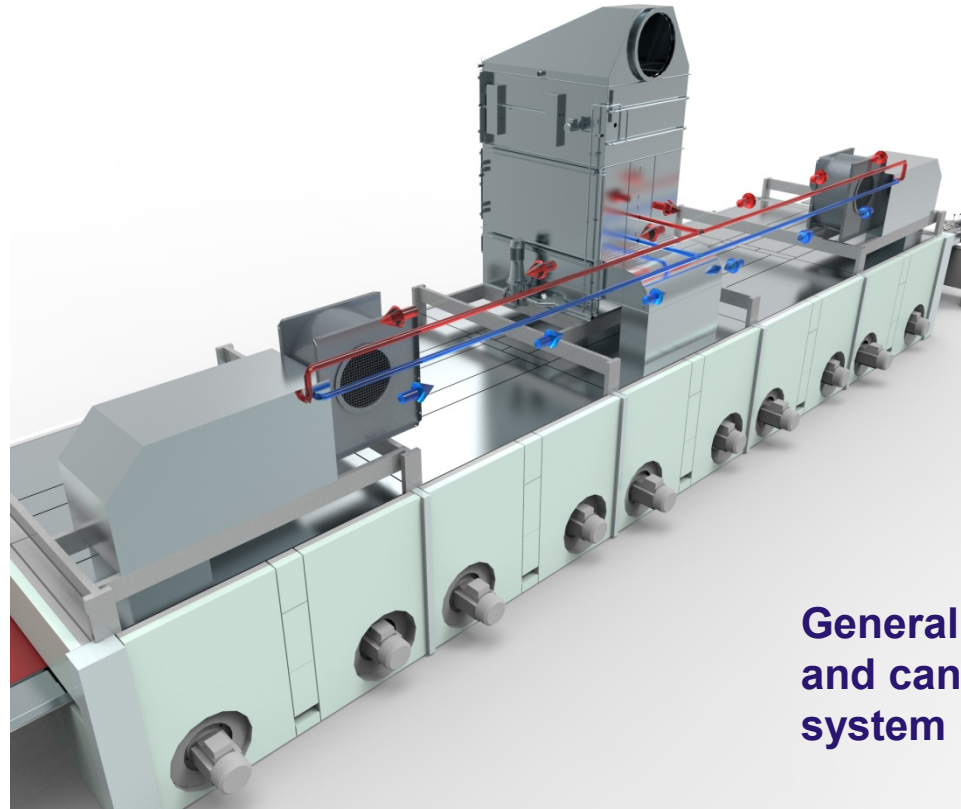


Practical examples

Textile Industry: stenters



Example: energy efficient exhaust air filtration for stenters



- High efficient filtration of waste air from textile production lines
- Recovery of waste heat >50%: use for preheating of fresh air or for heating of water
- Meets strongest environmental standards
- Short amortisation time due to heat recovery

Generally, the recovery potential is very large and can result in payback period of the entire system of less than one year!



Practical examples

**Food Industry:
meat processing**

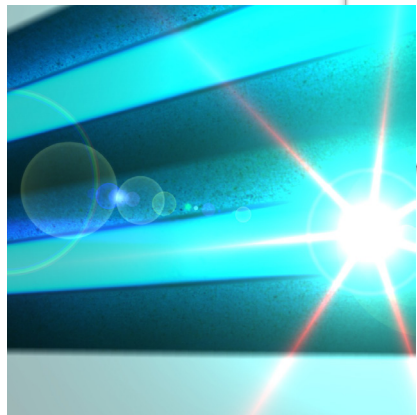


Example: energy efficient exhaust air filters for frying lines



- High efficient filtration of waste air:
 1. Electrostatic precipitators to remove grease and fat particles
 2. Heat exchanger to recover the energy from the exhaust air
 3. UV Light for odour reduction by Photo-Oxidation
- Short amortisation time due to heat recovery
- KMA was awarded for the project with several Innovation Awards since 2011

This hybrid exhaust air filtration system uses 90% less energy compared to conventional post-combustion systems, reduces the CO₂ emissions and improves the carbon footprint of this customer.





**BACKGROUND
INFORMATION**

What does KMA stand for?

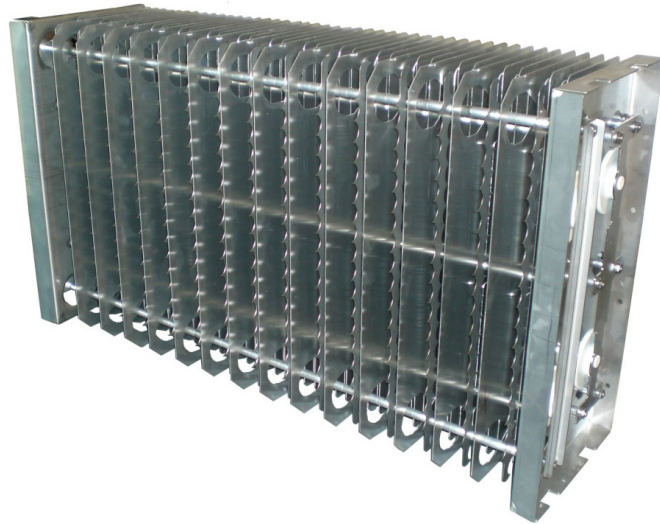


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 - ✓ due to low pressure losses in electrostatic precipitators



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What does KMA stand for?



- ✓ **Specialist in air filtration systems for highly effective removal of emulsion mist, fumes and sticky or oily aerosols**
- ✓ **Very low energy consumption:**
 - ✓ **due to low pressure losses in electrostatic precipitators**
 - ✓ **due to less energy consumption of fans**
 - ✓ **due to energy recovery in the customer's production plant**
- ✓ **Advanced technology improves customer's carbon footprint**

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