



# BAG FILTERS (BAGHOUSES)

Bag Filters (baghouses) have been our core product for over 30 years. With our own proprietary technology, our Bag Filters offer the highest particulate removal efficiency on the market, far exceeding the most stringent emissions regulations worldwide. Our secret has been to constantly evolve with technology and search for improvements to provide our customers with optimum air filtration solutions.

## WHY CHOOSE OUR BAG FILTERS?

### Unsurpassed filtration

*Our Bag Filters can far exceed the strictest regulations and can remove more fine and ultra-fine particulates than any other on the market.*

### Incomparable life expectancy

*We have Bag Filters that were installed over 25 years ago that still achieve the strictest emission requirements today.*

### Innovative solutions

*Our persistent R&D has led to innovations such as our Dual- and Multi-Input Integrated Systems, saving CAPEX and space.*

### Guaranteed casing tightness

*Our SPS bag fixation system ensures 100% casing tightness, meaning no dust leakages.*

### Reduced energy costs

*Redecam's Bi-Jet Bag Cleaning System reduces your system's compressed air usage by up to 40%, lowering energy costs.*

### High temperature capacity

*We offer Extreme High Temperature Bag Filters which can withstand temperatures of up to 1000°C (1832°F).*



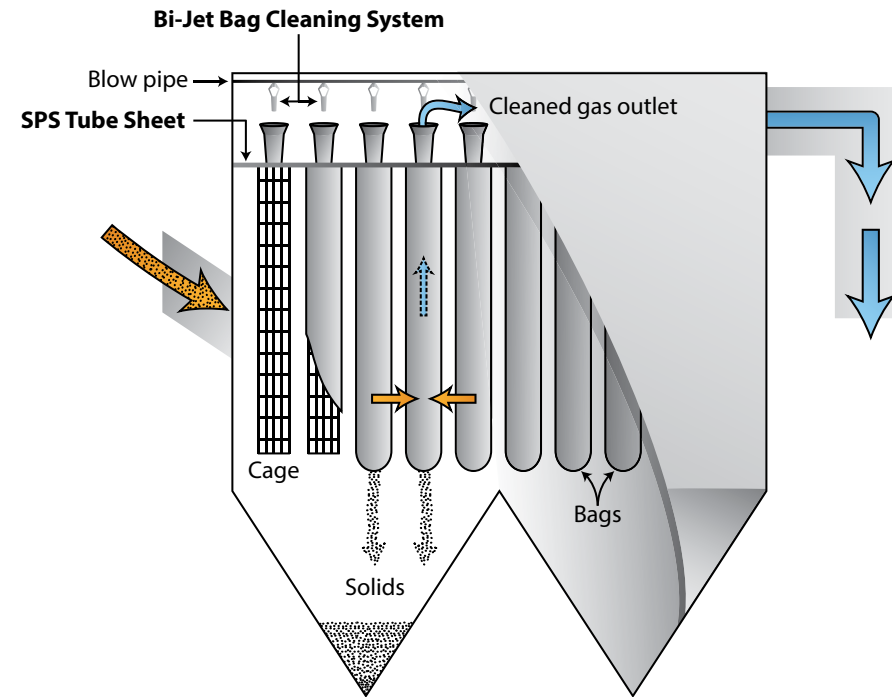
**REDECAMGROUP**

# BAG FILTERS: MODELS

# AND UNIQUE FEATURES

We offer a wide variety of Bag Filters and Nuisance Filters to suit any flow rate and dust burden. All models feature our innovative SPS bag fixation system and our Bi-Jet Bag Cleaning System, ensuring optimal air filtration and lower operating costs (SPS and Bi-Jet are optional on Nuisance Filters). All of our models are also available as retrofits, upgrades or transformations. Among our most popular models are our DPD- and DPM-Model Bag Filters.

Please visit the Products section of our website at [www.redecam.com](http://www.redecam.com) for information about our other Bag Filter models.



*Our  
DPM-Model  
Bag Filter*

We offer **multiple** Bag Filter models for flow rates from 10,000 m<sup>3</sup> to 3,000,000 m<sup>3</sup> (353,000 ft<sup>3</sup> to 105,000,000 ft<sup>3</sup>) and for dust loads of 1 g to 1 kg (0.035 oz to 35 oz).

## *Our DPD-Model Bag Filter*

DPD-Model Bag Filters are suited for high flow rates (above 1.5 million m<sup>3</sup>/hr or 883,000 ACFM) and medium inlet dust burden applications (up to 200 g/Nm<sup>3</sup> or 0.087 gr/ft<sup>3</sup>). Examples include installations with 3-fan kiln circuits, clinker coolers or our Dual-Input Integrated System, as well as solutions in large power plants or integrating flue gas treatment.

This model has compartments placed in pairs on either side of a large central duct. The central duct contains separate ducts for the inlet (dirty) gas and the outlet (clean) gas.

The baffles (pipes and perforated plates) are specially designed for each project to ensure the ideal permeability and orientation in order to obtain a uniform gas velocity throughout each pair of compartments. As particles are captured, they enter hoppers through isolation dampers, designed to provide superior airflow control in severe environments.

DPM-Model Bag Filters are suitable for high flow rates (above 1.5 million m<sup>3</sup>/hr or 883,000 ACFM) and high inlet dust burden applications (up to 1000 g/Nm<sup>3</sup> or 0.44 gr/ft<sup>3</sup>). Examples include installations with 2-fan kiln systems, in cement mills or on separators. In such cases, there is a need for efficient dust pre-separation to reduce the dust burden reaching the bags.

A wide central hopper is used to decrease the axial gas velocity so that a dust pre-dropping action takes place. Suitable baffles between the gas inlet and the central hopper ensure a uniform gas flow and velocity across the hopper cross-section. Indeed the gas, after being largely pre-separated of its dust, rises up in the central hopper and passes through **our unique Distribution Screen**, which acts as another dust separator. This screen disperses the gas/dust evenly throughout the filter bag compartments, resulting in a highly efficient process. This translates into a lower pressure drop, fewer cleaning cycles, a longer bag lifetime and significant compressed air savings, meaning lower energy consumption.

While the air-to-cloth ratio is of utmost importance for DPM-Model Bag Filters, the can velocity has no impact on the design since the gas flow to bags is horizontal. Access is made on one side of the bags in order to avoid the gas rising after mixing with the dropping dust.





# OUR EXTREME HIGH TEMPERATURE BAG FILTER

This new technology extends our air pollution control offering, as our Extreme High Temperature Bag Filter (EHT-Bag Filter) can remove both solids and tars while withstanding temperatures of up to 850°C (1562°F). It can even treat peak temperatures of **up to 1000°C** (1832°F).

Our EHT-Bag Filters are therefore ideal for the Oil & Gas industry and offer benefits for certain applications in the Cement, Metals & Mining and Waste-to-Energy & Biomass Power industries. Equipped with ceramic catalytic candles, our EHT-Bag Filters can be paired with our full flue gas treatment (FGT) system – whether to treat acid gases, mercury and metals or NO<sub>x</sub> – or all of these pollutants.



Our Extreme High Temperature Bag Filters can withstand temperatures of up to 1000°C (1832°F)

## ADVANTAGES OF OUR EXTREME HIGH TEMPERATURE BAG FILTER:

- 1 **Optimal performance.** Our filters can achieve near zero emission levels.
- 2 **Lower CAPEX & OPEX.** There's no need for further cooling systems, as the bags can withstand such high temperatures.
- 3 **Saves on energy costs.** It is possible to recover heat by installing a waste heat recovery system downstream of the EHT-Bag Filter.
- 4 **Safe.** Our special filter bags are non-flammable and 100% spark resistant.
- 5 **Easy installation and maintenance.** Our outer and inner collar sealing sets have readjustable bayonet locks and are flexible.

The design of our EHT-Bag Filter is not unlike our regular Bag Filters, but the filter material and the sealing technology are very different. The filters in the EHT-Bag Filter are rigid with a consistency like cardboard, and they don't need a cage inside as they are self-supporting.

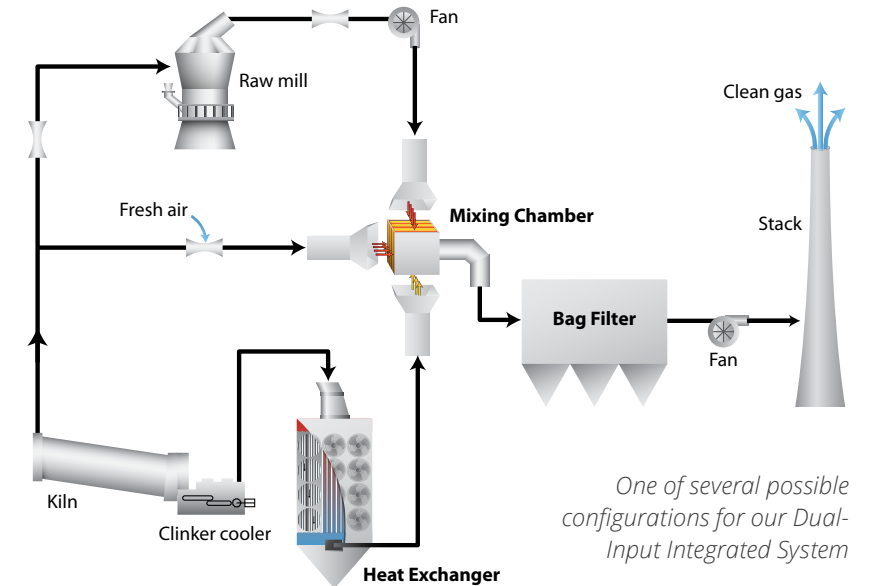


## IDEAL APPLICATIONS FOR OUR EHT-BAG FILTER:

- Oil & Gas** industry (gasification)
- Cement** industry (clinker cooler)
- Biomass and WTE** (incineration)
- Metals & Mining** (aluminum calcination, melting process and separation of precious metals)

# OUR DUAL- AND MULTI-INPUT INTEGRATED SYSTEMS

Amongst our innovations are systems in which **one Redecam Bag Filter** is used to dedust gases from **two or more** process or unit points to save our clients significant space and CAPEX. Our Dual-Input Integrated System, developed for the cement industry, uses one Bag Filter to dedust both the kiln & raw mill and the clinker cooler. For the Metals & Mining and Oil & Gas industries, we created Multi-Input Integrated Systems, which collect flows from several process points or units and converge them into one Bag Filter (ex: converging the gases from the Electric Arc Furnace or another primary hot source with gases from a secondary cold source into one baghouse).



# OUR SPECIALIZED RETROFIT & TRANSFORMATION SOLUTIONS



Redecam is a market leader in carrying out retrofit and transformation solutions: they are among our specialties. Many existing bag filters and electrostatic precipitators (ESPs) have become obsolete, either due to their age or their lower performance than current standards require. However in several cases, existing bag filters can be upgraded or retrofitted (taking out what's inside, keeping the casing and installing new Redecam components inside).

Transformations are also possible. This means changing an existing ESP into a Bag Filter, or vice-versa.

Advantages:

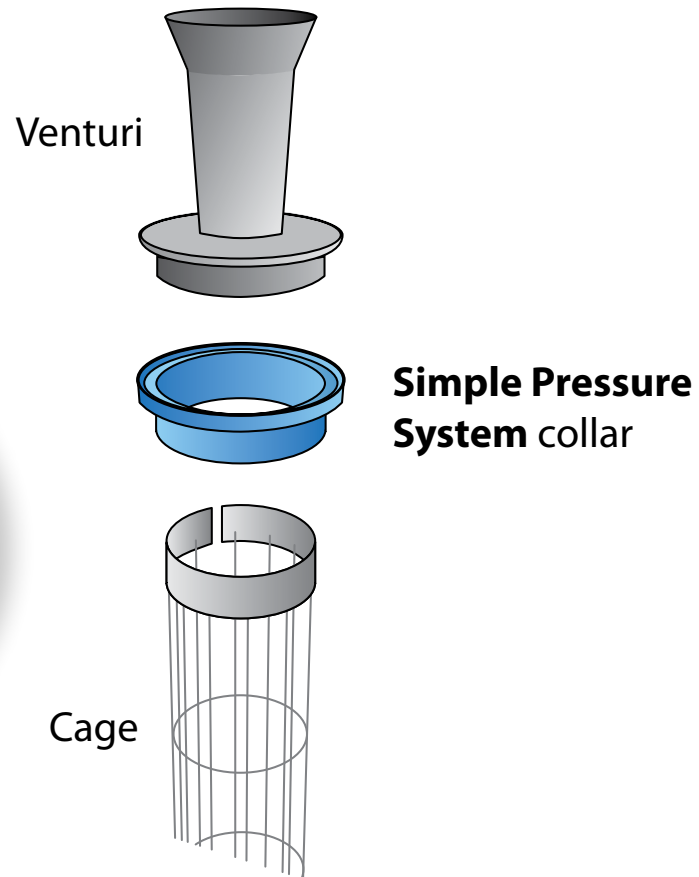
- 1 Lower CAPEX than replacing with a new model
- 2 Emissions can be reduced to well under the world's strictest emissions limits
- 3 Transformations can be made within the existing footprint
- 4 Minimal ductwork modifications/additions
- 5 Reuse of existing ancillary equipment

# OUR SPS BAG FIXATION SYSTEM

Continuous laboratory tests and on-site work experience inspired us to develop the most advanced, user-friendly and efficient bag fixation system on the market: our Simple Pressure System (SPS). Our SPS guarantees that the tightness of the casing between the dusty and clean sides is 100% effective.

To prevent dust leakage at weak points, we increased the contact surface area of the bag against the tube sheet by extending and contouring the tube sheet opening. The surface contact is therefore not limited to the pure thickness (typically 4 mm or 5/32") of the plate, but is extended to the entire internal surface of the drawn hole (around 18 mm or 45/64").

*Our Simple Pressure System offers quick and easy installation*



We increased the pressure of the bag collar on the drawn edge of the tube sheet hole, firmly securing the bag's cloth. The collar is also designed to take advantage of the temperature: the tube sheet is carbon steel and the collar is in aluminum, resulting in extreme pressure being generated on the sealing surface.

Other advantages to our SPS:

- 1 Bag installation and removal is simple and quick
- 2 No risk of bags falling during installation or maintenance
- 3 Bags cannot drop into the hopper thanks to the ring in solid steel embedded at the top of each bag



# OUR BI-JET BAG CLEANING SYSTEM

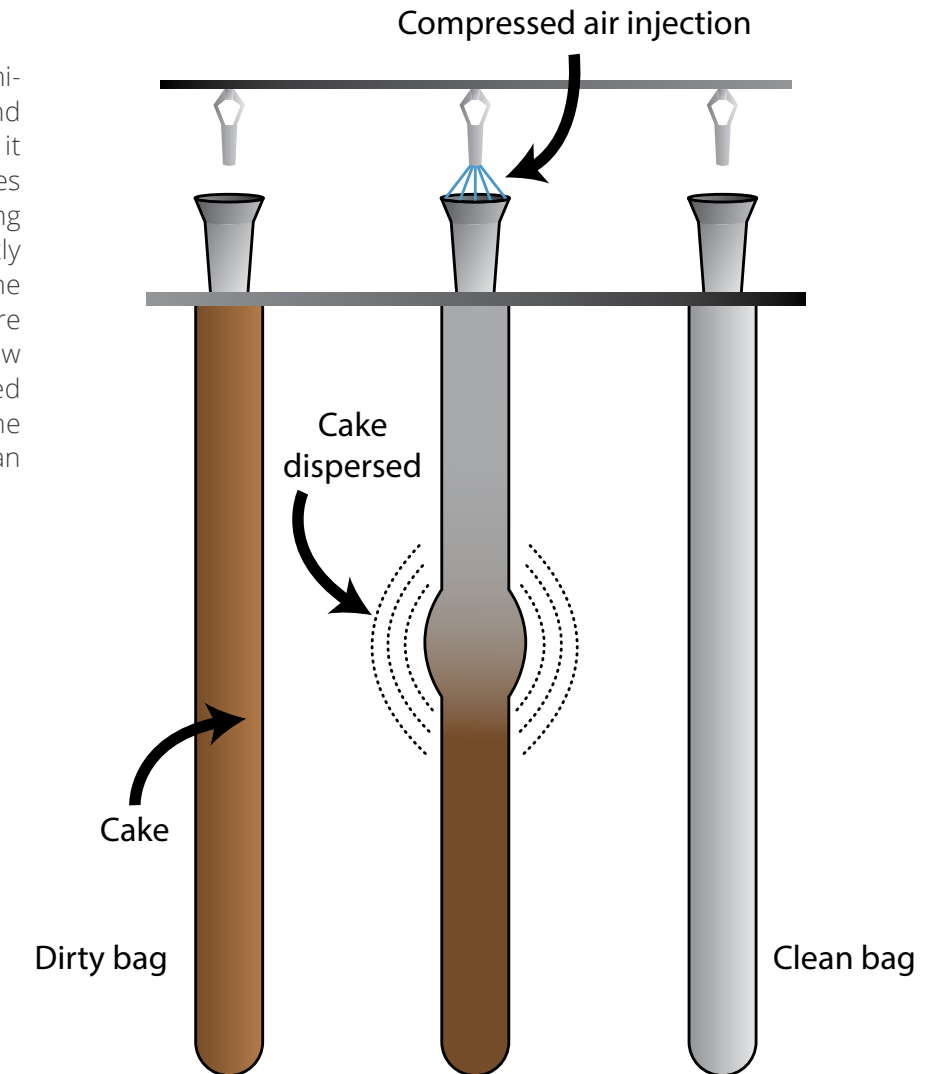
Our Bi-Jet Bag Cleaning System increases the volume of air that is forced into the bag inlet, while reducing the consumption of compressed air. How? We use a Dual Venturi arrangement: one pipe is located downstream of the nozzle and the other, above the bag inlet. This system minimizes the dispersion of compressed air during the injection phase, thus increasing the volume of air forced into the bag. In turn, this reduces the quantity of air needed to pulsate the bag and achieves a higher flow velocity than in systems equipped with one Venturi.

Redecam offers both online and offline/semi-offline cleaning systems. We recommend our online system for most customers as it provides less stress on mechanical devices (since its compartments do not close during cleaning operations) and consequently reduces power consumption. Our online system maintains both a constant pressure across the filter and a constant dust flow toward the dust discharge system. Compared to an offline filter that operates at the same air-to-cloth ratio, a filter cleaned with an online process has less cloth surface area.



*Our Dual Venturi arrangement optimizes the pressure for bag cleaning, reducing costs*

Redecam recommends offline (or semi-offline) cleaning filters for certain applications: when the dust contains very high quantities of fine particulates or if the filter does not act simply as a dust collector, but as a reactor as well, using its bags as a reaction layer.



*Our specially designed nozzle creates an intense air jet, concentrating the air flow into the bag and reducing the amount of compressed air required*



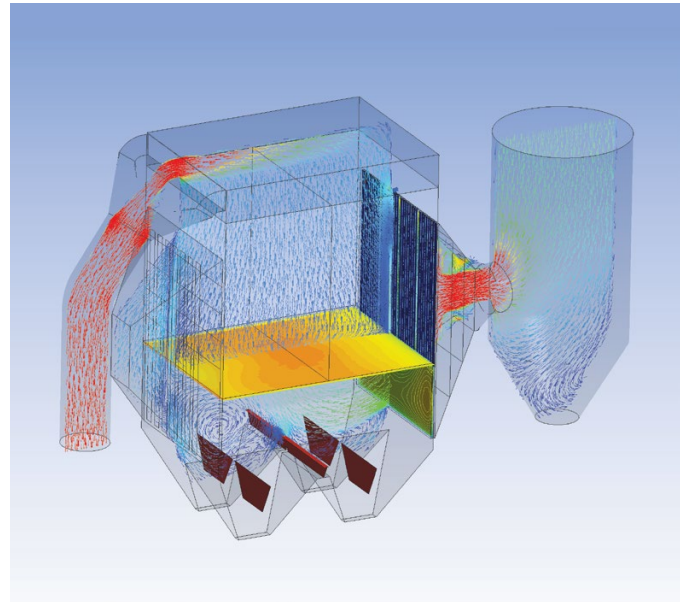
# DESIGN & MODELLING

## DESIGN PARAMETERS

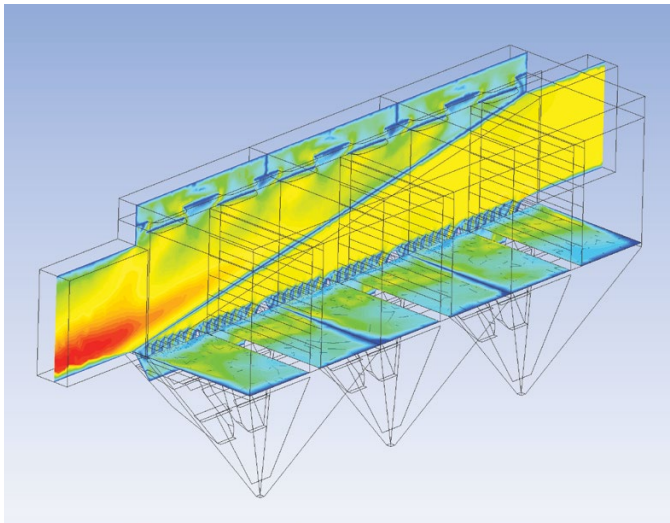
Your process parameters are key in selecting an appropriate Bag Filter design. Our engineering team has 30+ years of experience in surveying the output and needs of various plants, and will study yours to find an appropriate solution to reach your desired emissions reductions.

To determine the appropriate filter size, we must study the air-to-cloth ratio and can velocity. An appropriate air-to-cloth ratio is required to avoid high-speed impact of dust particles against the cloth, as this leads to early bag replacement.

To optimize the can velocity in the Bag Filter compartments, the distance between bags in each row as well as between the rows is calculated and defined for each specific case. These considerations are also used to determine the most suitable bag length and the number of compartments needed.



We develop the **highest quality** air pollution control products available.



## MODELLING

We use Ansys's Fluent software to accurately design and study every solution. This allows us to engineer and analyze each system's broad physical capabilities, optimize the fluid dynamics and study the efficiency of pollutants removal. When a computerized simulation is not sufficient, we undertake a physical simulation on a 1:7 scale in our Milan workshop.



Redecam offers a comprehensive portfolio of air filtration, flue gas treatment (FGT), gas conditioning and transportation, handling & storage products. Please contact us to see how we can take care of all your air pollution control needs.



**REDECAMGROUP**

Visit our website to learn more at  
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