ProJet mega®

Bag filter for 20,000 m³/h to over 2,000,000 m³/h

Product information

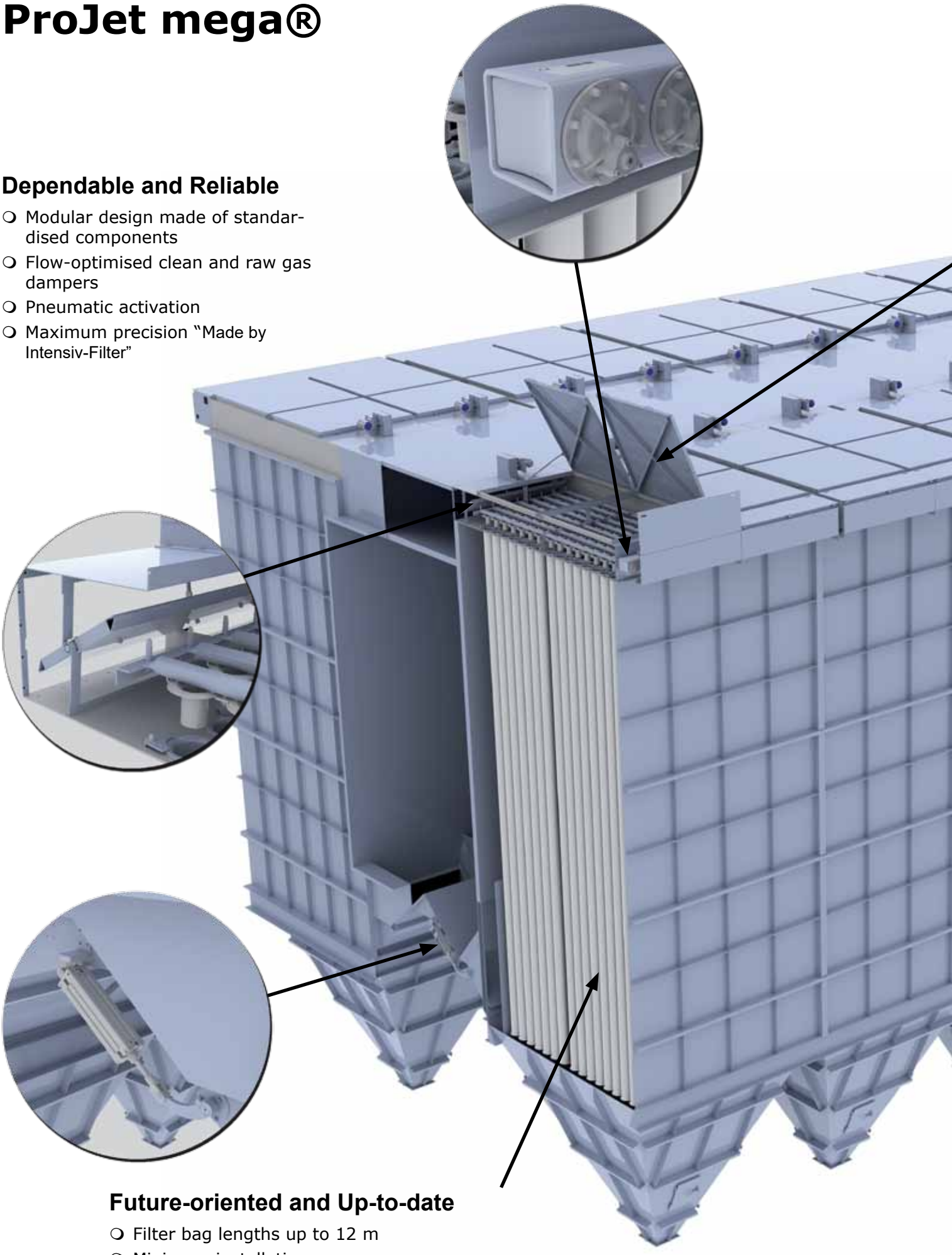
INTENSIV FILTER
HIMENVIRO™
Environmental Technologies
WE CARE FOR AIR

DUST REMOVAL TECHNOLOGY + FILTRATION

ProJet mega®

Dependable and Reliable

- Modular design made of standardised components
- Flow-optimised clean and raw gas dampers
- Pneumatic activation
- Maximum precision "Made by Intensiv-Filter"

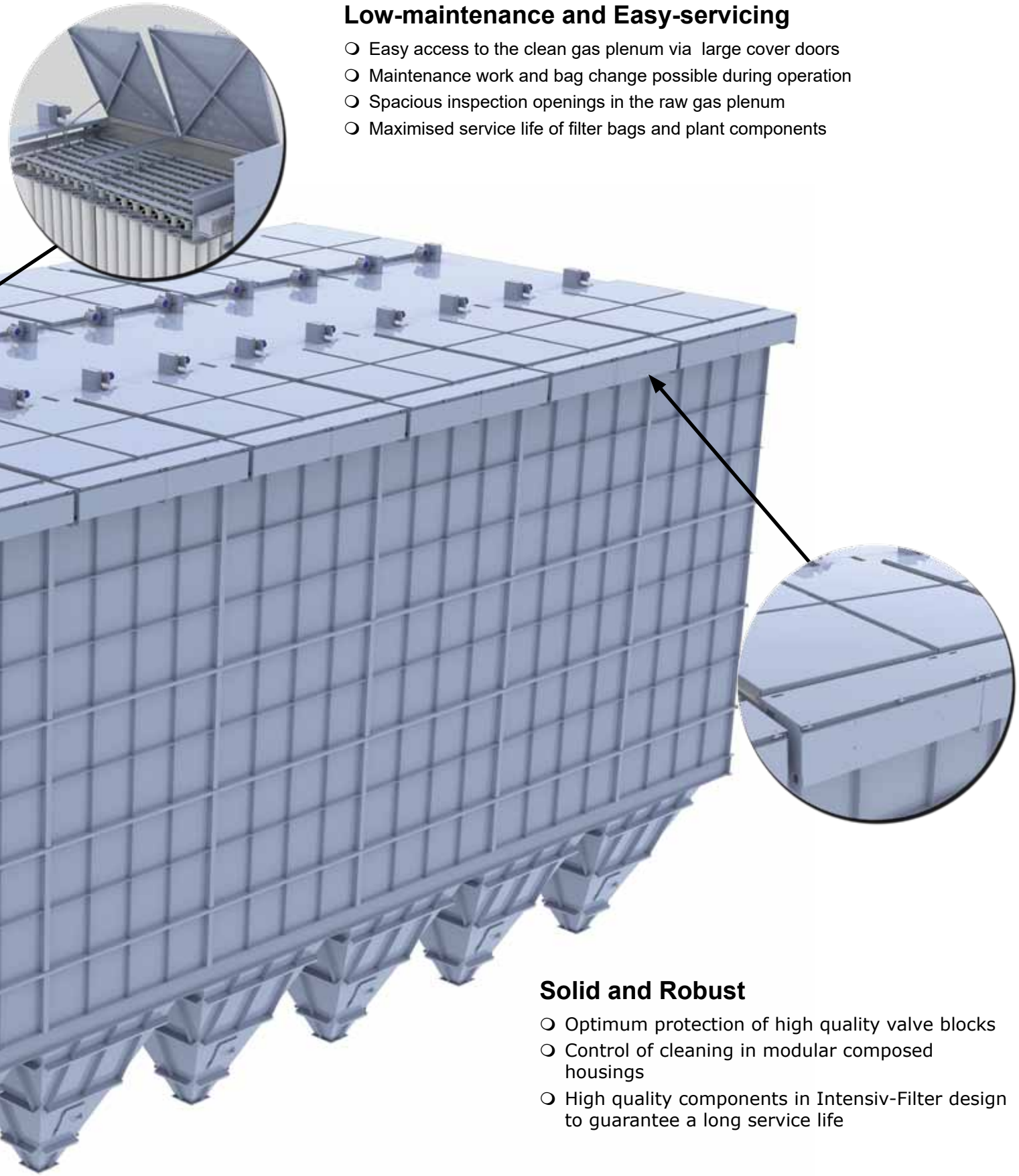


Future-oriented and Up-to-date

- Filter bag lengths up to 12 m
- Minimum installation space
- Filter modules optimised for transport
- Applicable for fine dust precipitation (PM 10 / PM 2.5)

Low-maintenance and Easy-servicing

- Easy access to the clean gas plenum via large cover doors
- Maintenance work and bag change possible during operation
- Spacious inspection openings in the raw gas plenum
- Maximised service life of filter bags and plant components

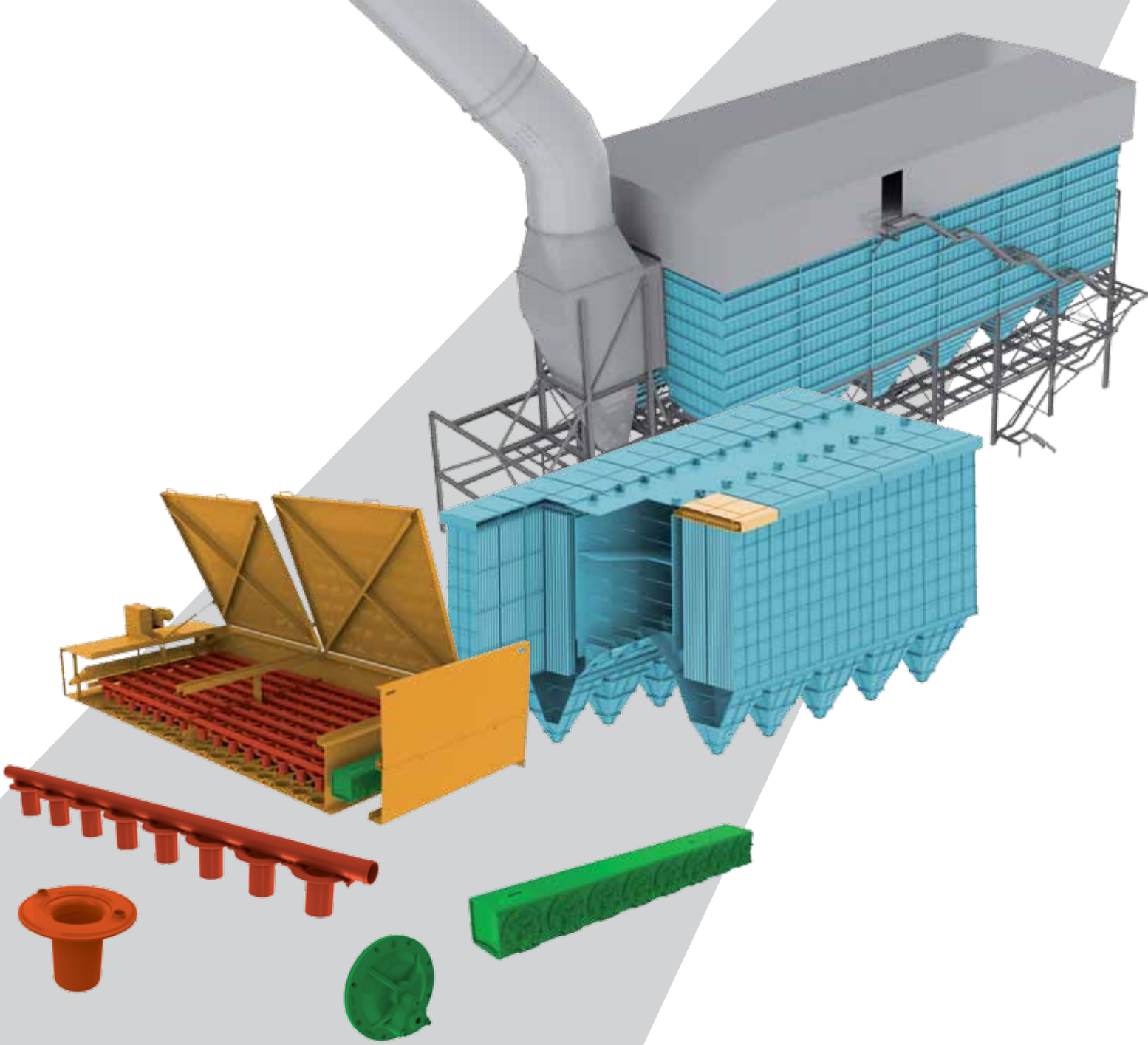


Solid and Robust

- Optimum protection of high quality valve blocks
- Control of cleaning in modular composed housings
- High quality components in Intensiv-Filter design to guarantee a long service life

Energy efficient and optimised operating costs

- CFD optimised design
- Minimum filter differential pressure
- Drastically reduced compressed air consumption
- Considerable improvement of carbon footprint



Generation of a wide range of filter sizes by using standardised and specific individual parts and modules

The modular filter series

The ProJet mega® series is the result of a strategic research project by Intensiv-Filter. The new modular filter series consists of basic modules, each with eight valves and 8 to 17 injectors. Clean gas plenums and housing modules with four different pressure levels and wall thicknesses of 3, 4 and 5 mm are available for all standard industrial dust removal requirement profiles. They are also optionally available in stainless steel.

The variety of components (inner design variance) of the ProJet mega® series has been drastically reduced while simultaneously retaining a maximum number of possible designs (variability). The modular design of the ProJet mega® filter implements customised dust removal solutions - from single chamber filters with 20,000 m3/h up to double row filters with 64 clean gas chambers, 12 m bag length and a volume flow of 3,000,000 m³/h.

Advantages

- ✓ Optimised stability from use of FEM calculations
- ✓ Construction of design variants without specialized associated costs
- ✓ Greatest possible flexibility
- ✓ Effects of rationalisation create improved economic solutions

Jet-pulse injector technology and cleaning control system

The injector system which generates the jet-pulse for filter media regeneration is of crucial importance for the energy efficient operation of a bag filter installation. This is why Intensiv-Filter has developed and patented the Coanda Injector. This utilises the Coanda effect, where the jet follows a curved surface. This gives maximum intensity cleaning and at the same time efficiently separates the filter cake from the filter medium.

Coanda-Injector

Operating principle

During cleaning a focused jet of compressed air flows out of a annular gap of the Coanda Injector where it is channeled over a curved surface. The primary air (compressed air) follows the boundary layer, which does not break away from the wall due to the geometry of the Coanda Injector. A strong vacuum is generated inside the Coanda Injector (first injector stage). This sucks in secondary air and forms a propulsion jet. The propulsion jet enters the inlet nozzle in the upper area of the filter bag (second injector stage) and sucks in further secondary air. The filter bags are briefly inflated, the filter cake breaks off due to the impulse transfer and the flow direction is briefly reversed.

Another cleaning system is equipped with "Ideal Nozzle". The air flowing out of the nozzle tube generates a free jet. The inlet nozzle on the upper end of the filter bag also improves the cleaning effectivity.

Controlled cleaning control system

Cleaning is controlled using microprocessor technology and fieldbus systems. For this, Intensiv-Filter uses the tried, tested and patented JetBus Controller® which controls the cleaning pressure. The cycling of the pressure surges varies according to requirement. It is possible to use fixed time control or differential pressure control with variable cycle times. By continuously controlling the tank pressure of the compressed air tank, the JetBus Controller® is able to offer an additional control parameter which allows cleaning to be carried out when needed. By continually adjusting the cleaning pressure, the compressed air requirement can be adapted to suit the current operating conditions.

Advantages of the Coanda injector

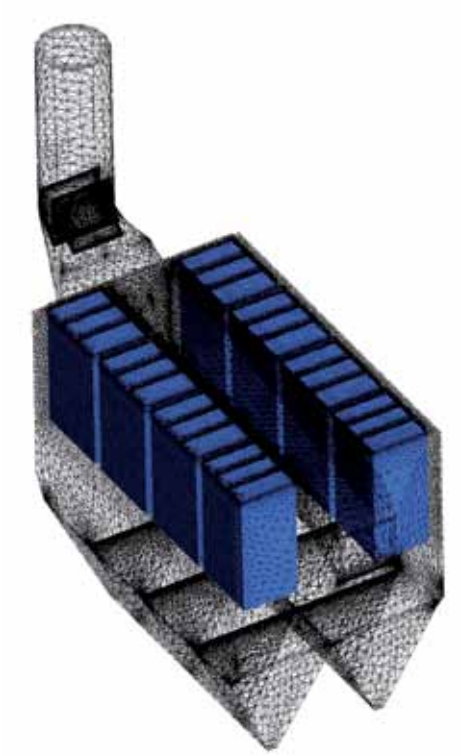
- ✓ Maximum cleaning effectiveness
- ✓ Large amounts of reverse air can be sucked in
- ✓ Optimum and economic cleaning
- ✓ Low mechanical stress of the filter bag
- ✓ Reduction in emissions
- ✓ Extended service interval

Valve block with diaphragm valve

CFD supported flow optimisation

Operating parameters such as flow speeds, temperatures and pressures can be displayed with utmost accuracy and evaluated using CFD (Computational Fluid Dynamics). The fluid flow of plant components of the ProJet mega® series was analysed using CFD simulation. These calculations made it possible to optimise the gas flow, the calculation results prevented dead zones and resulting pressure losses. In addition to gas flow optimisation, particle trajectories have been analysed and improved. Uniform charging of the filter media guarantees efficient dust removal.

CFD is a powerful tool for filtering installation engineering. Intensiv-Filter performs these simulations in-house. It is therefore possible to answer questions relating to fluid flow far more quickly. In addition to process engineering and constructional project work during the design and realisation of industrial dust removal installations, CFD also serves as a tool for fundamental developments. Through this, Intensiv-Filter can, from emission source to stack discharge, strengthen its core competence in the development of energy efficient filtering installations and filtration technology.



3-D-Model eines Elektrofilters nach Umbau in einen ProJet mega® Schlauchfilter

Benefits from CFD optimised filtering installations:

- ✓ Uniform filter bag inflow
- ✓ Uniform speed distribution
- ✓ Minimisation of the upward flow between the bags
- ✓ Significant reduction of filter resistance
- ✓ Reduction of the differential pressure
- ✓ Reduction in operating costs

Minimised energy costs

The ProJet mega® filter series reduces operating costs incurred when removing dust from exhaust gases to a minimum. Our specialists have reduced filtering installation pressure loss by using improved cleaning processes and newly developed filter media.

ProJet mega® filters are equipped as standard with ProTex filter media made of microfibres. These ensure optimum surface filtration and guarantee the lowest filter cake resistances with high separation efficiency at the same time. Supported by the effective and self-regulating cleaning system, complete filter bag regeneration is achieved. This happens at a minimum compressed air consumption adapted to the operating conditions. Semi-

offline operation prevents dust re-entrainment to the bag after cleaning. The flow-optimised geometry of the filter housing guarantees a uniform inflow and dust distribution to the filter bags, and thus a further reduction of filter pressure loss.

In comparison to conventional process filters, operating costs can be minimised with ProJet mega® and as a result the life cycle costs can be reduced by up to 40 %.

Advantages

- ✓ Use of highly efficient ProTex filter media manufactured from microfibres
- ✓ Low operating costs thanks to significant reduction in filter pressure losses and fan capacity
- ✓ Reduction of compressed air consumption via cleaning control as required (JetBus Controller®)
- ✓ Increased filter bag service life via low-impact cleaning and low stress of the filter bags
- ✓ Reduction of fine dust and CO2 emissions
- ✓ Reduction of life cycle costs by up to 40 %

All over the world, leading operators and plant engineers trust in filtering installations from Intensiv-Filter

Cementa AB, Slite plant, Sweden (Heidelberg Cement)
Turnkey project
ProJet mega® with offline cleaning
Dust removal in a rotary kiln

Deuna Zement GmbH, Germany (Heidelberg Cement)
Electrostatic filter conversion
CombiJet double row filter with semi-offline cleaning, dust removal in a rotary kiln/raw meal mill

Nowiny, Poland (Dyckerhoff)
Electrostatic filter conversion
Two CombiJet double row filters with offline cleaning
Dust removal in a rotary kiln

Doncement, Ukraine (Heidelberg Cement)
Electrostatic filter conversion
ProJet mega® with offline cleaning
Dust removal in a rotary kiln

Intensiv-Filter Himenviro GmbH
Voßkuhlstraße 63 • 42555 Velbert-Langenberg
Germany
✆ +49 2052 910-0 • 🖷 +49 2052 910-248
www.intensiv-filter.com • if@intensiv-filter.com

Technische Änderungen vorbehalten
PI.08.010 DE • 11.16-200