

Clean Air is our Mission. *World-class German engineering, tailored for the mining industry.*

HJS Emission Technology SA

Product Range and Data



Innovation through Experience

Our History

HJS Emission Technology GmbH & Co. KG, founded in 1976 in Menden, Germany, has been a pioneer in clean air solutions for nearly five decades. The company has built its global reputation on developing advanced catalytic converters, Diesel Particulate Filters (DPFs), and exhaust aftertreatment systems for a wide range of engines and applications. With innovation at its core, HJS has become a trusted partner for OEMs, fleet operators, and industries that demand reliability, efficiency, and environmental responsibility.

Building on this strong foundation, HJS Emission Technology South Africa (HJS SA) was established through the merger of local leaders in Emission Quality Solutions and Exhaust System Solutions with the global expertise and technology of HJS Germany. This move positioned HJS SA as the dedicated global mining hub for emission technology, with a special focus on the mining underground sector and its unique challenges. The South African operation integrates German engineering with local expertise, while also investing in skills development and social upliftment by training and employing local communities near mine sites.

The HJS Solution

Jointly with manufacturers, HJS finds solutions for the emission requirements of the future. As system vendors for exhaust gas treatment, we possess product development competencies for diesel, spark ignition and gas engines, extended by a comprehensive application competence for on-highway and off-highway applications.

Certified according to all usual regulatory specifications, we offer verified OE series competence. Our know-how is based on 40 years' experience in product development of exhaust gas technology and emission reduction. HJS SA provides world-class emission control solutions tailored to the demanding environments of mining and heavy-duty industries. Our product range includes:

- **Diesel Particulate Filters (DPFs)** – advanced systems that drastically reduce Diesel Particulate Matter (DPM).
- **Catalytic Converters** – reducing harmful gases such as carbon monoxide and hydrocarbons.
- **Combination Systems** – integrating filters and catalysts to meet stringent local and international standards.
- **Monitoring & Maintenance Solutions** – ensuring compliance, efficiency, and extended equipment life.

By combining proven German technology with on-the-ground support in South Africa and beyond, we ensure that our solutions are not only effective but also practical and sustainable in real mining conditions.



Our Mission – Clean Air that Saves Lives

At HJS SA, our mission is simple yet powerful: to create cleaner, safer, and more sustainable workplaces. Underground miners face significant risks from exhaust emissions, particularly Diesel Particulate Matter. By tackling these emissions at the source, we help safeguard workers' health, support regulatory compliance, and enable mines to operate responsibly.

Beyond compliance, we believe in making a broader impact. Cleaner air both above and underground means healthier employees, improved productivity, and stronger community relationships. By investing in local talent and empowering communities with technical skills, we contribute to both environmental sustainability and social development.

Our mission is clear: Clean air, protecting people, preserving the environment, and partnering with industries to build a safer future.



HJS SA isn't just about cutting-edge exhaust systems. The company is deeply committed to supporting the communities in which it operates. Through a unique value-driven model, HJS SA provides on-site technical support through trained local staff, upskilling and employment of community members, empowering local economies, and seamless integration of emission control systems into existing fleets.

This holistic approach ensures not only regulatory compliance to the Diesel Particulate Matter (DPM) exposure legislation, but long-term operational sustainability for clients. This is especially true for our mining industry clients, where on-site support is of utmost importance.

Why choose HJS Emission Technology SA to assist with emission reduction?

- Reduce DPM at source with tried and tested Diesel Particulate Filters, Catalytic Converters & Exhaust Aftertreatment systems.
- Buy directly from the OEM – no middlemen, no markups.
- Get end-to-end solutions from one trusted provider with skilled assessments, expert installation, and ongoing maintenance & support.
- Industry-leading emission solutions to meet safety and compliance needs.
- Proven patented HJS Technology for cleaner and safer diesel engine operations.
- Partnered with known businesses and mines to create healthier workplaces and protect workers.

HJS Exhaust-gas Aftertreatment Systems: SMF® Technology

In order to reduce the pollutant emissions of mobile machinery, HJS offers modular diesel particulate filter systems specifically developed for such applications. Our economical and environmentally sound solutions have proven themselves many times over.

SMF® - Sintered Metal Filter

The centrepiece of all HJS exhaust treatment systems is the Sintered Metal Filter (SMF®), with which the company sets new standards in the global marketplace. In 2003, HJS was awarded the 'Deutscher Umweltpreis' (German Environmental Award) for its development of the SMF®. This closed 100% filter reduces the emissions of soot particles, including fine particulate matter, down to the limit of detection, with a filter efficiency of over 99%.

Reliable and low on maintenance

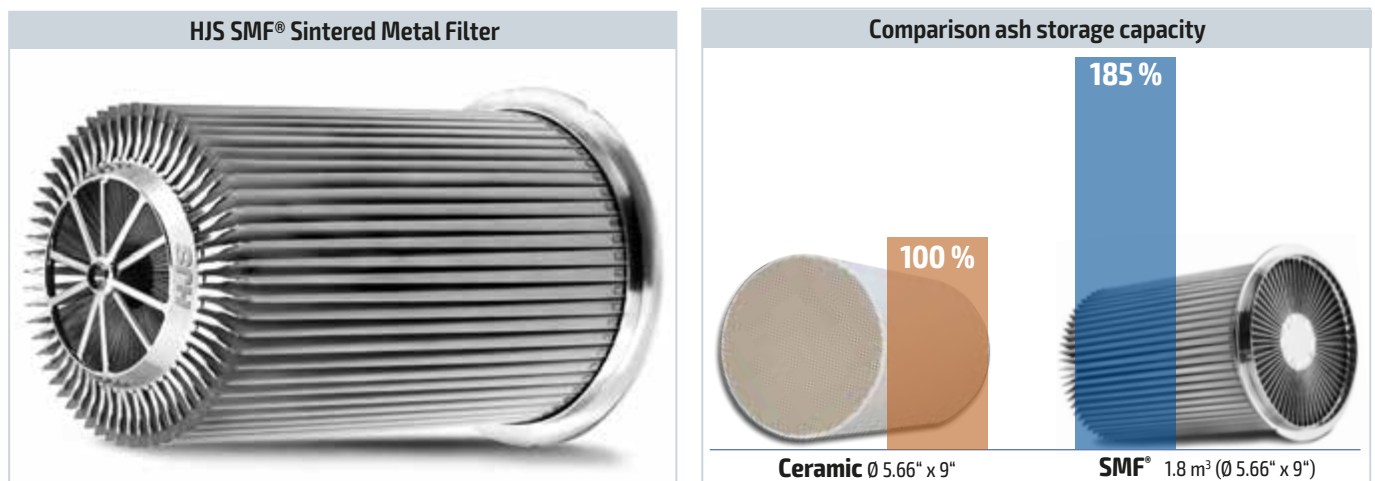
The SMF® and the systems based on it are exceptionally reliable in operation, low-maintenance and also benefit from a long service life. HJS systems have proved their worth over many years in more than 250,000 cars, buses, trucks and construction machines.

The advantages offered by the SMF® technology result from its special design as well as its use of sintered metal. Exhaust backpressure is minimised by the fact that there is an unrestricted inflow of gas into the filter pockets from outside. What's more, the ash holding capacity of the SMF® is considerably higher compared with that of a conventional wall-flow (honeycomb) filter. This significantly increases the mileage before an HJS filter requires cleaning, including in the case of older construction machinery and stationary applications that suffer from particularly high oil consumption. The costs for servicing and maintenance as well as the associated downtime costs fall accordingly.

Thanks to their modular construction, HJS Sintered Metal Filters can be adapted to create a range of different versions to suit different applications. They are suitable both as original equipment (OE) and also for retrofitting in mobile machinery and stationary applications.

SMF® advantages at a glance

- ✓ Reduction of soot particles and fine particulate matter by more than 99% (Based on particle number)
- ✓ Suitable for OE and retrofitting applications
- ✓ Proven system already installed in more than 20,000 construction machines
- ✓ High ash holding capacity and low exhaust backpressure
- ✓ Low-maintenance and economical
- ✓ Reliable with long service life
- ✓ Easy DIY cleaning



The higher ash storage capacity results in higher possible mileages between cleaning cycles within a range of 25 - 30 %.

SMF® technology has been developed specifically for applications in the medium to high power range. As a rule, the systems replace the original silencer, and they can be customised as required to match specific machines and stationary applications.

The modular SMF® systems require no extra regeneration aids, additives or intervention in the engine management system. The HJS Service Unit constantly displays the system's instantaneous operating state and indicates when the filter is in need of cleaning.

Catalytic coating

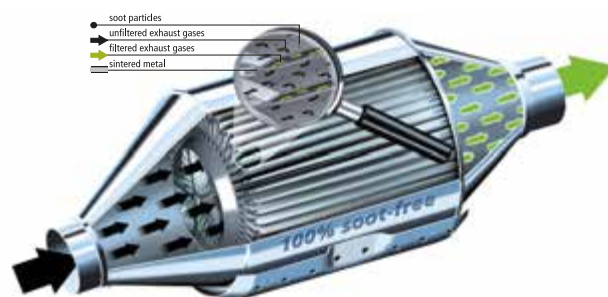
For low-temperature applications, the Sintered Metal Filter can be given a special coating in order to promote the regeneration process (CSMF = Coated Sintered Metal Filter).

Application examples for SMF® systems:

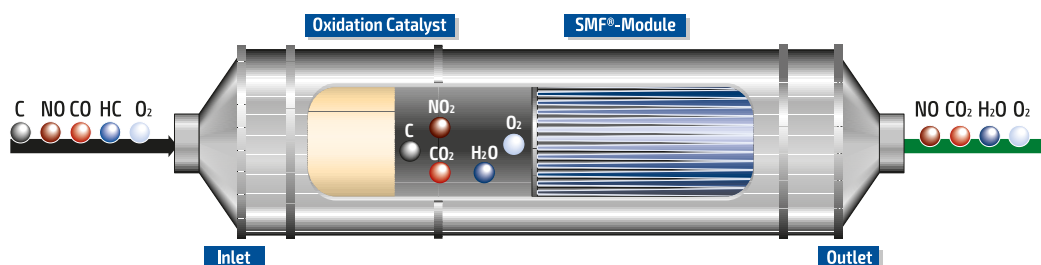
Underground mining machinery, construction machinery, construction vehicles, and heavy-duty diesel equipment such as industrial forklifts, trucks, wheel loaders, back-hoe loaders, special vehicles, power generators, and district heating plants.

Functional description

The hot exhaust-gases from the engine - which contain soot particles - are fed into the housing of the SMF®. The gaseous components flow through the microscopic pores of the filter pockets; the soot particles, including the fine particulate matter, are trapped on the surface and deposited on the individual filter pockets.

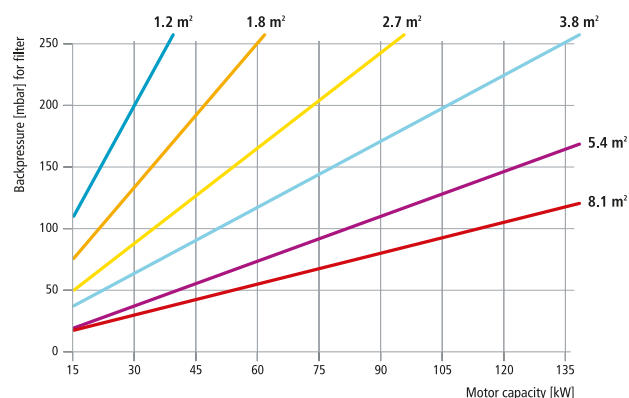


HJS's proven SMF® technology with passive regeneration is used to break down the soot that collects in the SMF®. The HJS system combines a highly efficient, upstream diesel oxidation catalyst (DOC) with an SMF®. Optimised tuning of the system results in the filter being continuously and effectively freed from the deposited soot.



Dimensioning the filter

HJS offers SMF® systems with filter surface areas ranging from 1.2 m² to 8.1 m². To help you choose the right size of filter, the diagram below shows the exhaust backpressure generated by each size of filter (not taking the inlet and outlet modules into account).



*Refers to a filter module with a maximum temperature upstream of the DPF® of 200°C



Certification

HJS Diesel Particulate Filters for mobile machinery and stationary applications ...

... are certified in accordance with internationally recognised **VERT** criteria

...are included on the Swiss BAFU filter list and as such satisfy the tough specifications laid down by the **Air Quality Control Regulation (LRV)**

...are approved by the **US Mine Safety and Health Administration (MSHA)**

HJS Emission Solution Products

SMF®-ER

External Regeneration



Particles are collected in the filter. As there is no regeneration strategy for this type of filter, the filter will have to be removed and cleaned once back pressure rises.

The SMF®-ER system is characterised by its easy installation and removal from the machine for maintenance. The SMF®-ER offers several advantages to machine operators as it provides an economical solution for equipping an entire fleet of similar construction. The regeneration requirements of the filter are displayed via a simple-to-read gauge, and the filter can be removed and cleaned on-site.

SMF®-AR

Active Regeneration



For lower temperature engines, the SMF®-AR adds an additive and heats coils that enables regeneration.

The SMF®-AR system is ideal for applications with varying profiles and low exhaust gas temperatures, commonly found on construction sites, mobile machines, and static equipment. The SMF®-AR System (Sintered Metal Filter with Active Regeneration) autonomously regenerates regardless of exhaust gas temperature and operating profile.

The compact design and modular structure enable adaptation to different applications, with customisable inlet and outlet pipes and mounting brackets for various machines and vehicles.

SMF®-CRT

Continuous Regeneration Trap



For higher temperature exhaust gas, the SMF®-CRT requires no additional components or support for regeneration.

The modular SMF® technology was developed specifically for applications in the medium to high kW range of performance. These filter systems can generally replace the original acoustic damper in the area of retrofitting and can be adapted individually to the machines and stationary applications.

The modular SMF® systems require no additional regeneration aids, additives, or interventions in the engine management.

S-CRT

Combination System



For the reduction of the gaseous pollutants, in combination with the diesel particle filter, HJS has developed the SCRT system (Selective Catalytic Reduction + Trap). With this modular, structured system, nitrogen oxides are also removed almost completely from the diesel exhaust gases.

For the reduction of the soot gathered in the SMF, the well-proven HJS-SMF technology with passive regeneration is used. The SCR unit reduces environmental pollution, as well as health-endangering nitrogen oxide emissions, of diesel engines by up to 99 percent. Together with the HJS particle filter, the SCR system thus reduces almost all pollutants in diesel exhaust gases (SCRT®- System = DPF + SCR system).

Fume Diluter

Mainstream Emission Solutions

Diluters will dilute and cool hazardous engine exhaust gases to ensure that the operators are working in a healthier environment. It will also reduce the risk of igniting nearby flammable or combustible materials due to lower exhaust temperatures.

For operators of vehicles within tunnels, containers and warehouses, diluters can be designed in such a way that the exhaust flow is projected away from the vehicle or stationary equipment.



LPG & Diesel Purifier

Mainstream Emission Solutions

Removes impurities and contaminants to reduce emissions.

As a truck, forklift, or heavy-duty vehicle shifts heavier loads, the more pollution it produces. However, with a purifier, these pollutants are reduced.



Fuel Born Catalyst

Mainstream Emission Solutions

An additive is introduced to reduce the ignition temperature of soot in Diesel Particulate Filters (DPFs) to enable low temperature regeneration.

A Fuel Born Catalyst (FBC) is developed to increase fuel efficiency and reduce emissions. These products can work in many ways by targeting the core problems behind incomplete combustion.



Diesel Oxidation Catalyst

Mainstream Emission Solutions

A Catalytic Converter (Diesel Oxidation Catalyst - DOC) chemically transforms harmful exhaust gases into less hazardous substances, reducing pollution.

Catalytic Converters (DOCs) make use of a catalyst, usually a precious metal coating like platinum or palladium, to speed up the chemical reactions between oxygen and pollutants in the air to convert them into less toxic by-products like water vapour, carbon dioxide, and nitrogen gas.



Tailored Solutions by HJS

The HJS Solution: Intelligently linked technologies

As an OEM, HJS SA offers advanced aftertreatment emission solutions, including Diesel Particulate Filters and Catalytic Converters (DOCs), engineered for optimal performance and compliance in modern powertrain systems.

To meet the latest and potential emission limits in both South Africa and globally, HJS combines DOC, DPF, and SCR systems with other technologies for use in various applications across multiple industries. Here, the exhaust gas temperature given by the application and how the end user operates it play a central role. Many applications do not reach the temperature necessary for soot oxidation and NOx reduction. For this purpose, HJS implements both active and passive thermal management measures to provide the necessary temperature and always guarantee full functional reliability.

Another major challenge for engine manufacturers is to package the increasingly complex exhaust aftertreatment components in the limited installation space of mobile machines. To solve this, HJS has developed a modular system that can be adapted to a wide variety of engine sizes and space requirements.



Seamless ECU to VMS Integration

One of the major advantages of the HJS-ECU is its ability to seamlessly integrate with your Vehicle Management System (VMS) using the J1939 CAN bus protocol. HJS SA is one of few companies that is able to offer this integration with our systems.

Through J1939, the ECU can continuously broadcast vital operational data - engine speed, temperatures, pressures, fault codes and more, directly to your VMS in real time. This enables proactive risk management and live updates on your vehicle display rather than delayed or manual reporting.

Because J1939 is a standardized protocol in heavy machinery, it ensures robust communication, error detection, and interoperability across different modules and systems. This integration empowers your team with timely alerts, trend analytics, and a unified view of the machine's health, resulting in safer, more efficient operations.



Servicing & Maintenance

Automatic monitoring and maintenance indicator

The HJS Service Unit monitors a filter automatically by measuring the backpressure and temperature of the exhaust gases. Both pieces of information are displayed on the HJS Display Unit in real-time, which means the status of the filter is immediately visible at all times. The Service Unit is included in the scope of delivery and ensures the filter functions at optimum efficiency.

Benefits

- Constant monitoring of the exhaust backpressure and temperature
- Overload detection for the particulate filter
- Automatic indication that the filter needs to be cleaned
- Lower maintenance costs



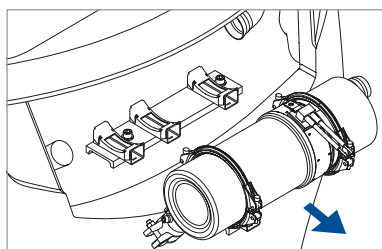
Maintenance

In addition to combustible soot particles, filter systems also remove all other solid particulate matter from the exhaust gases, above all, ash from engine oils and additives. These residues must be removed from the filter at specific intervals by cleaning.

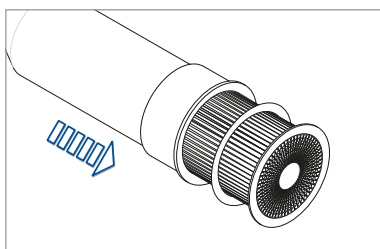
Thanks to the high ash-holding capacity of the SMF®, the mileage it can cover before needing to be cleaned is considerably higher compared with that of a conventional wall-flow (honeycomb) filter. Experience shows that many machines can operate for longer than 2,000 hours before the first servicing work needs to be carried out. This makes it possible to keep the running costs for servicing and maintenance as well as the associated downtime costs, to a minimum.

Cleaning SMF® filter modules

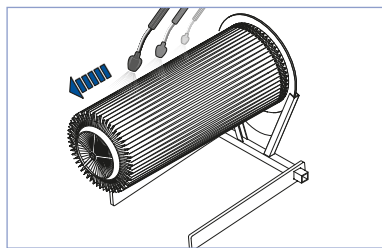
Cleaning a Sintered Metal Filter (SMF®) with a high-pressure cleaner results in a mixture of water, soot and ash. HJS recommends complete regeneration of the particulate filter before you start cleaning it, in order to degrade the soot particles that are collected in the filter.



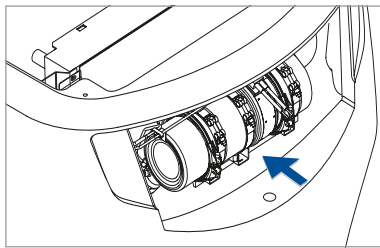
1. Remove filter module



2. Remove SMF® filter from casing



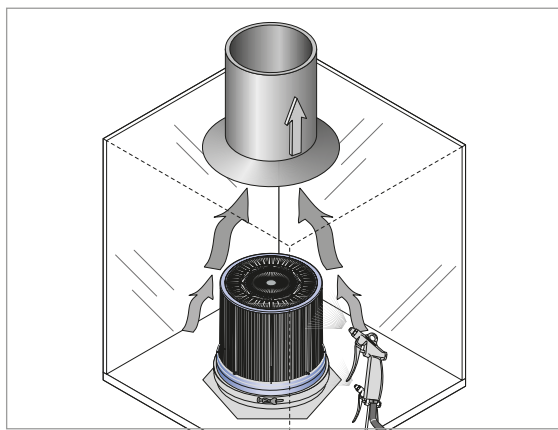
3. Clean SMF® filter with high-pressure cleaner



4. Reinstall filter module

Cleaning CSMF filter modules

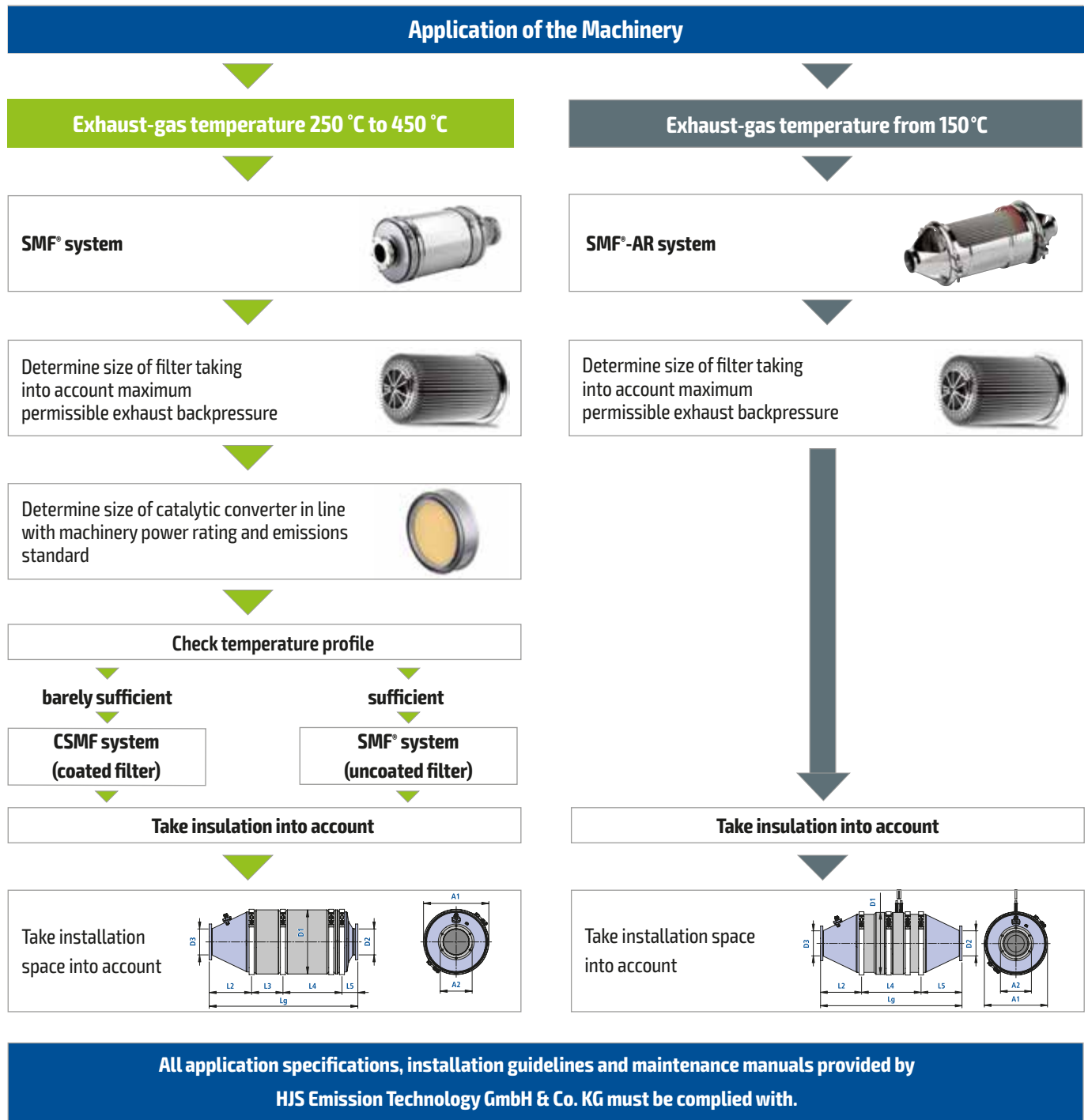
Coated Sintered Metal Filter modules (CSMF) may only be cleaned using compressed air. Manual or automatic cleaning equipment with an extractor unit is required.



NOTE: Observe all health and safety and environmental protection laws, directives and legal requirements applicable in your country.

Equipping of Diesel Engines with Particulate Filter Systems

The following guidelines and procedures will be followed when specifying and then installing an exhaust-aftertreatment system on applications:



Field Applications

The HJS Solution: Intelligently linked technologies

Practical experience

HJS Diesel Particulate Filter Systems are suited for original equipment as well as retrofitting of mobile machinery and stationary applications in the mining, industrial, logistics, and agricultural industries.

Since 2019, HJS SA has installed and maintained various systems successfully across Africa, focusing on the development of systems for underground mine applications. We see ourselves as a cost-, quality- and sustainability partner who supplies its customers with effective systems and components.

Many engine and machinery manufacturers are already convinced, with more than 20,000 applications globally already equipped with tailor-made HJS solutions.

Put your trust in HJS and benefit from many years of experience in the business:

- Minimal downtime
- Extremely low maintenance and better engine health
- Low servicing costs
- Active protection of health and safety of workers
- Compliance with government-enforced occupational exposure limits (OELs)
- Reduced fuel usage and cost due to better engine health
- Community upliftment and development due to on-site job creation



Clean Air is our Mission.

Put your trust in **HJS** and benefit from our extensive experience

- > Products for liquid and hot gas filtration
- > Certified reduction of emissions
- > Products for OEM and retrofit
- > Protection of human health and the environment



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