



**Blow-off and steam vent silencers
for power plants and other industries**



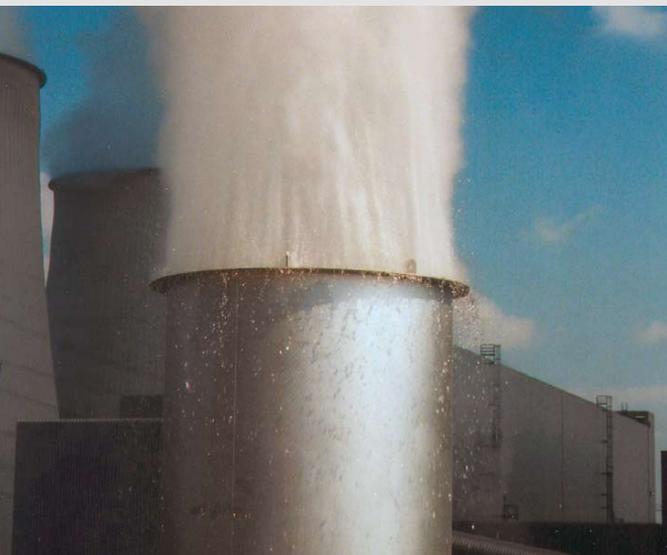


BBM Akustik Technologie
Blow-off and steam vent silencers
for power plants and other industries



Blow-off and steam vent silencers

Noise control for power plants
and other industries



BBM blow-off and steam vent silencers

BBM Akustik Technologie, Germany is one of the leading suppliers for blow-off and steam vent silencers. We offer the whole range of silencers for all kinds of blow-off, vent and other re-release processes:

- Safety valve silencers
- Vent silencers
- Start-up silencers
- Snort valve silencers
- Control valve silencers
- Natural gas silencers
- Special solutions

Profiting from several decades of experience, BBM Akustik Technologie has developed the most efficient silencers with the longest design life. We did the first tests to develop diffuser silencers to optimise acoustic performance and mechanical design. Along with a lot of site experience, we are leaders in the design, fabrication, and delivery of silencers.

Tailor-made for each individual project, BBM Akustik Technologie silencers are designed, engineered, manufactured, delivered, and – upon request – installed. They are to be found in operation worldwide and can be distinguished by the following characteristics

- High performance
- Reliability and endurance
- Stability and quality

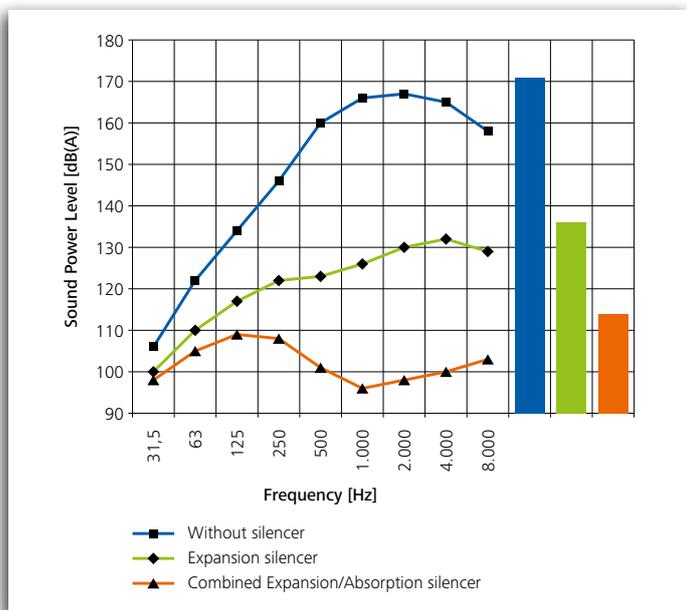
Our silencers can be found in many industries; on HRSG boilers, all kinds of fired boilers, and all types of power plants.

For temporary applications (e.g. steam purging of pipes before plant start-up), we provide suitable blow-off silencers for rent.

Acoustic design and calculation

The expansion of compressed gas or steam is combined with a transformation into acoustic energy, with which enormous sound power levels can be emitted.

Our silencers are specially designed for applications downstream of safety or pressure control valves. The design and calculation process requires the following data: medium, mass flow, pressure and temperature upstream of the valve.



The acoustic design covers two main steps: the determination of the non-silenced sound power level and calculation of the silencer itself.

Sound power level can be determined by the valve supplier or calculated by BBM Akustik Technologie using formulas based on international standards, improved and verified by the Müller-BBM scientists.

The acoustic design of the silencer components is strongly influenced by the allowable silencer back pressure. BBM Akustik Technologie offers an important contribution to early design process to optimise the system of valve, pipes and silencer with regard to sizes and costs. Our silencers basically consist of an inlet pipe with a radial multi-stage expansion unit and – if required – an absorption section, so that the noise reduction in total can be more than 60 dB.

Numerous measurements taken at installed silencers in situ verify the acoustic and mechanical engineering.

This experience enables us to optimize the expansion stages and the subsequent absorbing baffles in order to guarantee the acoustic requirements while minimizing costs, dimensions and weights, at the same time.

3-D design, associated detailed engineering, strength calculations

BBM Akustik Technologie develops a 3-D model of every silencer. These models can be provided to cross check the supports and guidelines in the clients system and will be used for in-house ANSYS calculations to verify resistance against external loads and temperature induced tensions etc.

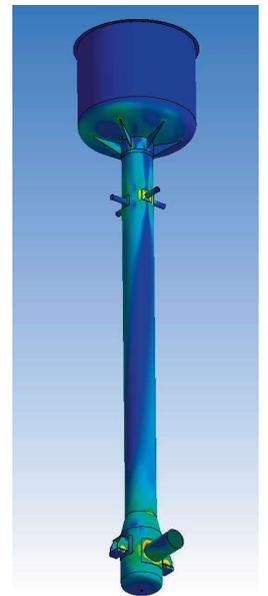
BBM Akustik Technologie offers comprehensive detailed engineering of the system from the valve outlet to the silencer outlet, i.e.

- selection of silencer back pressure and the pipe sizes with regard to flow velocity, pressure drop, flow noise and low costs of the total system
- design of the support and guiding system with regard to the thermal movements and all external loads under consideration of existing steel structures
- design of external insulations with regard to acoustic requirements and safety against high temperatures

Design codes, materials and manufacturing

BBM Akustik Technologie considers the silencer's expansion unit as a pressure part, which will be designed in accordance with pressure codes based on clients' preference (B31.1, B31.3 ASME8 Div1 for ASME materials, EN13445, AD2000 for EN materials). Inlet pipe material can be selected up to X10Cr-MoVnNb9-1 (1.4903) for temperatures above 600°C.

BBM Akustik Technologie applies PED 97/23/EC and confirms compliance for European sites including CE-marking.



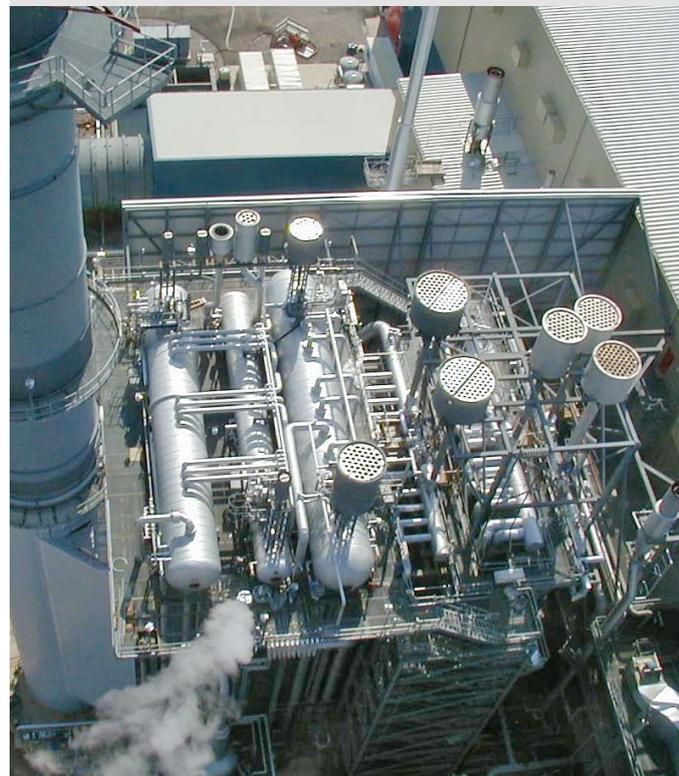
The following shows the comprehensive range of our projects:

- Acoustic design and optimisation
- 3-D (CAD) model engineering
- Pressure part calculation
- Pressure part third party design check
- Static calculation
- Procurement
- Production
- Third party and quality inspection
- Delivery
- Assembling
- Documentation

Your benefits from projects with BBM Akustik Technologie

- Access to all the experience of the Müller-BBM Group
- Acoustic design of the entire system from the valve outlet to the silencer outlet
- Guarantee for mechanical design and acoustics
- High standards for engineering, strong compliance with selected pressure vessel code
- Own workshop in Germany ensures high quality and in time delivery
- Fixed prices
- Inspection and documentation of each silencer

We will accompany you
throughout the entire project



Solving industrial noise problems for more than 30 years.

**BBM Akustik Technologie – a leading supplier
of industrial silencers and enclosures.**

**EN ISO
9001:2008
certified**

Our products

Hot gas turbine silencers

- Bypass silencers
- Gas turbine silencers
- Single cycle silencers
- Optimised splitter design



Steam silencers

- Vent silencers
- Start-up silencers
- Blow-off silencers
- Flash tank silencers



Acoustic enclosures and claddings

- Facades and shrouds
- Partial HRSG enclosures
- Steam and gas turbine enclosures
- Supply and erection



Flue-gas silencers

- HRSG outlet duct silencers
- Main stack silencers
- Id and Fd fan silencers
- Minimized pressure drop



Engine exhaust silencers

- For diesel and gas engines
- Highest attenuation
- Most compact design
- DNV certified spark arrestor



Condensate systems

- Complete system design
- Static and dynamic calculation
- Condensate tanks and flash tanks
- Piping and blow-off silencers



Cooling tower silencers

- Natural draught cooling towers
- Forced air cooling towers
- Cell cooling towers
- Hybrid cooling towers



The range of services offered by BBM Akustik Technologie, headquartered in Germany, comprises acoustic engineering, product-specific advice, manufacture, delivery and mounting.

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