

# Vent Silencer

## Vent and blow-off silencer



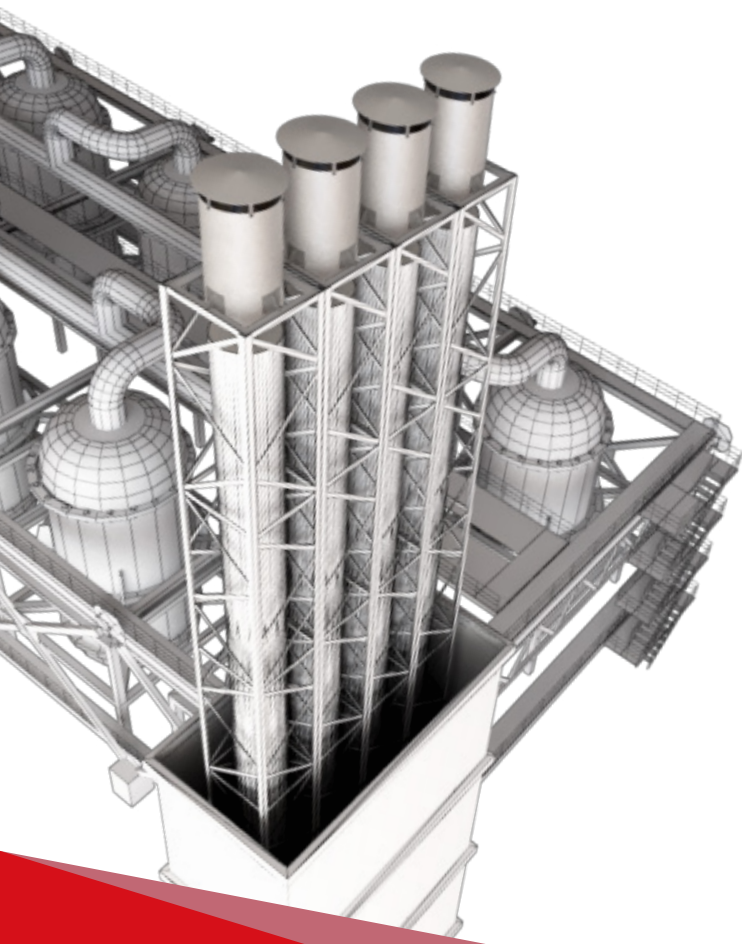
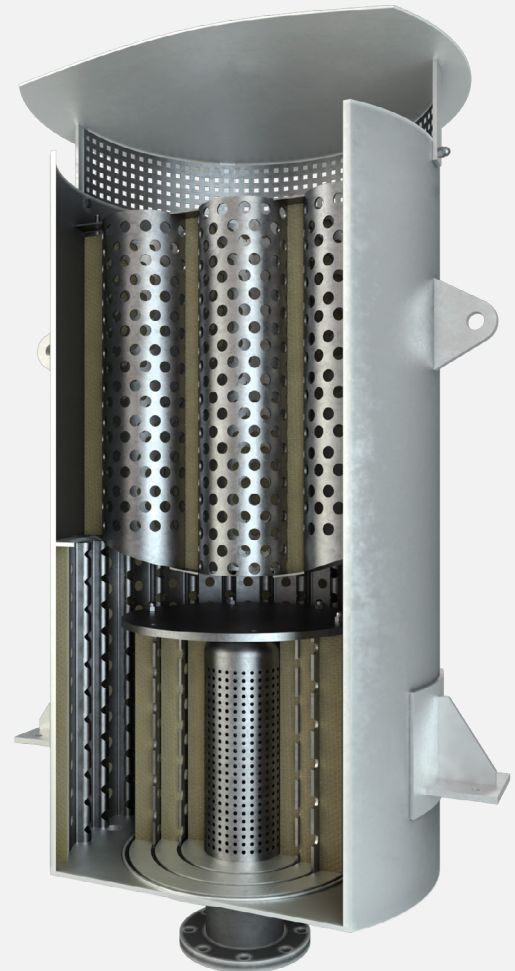
### Product Description

Ager GmbH in Germany is one of the world's leading suppliers for Industrial Vent and Blow-off silencers. Vent Silencers reduce the noise generated by the expansion of gas or steam from elevated pressures to atmospheric pressure.

These absorptive silencers are used to suppress noise generated by high velocity gas streams such as steam vents, safety relief valve outlets, system blow down and purge outlets.

This noise can be generated due to the high velocity flow through the valve and turbulence created around any obstacle in the line that suddenly restricts or changes the direction of flow such as valve or an orifice.

Our Vent Silencers are completely customizable and allow for either vertical or horizontal orientation. We offer the highest quality acoustically optimised silencers at reasonable prices, anywhere in the world. Industrial Vent and Blow-off silencers can be utilised in a number of industries.



### Purpose

Vent silencers attenuate noise from different kind of industrial process equipment. Silencer design, with an understanding of the application, equipment, and process, is critical when it comes to meeting specific noise attenuation requirements. The sound levels caused by steam or gas flow rates resulting due to extraction of pressurised flow to atmosphere in the pipeline are calculated and this source is ensured to remain at a low levels.

Vent silencers cover a broad range of applications such as HP, MP, LP Steam system, Natural gas relief vents, stacks and economiser outlets while all having the capability of different frequency bands to address each applications unique requirements.

## Manufacturing Materials

Housing	Surface
Carbon Steel	PTFE
Stainless Steel	XYLAN
Other Grade Available On Demand	Weld Overlay

## Design & Manufacturing Specifications

Ager designs and manufactures all types of vent silencers in compliance with the international quality standards. Our silencers are very much effective in reducing the noise for entire systems of gas and vapour transferring and emergency systems. Each vent silencer is designed to attenuate the noise level to the required sound pressure level criteria at a given distance from the silencer.

The highest emission of noise energy occurs at the outlet of the nozzle in any steam or gas relieving / blowing system. The silencer is placed in the outlet nozzle to suppress this noise before it spreads around.

There are two basic noise reduction principles used in the silencer design. A balanced noise reduction is achieved in a wide frequency range by using a sound absorbing material. Reactive components that are used together with the reflection elements used in the partitions and transitions enable the reduction of peak noise in a more effective frequency band. Ager vent silencers combine these two technologies in a highly efficient design.

Our Blow-off Vent silencer models typically have a three separate section, each providing a critical function.



## Applications

It is common practise to use silencers at exhaust for treating the noise. The special silencers can be designed to suit specific requirements for exhaust systems.

- Power Plant
- Cogeneration Plants
- Industrial Plants
- Biogas and Waste
- Marine
- Engine Test Beds
- Any Operation With Combustion Engine

Ager is specializing designs for meeting certain requirements. Multiple-nozzle orientations, different kind of material requirements and special silencers with insulated Shell, heat absorptive packing are increase the effectiveness of the silencers. The silencers described above are covering applications such as diesel generators, natural gas and diesel engines, stationary industrial engines as well as similar systems.

## Types

The silencers can be the absorbing, resonator, or reactive type, and in most cases a combination of these. Acoustic and velocity/pressure drop calculations for each design have to be executed in parallel to get the most optimised results. We also offer space-saving solutions. Ager provides full custom engineered Blow-off Silencers for high pressure vents, steam vents, safety relief valve outlets, system blow downs and purge outlets etc. Vent and blow down noise is a function of upstream pressure and temperature, type of gas being vented, the valve size and type, plus the effect of down stream piping.

Vent silencers find wide applications and for this reason vent and blow down silencers are seldom a catalogue selection because of temperature, pressure, flow rates are specific. Contact our experienced engineers to recommend a silencer best suited for your application for vertical or horizontal installations.

We are providing approximate Steam Vent Silencer dimensions for your reference. You can find regarding information on Selection section as a guideline.

### Splitter Tube Sections

- Primary high frequency noise absorption section.
- Tubes consist of perforated metal surfaces having internal insulation to provide continuous attenuation.
- The splitter tube sections diameter, open areas and lengths are adjusted for maximum attenuation.

### Plenum Section

- Provides a reduced flow velocity.
- Attenuate the frequencies by insulated wavy plates.
- Adjust the flow through the upper splitter tube section.
- Improve the flow turbulence and reduce radiated noises.

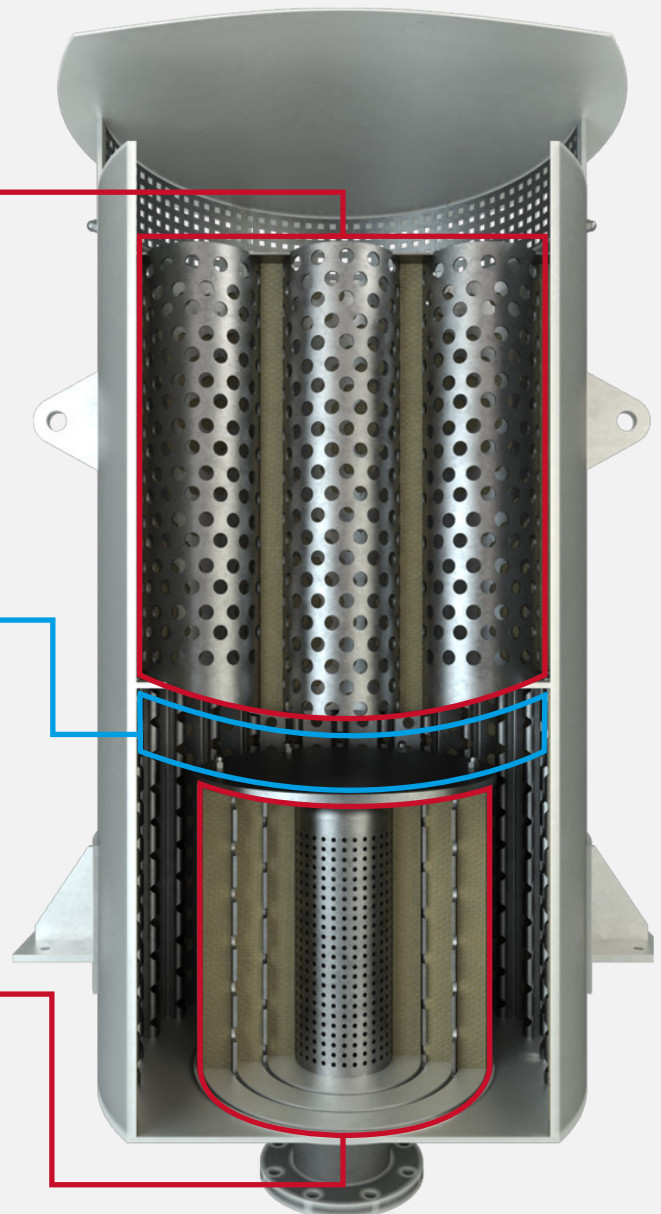
### Diffuser and Pressure Stage

- Redirects the flow in the direction of plenum chamber.
- Absorb flow forces.
- Adjust frequencies.
- Disturb the flow velocity sonic to subsonic.
- Provide pressure staged expansion to atmosphere.

## Selection

Basic data such as engine type, outlet flow rate, temperature and pressure must be known in order to choose the right engine exhaust silencer type. As a result of evaluating this information, the required silencing rate is determined.

<b>Commercial Grade</b>	upto 20db
<b>Industrial Grade</b>	upto 25db
<b>Residential Grade</b>	upto 35db
<b>Critical Grade</b>	upto 45db
<b>Super Critical Grade</b>	upto 60db





## Specifications

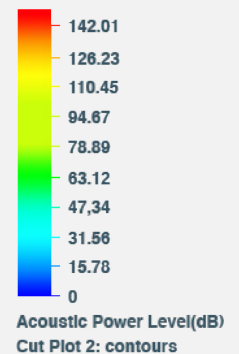
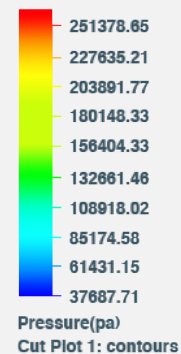
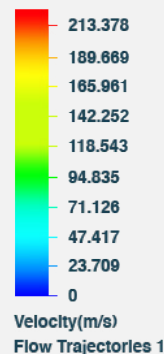
Target noise reduction is %40-45 comparing to source.

- The European directive 2003/10/EC at the work place to 87 dB(A) and the impulsive noise to 200 Pa (140 dB(C) peak).
- 29 CFR part 1910.95 - Occupational Noise Exposure 90 to 115 dB(A) to steady sound exposure, and 140 dB (peak) to impulsive noise.

Silencers shall be designed using a wide range of materials CS, SS.

Design aims to achieve higher acoustic frequencies so that the attenuation effect of the silencer are maximised by specially designed geometry to decrease sound pressure level.

- Stainless steel diffuser and internals.
- Higher noise reduction can be achieved utilising several pressure stages.
- Analyses are specialised according to client requirements utilising FEA basis softwares. Pressure, sound and attenuation values are modeled, so that physical and mechanical designs are performed as per international standards.
- Seamless stainless diffuser and multi-stages utilising finely woven stainless steel wire mesh.
- Circumferential wavy perforate plated on shell surface for reflecting sound.
- Insulated shell with high heat absorptive packing are available.
- Removable resonance plate to trap and reflect the sound waves before outlet.
- Perforated and insulated removable packing having tubes through upper body provide perfect sound isolation.
- Pressure drops and detailed gas extracting cases are to be modeled software basis during extracting period of gases to atmosphere.
- Seamless diffuser pipes, wrapped with high quality stainless-steel wire mesh.
- All pressure joints are designed, manufactured and controlled according to certain standards such as ASME, PED.
- Internal structures made by stainless steel.
- PTFE, Xylan cover are to be optionally provided.



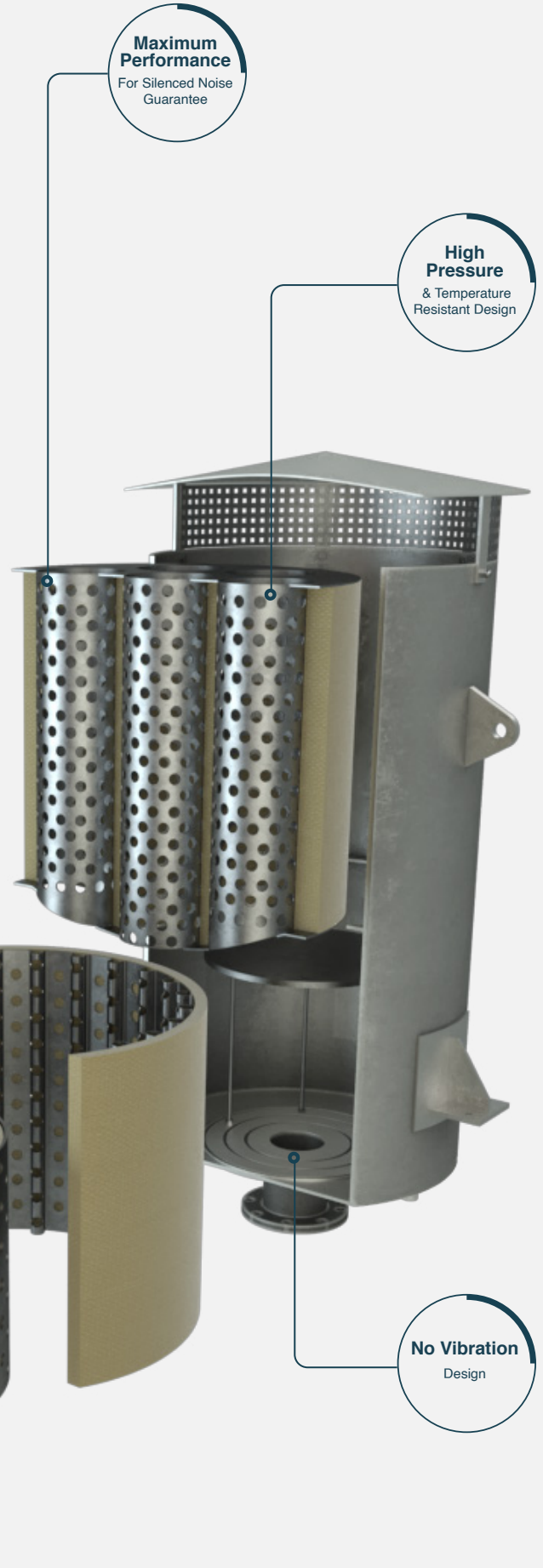
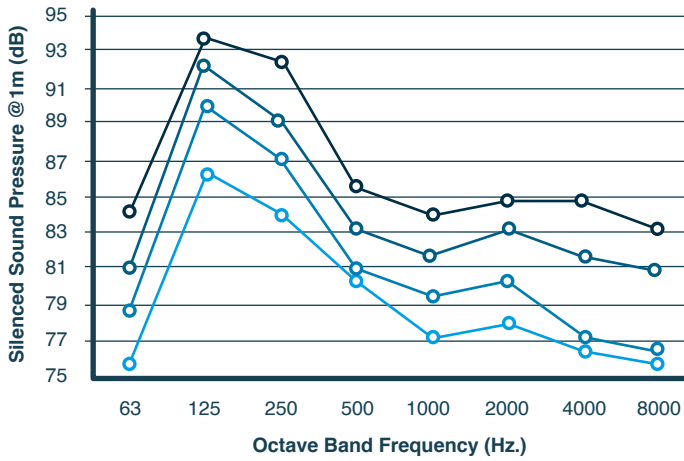
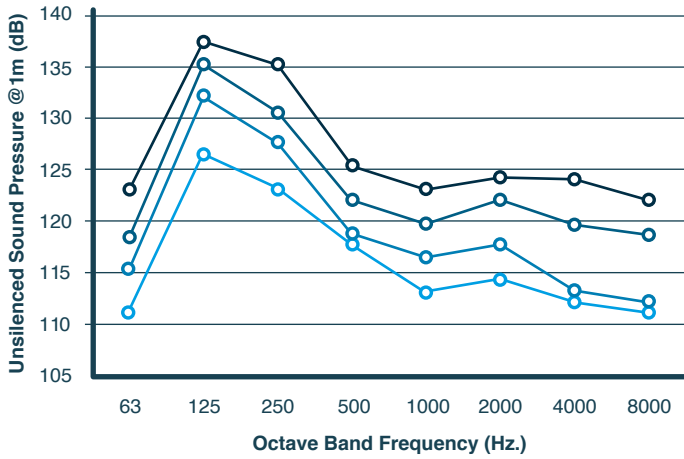
## Data Required To Select Vent Silencer

- Application (Vent, Blow down, Relief).
- Fluid Composition (Steam, Gas, Air).
- Process conditions units (kg/hr, SCMH, NCMH).
- Temperature, Pressure (C, Bar).
- Line size between valve and silencer (We can calculate and advise).
- Line size from silencer discharge (We can calculate and advise).

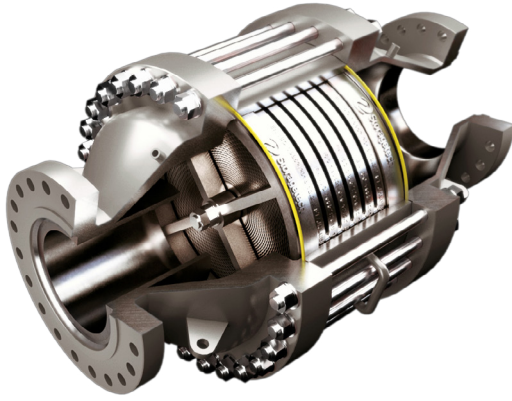
- Attenuation required @1m dB.

Allowable pressure drop. The attenuation curves Show the difference between Unsilenced-Silenced, indicate noise loss in dB at different frequencies. These curves express the expected dynamic loss at each frequency using the respective silencer. The resulting silenced noise levels can vary to some degree, as they affected the silenced noise with the specific values. These curves indicate the loss in dB for airborne noise and have no effect on the system by mechanical noise and can be used as a general indicator to evaluate overall system performance.

## Noise Attenuation Levels



# Product Recommendations



## Flame Arrester

Vertical, in-line, detonation

Storagetech™'s Model 320 In-line Detonation Flame Arrester (also called flame arrester or fire arrester) is designed for installation in gas pipelines. Detonation occurs when a flame travelling through the pipeline reaches supersonic velocities, usually as a result of the pipeline configuration or pipeline surface roughness. Changes in gas density and pressure causes the flame velocity to metamorphose from subsonic to supersonic.

The flame quenching element is designed to be three or four times the area of the pipe in which it is installed, and is assembled between two flanged reducing spools. The element comprises a tightly rolled scroll or scrolls of crimped stainless steel ribbon to form passages through which the vapour passes. The area of each passage determines level of protection that the element provides. ERGIL Storagetech™'s Model 320 In-line Detonation Flame Arrester has a maximum experimental safe gap (MESG) as per the standard, and is suitable for gas groups IIB and IIA.

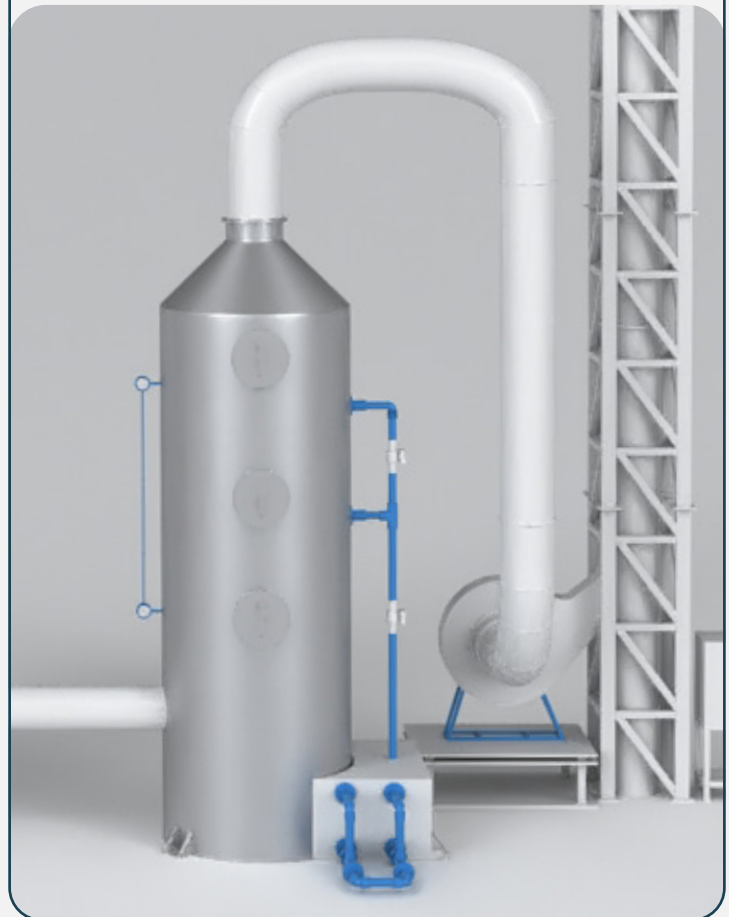
The detonation flame arrester is more robust than the deflagration flame arrester, and contiguous scrolls have smaller MESGs to withstand higher pressures and to quench detonations. It should be installed in the pipeline where there is a significant distance between the unit and the potential source of ignition.

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## Scrubber Systems Chemical Gas Washing Systems

The harmful gases and odors caused by the activities of industrial facilities and enterprises pose a great threat to human and environmental health.

It is necessary to develop some systems to protect our environment from these harmful substances. Gas purification systems installed in this direction contribute significantly to ensuring environmental safety. This system prevents the formation of acid rain by purifying the acidic gases from the exhaust before being released into the sky.





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#### data sheet series

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