



SILENCERS

Product catalogue

Power of
innovative ideas

Powerz

About us

Powerz[®] is an innovative international company specialized on engineering solutions in the field of thermal power, oil-gas and chemical industries.

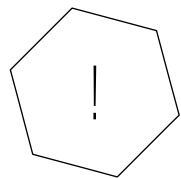
Powerz[®] designs and manufactures highly effective steam, gas and air silencers.



Basic concepts

Noise is random fluctuations of different physical nature, varied by complexity of time and spectral structure.

A human perceives noise as an unpleasant (unfavourable) sound which, depending on level of sound pressure, can bring discomfort or cause irreparable harm to health.



To protect against the negative impact of noise, there are various regulations governing the maximum permissible noise level for workplaces, residential premises, public buildings, and residential areas.



Source of increased noise, generated by non-stationary aerodynamic processes in high-speed areas of operating medium flow is the bulk of equipment at an industrial facility.

Problem detection

The problem may be the absence or malfunction of silencers in steam, gas or air discharge lines. The fault of silencers, as a rule, is connected with the following reasons:

1. Incorrect design calculations and, as a result, wrong design of the selected silencer.
2. Absence of noise-absorbing materials. Use of sound-absorbing materials that do not comply with the operating parameters or low-quality ones.
3. Failure to meet a silencer service life.



In all cases, there is the only solution — replacement of the silencer with a more advanced one.

Noise measurement

Sound level meter, accuracy class 1 spectrum analyser is designed for sound level measurement and frequency analysis of noise.

Analysis of noise measurements consists of the evaluation of the data obtained, using a sound level meter. To determine the high frequency or low frequency nature of the noise, the recorded figures are processed in octave bandwidths. Then, a solution is proposed by which noise is reduced to normal values (80 dB).

1.

Visit by a specialist with a sound level meter. Measurement, analysis, conclusion, preparation of TDA

2.

Acoustic and aerodynamic analysis of a silencer, design and materials option, engineering, manufacture, supply, installation supervision.

Operating medium: steam and air
(inlet pressure over 0.5kg/cm²)

Silencers: design
and calculation

Calculations are made by "Acoustic Powerz" in-house software developed by the company specialists.

Acoustic Powerz[®] software provides calculations in several steps:

1.

Modelling of steam dispersion inside the throttle units, between the adsorbing pads (baffles), at the silencer outlet.

2.

Calculation of throttle units quantity, determination of throttle thickness, holes number and diameter.

3.

Geometry analysis, number and thickness of pads, density and type of packed material (packing).

4.

Necessity of confuser at the silencer outlet. Calculation of the confuser configuration.

The main calculation steps:

1.

Geometry analysis, number and thickness of adsorbing pads (baffles), density and type of packed material.

2.

Aerodynamic design of silencer includes calculation of all local constraints. Dynamic loads on all silencer stages (throttle unit, sound absorption stage, exhaust portion). Calculation of the average velocity head at the silencer output.

Silencers: design and calculation

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Medium: flue gases and air (inlet pressure under 0.5kg/cm²)

If necessary, we design the silencer support structures and frames.

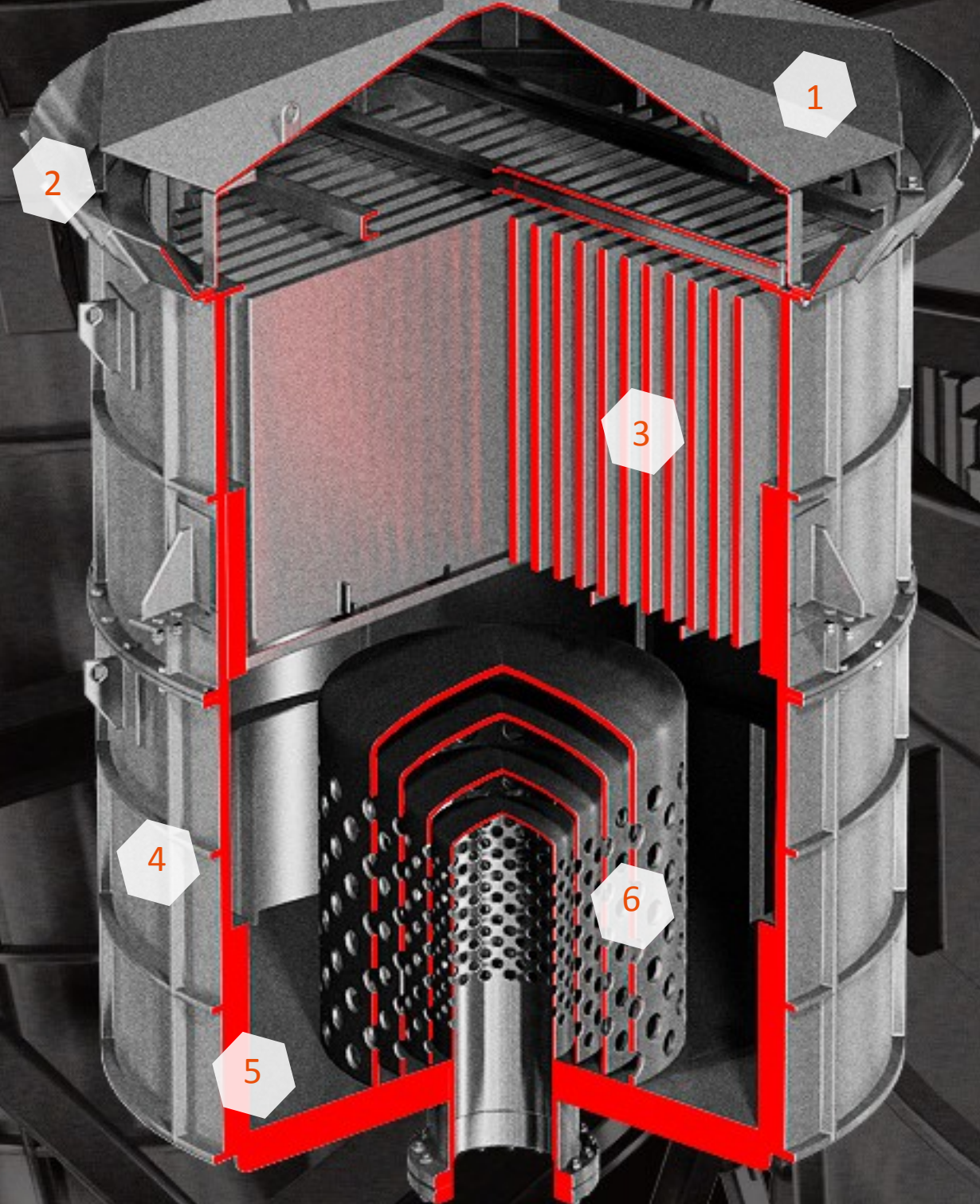


Manufacture of silencer

Powerz[®] silencers are manufactured at in-house production facilities



Silencer design



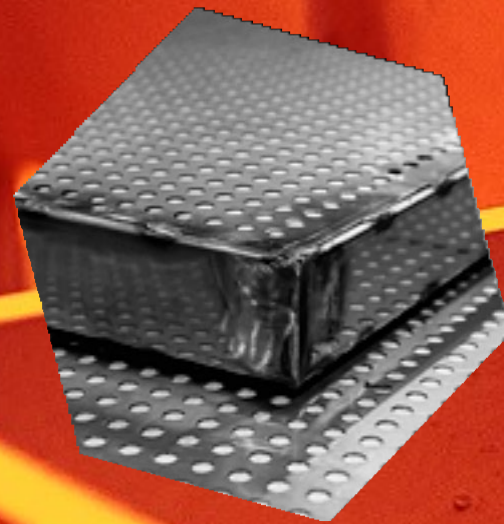
- 1 Cover
- 2 Protective casing
- 3 Noise absorbing pads (baffles)
- 4 Casing
- 5 Facing
- 6 Throttle unit



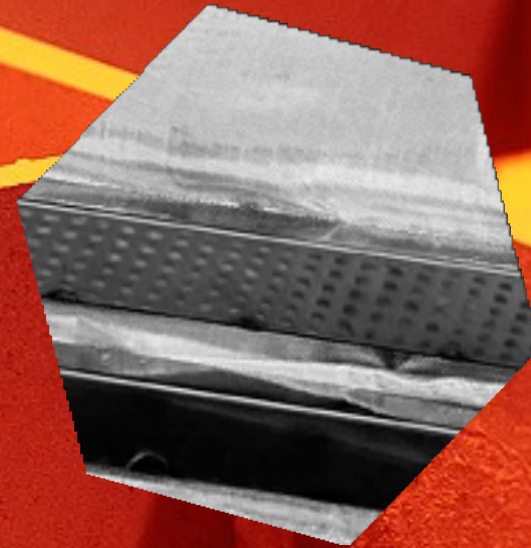
Manufacture of silencers

! Depending on operating temperature we use different heat and wear resistant materials.

Materials used in
production



The pads and internal protective sheets are made of steel EN 1.4541, 1.4005, AISI 409, AISI 430



Noise-absorbing material and fibreglass:

Mats made of basalt super-thin fibre (with packing density of 75kg/m³ to 80kg/m³)
ROCKWOOL Wired Mat 50
ROCKWOOL ALU WIRED MAT 80
Electrical insulating fabrics



The silencer casing and throttle grilles made of steel EN 1.0038 and 1.7715

POWERZ® silencers show following advantages:

- High efficiency
- Compact dimensions
- Maximum reliability
- Individual approach according to operating conditions
- Competitive price

Technical advantages
of silencers



Only an integrated approach can solve the problems of your company or plant, related to noise exposure. Therefore, at any stage of decision-making it is possible and necessary to:

- Get focused advice on acoustic subject from a specialized organisation
- Make noise level measurements
- Make up an analytical calculation report
- Get a solution regarding removal of noise-related problems

Engineering and consulting



