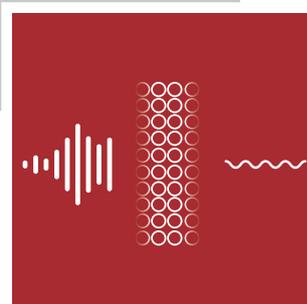
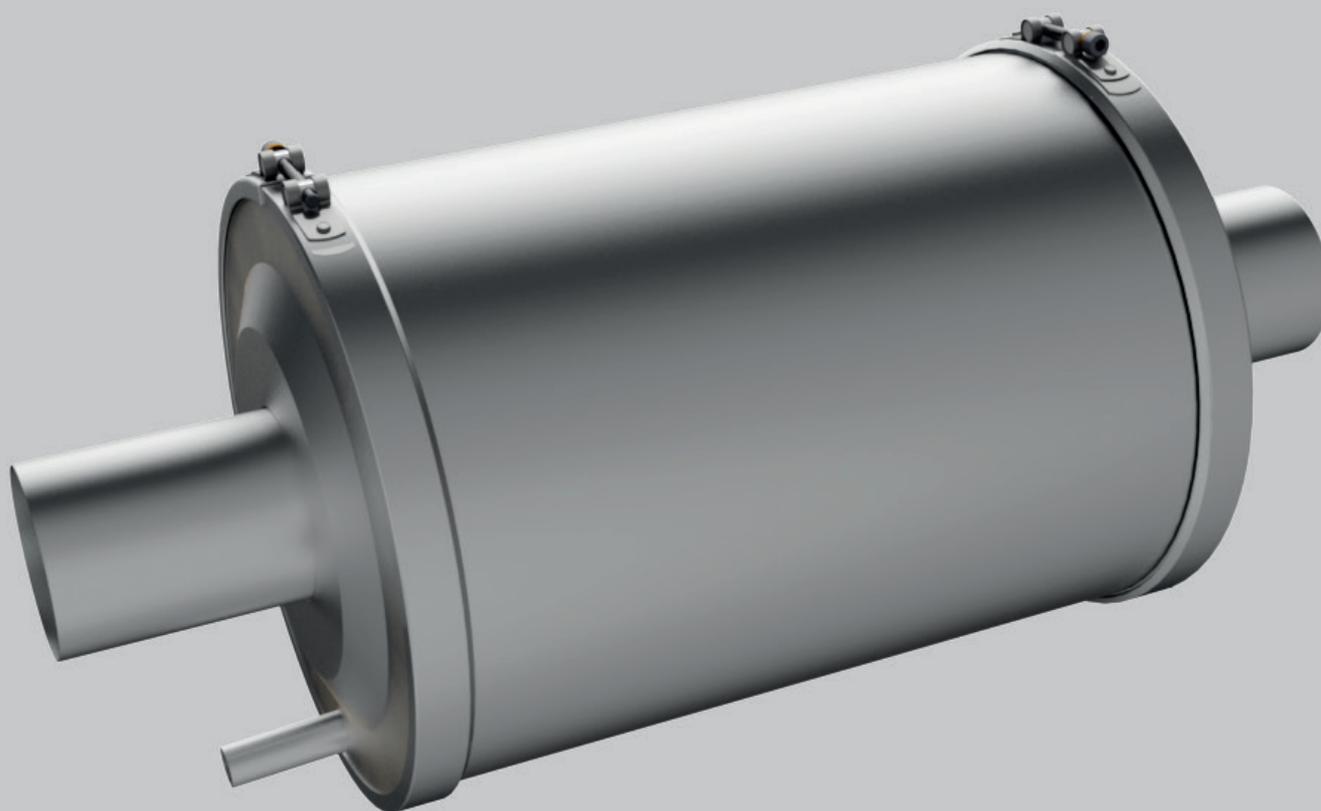


The Silencers for Efficient Sound Reduction

Product Sheet



The Silencers

Intelligent Solution for Sound Problems

Kutzner + Weber already produced its first flue gas silencers in 1988. Another important step in 2001 was the licence partnership with the Fraunhofer Institute for Building Physics (IBP) as a scientific partner for the development of special silencer solutions. Today, Kutzner + Weber can make use of a variety of silencing technologies that have repeatedly proven to be efficient for solving sound problems in the areas of boiler systems, block heating stations or emergency generators.

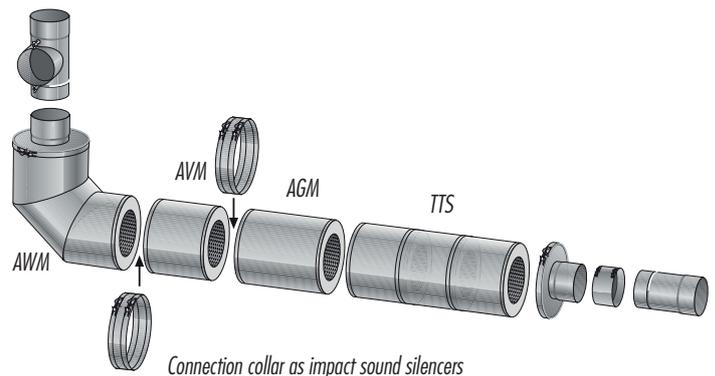
Already during the development process, the products are designed to ensure an easy installation. The main focus for the silencers are their noise reduction properties in combination with a long lifespan. All silencers of the series AGM, AVM, AWM and TTS can be combined with each other. This allows for the solution of complex sound problems.



For a quiet environment

The noise exposure in our environment is constantly increasing. But people want a quiet living environment. Thankfully the noise emission from household appliances such as dish washers keeps decreasing. Furthermore, modern building methods, with good heat insulation and double-glazed windows, prevent ambient noise from entering the building. However, modern heating systems can also cause noise pollution, which residents and neighbours have to deal with particularly in quiet housing areas. But many sound problems can be solved! With the right advice and the resulting purposeful choice of measures on-site, everybody can do their part in creating a quiet environment. The environmental regulations TA-Lärm, DIN 4109 and VDI guideline 2715 must be followed.

The Modular Design



Quality and Functionality

- ✓ High-quality stainless steel used
- ✓ Insertion attenuation of all silencer series tested according to DIN EN ISO 7235
- ✓ No reduction of cross-section, therefore lower flow resistance (Zeta values)
- ✓ Special mineral fibre for passive silencers, also suitable for calorific value method
- ✓ All silencers are serially equipped with a condensation drain
- ✓ Special solutions for every sound problem

Certified Sound Survey

Solving Sound Problems

By now, Kutzner + Weber has been able to solve sound problems in several hundred buildings due to a sound survey. This is why Kutzner + Weber offers its customers an extensive service. We offer sound survey across Germany, Austria, Hungary and Switzerland thanks to a comprehensive network of sound survey partners. All our sound survey partners have to participate in training courses by the Fraunhofer Institute for Building Physics (IBP), Brüel & Kjaer and Kutzner + Weber.



All sound surveys are conducted with sound-level meters of class 1.

The KW Sound Measuring App



- ✓ Measuring with third-octave band, measurements of variable length
- ✓ Displays measurement in real time with calculation of sum level while measuring
- ✓ Optimizing measuring results by connecting external microphone
- ✓ Higher accuracy class
- ✓ Measuring results displayed as chart and table for individual frequencies
- ✓ Measuring results saved in archive where they are accessible at all times
- ✓ Export of measuring data via e-mail in CSV format and PDF, for immediate processing
- ✓ Free Lite-Version
- ✓ For Android and Apple



Passiv Silencers AGM

The passive silencers are particularly suitable to reduce the sound levels of medium and high frequencies. Their sound absorption is most efficient between 1,000 and 2,000 Hz. With larger installation lengths it is also possible to absorb lower frequencies.

The silencers of type series **AGM** are suitable for all standard fireplaces and they can be used in condensing boiler systems without restrictions.



Passive Extension Modules AVM

The inner structure of the extension modules of type series **AVM** is identical to the passive silencers **AMG**. Thanks to the modular design, sound levels can be noticeably reduced by extending the standard silencers. To ensure a safe connection of the elements, inner support rings must be provided by the manufacturer. Extra wide sealing bands ensure tightness and the also extra wide sealing collars connect two modules via the outer casing.



Passive Elbow Silencers AWM

The elbow silencers of type series **AWM** also belong with the group of passive silencers and therefore have the same structure. Due to their 90° elbow design they are often the only option for installing a silencer in a very tight boiler room. In many cases the pipe is not long enough to install a standard pipe silencer.



Low-Frequency Silencers TTS

The low-frequency silencers are a great addition to the product range of Kutzner + Weber because they achieve a high degree of absorption at very low frequencies. In the case of many standard silencer solutions low frequencies can only be absorbed via a large volume, a large mass or a large installation length.

The low-frequency silencers were designed to reduce sound levels of oil and gas boilers. However, they can also be used for all types of fuels. For example, they can be used for condensing boilers without problems. And especially in engine systems such as block heating stations or emergency generators, the **TTS** stand out with a long lifespan. The pressure and temperature resistance can be increased with a fully welded version.



Synthetic Silencer AGP

A versatile synthetic silencer for boilers at an appealing price. Suitable for the fuels oil and gas, also for calorific-value operation up to 120 °C.



The Slot Silencers

Low-key yet effective

With this type of silencer, it is possible to reduce sound emissions right behind the sound source. The slot silencers can be adjusted to complicated spatial conditions in boilers to use every bit of space possible for reducing sound levels. The slot silencers are the result of a close cooperation with the Fraunhofer Institute of Building physics. Kutzner + Weber is the first to get them ready for marketability. This method of sound absorption is patent-protected.



The Benefits

- ✓ Dimensions and geometry on customer's request
- ✓ Sound absorption in tight spaces
- ✓ Especially suitable for installation in boilers
- ✓ Extremely variable in shape and size
- ✓ Very robust design
- ✓ Successful serial operation

Design

The porous absorbers used here are almost completely covered with discs with small slots. Using a program that was specifically developed for this purpose, the width and length of the slots is configured for a specific frequency range. This way the silencer dimensions can be provided.

Operating Mode

The slot silencers work similarly to conventional resonators. However, unlike e. g. Helmholtz resonators they can be adjusted for a bigger broadband range.

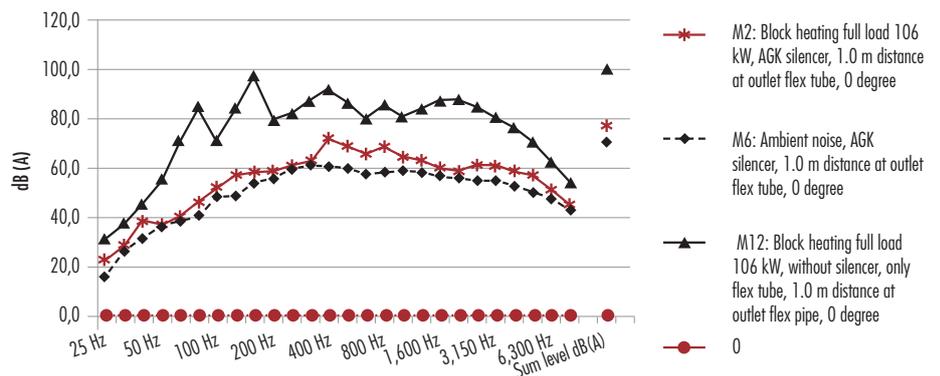


Silencers AGK for Block Heating

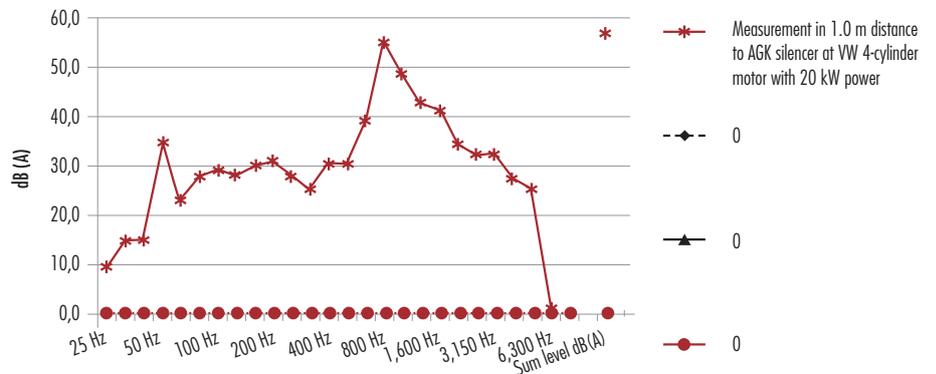
Silencer Series AGK

The solution for the reduction of low-frequency sound due to typical ignition frequencies. The silencers have compact dimensions and are designed to be completely maintenance-free. The silencers can be integrated into the module as well as be installed externally behind the module. With its adjusted connections it can be connected to your block heating station perfectly. Due to our silencing technology, which we have adopted from the automotive industry, the silencers can be designed individually and achieve optimum results with the available space.

The gradient shows that the compact silencer has a large absorption capacity. The values can be lowered even more by using an AGG silencer as a secondary silencer or downstream silencer. The silencers consist entirely of stainless steel and are therefore completely free from



Gradients 4-cylinder Liebherr motor 100 kW power, electric. With the AGK silencer we are barely above the sound level of the ambient sound while eliminating low-frequency ignition frequencies.



Gradients 4-cylinder VW motor 20 kW power, electric
With the AGK silencer, the low ignition frequencies are at a barely audible level.

For selling prices please see our price list at www.kutzner-weber.de
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Kutzner + Weber GmbH
Frauenstraße 32 · D-82216 Maisach
Tel.: +49 (0) 8141 / 957-0 · Fax: +49 (0) 8141 / 957-500
www.kutzner-weber.de · info@kutzner-weber.de

Hotline:
Sales: +49 (0) 8141 / 957-118 · +49 (0) 8141 / 957-131 · +49 (0) 8141 / 957-120
Engineering: +49 (0) 8141 / 957-400