jeremias®
CHIMNEY SYSTEMS

CHIMNEY SYSTEMS FOR COMBINED HEAT & POWER UNITS

www.jeremias-group.com

ENERGY-EFFICIENT CHP

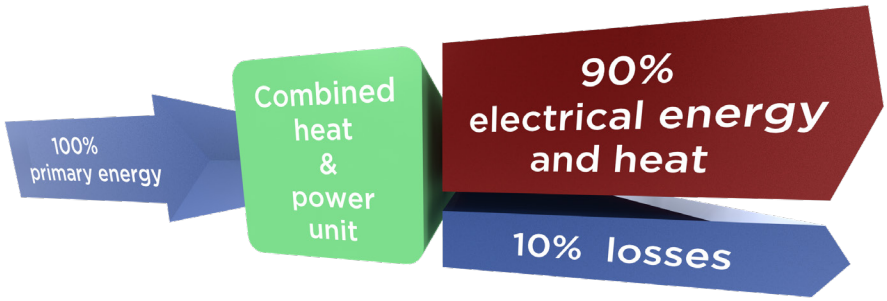
The energy revolution is one of the most important issues of our time and essentially focuses on developing renewable energy sources, reducing energy consumption and increasing energy efficiency.

The increased use of decentralised combined heat & power units is one factor that may contribute to the success of the energy revolution.

In line with the combined heat and power (CHP) principle, they not only generate electrical energy, but also simultaneously use the heat released in situ to heat detached/semidetached houses, hotels and public facilities or provide process heat for laundry services, clinics or the food industry, for example.

In this way, combined heat & power units can achieve an extremely high level of efficiency and, in an ideal scenario, utilise more than 90% of the primary energy supplied.

The centrepiece of a combined heat & power unit is usually an engine fuelled by heating/vegetable oil, gas, diesel or biomass, which drives a generator. A heat exchanger extracts generated heat from the cooling system and exhaust gases and transfers it to the heating circuit.



Whereas combined heat & power units were previously used primarily in industrial and commercial applications, the ever-expanding range of combined heat & power units from smaller output classes has recently made energy-efficient decentralised power plants a more interesting prospect for private individuals.

CHIMNEY SYSTEMS FOR CHP UNITS

Depending on the output class and actual application, combined heat & power units set a host of different challenges for the chimney system to be installed. As one of the leading global manufacturers of flue and chimney systems , we would be pleased to use our experience and expertise from a range of reference projects to help you plan and install chimney systems for combined heat & power units.

Our experts would be more than happy to help!

THERE ARE MORE THAN ENOUGH REASONS TO CHOOSE JEREMIAS AS YOUR EXCLUSIVE PARTNER!

> Individual consultation
> Assistance with project planning and installation
> Technical support and after-sales service
> Country-specific licences and documentation
> In-house development and manufacture of silencers
> Individual solutions and versions according to customer requirements
> Sound measurements on-site
> Free software solutions for designing and planning chimney systems

We would be pleased to advise you:
Tel. +49 (0) 9832 - 68 68 8001

JEREMIAS SYSTEM SOLUTIONS for CHP

Output	EW-PPS	EW-KL	DW-KL	DW-KH	Flue gas silencer	Flue gas dampers	Explosion flaps
Nano <2.5 kW	✓	✓	✓	✗	✓	✗	✗
Micro 2.5-20 kW	✓	✓	✓	✗	✓	✗	✗
Mini 20-50 kW	✗	✓	✓	✗	✓	✗	✗
Large >50 kW	✗	✓	✓	✓	✓	✓	✓

This table provides an overview of typical applications for the different output classes of flue gas system that we offer. These may conflict with country-specific regulations. Please contact our technical department for more detailed information.

Nano combined heat & power units:
The smallest combined heat & power units with electrical outputs below 2.5 kW are usually used in modern detached or semidetached houses. In the face of rising electricity prices, these units, which generate power and heat at the same time, often provide a worthwhile alternative to gas condensing combi-boilers.

Micro combined heat & power units:
With an output of 2.5-20 kW, combined heat & power units from the micro class are suitable for detached/semi-detached houses and small business.

Mini combined heat & power units:
Combined heat & power units with an output class between 20 and 50 kW are used in businesses, hotels, hospitals, swimming pools and even local heating systems in residential complexes.

Large combined heat & power units:
Combined heat & power units with an electrical output of more than 50 kW are used predominantly in larger local heating systems and industrial facilities.

EW-PPS system

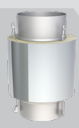
Cost-effective single-wall plastic chimney system made from polypropylene designed for combined heat & power unit flue gas temperatures up to 100°C and maximum pressure conditions of 5000 Pa.

EW-KL system

Single-wall stainless steel system with conical metal surface seal that can withstand maximum pressures of 5000 Pa and flue gas temperatures up to 600°C without requiring additional sealing materials.

DW-KL system

Double-wall conically sealed chimney system with mineral insulation, suitable for temperatures up to 600°C and maximum positive pressures of 5000 Pa.



DW-KH system

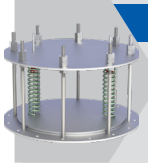
Derived from the DW-KL system, the DW-KH system incorporates positive friction-locked connections that allow the manufacture of pressure tight connecting pipes, even under unfavourable installation conditions. DW-KH is only suitable for connecting pipes in indoor applications!

Flue gas silencer

The low-frequency humming from combined heat & power plants is often perceived as a nuisance in the surrounding area. Flue gas silencers adapted perfectly to the system provide a perfect solution here!

Flue gas dampers

Dampers block off the flue duct while simultaneously connecting several combined heat & power units to a flue pipe or divert the flue gas past the heat exchanger along a bypass line.



Explosion flaps

In combustion engines, valve play can sometimes allow unburned gases into the flue pipe, which can lead to an explosion or deflagration and cause excessively high pressure peaks. Consequently, the chimney system may be damaged beyond repair. Jeremias explosion flaps are reusable and close again automatically after an explosion. The opening pressure can be preset on the system.

NANO/MICRO CHP

The engines only generate low flue gas temperatures during combustion and can therefore be operated with cost-effective **plastic flue systems (PP = polypropylene)**. Variable reduction options make PP systems quick to assemble on site, while they can be connected to all standard combined heat & power units using special adapters.

Polypropylene elements can be used to extend the riser on existing chimneys, otherwise all **pressure-tight DW systems** are suitable for external installation. Alternatively, our **KL versions** can be installed for the flue pipe, even on combined heat & power units with low flue gas temperatures.

MINI/LARGE CHP

The main purpose of larger combined heat & power units is often to generate energy with a view to feeding it into the public grid. In such cases, the generated heat cannot be fully utilised at all times and must therefore be directed past the heat exchanger along a bypass line, which results in high temperatures in the flue pipe.

Our **DW-KL system** is the first choice here. Suitable for temperatures up to 600°C, the conical metal connection can withstand large fluctuations in temperature and positive pressures up to 15,000 Pa (UL certificate/USA), unlike many rival products. The simple connection of precision elements eliminates the need for welding on site and consequently saves valuable time when laying the pipeline.

Gas tight, thermally decoupled **flue gas butterfly valves** that control the flue duct by opening or closing various flue gas paths are essential in operating the bypass line safely. The material used to manufacture pipelines is subject to thermal linear extension when the line exceeds a certain length and **compensators** are therefore required in order to prevent leaks.

CHP IN THE FOOD INDUSTRY

The owner of one reference system is a canned fish producer based in Vigo in Spain who requires a permanent supply of water vapour maintained at a high temperature in order to pasteurise and sterilise food products, whereby the heat used originates from a combined heat & power unit.

The chimney system was planned and installed by Jeremias.

Because the engine and boiler exhaust gases had to be directed to the outside world along a single pipeline, a special chimney system consisting of two interlocking **DW-KL flue pipes** 400 and 500 mm in diameter was developed and installed to produce a three-wall chimney system.

Motorised **MAK flue gas dampers** and **compensators** are also used.

CHP FOR DISTRICT HEATING

The municipal authorities in the Italian commune of Vignola recently began operating a district heating pipeline, which replaces a total of 20 boilers in public buildings such as the hospital, town hall, libraries and schools.

A combined heat & power unit not only generates power, but also hot water, which is directed to the various buildings along an underground pipeline and used to heat drinking water as well as for space heating.

Jeremias took over the entire planning and installation of the flue pipe from the **DW-KL system** , which is 400 mm in diameter.

REDUCING ACOUSTIC EMISSIONS

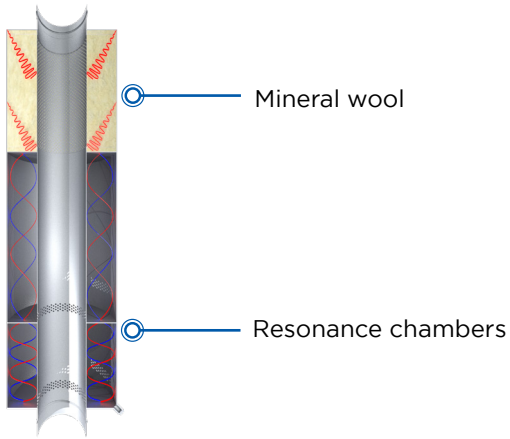
Humming from combined heat & power plants is often perceived as a nuisance. The flue pipe is a good sound conductor that plays a major role in transmitting engine noises, depending on the material. Noise pollution can be contained effectively through the installation of specially adapted flue gas silencers.

Combined flue gas silencers are particularly suited to combined heat & power units. They use porous materials such as mineral wool to absorb medium and high-frequency sound waves, while the installation of several resonance chambers also filters out low-frequency humming that is so typical of combined heat & power units.

Jeremias has been developing active technological sound solutions that effectively reduce such noise pollution for many years. A dedicated silencer test bench highlights our excellent quality standards.

ADVANTAGES OF JEREMIAS:

> Comprehensive range of standard silencers
> Silencers manufactured according to customer requirements and special designs created
> Sound measurements on-site
> Technical calculation of chimney system acoustics
> Complete chimney systems from a single source
> Individual consultation



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GERMANY

Jeremias Abgastechnik GmbH
Opfenrieder Str. 12
D-91717 Wassertrüdingen
Phone: +49 9832 6868-50
Mail: welcome@jeremias-group.com
www.jeremias.de

POLAND
www.jeremias.pl

USA
www.jeremiasinc.com

SPAIN
www.jeremias.es

CROATIA
www.jeremias.hr

ITALY
www.jeremias.it

CZECH REPUBLIC
www.jeremias.cz

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www.jeremias.fi

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Jeremias high quality products to be installed only by selected experts.