

# HEATING WITH BIOMASS

System solutions by the Raab Group

INFORMATION



**Raab**Gruppe  
KW | Raab | NET

# BIOMASS

## WHAT IS BIOMASS?

Biomass is plant matter used as an energy source. This renewable raw material burns in an environmentally friendly and CO<sub>2</sub>-neutral way. It thus offers economic and ecological advantages over fossil fuels and other alternative energy sources.

## BIOMASS FUELS

Biomass as an energy source can be used in various forms, e. g.:

- ✓ Wood pellets
- ✓ Lump wood
- ✓ Wood chips



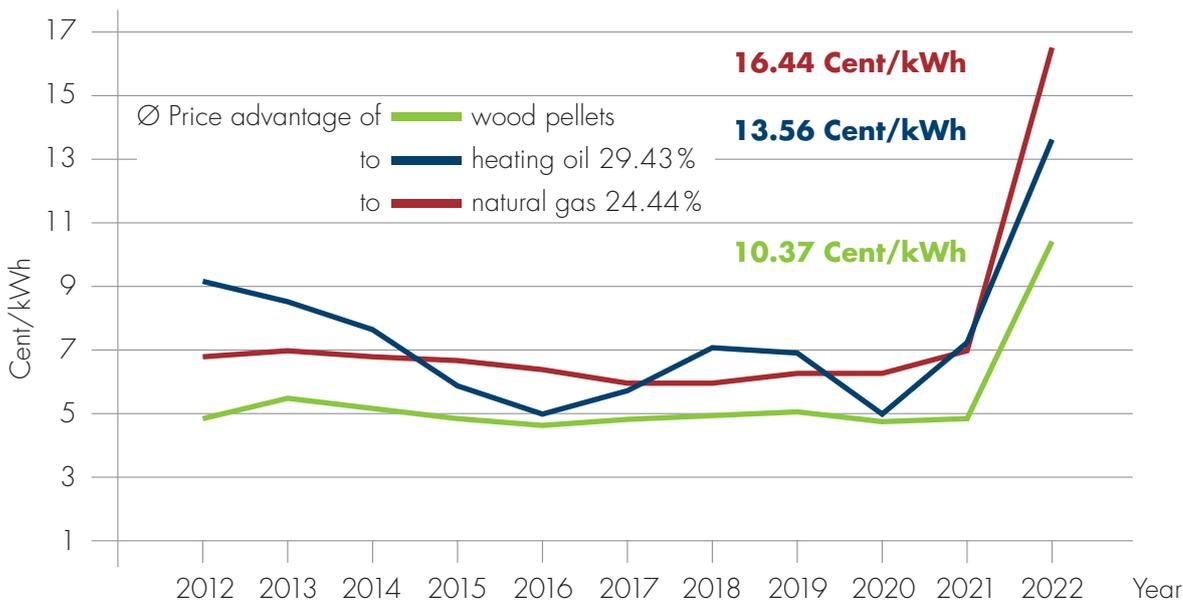
## HEATING WITH BIOMASS

The combustion of biomass fuels releases the same amount of CO<sub>2</sub> as it has absorbed during its lifetime. This amount corresponds to the amount that would also be released during the normal decomposition process, so that a neutral ecological balance is achieved through the combustion of biomass. As a renewable raw material, biomass can contribute to regional supply security in the long term and play a significant role in the energy system transition. The use of own cultivation areas, the regional availability and the comparatively low production costs make it a particularly economical and forward-looking alternative.

## ADVANTAGES OF BIOMASS HEATING SYSTEMS

- ✓ Environmentally friendly, CO<sub>2</sub>-neutral combustion
- ✓ Reduced heating costs, independent price development of fossil fuels
- ✓ Renewable raw material, security of supply
- ✓ Low costs for production and transport with local cultivation
- ✓ Important contribution to energy system transformation
- ✓ Securing jobs and strengthening the region

## PRICE DEVELOPMENT OF ENERGY SOURCES FOR HOUSEHOLDS FROM 2012-2022



Basis: Consumer prices for the purchase of 33,540 kWh gas (Ho), 3,000 l EL heating oil (Hu: 10 kWh/l) or 6 t pellets ENplus A1 (Hu: 5 kWh/kg, incl. VAT and other costs).

Sources: Deutsches Pellet Institut GmbH, Brennstoffspiegel (heating oil and natural gas prices)

# FLUE GAS ROUTING COMPONENTS

## WPG STAINLESS STEEL FLUE GAS SYSTEMS

The WPG stainless steel flue gas system has been specially developed and tested for condensing operation (insensitive to moisture) and is thus excellently suited for wood firing systems that are operated with low flue gas temperature and/or low output (e.g. modulating boilers). Conventional stainless steel flue gas systems are only suitable for these applications to a limited extent. It thus enables a reduction of CO<sub>2</sub> emissions and actively contributes to climate protection. In addition, it fulfils all building inspection requirements through DIBt approval.

- ✓ High level of protection against corrosion after thermal stress – system failure due to corrosion causes high replacement costs and endangers the heat supply.
- ✓ Protection against fluctuating fuel quality.
- ✓ Saves investment costs in the flue gas system when retrofitting flue gas heat exchangers or later converting to condensing technology.
- ✓ Alkon WPG is designed for overpressure operation up to 5,000 Pa and a flue gas temperature of 600 °C and offers the greatest possible safety due to the metallic sealing method – for all areas of application.



## THE ENERGY-SAVING CHIMNEY

Make double-walled chimneys for solid fuels dynamically controllable with an integrated draught limiter. This turns a simple chimney into an „intelligent“ energy-saving chimney right from the start. Improved combustion saves the operator fuel costs and reduces emissions into the environment.

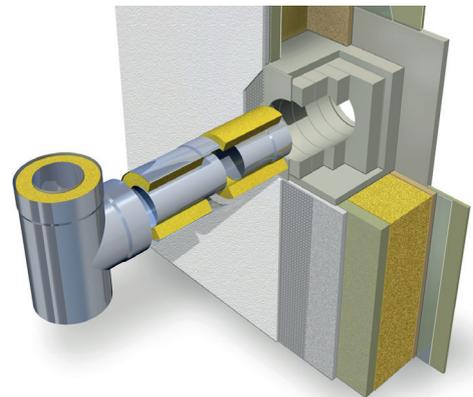
- ✓ Reduced fuel use
- ✓ Less emissions
- ✓ Without auxiliary energy



## THE WALL, ROOF AND CEILING DUCT

When flue pipes are routed through combustible building materials, e.g. wooden beam ceilings or wooden stud frame, all fire protection requirements are met with the wall, roof and ceiling duct. The compact design allows for small dimensions and quick installation and has been tested and approved by the building authorities.

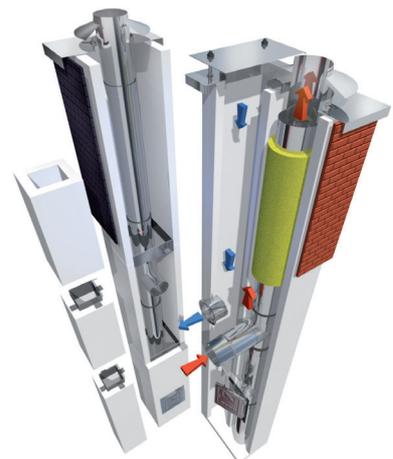
- ✓ Maximum fire protection due to the use of special fire protection panels
- ✓ Easy to install due to dry construction method
- ✓ General building authority approval of the DIBt, approval number Z-7.4-3359



## LIGHTWEIGHT CHIMNEYS

Our lightweight chimneys are fully-fledged 3-shell chimneys and meet all fire protection requirements. The thermal insulation keeps heat losses low and optimises draught. The plug-in technology makes them easy to assemble. They are recommended for fireplaces for solid fuels such as stoves, heating inserts and fireplaces in negative pressure operation. The compact external dimensions and the dry construction method open up flexible design possibilities for the planner. With their low weight, the lightweight chimneys are excellently suited for the renovation and conversion of buildings. After filling, the lightweight chimney is ready for plastering, painting and wallpapering. They can be finished and heated immediately after installation.

- ✓ Room air-independent: e.g. connection of wood-burning stoves, tiled stoves, etc.
- ✓ High safety: tested system with DIBt approval
- ✓ Suitable for low-energy or passive houses

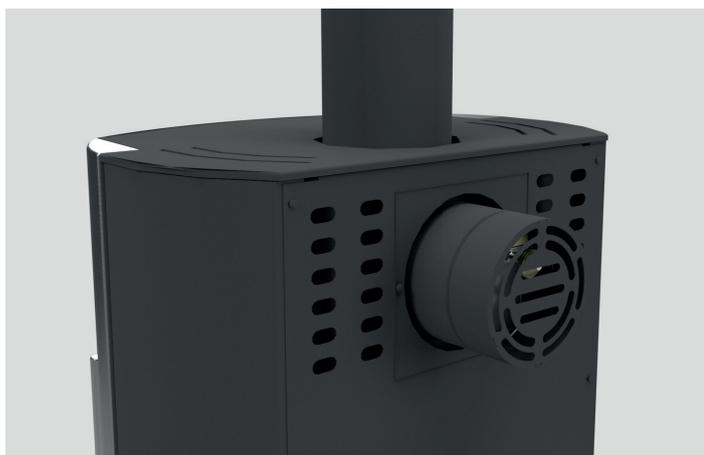


# COMPONENTS FOR BEST DRAUGHT CONDITIONS



## THE DRAUGHT REGULATORS

- ✓ Generating a constant negative pressure according to presetting
- ✓ Calm flame pattern means more constant combustion
- ✓ Up to 20% fuel savings
- ✓ Extension of combustion time by almost 40%
- ✓ Less fuel also means less fine dust
- ✓ Protection of the fireplace



## THE DRAFTBOX LIGHT

- ✓ Up to 45% fuel saving
- ✓ Fewer sooty windows
- ✓ More beautiful flame picture
- ✓ Fewer emissions
- ✓ Quick installation
- ✓ Easy to retrofit



## THE CHIMNEY FANS

- ✓ Safe heating even in weather conditions that are unfavourable for combustion
- ✓ No smoke backflow with cold chimney systems
- ✓ Ensuring operating conditions
- ✓ Switching off the chimney fan when assistance with flue gas extraction is no longer required
- ✓ Wide range of devices for all applications



# COMPONENTS FOR FINE DUST SEPARATION

## THE FINE DUST PARTICLE SEPARATORS OF THE AIRJEKT 1® SERIES

The fine dust particle separators use electrostatic principles to separate up to 90 % of the fine dust from the flue gas. The Airjekt® 1 series particle separators can be fitted to any wood-burning appliance, be it a stove, tiled stove or boiler. Due to electrostatic charging, the fine dust particles agglomerate or combine and condense and are then deposited on the inside of the flue pipe or chimney. This creates a dust layer of coarser particles that can be easily removed.

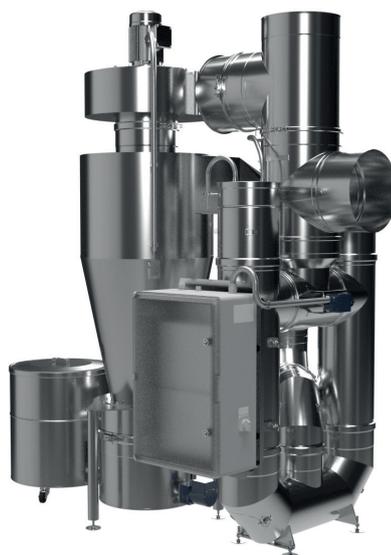
- 1 Airjekt® 1 Basic – for indoor use
- 2 Airjekt® 1 Outdoor DW – for double-walled outdoor chimneys
- 3 Airjekt® 1 Outdoor Top – for the chimney mouth, for masonry or single-wall systems
- 4 Airjekt® 1 Ceramic – the below-roof solution for the installation in the render door



## THE CYCLOJEKT®

In cooperation with the Fraunhofer Institute for Building Physics (IBP), the patented Cyclojekt® cyclone separator was developed in conjunction with the Airjekt 1®. The combination of two separation processes – centrifugal force and electrostatic separation – has resulted in a device that removes both fine dust and coarse dust from the flue gases and is extremely low-wear and low-maintenance. Separation efficiency up to 90% possible!

Entwickelt in Zusammenarbeit mit dem  
Fraunhofer-Institut für Bauphysik (IBP)

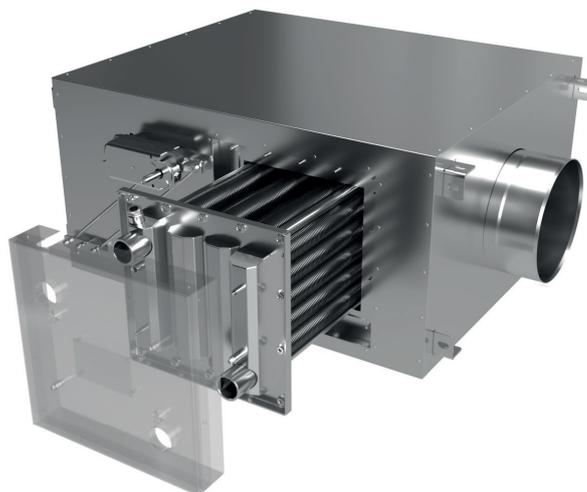


# COMPONENTS FOR HEAT RECOVERY

## THE HEAT EXCHANGERS

Companies with energy-intensive thermal production processes can significantly reduce their energy costs and emissions by systematically recovering heat from exhaust gases or fume extraction systems with the help of heat exchangers. In this way, heat from exhaust gases is not discharged unused, but recovered and can be used in ongoing operations. The heat exchangers can be easily integrated in new plants as well as in existing ones.

The Thermojekt heat exchangers are available in various designs as smooth or finned tube heat exchangers or as vapour condensers for a wide range of applications.



# SYSTEM SOLUTIONS BY THE RAAB GROUP

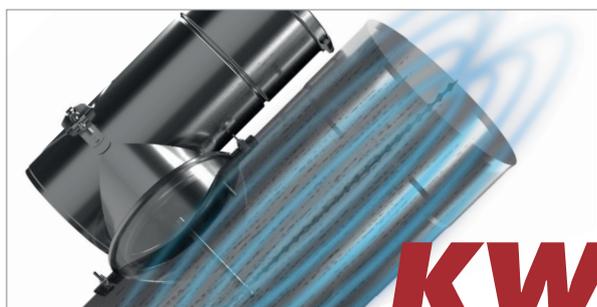
## FURTHER OPTIMISE THE EFFICIENCY OF FIREPLACES

The Raab Group is one of the leading suppliers of environmentally friendly and energy-efficient flue gas system solutions made of stainless steel. Our goal is to optimise the efficiency of fireplaces. We offer a wide range of components to ensure optimised combustion conditions for fireplaces. Whether it's constant pressure conditions, efficient combustion, safe flue gas routing, effective fine dust reduction or heat recovery, we offer solutions for all applications, from concept development to maintenance and service.



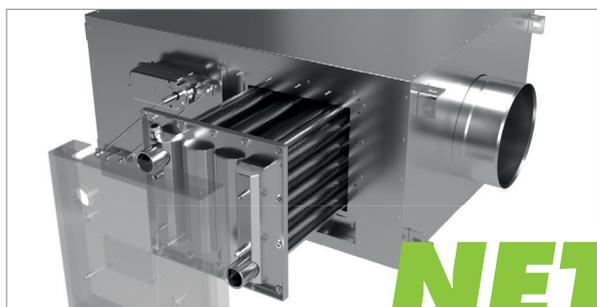
# Raab

**Joseph Raab GmbH & Cie. KG** was founded in 1898 and is still a family-owned company today. The production program at the Luckenau site, near Leipzig, includes stainless steel flue gas systems for single room fireplaces, such as stoves and tiled stoves, through to large-scale systems for commercial and industrial use.



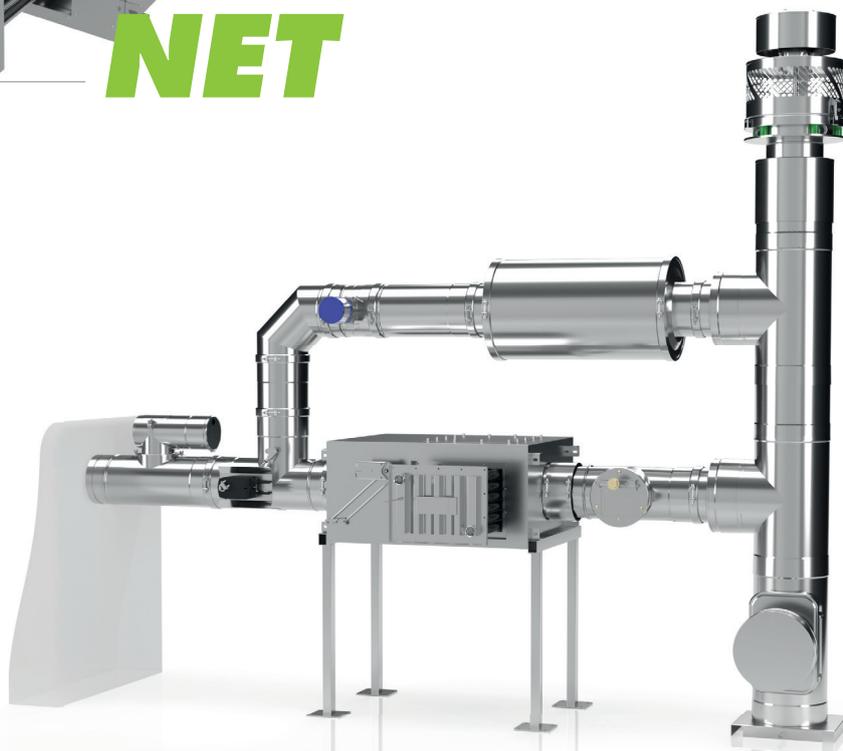
# KW

In 1997, **Kutzner + Weber GmbH** was acquired, a company that develops and sells chimney components for reducing flue gas emissions, for noise reduction and for increasing the efficiency of the flue gas system.



# NET

With the acquisition of the company **NET – Neue Energie-Technik** in 2015, the product portfolio was completed with heat exchangers for exhaust gas heat recovery. The Raab Group is a supplier to the trade and an OEM supplier for well-known companies.



# PROJECT SOLUTIONS

## RAAB PLANT ENGINEERING – THE DEPARTMENT FOR COMPLETE TECHNICAL SOLUTIONS



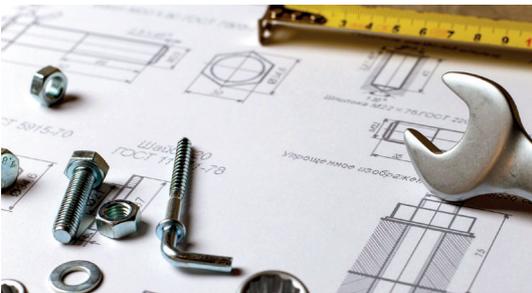
### Concept Development

Already during the concept development of your project, we will support you with words and deeds. All involved trades are included to ensure your project will run smoothly from the start.



### Planning

Optimised processes through systematic planning. Leave nothing to chance in your project. Whether on the construction site or in the office, our specialists stand for a consistently coordinated planning of your project through their know-how and experience. Efficiently and with the best price-performance ratio.



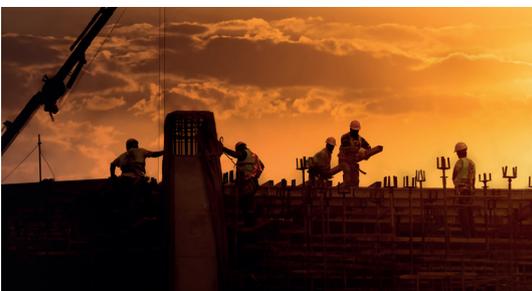
### Construction

Whether it is the perfectly adapted design of a heat exchanger, the complex calculation of mass flows or the consideration of pressure ratios – all components are perfectly matched by the Raab design and development department. For maximum efficiency and service life.



### Manufacturing of Components

All components are manufactured exclusively in Germany. Only high-quality materials are used. State-of-the-art manufacturing processes, highly qualified employees and an efficient quality management system ensure a high level of quality and operational reliability of the systems.



### Installation

Thanks to a comprehensive network of installation partners, your system can be installed at any location in Germany and in the neighbouring countries. It is guaranteed at all times that technical rules, standards and regulations are adhered to. Raab stands for smooth installation – even during ongoing operation.



### Maintenance and Service

Maintenance, special services or full service – our expert staff will be happy to assist you even after the installation of your system.

Arrange an appointment with our specialists today!

[info@raab-gruppe.de](mailto:info@raab-gruppe.de)

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