



BIOMASS HEATING

Jeremias Chimney Systems for Biomass applications

www.jeremias.de/int



Woodchips



Wood pellets



Elephant grass



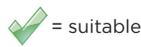
Cereal



Corn



Logs



= suitable



= not recommended



= also suitable for wet working conditions (W), with soot fire resistance (G)

JEREMIAS BIOMASS SYSTEM SOLUTIONS

Jeremias Chimney systems fuel compatibility*

Fuel type	DW-FU	DW-VISION	DW-ECO 2.0	DW-MAMMUT	DW-SILVER	FERRO-LUX	PELLET-LINE	EW-FU	EW-LINE FLEX	EW-MAMMUT	EW-SILVER
Woodchips	✓	✓	✓	✓ 💧	✓ 💧	✓	✗	✓	✓	✓ 💧	✓ 💧
Logs	✓	✓	✓	✓ 💧	✓ 💧	✓	✗	✓	✓	✓ 💧	✓ 💧
Pellets	✓	✓	✓	✓ 💧	✓ 💧	✓	✓	✓	✓	✓ 💧	✓ 💧
Cereals	✗	✗	✗	✓ 💧	✓ 💧	✓	✗	✗	✗	✓ 💧	✓ 💧
Corn	✗	✗	✗	✓ 💧	✓ 💧	✓	✗	✗	✗	✓ 💧	✓ 💧
Elephant grass	✓	✓	✓	✓ 💧	✓ 💧	✓	✗	✓	✓	✓ 💧	✓ 💧
Coal	✓	✗	✗	✓ 💧	✓ 💧	✓	✗	✓	✗	✓ 💧	✓ 💧

Please take this information as general reference. There are country specific installation rules for Biomass appliances. Please contact your Jeremias technical department for exact documentation and advise on installing rules in your country.

*Some of the appliances may work in overpressure, in that case a silicone joint in the inner liner may be necessary.

Jeremias flue systems made of stainless steel and ceramics are suitable for connection to biomass fireplaces, depending on the mode of operation, as they are soot-resistant and corrosion-tested.

In addition, with DW-MAMMUT and EW / DW SILVER we also offer exhaust systems that allow condensing wet operation even after a soot fire (W3G ceramic and W2G with additional application for stainless steel - see respective DIBt type approval).

Besides the CE Certification Jeremias also has a wide range of specific certifications and approvals to enforce national specific regulations.

Jeremias highly recommend to rely on specialised companies in planning and installation of biomass Heating systems specially with Biomass Boilers and CHPs.

Jeremias gives an standard guarantee of 10 years for its products using officially approved fuel types. Nevertheless with the proper maintenance the life expectancy of the systems can be longer.

Specially with biomass appliances it is recommended to check the chimney system once a year, either at the end of the current heating season or shortly before the start of the next season. Please contact your local chimney sweeper for advise.



Corn

CORN

CORN / MAIZE

„Feed maize“ is being used increasingly for heating, specialized corn stoves are available and use either feed maize or wood pellets to generate heat. Maize cobs are also used as a biomass fuel source. Maize is relatively cheap and home-heating furnaces have been developed which use maize kernels as a fuel.

ELEPHANT GRASS / MISCANTHUS

Miscanthus (commonly known as Elephant Grass) is a high yielding energy crop that grows over 3 metres tall, resembles bamboo and produces a crop every year without the need for replanting. The rapid growth, low mineral content, and high biomass yield of Miscanthus increasingly make it a favourite choice as a biofuel.



Elephant grass

Elephant grass

CO₂ NEUTRAL HEATING

What Is Biomass?

> Biomass is biological material originating from living, or recently living organisms. Biomass for energy is generally from plant material, but biomass can also be from animal waste.

What is the difference between Biomass and fossil fuels?

> Biomass is the matter from plants that have taken carbon out of the air as carbon dioxide in recent times. This is then burnt and displaced back into the atmosphere, as it was before. By burning the fuel we are displacing less carbon than if the wood were to rot on the floor. Also if a tree is planted every time a tree is felled the younger tree takes out approximately twice the amount of carbon dioxide as the older tree in its attempt to grow. Also, biomass does not only cover trees, it covers plants also, this means that waste products such as rape seed straw, (which is generally put back on the floor), can be burned.

In conclusion, the difference between BIOMASS and FOSSIL FUELS is that biomass is carbon that has recently been taken from the atmosphere, and uses a waste product such as windblown timber and brash from trees.

Solid biomass is an attractive fuel for addressing the concerns of the energy crisis and climate change, since the fuel is affordable, widely available, and is carbon neutral and sustainable as long as the crops are allowed to re-grow.

The use of biomass in heating systems is beneficial because it uses agricultural, forest, urban and industrial residues and waste to produce heat and electricity with less effect on the environment than fossil fuels. This type of energy production has a limited long term effect on the environment because the carbon in biomass is part of the natural carbon cycle.

Biomass is carbon neutral, renewable and an affordable way to heat your home or your community.



Woodchips

Woodchips

WOODCHIPS

Traditional use of woodchips is as a solid fuel for heating in buildings or in energy plants for generating electric power from renewable energy. In several well wooded European countries wood chips are becoming an alternative fuel for family homes and larger buildings due to the abundant availability of wood chips, which result in low fuel costs.

LOGS

Logs are the traditional fuel for stoves and fireplaces. Several types of wood stoves are available: those designed to heat a single room (with or without a back boiler) or, when an internal boiler is incorporated, those that provide all of the heating and hot water requirements of a house.



Logs

logs



Pellets

pellets

PELLETS

Wood pellets are a type of wood fuel, generally made from compacted sawdust or other wastes from sawmilling and other wood products manufacture Pellets are extremely dense and can be produced with a low moisture content (below 10 %) that allows them to be burned with a very high combustion efficiency.

CEREAL

The direct use for cereals in the heating sector is apply in some countries as an alternative to the more costly bioethanol production.



Cereal

CEREAL

> WOOD BURNING STOVE

Typical installation of a wood burning stove is connecting the Jeremias stove pipe FERRO-LUX to a double wall stainless steel system. The 2 mm Stove pipe Ferrolux is available in Black or Grey and matching your stove and is coated with a matt, high quality heat resistant senotherm paint.

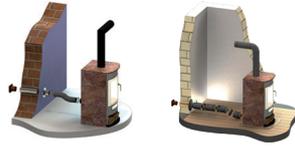
FERRO-LUX is the solution for these people who want to see the connection pipe as an integrated part of the stove.

If we have an existing chimney, we can relinet with a rigid single wall system as EW-FU or EW-SILVER (recommended specially with coal) or Flexible liner EW-LINE FLEX.

If we need to install a completely new chimney we have multiple solutions one of them

is to install the Jeremias Fire resistant shaft FUMO-LUX or FURADO (classified L90) in combination with EW-FU or EW-SILVER. This solution is sold as a package including a 25 mm thick rockwool insulation.

*Modern, high efficiency stove appliances may require a direct supply of fresh combustion air (close combustion chamber) Jeremias has developed a direct air intake „AIR SYSTEM“ that is sold as a packet. Jeremias provides two different solutions; EW: single wall flexible or DW: double wall insulated.



Wood burning Stove
+ FERRO - LUX
+ FURDO



> PELLET STOVE

As an alternative to burning firewood or logs in a stove, fully automatic stoves designed to burn pellets are also available. These are much more sophisticated devices than wood stoves as, typically, they have automatic ignition, automatic metering and feeding of pellets from an internal hopper and the combustion is controlled.

The smoke exhaust is normally supported by an internal fan that makes the connection pipe work in overpressure with temperatures not superior to 160° C. Jeremias provides the PELLET-LINE a pressure tight connection pipe in high quality Stainless steel AISI 316L and powder coated with a matt, high quality black colour. With a complete range of components for inspection PELLET-LINE is also available in grey colour or stainless steel shiny finishing as standard.

The best combination for a PELLET-LINE connecting pipe is the Jeremias DW ECO 2.0 with an insulation of 25 mm and also available in the same colours is the economic way to have a high quality and good looking solution for the installation of your stove.

*Please remember that if you pass through walls made in combustible materials you may need to keep a minimum distance between the flue and the frame. Jeremias offers you a simple way to respect building regulations with the pre-fabricated fire resistant wall sleeves LUX-NOVA and LUX-ECO (adjustable).



Pellet Stove
+ PELLET-LINE
+ LUX-NOVA/LUX-ECO
+ DW-ECO 2.0



> BIOGAS ENERGY CENTRE

The power generation from CO₂, natural resources such as Biogas or gases from purification plants are very common. The combustion of these fuels require a sophisticated flue design, due to the temperature and corrosion resistance required.

Besides the design and product specification Jeremias provides heat recovery systems with dampers which can be installed between two pipe sections to increase the efficiency of the application. Should there be no requirement for heat in summer months the damper within the system will allow it to operate in „bypass“ mode. That means that the flue exhaust reaches temperatures of around 550° C throughout the system.

The operation on bypass mode requires special accessories like dampers and jointing systems that regulate the gas exhaust. To compensate the expansion Jeremias also provides expansion bellows in stainless steel or fabric.

*Besides free standing chimneys, Jeremias can take the complete design including: heat recovery, expansion and noise reduction for these special industrial applications.



FSA
+ HEAT EXCHANGER
+ BELLOW
+ MAK DAMPER



> BIOMASS DISTRICT HEATING

Energy and District Heating centers are a very efficient alternative to individual heating.

District Heating centers are usually placed very close to residential areas to avoid heat losses through long distances. Due to this the chimney systems are usually very high to comply with local clean air regulations and the noise criteria means attenuation has to be considered the majority of the time.

Jeremias offer freestanding systems; windshields or mast supports to reach the heights to comply with existing regulations: i.e. „Clean Air Act/IGE UPI0“ in the UK or „BimSchV“ in Germany. The fuels used in these applications, (woodchips, cord

firewood, waste wood) specifies the thickness and quality of the inner liner. Jeremias offers solutions from 0,5 mm in Aisi 316L (DW ECO) till 3,0 mm in Aisi 904L (i.e. FSA System).

*Jeremias also offers all the required accessories needed for these types of systems: inspection doors for cleaning, silencers for noise attenuation, dampers, expansion bellows.

FSA-2
with ladder
and working
platform

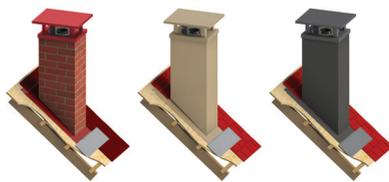


> OPEN FIREPLACE

Open fireplaces or in the waintegrated fireplaces give an incredible comfortable atmosphere in every house. Normally the draft requirements for these applications are bigger than with morden stoves. The right sizing of the systems is essential to guarantee the right combustion.

Jeremias Technical department offers chimney sizing calculations (to EN-18160) for all kind of appliances and has a deep knowledge on systems for wood fireplaces.

Specially for systems installed on individual houses Jeremias can offer pre-fabricated chimney stacks in diferent finishings. this chimney housing is simple to fit and save time and money by the installation.



*Please note that to burn coal and peat we recommend the use of our stove pipe FERROLUX in combination with DW or EW MAMMUT system with ceramic liner that can resist the eventually high sulphur content of this fuel type

Fireplace
+ DW FU
+ Prefabricated
Chimney Stack



> BIOMASS BOILER

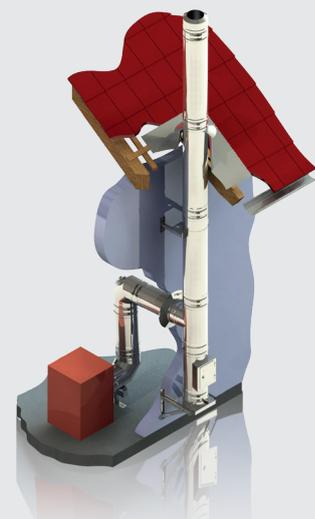
The critical difference between stoves and boilers is that stoves provide radiant room heating while boilers only produce hot water, either for heating or domestic hot water (DHW). Although some stoves will allow the incorporation of a boiler and radiators, stoves are usually much simpler devices than boilers

Jeremias offers different products for the right smoke exhaust in Bio-mass Boilers, the DW-FU systems is the most common solution for both domestic or commercial heating.

Modern Biomass Bolilers could also work in wet conditions therefore Jeremias recommends the use of DW- SILVER with the special alloy AISI 904 that guarantees the corrosion resistance after an eventull chimney fire.



Biomass Boiler
+ DW FU
chimney system



> BIOMASS PACKAGE PLANTROOM

Many medium sized buildings like shopping centers, supermarkets or office buildings are changing their heating and sanitary hot water systems to a more eco friendly version and substituting their old gas or oil fired boilers to new high efficiency, CO₂ Natural Biomass boilers. In many cases the best option is to install packaged plant room in close proximity to the existing building.

For these types of situations Jeremias has developed a standard mast supported system allowing the necessary discharge height required for the exhaust gases to disperse to atmosphere. In the majority of these cases the double wall insulated system is installed to the mast at the offsite manufacturing plant and transported in one piece to the construction site. This way the

installation time can be reduced significantly. The horizontal connection to the boiler is made on site on the same day of the support mast installation.

Jeremias can provide a list of references where these types of systems have been installed for these solutions, from Ashgabat in Turkmenistan to Reading in England; package plant rooms with free-standing chimney systems are a good option to ensure your business meets its eco friendly status in today's market place.

*Please contact our technical department for country specific advice on regulations and installation requirements.

DW-ECO 2.0
mast supported



> GREEN TECHNOLOGY – SPECIAL DEMANDS

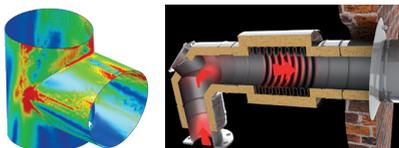
Jeremias is well known for its market specific solutions and continuous research and development. Modern green technologies need very particular solutions, for example Gasification Power Plants.

A high technology synthesis gas generator uses microwave and plasma technology to produce fuel gas with high hydrogen content using wood chips as a combustible source.

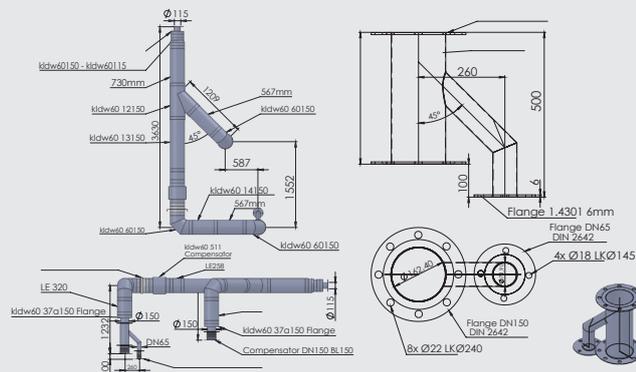
This high hydrogen content gas is used to generate Combined Heat and Power. The performance of these kinds of gasification plants ranges between 220 to 500 kW electricity power and 500 to 1.000 kW thermal output.

Gasifying of wood chips with flue gas temperatures of 900° C creates special demands on material – in flue liner and insulation. This was solved by Jeremias with DW-KL, high temperature steel and ceramic fiber insulation to protect health and environment.

*Jeremias is not afraid to take every challenge to improve their products and knowledge in the gas exhaust industry.



GREEN TECHNOLOGIES: GASIFICATION



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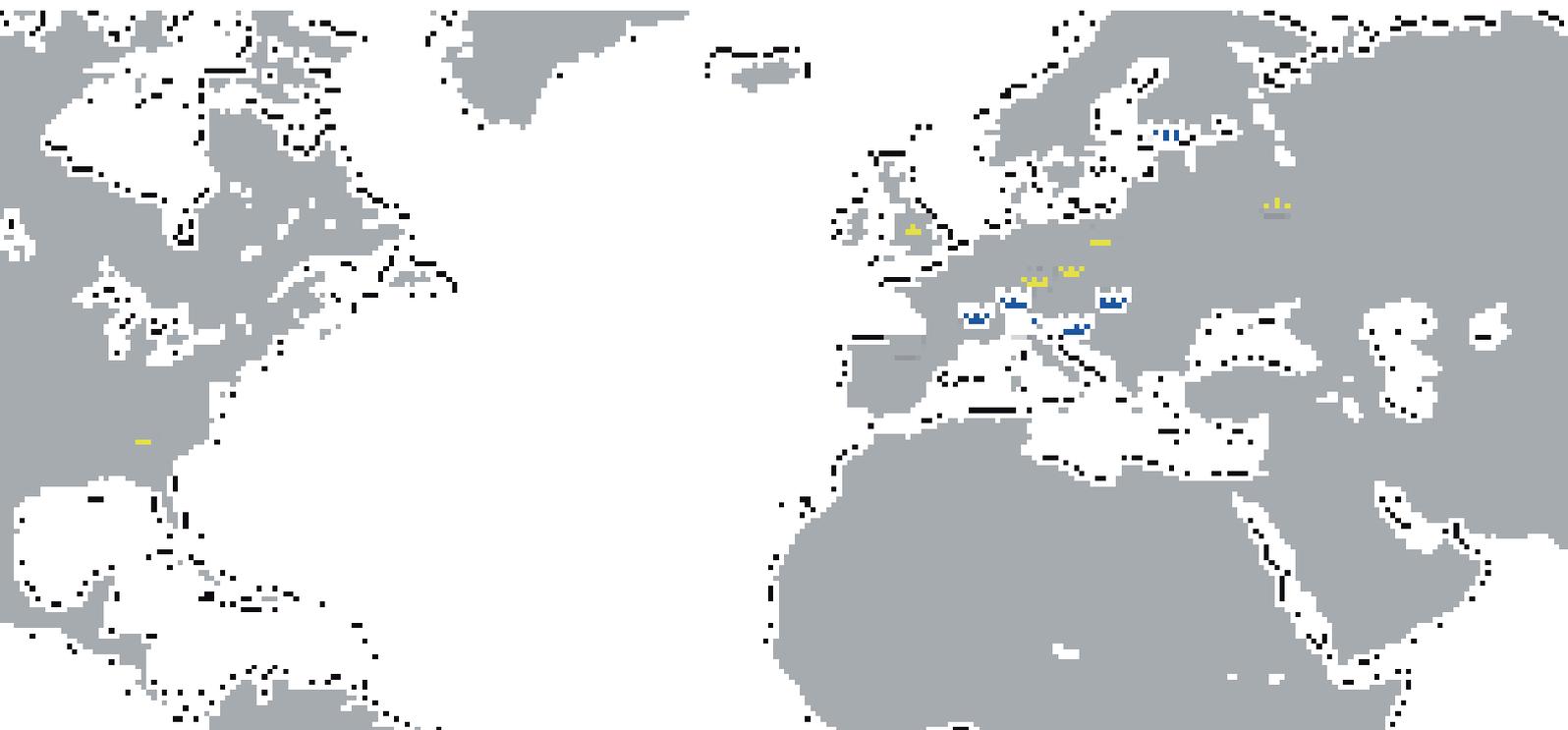
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Jeremias high quality products to be installed only by selected experts.