



Taking the lead  
at the  
Stavenhagen site.



**eew**

Energy from Waste

## Welcome to EEW Energy from Waste!

Energy is essential to everyday life. Since the availability of fossil fuels is limited, the use of energy from waste is becoming increasingly important. As Germany's leading company in the production of environmentally friendly energy from thermal waste recovery, it is our mission to take the lead: With ultra-modern energy from waste plants. With state-of-the-art technology that meets the latest environmental standards. With highly qualified, dedicated employees. With good and constructive relationships with citizens, municipalities and companies. And, of course, with environmentally friendly energy from waste.



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**1 tonne of waste = 600 KWh of electricity**

Electricity from waste is an important resource. The calorific value of the material is comparable to that of brown coal, making it virtually predestined for energy generation.

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## EEW Energy from Waste Stavenhagen. Built to serve the region.

Energy from waste plants are a special kind of high-quality power plant. They not only have to comply with very strict emission limits, they must also satisfy the highest technical demands, and are therefore continuously monitored and optimised. For around 30 years, the EEW Energy from Waste Group has been planning, building and operating thermal waste recovery plants that set standards across Europe. In the vicinity of our plants, which stand out for their low emissions, high efficiency and excellent workplace safety, new companies and thus new jobs are being created. At the same time, consumers and nearby industrial firms benefit from using the environmentally friendly energy that EEW generates.

Food company Pfanni GmbH & Co. OHG requires large volumes of steam and electrical energy to produce its potato products, and the Stavenhagen energy from waste plant was built to meet this need. Since August 2007, up to 140,000 tonnes of refuse derived fuel (RDF) have been recovered here each year in order to generate 109,000 MWh of steam for Pfanni. The electrical energy created as a by-product of the combined heat and power system meets the electricity demand of the entire production facility. The surplus power is fed into the grid of the regional energy company. The RDF comes primarily from the mechanical biological treatment (MBT) plant located just 12 kilometres away. Waste collected from the region is processed at the MBT plant into RDF, which is then delivered to the energy from waste facility, where it is recovered in a safe low-emission process. We are proud to take the lead – for more energy and for environmental protection.

## An overview of how the EEW Stavenhagen plant works.

1

Every week, around 2,700 tonnes of refuse derived fuel (RDF) is transported to the energy from waste plant.

2

The RDF is collected, mixed and temporarily stored in the fuel bunker, which has a capacity of around 2,500 tonnes. The air pressure here is kept slightly negative so that no emissions or odours can escape. Environmental protection is therefore integral right from the start.

3

The RDF crane system continuously transfers the waste to the feed hopper. From there, it enters the grate of the combustion line (boiler).

4

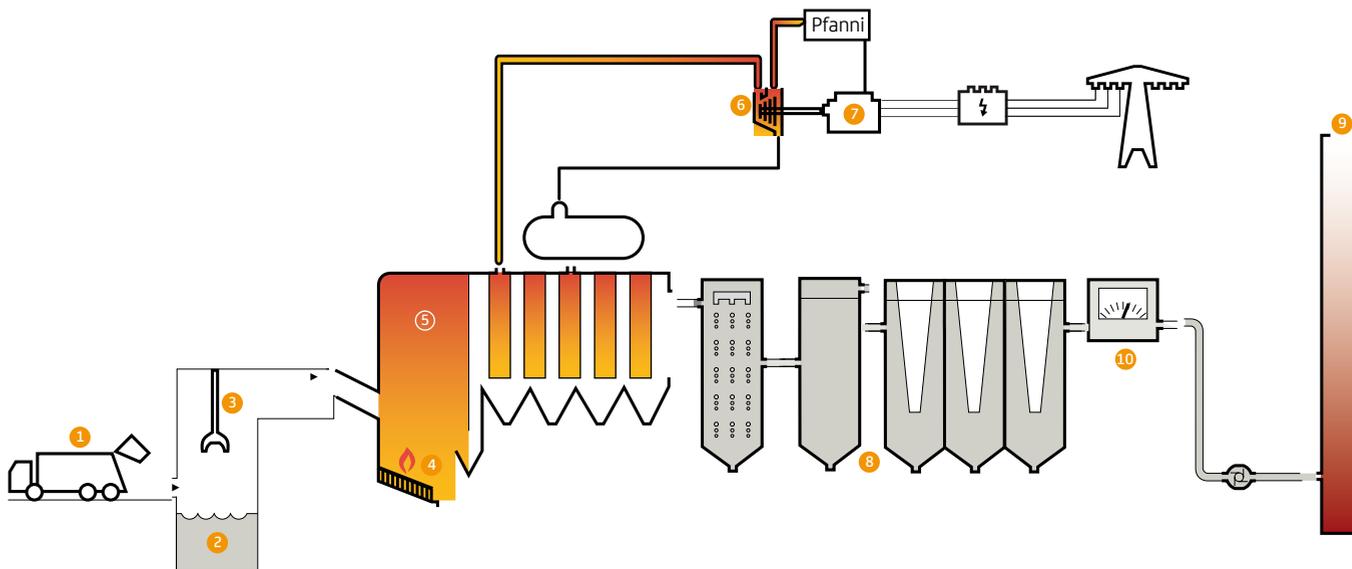
As waste self-combusts at the high temperatures in the boiler, no additional fossil fuels are required. Oil burners are only activated when the boiler is powered up or down in order to guarantee the minimum temperature of 850 °C. This high temperature is required by law. Pollutants are largely destroyed.

5

The injection of a urea solution into the combustion chamber ensures that the nitrogen oxides created in the combustion process are converted into environmentally neutral nitrogen.

6

The thermal energy of the boiler produces around 52 tonnes of steam every hour. At a pressure of 40 bar and a temperature of 400 °C, the steam drives a turbine connected to a generator. Some of the steam fed to the turbine is removed at the end of the high-pressure section and is piped to the Pfanni plant, where it is used as a source of energy for production.



7

Approximately 55,000 megawatt hours of electrical energy are generated in this way every year. This electricity is provided to Pfanni for its production processes and the surplus power is fed into the regional grid.

8

The flue gases leave the boiler at a temperature of approximately 180 °C and directly undergo several stages of flue gas cleaning. First, dust and heavy metals are removed. Next, lime hydrate is injected and the flue gas is mixed with recirculate in a conditioning rotor reactor. In a reaction, the lime hydrate binds the acidic components of the flue gas. Hearth furnace coke is then used to bind heavy metals, dioxins and furans, which are captured in the downstream fabric filter.

9

The clean gas then leaves the 51 m high stack with the aid of an induced draught fan. What remains is bottom ash and filter dust. The bottom ash is recovered and used for the construction of landfills. The filter dust is used as backfilling material in mines.

10

The plant easily complies with the particularly strict statutory emission limits and in most cases is substantially below them. A measuring station at the stack continuously analyses and monitors the emissions. Another interesting fact: The facility operates without producing any significant wastewater volumes in the power plant process. Water from the reverse osmosis during the boiler water treatment and from process-related sources is used to prepare and dilute the lime solution in the flue gas cleaning process as well as to replenish the wet deslaggers used for cooling the bottom ash.



Tobias Loerzer, Shift Manager, EEW Energy from Waste Stavenhagen GmbH & Co. KG

### Technical data

Commissioning	2007
Total investment	€ 50 million
Capacity	140,000 tonnes/year
Number of combustion lines	1
Waste bunker capacity	5,000 cubic metres ≈ 2,500 tonnes
Calorific range of waste	11 - 18 megajoules/kilogram
Electricity generation	55,000 megawatt hours/year ≈ 16,000 households
Process steam generation	109,000 megawatt hours/year



**Taking the lead  
to ensure  
clean air.**

## **We shrink the carbon footprint.**

A benefit for the environment.

As waste contains 50 per cent biogenic substances on average, it is recognised that energy from waste plants produce energy from renewable sources pursuant to the Germany's Renewable Energy Sources Act (EEG) and thus contribute to reaching the climate targets in Germany and Europe.

Another area where we take the lead: The emissions from our waste recovery plant reliably comply with – and are sometimes substantially below – the strict limits established by the German Federal Immission Control Act.

This is documented by constant emissions monitoring and controlled by the supervisory authority.

Ideally, come and see for yourself during a tour of our plant. You will discover that at EEW Energy from Waste, we put waste to work for climate protection.



**Our annual contribution to environmental protection:**



Up to 140,000 tonnes  
of waste recovered



55,000 megawatt hours of  
electricity generated in an  
environmentally friendly manner



Electricity produced in an  
environmentally friendly manner  
for 16,000 households



109,000 megawatt hours  
of process steam produced with  
energy-saving technology



## **We tackle the future.** And assume responsibility.

For more than 145 years, our expertise has been built on progress. Founded in 1873 as the coal mining firm Braunschweigische Kohlen-Bergwerke (BKB), the company soon also became an electricity producer and has evolved steadily to the present day. Having entered the waste treatment business in 1990, EEW Energy from Waste now has a great wealth of experience and expertise in environmentally friendly energy generation from thermal waste recovery. As the market leader in Germany, with our 18 plants here and in neighbouring countries we make a substantial contribution to conserving resources and reducing greenhouse gas emissions.

Our figures speak for themselves:

Our plants have an annual energy recovery capacity of more than 5 million tonnes of waste. We can thus produce around 2.5 million megawatt hours of electricity, more than 2.6 million megawatt hours of process steam and around 800,000 megawatt hours of district heating. EEW's electricity output alone corresponds to the power required by around 700,000 households.\*\*

Our team of around 1,150 highly qualified, dedicated employees takes the lead by producing energy that benefits not only numerous companies but also hundreds of thousands of households and, most importantly, the environment.

#### References:

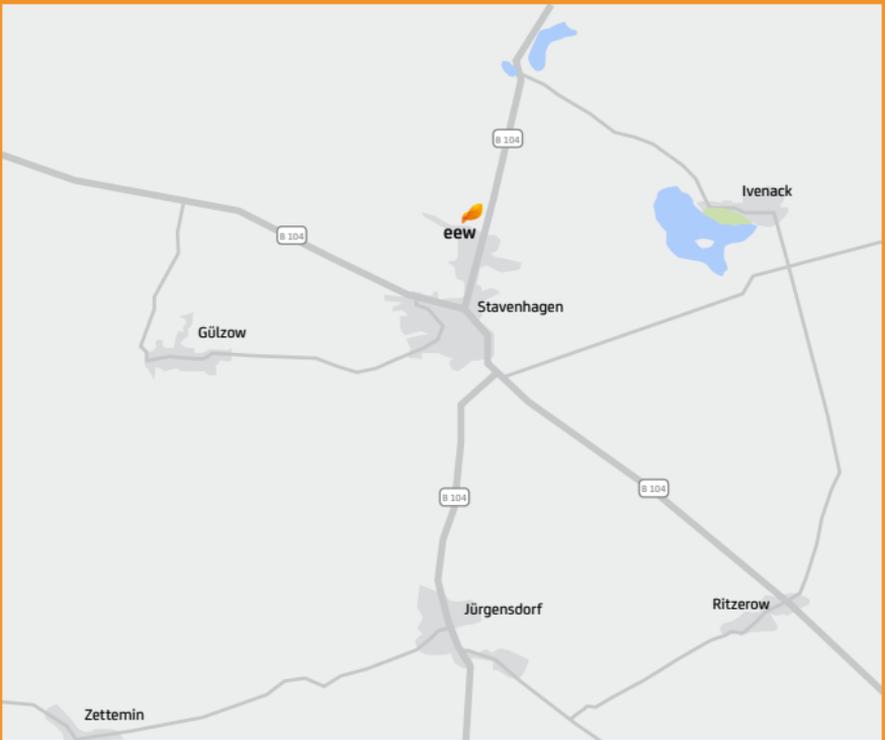
\* Electricity, district heating and steam volume produced by our 18 EEW Energy from Waste plants in 2018

\*\* Assumed annual average consumption per household: 3,500 kWh



Rather than resting on our laurels, we continuously improve the processes and efficiency of our plants. Ultimately, we offer municipalities and companies pioneering waste recovery services that encompass everything from customised waste management concepts to waste acceptance and compliance with the statutory waste transfer documentation. We deliver outstanding performance and achieve a high level of acceptance among the general population and local residents.

This is how we take the lead. Together. For our future.



Would you like to find out more,  
or visit the EEW site in Stavenhagen?  
Please get in touch!  
You can reach us at:

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