



**FOR LOCAL AUTHORITIES,
WASTE MANAGEMENT COMPANIES
AND INDUSTRY**

Turning waste into energy

swb

Energy efficiency and reliable waste recovery combined

Waste recovery and power generation are the two pillars of our energy-from-waste (EfW) strategy. Because these two activities are closely interlinked, we can offer our customers fair market prices. We use high-tech power plants to burn a wide range of waste and to guarantee reliable waste recovery. The 'Mittelkalorik-Kraftwerk Bremen' (MKK) and the 'Müllheizkraftwerk Bremen' (MHKW) complement each other ideally and provide waste treatment capacities of 860,000 metric tons (at 10.5 megajoules per kg) annually.

Better safe than sorry!

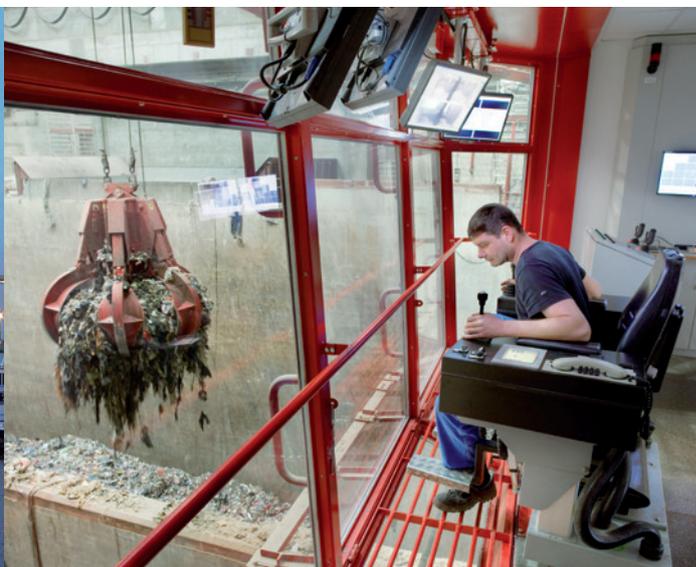
Reliable waste recovery is top priority at swb. Good infrastructure and the proximity of both power plants to one another ensure that either plant can accept waste should inspections be required or bottlenecks occur at the other plant.

Operational synergy

We have been on the market for over 100 years as power plant operators. Our expertise in energy-from-waste, as well as generating and using electricity and heat, means we can run a highly efficient business. Operating both plants also ensures that we can harness synergy on many different levels – from personnel and maintenance to material flow management and plant management.

Energy efficiency and sustainability

We invest in our power plants to make certain they are state of the art. We create added value in terms of energy efficiency, reduction of harmful substances and protection of the climate and natural resources. After all, harnessing waste to produce electricity and heat drastically cuts carbon dioxide emissions because fossil fuels are not used.



The energy-from-waste sales team – always there to help you

The sales experts for energy-from-waste, waste recovery and logistics: our employees' wide-ranging expertise ensures that we can offer our customers secure processes and therefore reliable waste-to-energy solutions.



From left to right: Jürgen Huismann, Arne Goldbohm, Christoph Heemsoth, Martina Pawlak, Christian Walter, Dirk Westerhausen, Michael Bartels, Stefanie Grotheer, Detlef Schütt and Stefan Melichar.

Material flow management/logistics:

Jürgen Huismann (1st from left)

T +49 421 359-6631

F +49 421 359-6640

juergen.huismann@swb-gruppe.de

Sales enquiries:

Detlef Schütt (2nd from right)

T +49 421 359-6636

F +49 421 359-6640

detlef.schuett@swb-gruppe.de

SITES

Our power plants in Bremen

Generating energy from waste is a linchpin of Germany's waste management industry. As part of its energy from waste business unit, swb Entsorgung GmbH & Co. KG operates the waste-fed combined heat and power plants Müllheizkraftwerk (MHKW) and Mittelkalorik-Kraftwerk (MKK) in Bremen. Our long-standing experience as a power plant operator stands us in good stead here.



MKK and combined heat and power station Hafen



Müllheizkraftwerk Bremen (CHP)



Vahr heating plant



Mittelsbüren power station



Combined-cycle power station (GuD) in Bremen (under construction)



Andreas Dömel
Director of power-plant operations
T +49 421 359-6201
F +49 421 359-156201
andreas.doemelt@swb-gruppe.de



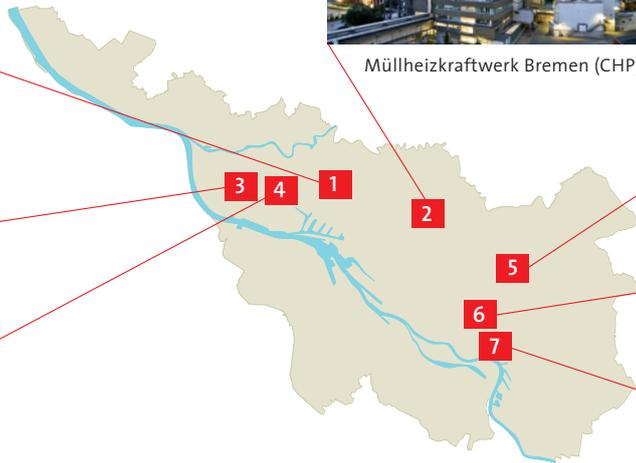
Christian Walter
Director Sales Energy from Waste
T +49 421 359-6630
F +49 421 359-6640
christian.walter@swb-gruppe.de



Weserkraftwerk Bremen (hydroelectric plant)



Hastedt CHP plant





**Six good reasons to pick swb
Entsorgung**

- > Two EfW plants for redundancy and therefore reliable waste treatment capacities
- > Fair market prices due to efficient plants
- > Wide range offered for recovery of energy from waste
- > R1 recovery status in both plants
- > Good transportation links via port and motorway
- > Over 100 years' experience in the power plant business

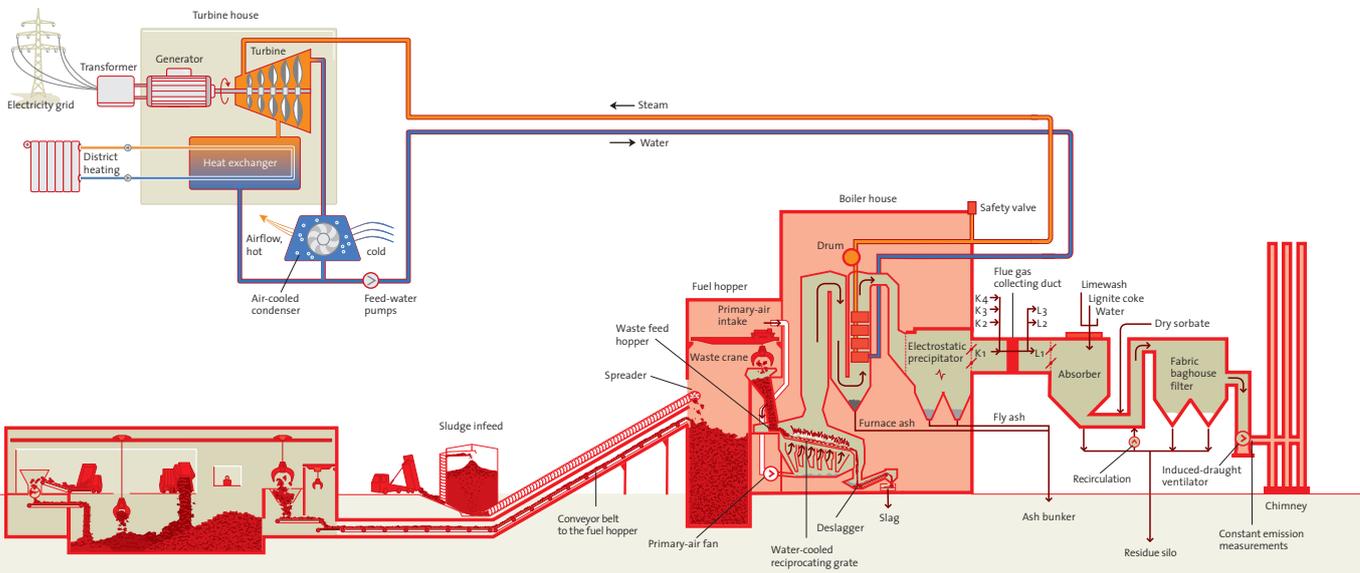
Bremen EfW plant MHKW

The waste incineration plant is located directly off the A 27 motorway. By completing modernisation of the plant in 2013, swb Entsorgung has set the bar high. After making investments in the double-digit millions, swb now generates three times more electricity from the same quantity of waste – without any additional CO₂ emissions. Municipal Solid Waste (MSW), commercial & industrial waste and sewage sludge are used as fuel at this Energy from Waste Plant.

By converting boilers 1 and 4 to higher steam parameters and by enhancing energy efficiency, the plant far exceeds the R1 value. As a result, today it is once again one of Germany's most efficient plants. In 2013 the waste incineration plant has supplied vast sections of Bremen with approximately 240,000 megawatt hours of electricity and 210,000 megawatt hours of district heating.

MHKW – Facts and Figures

Thermal output	221 MWth		Electrical output (gross)	48.5 MW
Annual fuel flow	560,000 Mg/a		Electrical efficiency (net)	22%
Specific heating value	8 – 14 MJ/kg		Electricity produced (2013)	approx. 240,000 MWh/a
Hourly fuel flow	72 Mg/h		District heating produced (2013)	approx. 210,000 MWh/a
Hours operating	8,000 h/a			
Availability	over 90%			
Boiler (K)	K1+K4	K2+K3		
Steam pressure	40 bar	22 bar		
Steam temperature	400 °C	217 °C		



Calorific-value and emission-enhancement plant (BEO)

Furnace and boilers (4 lines)

Flue-gas cleaning (3 lines)

MHKW in September 2013



MKK

Mittelkalorik-Kraftwerk Bremen

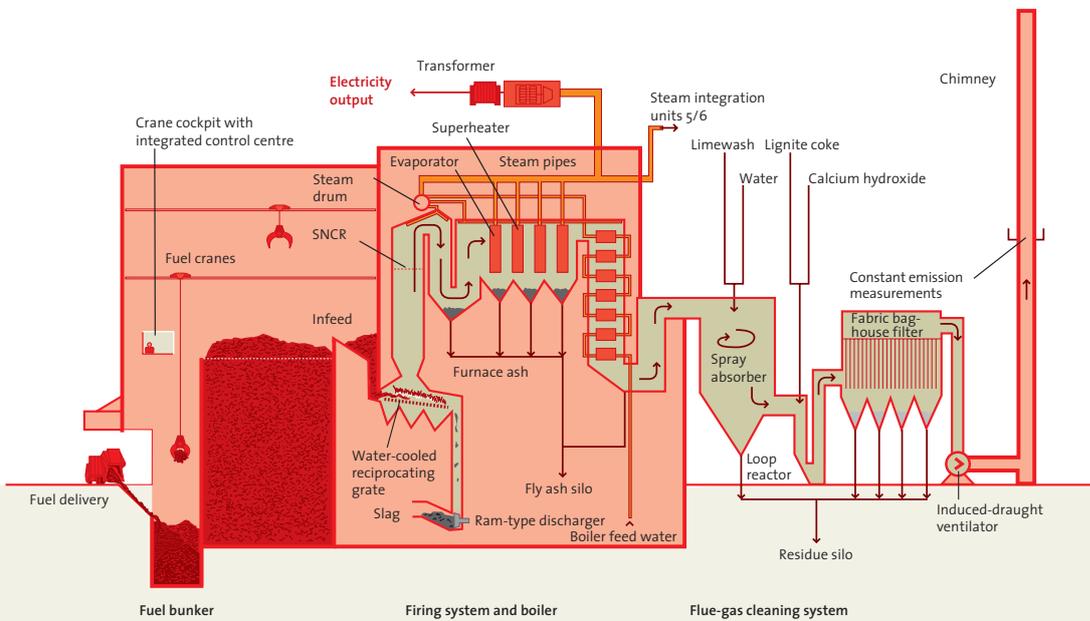
swb has been operating the MKK with an annual capacity of 300,000 Mg at the industrial port, with its excellent traffic links, since 2009. In 2013 the waste-to-energy plant generated about 240,000 megawatt hours of electricity annually, primarily from medium-calorific waste. This refuse is a mixture of municipal solid waste and commercial & industrial waste after sorting, mainly consisting primarily of non-recyclable paper, plastic, wood and leftover packaging.

Due to state-of-the-art engineering and long-standing experience with grate firing, the plant's energy efficiency is high and complies with R1 standards. The plant has 90 per cent availability and therefore offers reliable waste recovery capabilities and recycles energy efficiently. Due to its location on the harbour, the medium-calorific power plant is ideal for deliveries by ship.

Mittelkalorik-Kraftwerk-Bremen (MKK) – Facts and Figures

Thermal output	121 MWth	Steam pressure	40 bar
Annual fuel flow	300,000 Mg/a	Steam temperature	400 °C
Specific heating value	11 – 16 MJ/kg	Steam output	140 Mg/h
Hourly fuel flow	> 30 Mg/h	Electrical output (gross)	34 MW
Hours operating	8,000 h/a	Electrical efficiency (net)	27 %
Availability	over 90 %	Electricity produced (2013)	approx. 230,000 MWh/a
		District heating produced (2013)	approx. 40,000 MWh/a





Fuel bunker

Firing system and boiler

Flue-gas cleaning system

MKK in June 2010





swb Entsorgung – an swb Group company

Generating energy from waste is a linchpin of Germany's waste management industry. swb Entsorgung GmbH & Co. KG operates the EfW plant MHKW and the medium-calorific power plant MKK in the industrial port in Bremen to this end. Both plants offer a wide range of options for recycling waste by heating processes. The joint annual recovery capacity is 860,000 metric tons (at 10.5 megajoules per kg) of waste. In terms of marketing, the company can offer customised and flexible waste recovery and logistics services at fair prices.

swb Entsorgung is a reliable partner to local-authority waste companies, private waste management enterprises and industrial customers. By turning waste into electricity and heat through thermal treatment, the company is taking an environmentally friendly approach to the climate and resources. Following modernisation work on the waste incineration plant, both plants together will feed around 500,000 megawatt hours of electricity into the electricity grid and be able to produce approximately 200,000 megawatt hours of heat. As a result, swb Entsorgung is making a key contribution to the sustainability strategy pursued by its parent company, swb AG.



**FÜR HEUTE.
FÜR MORGEN.
FÜR MICH.**

swb Entsorgung GmbH & Co. KG
Theodor-Heuss-Allee 20
28215 Bremen
T +49 421 359-79333
F +49 421 359-6640
info.entsorgung@swb-gruppe.de



www.swb-entsorgung.de

swb