

Reference Projects

Plants built by Hitachi Zosen since 2000

in chronological order



CH, Enova Emmenspitz

Start of operation 2025 Combustion Conce

Concept Fuel

Number of Lines 2 Throughput per line 16.53 t/h Thermal power per line 53.72 MW

Boiler Concept

4-pass boiler with external

economizer

In construction

Water-cooled Grate

In construction

Water-cooled Grate

Superheated Steam 66 t/h at 47 bar(a) and 420 °C



GB, Slough Multifuel

Start of operation 2023
Combustion Concept

Fuel

Number of Lines 2
Throughput per line 36.30 t/h
Thermal power per line 100.8 MW

Boiler Concept 4-pass boiler with external

economizer

Superheated Steam 111 t/h at 57 bar(a) and 417 °C SNCR, Semi-dry Reactor Throughput per line 111 t/h at 57 bar(a) and 417 °C SNCR, Semi-dry Reactor 164'741 m³/h (STP)

Concept

Electric power output

Output

164'741 m³/h (STP) Condensation Turbine 50.00 MW (gross) Electrical Power



RU, Moscow 4

Energy recovery

Energy recovery

Start of operation 2023 In construction
Combustion Concept Air-cooled Grate

Fuel

Number of Lines 3
Throughput per line 32.89 t/h
Thermal power per line 75.83 MW
Concept 5-pass boiler

Boiler Conce

Steam

Flue gas treatment Concept

95 t/h at 70 bar(a) and 430 °C Activated Carbon Entrainment,

Fabric Filter, SNCR, Dry Sorption Reactor, Heat Exchanger Calcium Hydroxide, Lignite Coke

Reactant

Throughput per line

Concept

Electric power output

Output

147'030 m³/h (STP) Condensation Turbine

70.00 MW (gross) Steam, Electrical Power



RU, Moscow 3

Start of operation 2023 In construction Concept Combustion Air-cooled Grate

Fuel

Number of Lines

32.89 t/h Throughput per line 75.83 MW Thermal power per line Concept 5-pass boiler

Boiler Steam 95 t/h at 70 bar(a) and 430 °C

Activated Carbon Entrainment, Flue gas treatment Concept Fabric Filter, SNCR, Dry Sorption

Reactor, Heat Exchanger

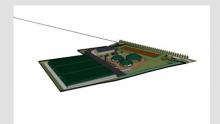
Condensation Turbine

Calcium Hydroxide, Lignite Coke Reactant 147'030 m³/h (STP)

Throughput per line Concept

Electric power output

70.00 MW (gross) Output Steam, Electrical Power



FR, Brion

Energy recovery

Start of operation 2023 In construction Anaerobic Digestion Number of Digester(s) 2

2'493 m³ Net volume per digester Digester Type Wet AD Technology

Membrane Technology Gas Upgrading Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h

Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



RU, Moscow 2

Energy recovery

Start of operation 2023 In construction Combustion Air-cooled Grate Concept

Fuel

Number of Lines Throughput per line 32.89 t/h 75.83 MW Thermal power per line

Boiler

Concept 5-pass boiler Steam 95 t/h at 70 bar(a) and 430 °C

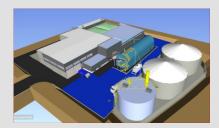
Flue gas treatment Concept Activated Carbon Entrainment,

Fabric Filter, SNCR, Dry Sorption Reactor, Heat Exchanger

Reactant Calcium Hydroxide, Lignite Coke

147'030 m³/h (STP) Throughput per line Condensation Turbine Concept

70.00 MW (gross) Electric power output Output Steam, Electrical Power



DE, Zuffenhausen

Start of operation

Anaerobic Digestion Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

In construction

2'100 m³

Bio Waste, Green Waste

35'000 t/a



AE, Dubai WMC

Start of operation Combustion

Boiler

2023 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line 53.57 t/h 124.6 MW

Thermal power per line Concept

4-pass boiler 170 t/h at 77 bar(a) and 432 °C Superheated Steam

Dry Sorption Reactor, Fabric Filter Flue gas treatment Concept Reactant Activated Carbon, Calcium

Hydroxide

Energy recovery Concept

Throughput per line 234'064 m³/h (STP) Condensation Turbine Electric power output 214.6 MW (gross)

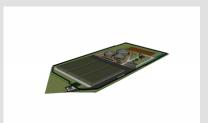
Output

Electrical Power

In construction

2'493 m³

Wet AD



FR, Lierville

Gas Upgrading

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type Technology Input Gas

2022

Membrane Technology Biogas from Agricultural Residues

Plant Capacity

700 Nm³/h

Hourly Biomethane Production 350 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Ivry-sur-Seine

Start of operation Combustion

Boiler

Concept Fuel

In construction Water-cooled Grate Municipal Solid Waste, Refuse

Derived Fuel

Number of Lines Throughput per line 24.64 t/h

Thermal power per line Concept

75.55 MW 4-pass boiler with external

economizer

Superheated Steam 92 t/h at 60 bar(a) and 420 °C



AU, Rockingham

Start of operation Combustion

Flue gas treatment

Energy recovery

Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

236'327 m3/h (STP)

Number of Lines Throughput per line Thermal power per line

41.18 t/h 101.8 MW 5-pass boiler

Boiler Concept Superheated Steam

129 t/h at 66 bar(a) and 431 °C Dry Sorption Reactor, SNCR, Activated Carbon Entrainment,

Calcium Hydroxide, Lignite Coke

Fabric Filter

Reactant Throughput per line

Concept

Concept

Condensation Turbine 32.00 MW (gross) Electric power output Electrical Power Output



GB, Newhurst

Start of operation Combustion

2022 Concept Fuel Number of Lines

50.93 t/h 126.4 MW Thermal power per line

Boiler Concept

Superheated Steam

Throughput per line

Concept Flue gas treatment

5-pass boiler 157 t/h at 80 bar(a) and 450 °C Dry Sorption Reactor, Fabric

Activated Carbon, Calcium

Municipal Solid Waste

Filter, SNCR

In construction

Air-cooled Grate

Reactant

Hydroxide

Throughput per line Energy recovery

Concept

Electric power output Output

239'250 m3/h (STP) Condensation Turbine 43.30 MW (gross) **Electrical Power**



IT, Reggio Emilia

Start of operation Anaerobic Digestion

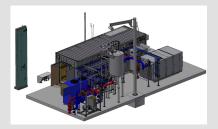
Number of Digester(s)

Net volume per digester Waste Throughput per Year

Gas Upgrading

In construction

2'100 m³ 111'000 t/a



US, Carpenter

Start of operation Gas Upgrading

2022 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

In construction

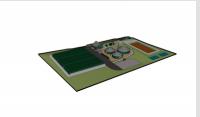
Membrane Technology

Biogas from Agricultural Residues

1'014 Nm³/h 575 Nm³/h

Biomethane for gas-grid injection,

CNG



FR, Faremoutiers

Start of operation Anaerobic Digestion

Number of Digester(s)

Net volume per digester Digester Type

Gas Upgrading Technology

Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

In construction

2 2'493 m³

Wet AD Membrane Technology

Biogas from Agricultural Residues

600 Nm³/h 300 Nm³/h

Biomethane for gas-grid injection



RU, Moscow 1

Start of operation Combustion

Flue gas treatment

Energy recovery

2022 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Concept

Superheated Steam

Concept

32.89 t/h 75.83 MW 5-pass boiler

In construction

Air-cooled Grate Municipal Solid Waste

95 t/h at 70 bar(a) and 430 °C Activated Carbon Entrainment, Fabric Filter, SNCR, Dry Sorption

Reactor, Heat Exchanger Calcium Hydroxide, Lignite Coke

Reactant Throughput per line

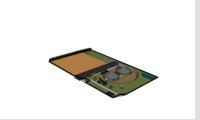
Concept

Output

Electric power output

147'030 m³/h (STP) Condensation Turbine

70.00 MW (gross) Steam, Electrical Power



FR, Missy-lès-Pierrepont

Start of operation Anaerobic Digestion 2022

Number of Digester(s) Net volume per digester

2'300 m³ Wet AD

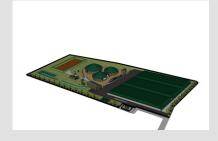
Digester Type Gas Upgrading

Technology Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage

Biomethane for gas-grid injection



FR, Voulton

Start of operation Anaerobic Digestion 2022 Number of Digester(s)

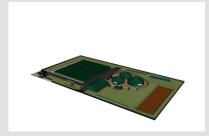
Net volume per digester 2'300 m³ Digester Type Wet AD Membrane Technology

Technology Gas Upgrading

Input Gas Biogas from Agricultural Residues 500 Nm³/h Plant Capacity

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Amillis

Gas Upgrading

Start of operation Anaerobic Digestion 2022 Number of Digester(s)

Net volume per digester Digester Type Wet AD Technology

Plant Capacity

Hourly Biomethane Production

Biomethane Usage

In construction 2

In construction

2'300 m³

Membrane Technology

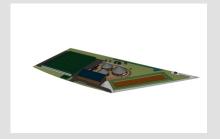
500 Nm³/h 250 Nm³/h

In construction

In construction

2'300 m³

Biomethane for gas-grid injection



FR, Saint-Martin-du-Boschet

Start of operation

Anaerobic Digestion

2022 Number of Digester(s)

Net volume per digester Digester Type

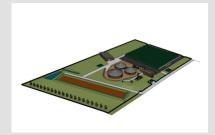
Gas Upgrading

Wet AD Technology Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h

Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Tremblay-les-Villages

Start of operation

Anaerobic Digestion

Net volume per digester

Digester Type

Gas Upgrading Technology Input Gas

Number of Digester(s)

2'300 m³ Wet AD Membrane Technology

Plant Capacity

Hourly Biomethane Production

Biomethane Usage

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection

Biogas from Agricultural Residues



FR, Saugnacq-et-Muret

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³
Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues
Plant Capacity 600 Nm³/h

Plant Capacity 600 Nm³/h Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Bellegarde-sur-Valserine Flue gas Treatment

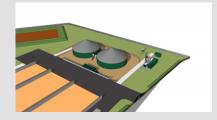
Start of operation 2021 In construction

Flue gas treatment Concept Dry Sorption Reactor, Dry Sorption Reactor 2, Heat

Sorption Reactor 2, Heat Exchanger, Heat exchanger 2,

Number of Lines 2

Fuel Municipal Solid Waste
Reactant Sodium Bicarbonate
Throughput per line 50'000 m³/h (STP)



FR, Vinantes

Start of operation 2021

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 400 Nm³/h Hourly Biomethane Production 200 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Réau

Start of operation 2021

Anaerobic Digestion Number of Digester(s) 2

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues
Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



DE, Kirchberg

Start of operation Anaerobic Digestion 2021

Number of Digester(s) Net volume per digester Waste Throughput per Year

1

1'050 m³ 15'000 t/a



GB, Rookery

Start of operation Combustion

Flue gas treatment

Boiler

2021 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines 3
Throughput per line 25.00 t/h
Thermal power per line 64.58 MW
Concept 5-pass boiler

Superheated Steam Concept

82 t/h at 75 bar(a) and 440 °C Dry Sorption Reactor, Fabric

Filter, SNCR

Reactant Calcium Hydroxide, Li

Throughput per line

Calcium Hydroxide, Lignite Coke 117'000 m³/h (STP)



FR, Mont-l'Evêque

Start of operation 202

Anaerobic Digestion Number of Digester(s)

Net volume per digester

Digester Type
Technology

Gas Upgrading Technology Membrane Technology
Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection

2'300 m³

Wet AD



FR, Chauconin-Neufmontiers

Start of operation 20

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³
Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Boutigny-sur-Essone

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Pouan-les-Vallées

Start of operation 202

Anaerobic Digestion Number of Digester(s) 2

Net volume per digester 2'300 m³
Digester Type Wet AD

Gas Upgrading Technology Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage

Biomethane for gas-grid injection



FR, Trancault

Start of operation 2021 In construction
Anaerobic Digestion Number of Digester(s) 2

Net volume per digester 2'300 m³
Digester Type Wet AD

Gas Upgrading Technology Wet AD

Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h

Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



IT, Legnano

Gas Upgrading

Start of operation 2021 In construction
Anaerobic Digestion Number of Digester(s) 2
Net volume per digester 1'300 m³

Net volume per digester 1'300 m³
Waste Throughput per Year 40'500 t/a
Plant Capacity 625 Nm³/h



FR, Coulombs-en-Valois

Start of operation

Anaerobic Digestion Number of Digester(s)

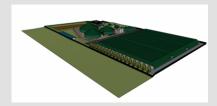
2'300 m³ Net volume per digester Digester Type Wet AD

Technology Membrane Technology Gas Upgrading

Input Gas Biogas from Agricultural Residues 500 Nm³/h Plant Capacity

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Avon-la-Pèze

Start of operation

Anaerobic Digestion Number of Digester(s)

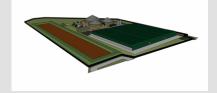
Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

> Input Gas Biogas from Agricultural Residues Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Saint-Jean-d'Illac

Start of operation

Anaerobic Digestion Number of Digester(s)

2'300 m³ Net volume per digester Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues Plant Capacity 600 Nm³/h

300 Nm³/h Hourly Biomethane Production

Biomethane Usage Biomethane for gas-grid injection



FR, Prémierfait

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³

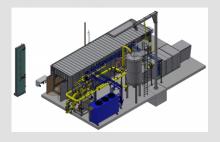
Technology Membrane Technology Gas Upgrading Input Gas Biogas from Agricultural Residues

600 Nm³/h Plant Capacity

300 Nm³/h

Hourly Biomethane Production

Biomethane Usage Biomethane for gas-grid injection



FR, Saint-Laurent-Médoc II

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues
Plant Capacity 600 Nm³/h

Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



US, Escondido

Start of operation 2021

Anaerobic Digestion Number of Digester(s) 2

Plant Capacity

Net volume per digester 2'100 m³

Waste Type Food Waste, Green Waste Waste Throughput per Year 84'400 t/a

Waste Throughput per Year 84'400 t/a
Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Green Waste & Bio Waste, Biogas from Energy Crops,

Waste, Biogas from Energy Crops, Biogas from Agricultural Residues, Biogas from Source Separated

Municipal Waste 447 Nm³/h

Biomethane Usage Biomethane for gas-grid injection

In construction



CN, Chongqing II

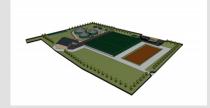
Start of operation 2021

Anaerobic Digestion Number of Digester(s)

Number of Digester(s) 3

Net volume per digester 2'100 m³

Waste Throughput per Year 110'000 t/a



FR, Bar-sur-Seine

Start of operation 2021

Anaerobic Digestion Number of Digester(s) 2
Net volume per digester 2'300 m³

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Saint-Mesmin

Start of operation

Anaerobic Digestion Number of Digester(s)

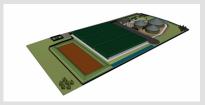
2'300 m³ Net volume per digester Digester Type Wet AD

Gas Upgrading Technology Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Chapelle-Vallon

Start of operation

Anaerobic Digestion Number of Digester(s)

2'300 m³ Net volume per digester Digester Type Wet AD

Membrane Technology Gas Upgrading Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h

300 Nm³/h Hourly Biomethane Production

Biomethane Usage Biomethane for gas-grid injection



CN, Chongqing I

Start of operation

Anaerobic Digestion

Number of Digester(s) Net volume per digester 1'800 m³

Waste Type

Organic Fraction of Municipal Solid Waste

50'000 t/a

Waste Throughput per Year



CN, Nanjing

Start of operation 2020

Anaerobic Digestion Number of Digester(s)

Net volume per digester

Waste Throughput per Year

Waste Type

2 1'800 m³

Organic Fraction of Municipal

Solid Waste 55'000 t/a





CN, Hangzhou

Start of operation 2020

In construction

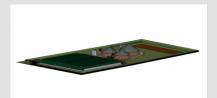


SE, Momarken Torsvik

Start of operation

2020

In construction



FR, Charny

Start of operation

Anaerobic Digestion

Number of Digester(s)

Digester Type Technology

2020

Gas Upgrading

2'300 m³ Net volume per digester Wet AD

Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Saint-Germain

Start of operation

Anaerobic Digestion

Net volume per digester

Gas Upgrading

Number of Digester(s)

2'300 m³ Digester Type Wet AD Technology Membrane Technology

Biogas from Agricultural Residues Input Gas

Plant Capacity Hourly Biomethane Production

Biomethane Usage

400 Nm³/h 200 Nm³/h

Biomethane for gas-grid injection



FR, Les-Grandes-Chapelles

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h

Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



US, Escondido

Start of operation
Gas Upgrading

2020 Technology Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Membrane Technology

1'000 Nm³/h 500 Nm³/h

Biomethane for gas-grid injection



FR, Herpy-l'Arlésienne

Start of operation

Anaerobic Digestion Number

Number of Digester(s)
Net volume per digester

Digester Type

Gas Upgrading Technology

Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 600 Nm³/h

Hourly Biomethane Production 300 Nm³/h

Biomethane Usage Biomethane for gas-grid injection

2'300 m³

Wet AD



SE, Jönköping

Start of operation 202

Anaerobic Digestion Number of Digester(s)

Net volume per digester 1'500 m³

Waste Type Bio Waste, Food Waste, Grease

sludge, Green Waste, Production

Waste 40'000 t/a

Waste Throughput per Year Gas Upgrading Technology

Technology Input Gas Membrane Technology

Biogas from Green Waste & Bio

Waste 717 Nm³/h

Plant Capacity

Hourly Biomethane Production 430 Nm³/h

Biomethane Usage

Biomethane Filling Station, CNG



FR, Trouy

Start of operation Anaerobic Digestion

2020 Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Technology Membrane Technology Gas Upgrading

Input Gas Biogas from Agricultural Residues 300 Nm³/h

Plant Capacity Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Yversay

Gas Upgrading

Start of operation 2020

Anaerobic Digestion Number of Digester(s)

2'300 m³ Net volume per digester Digester Type Wet AD Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h 250 Nm³/h Hourly Biomethane Production

Biomethane Usage Biomethane for gas-grid injection



FR, Neuville-Saint-Amand

Start of operation 2020

Anaerobic Digestion Number of Digester(s)

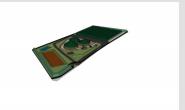
2'300 m³ Net volume per digester Digester Type Wet AD

Gas Upgrading Membrane Technology Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Bucy-le-Long

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Technology Gas Upgrading Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



DE, Anröchte

Start of operation Anaerobic Digestion

2020

Number of Digester(s) Net volume per digester

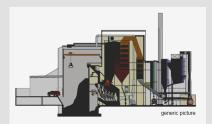
Waste Type

Waste Throughput per Year

1'500 m³

Bio Waste, Green Waste

15'000 t/a



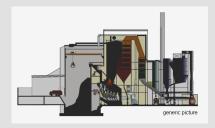
JP, Mito, Ibaraki

Start of operation Combustion

2020 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

4.58 t/h



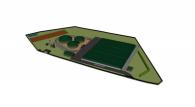
JP, Yokosuka, Kanagawa Start of operation 2020

Combustion

Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

5.00 t/h



FR, Saint-Aubin

Start of operation

Anaerobic Digestion Number of Digester(s)

Net volume per digester

Gas Upgrading

Digester Type

Input Gas Plant Capacity

Technology

Hourly Biomethane Production

Biomethane Usage

Wet AD

2'300 m³

Membrane Technology Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



FR, Messy

Start of operation Anaerobic Digestion

Gas Upgrading

2020

Number of Digester(s) Net volume per digester

Digester Type Technology

Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

2'300 m³

Wet AD

Membrane Technology Biogas from Agricultural Residues

600 Nm³/h 430 Nm³/h

Biomethane for gas-grid injection



CA, London

Start of operation Gas Upgrading

2020 Technology Input Gas

Plant Capacity Hourly Biomethane Production

Biomethane Usage

Membrane Technology

Biogas from Green Waste & Bio

Waste 1'200 Nm³/h 800 Nm³/h

Biomethane for gas-grid injection



DK, Vrå

Start of operation Gas Upgrading

2020 Technology Input Gas Plant Capacity

Hourly Biomethane Production

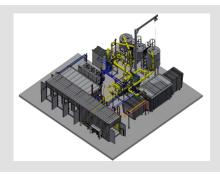
Biomethane Usage

Membrane Technology

Biogas from Agricultural Residues

900 Nm³/h 500 Nm³/h

Biomethane for gas-grid injection



GB, Aberdeenshire

Start of operation Gas Upgrading

2020 Technology Input Gas

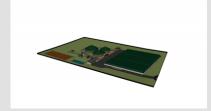
Membrane Technology Biogas from Green Waste & Bio

Waste 1'200 Nm³/h 680 Nm³/h

Biomethane for gas-grid injection

Plant Capacity Hourly Biomethane Production

Biomethane Usage



FR, Chalandry

Start of operation Anaerobic Digestion

Gas Upgrading

2020 Number of Digester(s)

Net volume per digester 2'300 m³

Digester Type Wet AD

Technology Membrane Technology Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



TR, Istanbul

Start of operation Combustion

Boiler

2019 Concept Air-cooled Grate

Fuel Hospital Waste, Municipal Solid

Waste

Number of Lines 46.00 t/h Throughput per line Thermal power per line 86.81 MW

5-pass boiler Concept Superheated Steam 112 t/h at 72 bar(a) and 426 °C Flue gas treatment Concept SNCR, Dry Sorption Reactor,

Fabric Filter

Calcium Hydroxide, Activated Reactant

Carbon

2'300 m³

173'720 m3/h (STP) Throughput per line Condensation Turbine Energy recovery Concept Electric power output 77.21 MW (gross)

Output

Electrical Power



FR, Saint-Laurent-Médoc

Start of operation

Anaerobic Digestion

Number of Digester(s)

Net volume per digester Digester Type

Technology

Wet AD Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



FR, Payns

Gas Upgrading

Start of operation 2019

Anaerobic Digestion Number of Digester(s)

2'300 m³ Net volume per digester Digester Type Wet AD

Technology Membrane Technology Gas Upgrading Input Gas Biogas from Agricultural Residues

500 Nm³/h Plant Capacity

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



CN, Shunde

Start of operation Combustion

Energy recovery

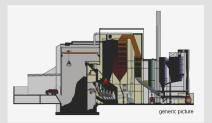
2019 Concept Fuel

Number of Lines Throughput per line

Output

In construction Air-cooled Grate Municipal Solid Waste

35.42 t/h **Electrical Power**



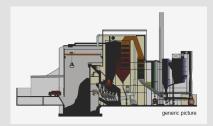
CN, Jimo

Start of operation Combustion

2019 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Tancheng Start of operation

Combustion

2019 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.70 t/h



JP, Kyoto (Nambu No.2) Start of operation 2019

Combustion

Energy recovery

Concept Fuel

Number of Lines Throughput per line Thermal power per line

Output

In construction Air-cooled Grate Municipal Solid Waste

10.42 t/h 39.06 MW **Electrical Power**



JP, Nagano, Nagano

Start of operation Combustion

Energy recovery

2019 Concept Fuel In construction Air-cooled Grate Municipal Solid Waste

Number of Lines
Throughput per line
Thermal power per line
Output

5.60 t/h 17.90 MW Electrical Power



TH, WPP Phetchaburi

Start of operation Combustion

2019 Concept Fuel In construction Air-cooled Grate Municipal Solid Waste

Number of Lines
Throughput per line

Output

19.83 t/h Electrical Power

Energy recovery



GR, Epirus

Start of operation Anaerobic Digestion

2019 Number of Digester(s)

Net volume per digester

Waste Type

Waste Throughput per Year

2

1'500 m³

Organic Fraction of Municipal

Solid Waste 38'700 t/a



GB, Ferrybridge Multifuel 2 (FM2)

Start of operation Combustion

Flue gas treatment

Energy recovery

2019 Concept

Fuel

Water-cooled Grate

Municipal Solid Waste, Refuse

Derived Fuel

Number of Lines

Throughput per line 42.26 t/h
Thermal power per line 117.7 MW

Boiler Concept

Concept 5-pass boiler Superheated Steam 145 t/h at 73

145 t/h at 73 bar(a) and 430 °C Fabric Filter, SNCR, Semi-dry

Reactor

Reactant Activated Carbon, Calcium

Hydroxide

238'866 m³/h (STP)

Throughput per line

Concept

Concept

Condensation Turbine

Electric power output 79.17 MW (gross)
Output Electrical Power



DE, Hamburg

Start of operation Gas Upgrading

2019 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Sewage Sludge

1'500 Nm³/h 930 Nm³/h

Biomethane for gas-grid injection



GB, Edinburgh

Start of operation Combustion

Flue gas treatment

Boiler

2018 Concept Fuel

Air-cooled Grate

Municipal Solid Waste, Refuse

Calcium Hydroxide, Activated

Derived Fuel

Number of Lines

24.00 t/h Throughput per line Thermal power per line 50.00 MW 6-pass boiler

Concept Superheated Steam 64 t/h at 60 bar(a) and 400 °C Dry Sorption Reactor, Fabric Filter

Concept Reactant

Throughput per line Energy recovery

Concept

Electric power output Output

103'178 m³/h (STP) Condensation Turbine

12.49 MW (gross) **Electrical Power**



CN, Changsha

Start of operation Combustion

2018 Concept Fuel

Air-cooled Grate

Refuse Derived Fuel, Municipal

In construction

Number of Lines Throughput per line

Energy recovery Output Solid Waste

35.42 t/h **Electrical Power**



CN, Laohuchong

Start of operation Combustion

2018 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line

31.25 t/h



JP, Kyoto 2 Start of operation

Anaerobic Digestion

2018 Number of Digester(s) Net volume per digester Waste Type

Waste Throughput per Year

In construction

1'483 m³

Organic Fraction of Municipal

Solid Waste 20'820 t/a



IT, Foligno

Start of operation Anaerobic Digestion

2018 Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

2

1'300 m³ PF1300

Bio Waste, Green Waste

40'000 t/a



CN, Rénhuái

Start of operation Combustion

2018 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

25.00 t/h



FR, Combrand

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Solid Manure, Crop Residues

46'000 t/a



US, San Luis Obispo Start of operation 2018

Anaerobic Digestion

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

1'800 m³

Bio Waste, Green Waste

30'000 t/a



IT, Bologna

Start of operation Anaerobic Digestion

2018 Number of Digester(s)

Net volume per digester

Waste Type

Waste Throughput per Year

4

1'800 m³

Bio Waste, Green Waste

102'000 t/a



SE, Högbytorp

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

2'100 m³

Bio Waste, Food Waste, Green

Waste, Solid Manure

83'050 t/a



TH, Nong Khai

Start of operation Combustion

2018

Output

Energy recovery

Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

15.42 t/h **Electrical Power**



JP, Orii Start of operation

Combustion

2018 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

2.40 t/h



JP, Yatsushiro, Kumamoto

Start of operation Combustion

2018 Concept Fuel Number of Lines

Municipal Solid Waste 2.79 t/h 9.93 MW

Energy recovery

Thermal power per line Concept Electric power output

Throughput per line

Output

Condensation Turbine 2.88 MW (gross) Electrical Power

In construction

Air-cooled Grate



JP, Neyagawa

Start of operation Combustion

2018 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste Number of Lines

Throughput per line Thermal power per line Concept

13.60 MW Dry Sorption Reactor, Fabric

Reactant

Filter, SCR Calcium Hydroxide, Activated

4.17 t/h

Carbon 23'990 m³/h (STP) **Electrical Power**

Energy recovery

Flue gas treatment

Throughput per line

Output



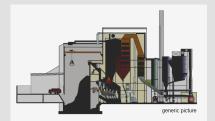
CN, Pingxiang

Start of operation Combustion

2018 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.70 t/h



CN, Nínghé Start of operation

Combustion

2018 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h



MY, SMART WTE

Start of operation Combustion

2018 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line Thermal power per line

25.00 t/h 69.44 MW

Energy recovery

Concept Electric power output Output

Condensation Turbine 17.70 MW (gross) Electrical Power



CN, Déyáng

Start of operation Combustion

2018 Concept Fuel Number of Lines

Throughput per line

In construction Air-cooled Grate Municipal Solid Waste

50.00 t/h



SE, Högbytorp (Residue Treatment)

Start of operation



FR, Audenge

Start of operation

2018 Anaerobic Digestion Number of Digester(s)

Net volume per digester Digester Type

Gas Upgrading Technology

Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

2'300 m³ Wet AD

Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



FR, Cernay

Start of operation Anaerobic Digestion

Gas Upgrading

2018 Number of Digester(s)

Net volume per digester Digester Type Technology

Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

2'300 m³

Wet AD Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



FR, Fère-Champenoise

Start of operation

Anaerobic Digestion

Number of Digester(s)

Net volume per digester Digester Type

Gas Upgrading

2018

Technology Input Gas

Plant Capacity

Hourly Biomethane Production

Biomethane Usage

2'300 m³ Wet AD

Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



DE, Grabsleben II

Start of operation Gas Upgrading

2018 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

In construction Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Parum

Start of operation Gas Upgrading

2018 Technology Input Gas

Amine Scrubbing

Biogas from Green Waste & Bio

Waste 700 Nm³/h

Plant Capacity

Hourly Biomethane Production

Biomethane Usage

400 Nm³/h

Biomethane for gas-grid injection



DE, Plaidt

Start of operation Gas Upgrading

2018 Technology Input Gas

Membrane Technology

Biogas from Green Waste & Bio

Waste 500 Nm³/h

Plant Capacity Hourly Biomethane Production

Biomethane Usage

300 Nm³/h

Biomethane for gas-grid injection



FR, Pommeuse

Start of operation Anaerobic Digestion

2018

Number of Digester(s) Net volume per digester

2'300 m³ Wet AD

Gas Upgrading

Digester Type Technology Membrane Technology Biogas from Agricultural Residues

Input Gas Plant Capacity

500 Nm³/h

Hourly Biomethane Production Biomethane Usage

250 Nm³/h

Biomethane for gas-grid injection



FR, Saconin

Start of operation Anaerobic Digestion 2018

Number of Digester(s)

2'300 m³

Gas Upgrading

Net volume per digester Digester Type

Wet AD

Technology Input Gas

Membrane Technology

Plant Capacity

Biogas from Agricultural Residues 500 Nm³/h

Hourly Biomethane Production

250 Nm³/h

Biomethane Usage

Biomethane for gas-grid injection



CN, Ningbo Start of operation

Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

31.25 t/h



CN, Huairou

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Chengdu Wanxing

Start of operation Combustion

2017 Concept Fuel

Output

2017

Number of Lines Throughput per line Thermal power per line

Energy recovery

Air-cooled Grate Municipal Solid Waste

25.00 t/h 48.60 MW **Electrical Power**

In construction



DE, Herten

Start of operation



CN, Yulin Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.67 t/h



JP, Joetsu, Niigata

Start of operation Combustion

2017 Concept Fuel

Municipal Solid Waste Number of Lines Throughput per line 3.54 t/h 15.60 MW Thermal power per line

Flue gas treatment Concept

SNCR, Dry Sorption Reactor, Fabric Filter Reactant

Calcium Hydroxide, Activated

In construction

Water-cooled Grate

Throughput per line

Energy recovery Output 20'330 m³/h (STP)

Hot Water, Electrical Power



CN, Bazhou

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

25.00 t/h



CN, Shijiazhuang

Start of operation Combustion

2017 Concept Fuel Number of Lines

Throughput per line

In construction Air-cooled Grate Municipal Solid Waste

31.25 t/h



CN, Muping Start of operation

Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste



CN, Tonghua

Start of operation Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.70 t/h

16.70 t/h



CN, Meishan

Start of operation Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h



IE, Dublin

Start of operation Combustion

2017 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line

41.00 t/h 102.5 MW

Thermal power per line Boiler Concept

4-pass boiler

Superheated Steam

125 t/h at 62 bar(a) and 443 °C SNCR, Fabric Filter, Scrubber,

Concept

Semi-dry Reactor Caustic Soda

Scrubber Reactant Reactant

Lignite Coke, Calcium Hydroxide

Throughput per line

189'000 m³/h (STP) Condensation Turbine

Energy recovery

Flue gas treatment

Concept Electric power output

68.80 MW (gross)

Output

Electrical Power, Hot Water



CN, Lhasa

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

14.60 t/h



JP, Tokyo (Suginami)

2017 Start of operation Concept Combustion . Fuel

> Number of Lines Throughput per line Thermal power per line

Output Energy recovery

12.50 t/h 49.70 MW

In construction

Air-cooled Grate

Municipal Solid Waste

Hot Water, Electrical Power



GB, Herefordshire and Worcestershire

Start of operation 2017 Combustion Concept Air-cooled Grate Fuel Municipal Solid Waste

Number of Lines 30.55 t/h Throughput per line Thermal power per line 67.89 MW

Boiler Concept 5-pass boiler

86 t/h at 60 bar(a) and 415 °C Superheated Steam Flue gas treatment Concept SNCR, Fabric Filter, Semi-dry

Reactor

Calcium Hydroxide, Activated Reactant

Carbon

126'000 m³/h (STP)

Condensation Turbine

Throughput per line Energy recovery Concept

20.00 MW (gross) Electric power output Output **Electrical Power**



CN, Xiamen (Ruikepang reCulture)

Start of operation 2017 In construction Concept Combustion Air-cooled Grate Fuel Municipal Solid Waste

Number of Lines

Throughput per line 10.42 t/h Thermal power per line 24.05 MW

Flue gas treatment Concept

Throughput per line

54'257 m3/h (STP)



CN, Guangan Start of operation

Combustion

2017 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Concept Flue gas treatment

Throughput per line

In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h 23.26 MW

55'266 m3/h (STP)



CN, Haikou II

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Flue gas treatment Concept

Throughput per line

In construction Air-cooled Grate Municipal Solid Waste

25.00 t/h 49.31 MW

115'540 m³/h (STP)



VN, Hanoi

Start of operation Combustion

Energy recovery

2017 Concept Fuel

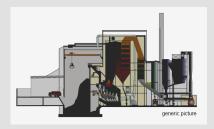
Number of Lines Throughput per line

Output

Rotary Kiln Industrial Waste

3.13 t/h

Electrical Power



CN, Bozhou

Start of operation Combustion

2017 Concept Fuel Number of Lines

Throughput per line

In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h





CN, Kaixian Start of operation

Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste 12.50 t/h



CN, Linqu Start of operation Combustion

Concept Fuel Number of Lines Throughput per line

2017

In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Huaxi

Start of operation Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

25.00 t/h



CN, Wuhu Start of operation Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

25.00 t/h

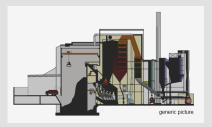




CN, Yíshui Start of operation Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



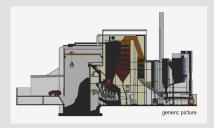
CN, Jùlù Start of operation Combustion

Concept Fuel Number of Lines Throughput per line

2017

In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h

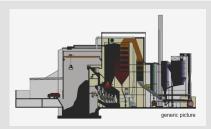


CN, Wèi Xiàn Start of operation

Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.67 t/h



CN, Linqing

Start of operation Combustion

2017 Concept Fuel Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Xinjí Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Qian'an

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Shuangchéng

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h



CN, Ch?xiòng

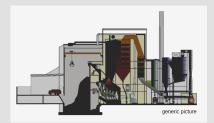
Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h





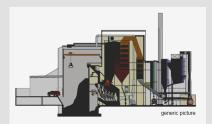
CN, Lánlíng Start of operation

Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.67 t/h



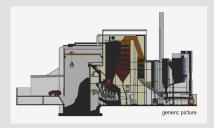
CN, Chéngwu Start of operation

Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



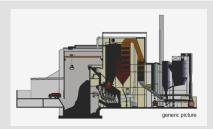
CN, Beijing, Pínggu

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



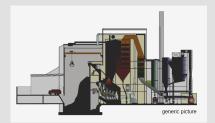
CN, Dehui Phase II

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.67 t/h



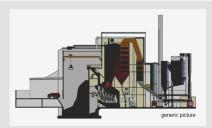
CN, Zhàodong Start of operation

Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h



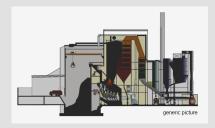
CN, Línqing Phase II

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



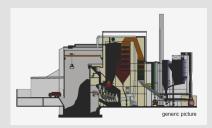
CN, Qian'an Phase II

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Shuangchéng Phase II

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h

Hitachi Zosen HILLS INOVA



CN, Wèi Xiàn Phase II Start of operation 2017

Combustion

Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.67 t/h



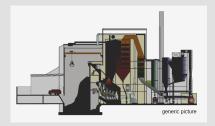
CN, Xinjí Phase II Start of operation 201

Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



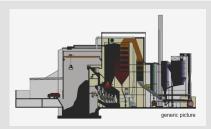
CN, Yíshui Phase II Start of operation 2017

Combustion

Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Chéngd?

Start of operation Combustion

2017 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h



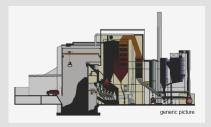
JP, Kurokawa II Start of operation

Combustion

2017 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

1.04 t/h



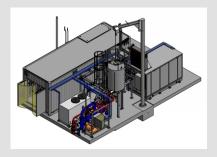
JP, Kiso

Start of operation Combustion

2017 Concept Fuel Number of Lines

Air-cooled Grate Municipal Solid Waste

Throughput per line 0.25 t/h



FR, Barberey

Start of operation Anaerobic Digestion

Gas Upgrading

2017 Number of Digester(s)

Net volume per digester Digester Type Technology

Input Gas

Plant Capacity

Hourly Biomethane Production Biomethane Usage

2'300 m³ Wet AD

Membrane Technology Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



CH, Niedergösgen

Start of operation Gas Upgrading

Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Membrane Technology Biogas from Sewage Sludge

400 Nm³/h 280 Nm³/h



FR, Noyen

Start of operation Anaerobic Digestion

Gas Upgrading

2017

Number of Digester(s) Net volume per digester

Digester Type Technology

Input Gas

Plant Capacity

Biomethane Usage

250 Nm³/h Hourly Biomethane Production

2'300 m³

Wet AD

500 Nm³/h

Biomethane for gas-grid injection

Membrane Technology Biogas from Agricultural Residues



FR, Saints

Start of operation Anaerobic Digestion

Gas Upgrading

Number of Digester(s) Net volume per digester

Digester Type Technology

Input Gas

Plant Capacity Hourly Biomethane Production

Biomethane Usage

2

2'300 m³ Wet AD

Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



CH, Thun

Start of operation Gas Upgrading

2017 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Membrane Technology Biogas from Sewage Sludge

250 Nm³/h 130 Nm³/h

Biomethane for gas-grid injection



CN, Zhuhai

Start of operation Combustion

2016 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

25.00 t/h



JP, Fujimino, Saitama

Start of operation Combustion

Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

Number of Lines 3.00 t/h Throughput per line 10.30 MW Thermal power per line

Energy recovery Output Hot Water, Electrical Power



PL, Poznan

Start of operation Combustion

Boiler

2016 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line 15.00 t/h 31.50 MW Thermal power per line Concept 4-pass boiler

Superheated Steam Flue gas treatment Concept

38 t/h at 62 bar(a) and 422 °C SNCR, Semi-dry Reactor, Fabric

Filter Calcium Hydroxide

Reactant Throughput per line

Concept

66'000 m³/h (STP) Condensation Turbine

Electric power output 17.30 MW (gross) Electrical Power, Hot Water

Output

GB, Severnside L1, L2

Start of operation Combustion

Energy recovery

2016 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line

Concept

24.24 t/h Thermal power per line 62.61 MW 5-pass boiler

Boiler Flue gas treatment

Superheated Steam

78 t/h at 62 bar(a) and 422 °C SNCR, Semi-dry Reactor, Fabric

Filter

Reactant

Concept

Throughput per line

Concept

127'000 m³/h (STP) Condensation Turbine

Calcium Hydroxide

Electric power output

37.40 MW (gross) **Electrical Power**

Energy recovery

Output



IN, Essel Jabalpur

Start of operation Combustion

Boiler

2016 Concept Fuel

Air-cooled Grate Municipal Solid Waste

57 t/h at 46 bar(a) and 410 °C

Evaporation cooler, Fabric Filter

Number of Lines Throughput per line 25.00 t/h

47.97 MW Thermal power per line 4-pass boiler Concept

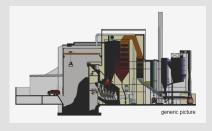
Superheated Steam Flue gas treatment

Concept Reactant

Calcium Hydroxide, Activated Carbon

112'178 m³/h (STP)

Throughput per line



TH, Bangkok (Nong Khaem)

Start of operation Combustion

2016 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

10.40 t/h



JP, Tsuyama, Okayama

Start of operation Combustion

2016 Concept Fuel Number of Lines

Throughput per line Thermal power per line Air-cooled Grate Municipal Solid Waste

2.67 t/h 9.40 MW



CN, Wuxi Xidong

Start of operation Combustion

Flue gas treatment

Energy recovery

2016 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

20.83 t/h

Number of Lines Throughput per line Thermal power per line Concept

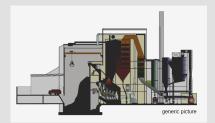
38.77 MW SNCR, Spray Absorber, Fabric

Filter

Reactant Activated Carbon, Calcium

Hydroxide

Throughput per line 100'950 m³/h (STP) **Electrical Power** Output

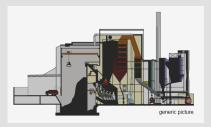


CN, Dehui Start of operation Combustion

2016 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

16.67 t/h



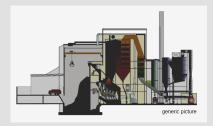
JP, Nikaho

Start of operation Combustion

2016 Concept Fuel Number of Lines Throughput per line

Air-cooled Grate Municipal Solid Waste

0.60 t/h



JP, Yasu III
Start of operation Combustion

2016 Concept Fuel Number of Lines Throughput per line

Air-cooled Grate Municipal Solid Waste

0.90 t/h



FR, Brie

Start of operation Anaerobic Digestion

Gas Upgrading

2016 Number of Digester(s) Net volume per digester Digester Type Technology

Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

2 2'300 m³ Wet AD

Membrane Technology Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h



FR, Meaux

Gas Upgrading

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type Technology

Input Gas Plant Capacity

2016

Hourly Biomethane Production

Biomethane Usage

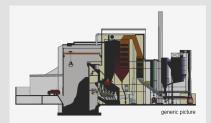
2'300 m³ Wet AD

Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



CN, Yongji

Start of operation Combustion

2015 Concept Fuel

Number of Lines Throughput per line In construction Air-cooled Grate Municipal Solid Waste

10.40 t/h



PL, Jarocin

Start of operation Anaerobic Digestion 2015

Number of Digester(s) Net volume per digester Digester Type

Waste Type

1'300 m³ RM18

Organic Fraction of Municipal

Solid Waste

Waste Throughput per Year

15'000 t/a



GB, Buckinghamshire

Start of operation Combustion

Boiler

Flue gas treatment

2015 Concept Fuel

Air-cooled Grate

Municipal Solid Waste, Industrial

Waste

Number of Lines Throughput per line

Electric power output

39.40 t/h Thermal power per line 101.7 MW 5-pass boiler

Concept Concept

Superheated Steam

127 t/h at 52 bar(a) and 402 °C SNCR, Fabric Filter, Semi-dry

Reactor

Activated Carbon, Calcium Reactant

> Hydroxide 180'714 m³/h (STP)

Throughput per line Energy recovery

Concept

Condensation Turbine 26.50 MW (gross)

Output

Electrical Power



JP, Namie

Start of operation 2015 Combustion

Concept Fuel

Number of Lines Throughput per line

Thermal power per line Concept Reactant

Throughput per line

Air-cooled Grate

Radioactive waste

Water-cooled Grate

Municipal Solid Waste

3-pass boiler with external

Dry Sorption Reactor, Electrostatic

45.00 MW Dry Sorption Reactor, Fabric Filter Calcium Hydroxide, Activated

Carbon

12.50 t/h

154'040 m3/h (STP)



CH, Horgen

Flue gas treatment

Flue gas treatment

Start of operation Combustion

Boiler

2015 Concept

Fuel Number of Lines

Throughput per line Thermal power per line

Throughput per line

Concept

Steam

Concept

Reactant

Precipitator (1 Field), Fabric Filter, Heat exchanger again, SCR Adsorbent, Sodium Bicarbonate

25'300 m3/h (STP)

5.14 t/h

15.00 MW

economizer

18 t/h at 30 bar(a)



GB, Ferrybridge

Start of operation Combustion

Boiler

2015 Concept Fuel

Water-cooled Grate Municipal Solid Waste, Biomass,

Number of Lines Throughput per line 42.25 t/h 117.4 MW Thermal power per line Concept 5-pass boiler

Flue gas treatment

Superheated Steam Concept

Reactant

104 t/h at 72 bar(a) and 427 °C SNCR, Fabric Filter, Heat Exchanger, Semi-dry Reactor Activated Carbon, Calcium

Refuse Derived Fuel, Wood

Hydroxide

Energy recovery

Throughput per line Concept

Electric power output Output

208'000 m³/h (STP) Condensation Turbine 75.00 MW (gross) Steam, Electrical Power



JP, Gotemba Oyama, Shizuoka Start of operation 2015

Combustion Fuel

> Number of Lines Throughput per line Thermal power per line

Energy recovery Output Municipal Solid Waste

2.97 t/h 9.80 MW **Electrical Power**



JP, Hagi Nagato, Yamaguchi Start of operation 2015

Combustion Fuel

Number of Lines Throughput per line Thermal power per line

Output Energy recovery

Municipal Solid Waste

2.16 t/h 4.75 MW Hot Water



CN, Yingtán

Start of operation Combustion

Concept Fuel Number of Lines

2015

Throughput per line Thermal power per line

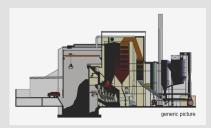
Flue gas treatment Concept

Throughput per line

Air-cooled Grate Municipal Solid Waste

16.67 t/h 25.20 MW

63'115 m3/h (STP)



CN, Shanghai Chongming

Start of operation Combustion

2015 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line 10.42 t/h 18.78 MW Thermal power per line

Flue gas treatment Concept

Throughput per line

44'189 m3/h (STP)



JP, Murakami, Niigata Start of operation 2015

Start of operation Combustion

Fuel

Municipal Solid Waste, Sewage

Sludge 2

Number of Lines Throughput per line 1.96 t/h 6.10 MW Thermal power per line

Output Energy recovery

Hot Water, Electrical Power



CN, Xiamen West

Start of operation Combustion

2015 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line Thermal power per line

12.50 t/h 20.10 MW

Flue gas treatment Concept SNCR, Spray Absorber, Fabric

Reactant

Calcium Hydroxide, Activated

Carbon

Throughput per line Output

54'170 m3/h (STP) **Electrical Power**



CN, Nanchong

Start of operation Combustion

Energy recovery

2015 Concept Fuel

In construction Air-cooled Grate Municipal Solid Waste 2

Number of Lines Throughput per line Thermal power per line

16.66 t/h

Flue gas treatment Concept 31.98 MW

SNCR, Spray Absorber, Fabric

Filter

Activated Carbon, Calcium

Hydroxide

83'230 m3/h (STP) **Electrical Power**

Reactant

Throughput per line Energy recovery Output



CH, Lucerne Perlen

Start of operation 2 Combustion 0

Concept Water-cooled Grate
Fuel Municipal Solid Waste
Number of Lines 2

Throughput per line 15.60 t/h
Thermal power per line 47.00 MW

Boiler Concept 4-pass boiler with external

economizer

Superheated Steam 57 t/h at 41 bar(a) and 410 °C
Flue gas treatment Concept Dry Sorption Reactor, Dry
Sorption Reactor 2 Electrosta

Sorption Reactor 2, Electrostatic Precipitator (1 Field), Ext. Eco, Fabric Filter, Fabric Filter 2, Heat Exchanger, Heat exchanger 2,

SCF

Reactant Sodium Bicarbonate, Lignite Coke,

Calcium Hydroxide 78'000 m³/h (STP)

Air-cooled Grate

Throughput per line 78'000 m³/h (STP)
Energy recovery Concept Condensation Turbine
Electric power output 28.10 MW (gross)

Output Steam, Electrical Power, Hot

Water



JP, Daigo II

Start of operation Combustion

2015 Concept Fuel Number of Lines

Fuel Municipal Solid Waste
Number of Lines 1
Throughput per line 0.67 t/h



DE, Heinfelde

Start of operation Gas Upgrading 2015 Technology Input Gas

Plant Capacity
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Source Separated

Municipal Waste 1'000 Nm³/h 500 Nm³/h



FR, Thennelières

Start of operation 2015

Anaerobic Digestion Number of Digester(s)

Net volume per digester 2'300 m³ Digester Type Wet AD

Gas Upgrading Technology Membrane Technology

Input Gas Biogas from Agricultural Residues
Plant Capacity 500 Nm³/h

Hourly Biomethane Production 250 Nm³/h

Biomethane Usage Biomethane for gas-grid injection



DE, Wittenburg

Start of operation Gas Upgrading

2015
Technology
Input Gas
Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Membrane Technology

Biogas from Agricultural Residues

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



CN, Shanghai Liming

Start of operation 2014 Combustion Conc

Concept Air-cooled Grate
Fuel Municipal Solid Waste

Number of Lines 4
Throughput per line 20.83 t/h
Thermal power per line 37.62 MW

Thermal power per line 37.62 MW
Flue gas treatment Concept SNCR, Dry Sorption Reactor,

Fabric Filter, Scrubber
Reactant Calcium Hydroxide, Activated

Carbon

Throughput per line 103'810 m³/h (STP)
Output Electrical Power



CN, Xiangtan

Start of operation Combustion

Energy recovery

2014 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines
Throughput per line

4 20.83 t/h



CN, Shanghai Laogang Start of operation 2014

Combustion

Concept Fuel Number of Lines

Air-cooled Grate Municipal Solid Waste

Throughput per line 31.25 t/h 61.80 MW Thermal power per line Output **Electrical Power**

Energy recovery



CN, Sanya

Start of operation Combustion

2014 Concept Fuel Number of Lines

Air-cooled Grate Municipal Solid Waste

Throughput per line 14.58 t/h



CN, Harbin

Start of operation Combustion

2014 Concept Fuel Number of Lines

Throughput per line

Air-cooled Grate Municipal Solid Waste

25.00 t/h



JP, Bekki Hayami, Oita

Start of operation Combustion

2014 Fuel

Municipal Solid Waste Number of Lines 4.90 t/h Throughput per line

Energy recovery

Thermal power per line Output

14.60 MW **Electrical Power**



CN, Tianjin Binghai Start of operation 2014

Combustion

Flue gas treatment

Concept Fuel

Air-cooled Grate Municipal Solid Waste

20.83 t/h

Number of Lines Throughput per line Thermal power per line Concept

38.80 MW SNCR, Spray Absorber, Fabric

Calcium Hydroxide, Activated Reactant

Carbon

100'250 m³/h (STP) Throughput per line Energy recovery Output **Electrical Power**



CN, Zhuzhou

Start of operation Combustion

2014 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

20.83 t/h



CN, RongchengStart of operation 2

Combustion

2014 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

2 14.58 t/h



CN, Shuyang

Start of operation Combustion

2014 Concept Fuel Number of Lines

Throughput per line

Air-cooled Grate Municipal Solid Waste

14.58 t/h



CN, Xingyi Start of operation

Combustion

2014 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

12.50 t/h



FI, Vantaa

Boiler

Start of operation Combustion

Concept Fuel Number of Lines Throughput per line

Concept

Flue gas treatment

2014 Water-cooled Grate Municipal Solid Waste

24.00 t/h 64.20 MW Thermal power per line

4-pass boiler with external

economizer

Superheated Steam 83 t/h at 91 bar(a) and 400 °C

Concept **SNCR**

Throughput per line 111'100 m3/h (STP)



CN, Dalian

Start of operation 2014 Combustion

Concept Fuel

Throughput per line Thermal power per line

Flue gas treatment Concept

Air-cooled Grate Municipal Solid Waste Number of Lines

> 20.83 t/h 38.80 MW SNCR, Spray Absorber, Fabric

Activated Carbon, Calcium Reactant

Hydroxide

100'250 m³/h (STP) Throughput per line **Electrical Power**



CH, Winterthur Digester

Start of operation **Anaerobic Digestion**

Energy recovery

Output

Number of Digester(s) Net volume per digester

Waste Type

1'500 m³

Bio Waste, Food Waste, Green

Waste 25'000 t/a

Waste Throughput per Year Gas Upgrading

Technology Input Gas

Amine Scrubbing Biogas from Green Waste & Bio

Waste 300 Nm³/h

Plant Capacity

122 Nm³/h Hourly Biomethane Production

Biomethane Usage



CH, Vétroz Start of operation Anaerobic Digestion

Gas Upgrading

2014

Number of Digester(s) Net volume per digester

Digester Type Waste Type

PF1300 Bio Waste, Green Waste, Liquid

Manure, Waste Oil

20'000 t/a

Waste Throughput per Year Technology Amine Scrubbing

Input Gas Biogas from Green Waste & Bio

Waste 250 Nm³/h

1'300 m³

Plant Capacity

Hourly Biomethane Production

Biomethane Usage

130 Nm³/h Biomethane for gas-grid injection



PT, Amarsul

Start of operation Anaerobic Digestion 2014

Number of Digester(s) Net volume per digester Digester Type

Waste Type

1'300 m³ PF1300

Organic Fraction of Municipal

Solid Waste

Waste Throughput per Year 60'000 t/a



PL, Olawa

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Throughput per Year

Waste Type

1'300 m³

RM18

Organic Fraction of Municipal

Solid Waste

25'000 t/a



GB, Saint Nicholas Court Farm

Start of operation Gas Upgrading

2014 Technology Input Gas

Plant Capacity Hourly Biomethane Production

Biomethane Usage

Membrane Technology

Biogas from Agricultural Residues

700 Nm³/h 350 Nm³/h



JP, OshimaStart of operation Combustion

2014 Concept Fuel Number of Lines Throughput per line

Air-cooled Grate Municipal Solid Waste

0.31 t/h



JP, Mimasaka

Start of operation Combustion

2014 Concept Fuel Number of Lines Throughput per line

Air-cooled Grate Municipal Solid Waste

0.71 t/h



DE, Feldberg

Start of operation Gas Upgrading

2014 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

700 Nm³/h

Membrane Technology

Biogas from Energy Crops

350 Nm³/h

Biomethane for gas-grid injection



FR, Méry-sur-Seine

Start of operation Anaerobic Digestion

Gas Upgrading

Number of Digester(s)

Net volume per digester Digester Type Technology

Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

2'300 m³ Wet AD

Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h



DE, Niederröblingen

Start of operation Gas Upgrading

2014 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Agricultural Residues

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Rackwitz

Start of operation Gas Upgrading

2014 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Agricultural Residues

1'400 Nm³/h 700 Nm³/h

Biomethane for gas-grid injection



FR, Sourdun

Start of operation Anaerobic Digestion

Gas Upgrading

2014 Number of Digester(s)

Net volume per digester Digester Type

Technology

Input Gas

Plant Capacity

Biomethane Usage

Hourly Biomethane Production

2'300 m³ Wet AD

Membrane Technology

Biogas from Agricultural Residues

500 Nm³/h 250 Nm³/h

2'300 m³

Wet AD

Biomethane for gas-grid injection



FR, Ussy-sur-Marne

Start of operation Anaerobic Digestion

Number of Digester(s)

Net volume per digester Digester Type

Gas Upgrading

Technology Membrane Technology

Input Gas Biogas from Agricultural Residues

Plant Capacity 500 Nm³/h Hourly Biomethane Production 250 Nm³/h

Biomethane Usage



CH, Zuchwil

Start of operation Gas Upgrading

2014 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Membrane Technology Biogas from Sewage Sludge

250 Nm³/h 130 Nm³/h

Biomethane for gas-grid injection



KR, Namyangju Start of operation

Combustion

2013 Concept Fuel

Number of Lines Throughput per line Fluidised Bed Gasification Municipal Solid Waste

2.66 t/h



CN, Changshu

Start of operation Combustion

2013 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

12.50 t/h



CN, Yantai Start of operation Combustion

2013 Concept Fuel Number of Lines Throughput per line

Air-cooled Grate Municipal Solid Waste

20.83 t/h



JP, Nantan Start of operation

Anaerobic Digestion

2013

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

1'030 m³

Organic Fraction of Municipal

Solid Waste

10'800 t/a



JP, Matsuyama, Ehime

Start of operation Combustion

Energy recovery

2013 Fuel

Municipal Solid Waste

Number of Lines Throughput per line Thermal power per line Output

5.83 t/h 16.90 MW **Electrical Power**



JP, Nishiharima, Hyogo

Start of operation Combustion

Fuel

Number of Lines Throughput per line

1.85 t/h 5.80 MW

Thermal power per line Energy recovery

Output

Electrical Power, Hot Water

Municipal Solid Waste



JP, Nakakita Sorachi, Hokkaido Start of operation 2013

Combustion

Fuel

Number of Lines Throughput per line

Thermal power per line Concept

Steam

Energy recovery Output

Boiler

Municipal Solid Waste

1.77 t/h 8.20 MW 3-pass boiler

Electrical Power



DE, Coesfeld

Start of operation Anaerobic Digestion

2013

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

40'000 t/a



CN, Haikou

Start of operation Combustion

2013 Concept Fuel Number of Lines Throughput per line

Thermal power per line

Air-cooled Grate Municipal Solid Waste

25.00 t/h 46.00 MW **Electrical Power**

Energy recovery

Output



JP, Hadano Isehara, Kanagawa

Start of operation Combustion

2013 Fuel

Number of Lines Throughput per line Thermal power per line

Output

Municipal Solid Waste

4.16 t/h 13.30 MW **Electrical Power**



GB, Cleveland L4, L5

Start of operation Combustion

Boiler

Energy recovery

2013 Concept Fuel

Municipal Solid Waste, Industrial Waste

Air-cooled Grate

Number of Lines

19.00 t/h Throughput per line Thermal power per line 45.85 MW Concept 4-pass boiler

Flue gas treatment

Superheated Steam 56 t/h at 50 bar(a) and 410 °C Concept

SNCR, Fabric Filter, Semi-dry Reactor

2

Reactant

Activated Carbon, Calcium

Electric power output

Hydroxide

Energy recovery

Throughput per line Concept

95'400 m³/h (STP) Condensation Turbine 26.00 MW (gross)

Output

Electrical Power



CN, Longyan Start of operation

Combustion

2013 Concept Fuel

Number of Lines Throughput per line

Flue gas treatment Concept Air-cooled Grate Municipal Solid Waste

12.50 t/h

Dry Sorption Reactor, Semi-dry

Reactor, Fabric Filter



CN, Rudong II

Start of operation Combustion

2013 Concept Fuel Number of Lines

Throughput per line

Flue gas treatment Concept Air-cooled Grate Municipal Solid Waste

Dry Sorption Reactor, Fabric Filter



DE, Fulda

Start of operation Anaerobic Digestion

2013 Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

32'000 t/a



NL, Tilburg

Start of operation Anaerobic Digestion

Number of Digester(s)

Net volume per digester Digester Type Waste Type

Waste Throughput per Year

1'300 m³

PF1300 Bio Waste, Green Waste

46'000 t/a



CH, Zurich WerdhölzliStart of operation 2013

Anaerobic Digestion

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

1'500 m³

Bio Waste, Food Waste, Green

Waste

25'000 t/a



FR, Clermont-Ferrand

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

15'000 t/a



JP, Hofu

Start of operation Anaerobic Digestion 2013

Number of Digester(s) Net volume per digester

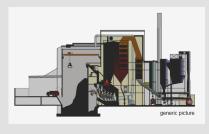
Waste Type

Waste Throughput per Year

 750 m^3

Organic Fraction of Municipal

Solid Waste 17'500 t/a



JP, Hida Start of operation Combustion

2013 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

0.52 t/h



DE, Altenhof

Start of operation Gas Upgrading 2013
Technology
Input Gas
Plant Capacity
Hourly Biomethane Production

Hourly Biomethane Production
Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

1'400 Nm³/h 700 Nm³/h

Biomethane for gas-grid injection



DE, Gardelegen

Start of operation Gas Upgrading 2013
Technology
Input Gas
Plant Capacity
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Jabel

Start of operation Gas Upgrading 2013 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Kirchgellersen

Start of operation Gas Upgrading

2013
Technology
Input Gas
Plant Capacity
Hourly Biomethar

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing
Biogas from Energy Crops

700 Nm³/h 250 Nm³/h



DE, Kroppenstedt

Start of operation Gas Upgrading

Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

1'400 Nm³/h 700 Nm³/h

Biomethane for gas-grid injection



DE, Werlte

Start of operation Gas Upgrading

2013 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops 1'000 Nm³/h

500 Nm³/h

Biomethane for gas-grid injection



CN, Huzhou

Start of operation Combustion

Flue gas treatment

Energy recovery

2012 Concept Fuel

Number of Lines Throughput per line

Concept

Output

Air-cooled Grate Municipal Solid Waste

8.33 t/h

Fabric Filter, Semi-dry Reactor,

SNCR

Electrical Power



FI, Vaasa

Boiler

Start of operation Combustion

2012 Concept Fuel

Water-cooled Grate

Municipal Solid Waste, Industrial Waste

Number of Lines

Throughput per line 24.00 t/h Thermal power per line 61.00 MW Concept 4-pass boiler

Superheated Steam 74 t/h at 42 bar(a) and 402 °C Flue gas treatment Concept

Throughput per line

Energy recovery Output

104'140 m³/h (STP) Hot Water, Electrical Power



CH, Hinwil

Start of operation Flue gas treatment 2012 Concept

Number of Lines

Fuel Reactant

Throughput per line

Dry Sorption Reactor, Fabric Filter, Heat Exchanger, SCR

Municipal Solid Waste

Sodium Bicarbonate, Activated

Carbon

87'500 m³/h (STP)



ES, Sant Adrià de Besòs L1-L3

Start of operation Combustion

2012 Concept Fuel

Concept

Air-cooled Grate

Industrial Waste, Municipal Solid

Waste

Number of Lines Throughput per line Thermal power per line

15.00 t/h 48.80 MW

3-pass boiler

Boiler

Superheated Steam

50 t/h at 40 bar(a) and 400 °C



CN, Ningde

Start of operation

Combustion

Flue gas treatment

2012 Concept Fuel

Number of Lines

Throughput per line Concept

Air-cooled Grate Municipal Solid Waste

12.50 t/h

Dry Sorption Reactor, Semi-dry

Reactor, Fabric Filter



TH, Phuket

Start of operation Combustion

2012 Concept Fuel

Concept

Number of Lines Throughput per line

Flue gas treatment

Air-cooled Grate Municipal Solid Waste

14.58 t/h

Semi-dry Reactor, Fabric Filter



FR, Vannes Start of operation Anaerobic Digestion

2012 Number of Digester(s) Net volume per digester Digester Type Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Organic Fraction of Municipal Solid Waste

15'000 t/a



FR, Angers

Start of operation Anaerobic Digestion

2012 Number of Digester(s) Net volume per digester Digester Type Waste Type

Waste Throughput per Year

4 1'300 m³ PF1300

Organic Fraction of Municipal

Solid Waste 50'000 t/a



DE, Witten

Start of operation Anaerobic Digestion

2012 Number of Digester(s) Net volume per digester Digester Type Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

26'300 t/a



DE, Trittau

Start of operation Anaerobic Digestion 2012 Number of Digester(s) Net volume per digester Digester Type Waste Type Waste Throughput per Year

1'300 m³ PF1300 Bio Waste 20'000 t/a



IT, Faedo Start of operation Anaerobic Digestion

2012 Number of Digester(s) Net volume per digester Digester Type

Waste Type Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

32'000 t/a



IT, Terni

Start of operation Anaerobic Digestion

2012 Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

17'500 t/a



NL, Weurt

Start of operation Anaerobic Digestion

2012 Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

38'000 t/a



IT, Novi Ligure

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

16'800 t/a



DE, Heidenau

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Karben

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Klein Wanzleben

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

1'400 Nm³/h 700 Nm³/h

Biomethane for gas-grid injection



DE, Leizen

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops 700 Nm³/h

350 Nm³/h



DE, Marienthal

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity

Hourly Biomethane Production

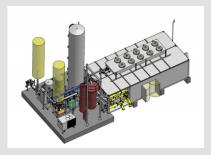
Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Müden-Aller

Start of operation Gas Upgrading

Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h

350 Nm³/h

Biomethane for gas-grid injection



DE, Neudorf-Helle

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity

Hourly Biomethane Production

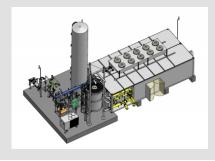
Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops 1'400 Nm³/h

700 Nm³/h

Biomethane for gas-grid injection



DE, Rätzlingen

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h



DE, Rosche

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Zeven II

Start of operation Gas Upgrading

2012 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Membrane Technology Biogas from Energy Crops

250 Nm³/h 130 Nm³/h

Biomethane for gas-grid injection



FR, Forbach

Start of operation Anaerobic Digestion 2011 Number of Digester(s)

Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

42'000 t/a



GB, Newhaven

Start of operation Combustion

2011 Concept

Fuel Number of Lines

Throughput per line

14.50 t/h

Boiler

Thermal power per line Concept Superheated Steam

Concept

35.85 MW 4-pass boiler

Municipal Solid Waste

Air-cooled Grate

Flue gas treatment

44 t/h at 50 bar(a) and 400 °C SNCR, Semi-dry Reactor, Fabric

Energy recovery

Throughput per line Concept

Electric power output

Output

75'600 m3/h (STP) Condensation Turbine 19.25 MW (gross) Electrical Power

Plants built by Hitachi Zosen since 2000

Hitachi Zosen INOVA



NO, Oslo Start of operation

Combustion

2011 Concept Fuel

Water-cooled Grate

Municipal Solid Waste, Industrial

Waste

Number of Lines

24.00 t/h Throughput per line 66.70 MW Thermal power per line Concept 4-pass boiler

Boiler Superheated Steam

Flue gas treatment

Concept

78 t/h at 42 bar(a) and 402 °C Electrostatic Precipitator (3

Fields), Heat Exchanger,

Scrubber, Heat exchanger again,

Heat exchanger 2, Heat exchanger 3, SCR, Heat exchanger 2 again

Scrubber Reactant

Throughput per line

Concept

Electric power output

Output

Lye 130'000 m³/h (STP) Back-pressure Turbine 12.80 MW (gross)

Hot Water, Electrical Power



JP, Iwata Bannan II, Shizuoka

2011 Start of operation Combustion

Energy recovery

Fuel Number of Lines

Throughput per line Thermal power per line

Energy recovery Output Municipal Solid Waste

4.67 t/h 3.00 MW

Hot Water, Electrical Power



GB, Riverside, London

Start of operation

Energy recovery

Combustion

2011

Concept Fuel

Air-cooled Grate

Municipal Solid Waste, Industrial

Waste 3

Number of Lines Throughput per line

Thermal power per line Concept

32.44 t/h 81.10 MW

Boiler Superheated Steam 4-pass boiler

Concept Flue gas treatment

99 t/h at 72 bar(a) and 427 °C SNCR, Semi-dry Reactor, Fabric

Filter

Throughput per line

Concept

169'800 m³/h (STP)

Condensation Turbine 73.00 MW (gross) **Electrical Power**

Electric power output

Output



NL, Roosendaal

Boiler

Start of operation 2011 Concept Combustion

Water-cooled Grate Fuel Municipal Solid Waste Number of Lines

Throughput per line 21.00 t/h 62.00 MW Thermal power per line Concept 5-pass boiler

Superheated Steam

Concept Flue gas treatment

76 t/h at 62 bar(a) and 422 °C Dry Sorption Reactor, Fabric Filter, SCR, Electrostatic

Precipitator Sodium Bicarbonate Reactant

Throughput per line

Energy recovery Concept

Electric power output

Output

127'000 m³/h (STP) Condensation Turbine 28.70 MW (gross)

Hot Water, Electrical Power



CN, Xiangyang

Start of operation 2011 Combustion Concept Fuel

> Number of Lines Throughput per line

Flue gas treatment Concept Air-cooled Grate Municipal Solid Waste

16.67 t/h

Semi-dry Reactor, Fabric Filter



DE, Neunkirchen EEW

Start of operation 2011 Flue gas treatment

Concept

Number of Lines

Spray Dryer, Fabric Filter,

Scrubber

Municipal Solid Waste Fuel Throughput per line 50'000 m3/h (STP)



CN, Rudong

Start of operation 2011 Combustion

Concept Fuel Number of Lines

10.42 t/h

Air-cooled Grate

Municipal Solid Waste

Throughput per line Flue gas treatment

Concept

Dry Sorption Reactor, Fabric Filter



IT, Belluno Start of operation

Anaerobic Digestion

2011

Number of Digester(s) Net volume per digester Digester Type

Waste Throughput per Year

Waste Type

1'300 m³ PF1300

Bio Waste, Food Waste, Green

Waste 22'000 t/a



DE, Ennigerloh

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

21'000 t/a



DE, Backnang-Neuschöntal

Start of operation Anaerobic Digestion 2011

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

36'000 t/a



CH, Wauwil

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

16'000 t/a



CH, Chavornay Start of operation

Anaerobic Digestion

Number of Digester(s)

Net volume per digester

Waste Type

Waste Throughput per Year

1'500 m³

Bio Waste, Food Waste, Green

Waste

23'000 t/a



DE, Ingolstadt

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

20'000 t/a



DE, Altena

Start of operation Gas Upgrading

2011 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Apensen

Start of operation Gas Upgrading

2011 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Bruchhausen-Vilsen

Start of operation Gas Upgrading 2011 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Gross Kelle

Start of operation Gas Upgrading

2011 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops 500 Nm³/h

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



DE, Jürgenshagen

Start of operation Gas Upgrading

2011 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Karft

Start of operation Gas Upgrading

2011 Technology Input Gas

chnology Amine Scrubbing
but Gas Biogas from Source Separated
Municipal Waste

Plant Capacity Hourly Biomethane Production

Biomethane Usage

1'000 Nm³/h roduction 500 Nm³/h

Biomethane for gas-grid injection



DE, Malstedt

Start of operation Gas Upgrading 2011
Technology
Input Gas
Plant Capacity
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Oberriexingen

Start of operation Gas Upgrading

2011
Technology
Input Gas
Plant Capacity
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



DE, Schwedt

Start of operation Gas Upgrading 2011 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

1'400 Nm³/h 700 Nm³/h

Biomethane for gas-grid injection



JP, Osaka IV Start of operation

Start of operation Combustion 2010 Concept Fuel

Rotary Kiln

Industrial Waste, Sewage Sludge, Waste Oil, Green Waste, Wood

Waste

Number of Lines 1 Throughput per line 4.46 t/h



JP, Yamagata, Gifu

Start of operation Combustion

Fuel

Number of Lines Throughput per line

Concept Boiler Steam

Municipal Solid Waste

0.75 t/h Water Injection



LU, Leudelange TABA

Start of operation 2010

Combustion Concept

Fuel

Number of Lines

Throughput per line Thermal power per line

Concept

Superheated Steam Concept

Reactant

Throughput per line

Energy recovery Output Water-cooled Grate

Municipal Solid Waste

22.00 t/h 67.00 MW 3-pass boiler

79 t/h at 40 bar(a) and 400 °C Dry Sorption Reactor, Fabric

Filter, SCR

Lignite Coke, Sodium Bicarbonate

136'642 m³/h (STP) **Electrical Power**



US, Olmsted L5, MN

Start of operation Combustion

Boiler

Boiler

Boiler

Flue gas treatment

2010 Concept

Fuel

Number of Lines Throughput per line

Thermal power per line

Concept

Superheated Steam

Concept Throughput per line

Energy recovery Output Air-cooled Grate

Municipal Solid Waste, Waste Oil

7.93 t/h 23.30 MW 2-pass boiler

29 t/h at 44 bar(a) and 346 °C SNCR, Fabric Filter, Spray Dryer

46'300 m³/h (STP) Electrical Power, Steam

Water-cooled Grate Municipal Solid Waste



NO, Bergen L2

Flue gas treatment

Flue gas treatment

Start of operation 2010

Combustion Concept

Fuel

Number of Lines

Throughput per line Thermal power per line

Concept

Superheated Steam

16.00 t/h 44.80 MW 4-pass boiler

57 t/h at 43 bar(a) and 402 °C Concept SNCR, Fabric Filter, Scrubber,

Semi-dry Reactor

Scrubber Reactant Caustic Soda Lignite Coke, Calcium Hydroxide

Reactant

Throughput per line

92'000 m3/h (STP) Energy recovery Hot Water, Electrical Power Output



DE, Aurich-Grossefehn Start of operation 2010

Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type

Waste Type Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste

18'000 t/a



NL, Rijsenhout

Start of operation Anaerobic Digestion 2010

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

2 1'300 m³

PF1300

Bio Waste, Green Waste

42'000 t/a



CH, Villeneuve

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type Waste Type

1'300 m³ PF1300

Bio Waste, Food Waste, Green

Waste

Waste Throughput per Year 20'000 t/a



NL, Zwolle

Start of operation Anaerobic Digestion

2010

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ PF1300

Bio Waste, Green Waste



DE, Drögennindorf

Start of operation Gas Upgrading

2010 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

500 Nm³/h 250 Nm³/h

Biomethane for gas-grid injection



DE, Eggertshofen

Start of operation Gas Upgrading

2010
Technology
Input Gas
Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops 400 Nm³/h

200 Nm³/h

Biomethane for gas-grid injection



DE, Grabsleben

Start of operation Gas Upgrading 2010 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing

Biogas from Energy Crops 700 Nm³/h

350 Nm³/h

Biomethane for gas-grid injection



DE, Unsleben

Start of operation Gas Upgrading 2010
Technology
Input Gas
Plant Capacity
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

700 Nm³/h 350 Nm³/h

Biomethane for gas-grid injection



BE, Intradel

Start of operation

Boiler

2009 Combustion

Concept Fuel

Water-cooled Grate

Municipal Solid Waste, Sewage

Sludge 2

23.63 t/h

Number of Lines Throughput per line

Thermal power per line

67.10 MW Concept 3-pass boiler with external

economizer

Superheated Steam Flue gas treatment

Concept

Electrostatic Precipitator (1 Field), Ext. Eco, SCR, Spray Absorber,

80 t/h at 40 bar(a) and 400 °C

Dry Sorption Reactor

141'000 m³/h (STP) Throughput per line



CN, Chengdu Luodai

Start of operation Combustion

2009 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line 3

Concept

SNCR, Dry Sorption Reactor,

Fabric Filter

Activated Carbon, Calcium Reactant

Hydroxide

Throughput per line

Energy recovery

Flue gas treatment

Output

93'720 m3/h (STP) **Electrical Power**



KR, Iksan

Start of operation Combustion

2009

Fuel

Number of Lines

Municipal Solid Waste

Throughput per line Thermal power per line 4.17 t/h 3.90 MW

Energy recovery

Output

Electrical Power

Air-cooled Grate



JP, Osaka (Higashiyodo)

Start of operation Combustion

2009

Concept

Fuel

Number of Lines

Municipal Solid Waste 8.33 t/h

Throughput per line Thermal power per line

12.00 MW

Energy recovery

Output

Steam, Electrical Power



Boiler

JP, Aira Start of operation Combustion

Fuel

2009

Number of Lines

Throughput per line Concept

Steam

Municipal Solid Waste

1.54 t/h Water Injection



AT, Zistersdorf

Start of operation

Flue gas treatment

Energy recovery

Combustion

Boiler

2009 Concept

Fuel

Number of Lines

Throughput per line

Thermal power per line

Concept Superheated Steam

Concept

Reactant

Throughput per line Concept

Electric power output

Output

Water-cooled Grate

Municipal Solid Waste

19.79 t/h 57.80 MW

4-pass boiler 68 t/h at 42 bar(a) and 405 °C

Fabric Filter, SCR, Dry Sorption

Reactor

Sodium Bicarbonate 97'000 m3/h (STP) Condensation Turbine

14.90 MW (gross) **Electrical Power**



ES, Mallorca

Start of operation

Combustion

2009 Concept

Fuel

Water-cooled Grate

Municipal Solid Waste, Sewage

Sludge

2

Number of Lines

Throughput per line Thermal power per line

Boiler Concept 27.00 t/h 70.00 MW 3-pass boiler

Superheated Steam Concept

82 t/h at 52 bar(a) and 400 °C Semi-dry Reactor, Fabric Filter,

Heat Exchanger, Heat exchanger 2, SCR, Heat exchanger again

142'000 m³/h (STP)

Throughput per line

Output

Electrical Power

Energy recovery

Flue gas treatment



GB, Cleveland L3

Start of operation Combustion

Flue gas treatment

Boiler

2009 Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line 19.00 t/h 45.80 MW Thermal power per line 4-pass boiler

Concept Superheated Steam

Concept

55 t/h at 43 bar(a) and 400 °C SNCR, Fabric Filter, Semi-dry

Reactor

Condensation Turbine

Calcium Hydroxide, Activated Reactant

Carbon 94'600 m3/h (STP)

Throughput per line Energy recovery Concept

Electric power output Output

10.00 MW (gross) Electrical Power



CH, Altdorf

Start of operation Anaerobic Digestion 2009 Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

 340 m^3

Food Waste, Green Waste

5'000 t/a



ES, Botarell

Start of operation Anaerobic Digestion 2009

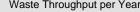
Number of Digester(s) Net volume per digester

Waste Type

1'300 m³ PF1300 Digester Type

Organic Fraction of Municipal

Solid Waste 54'000 t/a



Waste Throughput per Year



Start of operation Anaerobic Digestion

2009

Number of Digester(s) Net volume per digester

Waste Throughput per Year

Digester Type Waste Type

15

1'300 m³ PF1300

Green Waste, Organic Fraction of

Municipal Solid Waste





CH, Oensingen Start of operation

Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type Waste Type

Waste Throughput per Year

1'300 m³

PF1300 Bio Waste, Food Waste, Green

Waste 18'000 t/a



FR, Saint Lô

Start of operation Anaerobic Digestion 2009

Number of Digester(s) Net volume per digester

Digester Type Waste Type

2

1'300 m³ PF1300

Green Waste, Organic Fraction of

Municipal Solid Waste

Waste Throughput per Year 22'000 t/a



CH, Volketswil

Start of operation Anaerobic Digestion

2009

Number of Digester(s) Net volume per digester

Waste Throughput per Year

Digester Type Waste Type

Technology

Biomethane Usage

PF1300 Bio Waste, Food Waste, Green

Waste

1'300 m³

20'000 t/a

Amine Scrubbing

Biomethane for gas-grid injection,

Combined Heat and Power



JP, Aira

Start of operation Combustion

Gas Upgrading

2009 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

1.54 t/h



DE, Einbeck

Start of operation Gas Upgrading

2009 Technology Input Gas Plant Capacity

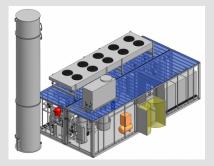
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

1'000 Nm³/h 500 Nm³/h

Biomethane for gas-grid injection



DE, Hardegsen

Start of operation Gas Upgrading

2009 Technology Input Gas Plant Capacity

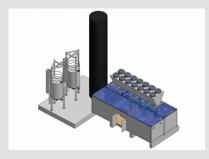
Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

1'100 Nm³/h 550 Nm³/h

Biomethane for gas-grid injection



DE, Horn-Bad Meinberg

Start of operation Gas Upgrading

2009 Technology Input Gas Plant Capacity

Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

2'000 Nm³/h 1'000 Nm³/h

Biomethane for gas-grid injection



DE, Zeven

Start of operation Gas Upgrading

2009 Technology Input Gas Plant Capacity Hourly Biomethane Production

Biomethane Usage

Amine Scrubbing Biogas from Energy Crops

250 Nm³/h 130 Nm³/h

Biomethane for gas-grid injection



FR, Argenteuil L4

Boiler

Start of operation 2008 Combustion Concept

Concept Air-cooled Grate
Fuel Municipal Solid Waste
Number of Lines 1

Throughput per line 16.50 t/h
Thermal power per line 44.14 MW
Concept 4-pass boiler

Superheated Steam 54 t/h at 47 bar(a) and 380 °C



DE, Witzenhausen

Start of operation 2008 Combustion Concept

Concept Circulating Fluidised Bed
Fuel Refuse Derived Fuel, Pulp Sludge

Number of Lines 1
Throughput per line 34

Throughput per line 34.92 t/h
Thermal power per line 125.3 MW

Flue gas treatment Concept SNCR, Semi-dry Reactor, Fabric

Filter

Throughput per line 207'100 m³/h (STP)
Energy recovery Output Steam, Electrical Power



JP, Osumi-kimotsuki, Kagoshima Pref.

Start of operation 2008

Combustion Concept Fluidised Bed Gasification

Fuel

Number of Lines 2 Throughput per line 2.66 t/h



CN, Xiamen Garbage Treatment

Start of operation 2008

Combustion Concept Air-cooled Grate
Fuel Municipal Solid Waste

Number of Lines 2
Throughput per line 9.00 t/h
Thermal power per line 14.65 MW

Boiler Concept 3-pass boiler
Superheated Steam 18 t/h at 40 b

Superheated Steam 18 t/h at 40 bar(a) and 400 °C Flue gas treatment Concept Semi-dry Reactor, Fabric Filter Throughput per line 42'000 m³/h (STP)



NL, Moerdijk L4

Start of operation Combustion

2008 Concept Fuel

Water-cooled Grate Municipal Solid Waste

Number of Lines

Throughput per line 38.33 t/h Thermal power per line 95.80 MW Concept 2-pass boiler

Boiler

Flue gas treatment

Superheated Steam

Concept

121 t/h at 107 bar(a) and 400 °C SNCR, Fabric Filter, Ext. Eco, Scrubber, Dry Sorption Reactor

Scrubber Reactant

Throughput per line Energy recovery Concept

Electric power output

199'200 m³/h (STP) Back-pressure Turbine 13.47 MW (gross) Steam, Electrical Power

Output



CH, Giubiasco

Start of operation Flue gas treatment

2008 Concept

Electrostatic Precipitator (3 Fields), Ext. Eco, Fabric Filter, Fly Ash Treatment, Heat Exchanger, Heat exchanger 2, Heat exchanger 2 again, Heat exchanger 3, Heat exchanger again, SCR, Scrubber, Activated

Carbon Entrainment

Number of Lines

Fuel

Scrubber Reactant Reactant

Throughput per line

Municipal Solid Waste Caustic Soda

Lignite Coke 67'430 m3/h (STP)



FR, Pithiviers

Start of operation Combustion

Energy recovery

Boiler

2008 Concept Fuel

Number of Lines

Air-cooled Grate Municipal Solid Waste

Throughput per line Thermal power per line Concept

Superheated Steam

10.93 MW 4-pass boiler

4.00 t/h

Flue gas treatment Concept 13 t/h at 40 bar(a) and 380 °C SNCR, Dry Sorption Reactor,

Fabric Filter

Reactant Throughput per line Output

Sodium Bicarbonate 24'000 m³/h (STP) Steam, Electrical Power



DE, Flörsheim Wicker

Start of operation Anaerobic Digestion 2008 Number of Digester(s) Net volume per digester

Digester Type Waste Type

1'300 m³ GG20

Bio Waste, Food Waste, Green

Waste

Waste Throughput per Year 45'000 t/a



CH, Klingnau

Start of operation Anaerobic Digestion 2008

Number of Digester(s) Net volume per digester Digester Type

Waste Throughput per Year

Waste Type

1'300 m³ GG20

Bio Waste, Food Waste, Green

Waste, Liquid Waste

20'000 t/a



CH, Lavigny

Start of operation Anaerobic Digestion 2008

Number of Digester(s) Net volume per digester Digester Type

Waste Type

960 m³ **GG16**

Bio Waste, Food Waste, Green

Waste 16'000 t/a

Waste Throughput per Year



FR, Montpellier

Start of operation Anaerobic Digestion 2008

Number of Digester(s)

Net volume per digester Digester Type

Waste Type

1'300 m³ PF1300 Organic Fraction of Municipal

Solid Waste

Waste Throughput per Year



CH, Inwil

Start of operation Anaerobic Digestion 2008

Number of Digester(s) Net volume per digester

Digester Type GG16

Waste Type Bio Waste, Green Waste, Liquid Manure, Liquid Waste, Solid

Manure

960 m³

16'000 t/a Waste Throughput per Year



NL, Wilp-Achterhoeck

Start of operation

2008

Anaerobic Digestion Number of Digester(s) Net volume per digester

Digester Type Waste Type

Bio Waste, Green Waste, Liquid

Waste

PF1300

4 1'300 m³

Waste Throughput per Year 60'000 t/a



FR, Dunkerque

Boiler

Start of operation 2007 Combustion

Concept Fuel

Number of Lines

Throughput per line Thermal power per line

Concept

Superheated Steam

Flue gas treatment Concept Municipal Solid Waste 12.00 t/h

Air-cooled Grate

29.30 MW 4-pass boiler

35 t/h at 40 bar(a) and 380 °C SCR, Scrubber, Electrostatic

Precipitator Caustic Soda Lignite Coke

Scrubber Reactant Reactant

Throughput per line

Concept

Electric power output

6.00 MW (gross)

50'000 m3/h (STP)

Condensation Turbine

Output

Electrical Power



JP, Sano, Tochigi Pref.

Start of operation Combustion

Energy recovery

2007 Concept

Fuel Number of Lines Throughput per line

Fluidised Bed Gasification Municipal Solid Waste

5.33 t/h



NO, Trondheim L3

Start of operation Concept Combustion

Fuel

Number of Lines Throughput per line Thermal power per line

Concept Hot Water

Concept Flue gas treatment

Scrubber Reactant

Throughput per line

Energy recovery Output Water-cooled Grate

Municipal Solid Waste

17.29 t/h

2-pass boiler 911 t/h at 16 bar(a) and 180 °C

SNCR, Semi-dry Reactor, Fabric

Filter, Scrubber

45.80 MW

84'000 m³/h (STP)

Hot Water



JP, Toyota, Aichi Pref.

Start of operation Combustion

Boiler

2007 Concept Fuel

Number of Lines Throughput per line Fluidised Bed Gasification Municipal Solid Waste

5.63 t/h



JP, Kitashiribeshi, Hokkaido

Start of operation Combustion

2007 Concept Fuel

Number of Lines Throughput per line

Thermal power per line Output

Air-cooled Grate Municipal Solid Waste

4.10 t/h 2.00 MW **Electrical Power**

Energy recovery



DE, Bamberg L1 - L3

Start of operation Combustion

2007 Concept Fuel

Air-cooled Grate

Municipal Solid Waste, Industrial

Waste, Sewage Sludge

Number of Lines Throughput per line 6.00 t/h Thermal power per line 17.50 MW 5-pass boiler

Concept

Superheated Steam

20 t/h at 40 bar(a) and 400 °C Hot Water

Energy recovery

Boiler

Output



DE, Stassfurt EVZA

Start of operation Combustion

Boiler

Concept

Fuel

Water-cooled Grate

Municipal Solid Waste, Industrial

Waste

2 22.50 t/h

Number of Lines

Throughput per line Thermal power per line

Concept

Superheated Steam

55.60 MW 4-pass boiler

64 t/h at 40 bar(a) and 400 °C Concept SNCR, Semi-dry Reactor, Fabric

Filter

Energy recovery

Flue gas treatment

Throughput per line Concept

Electric power output

Output

116'000 m³/h (STP) Condensation Turbine 28.14 MW (gross) Steam, Electrical Power



FR, Issy-les-Moulineaux

Start of operation 2007

Combustion

Concept Fuel

Number of Lines Throughput per line Thermal power per line

Boiler Concept Superheated Steam

Flue gas treatment Concept

Reactant

Throughput per line Output

Energy recovery

Water-cooled Grate Municipal Solid Waste

85.23 MW 4-pass boiler 104 t/h at 50 bar(a) and 400 °C

Dry Sorption Reactor, Fabric

Filter, SCR

34.90 t/h

Lignite Coke, Sodium Bicarbonate

151'000 m³/h (STP) Electrical Power, Hot Water



DE, Amtzell

Start of operation Anaerobic Digestion

2007

Number of Digester(s)

Net volume per digester Digester Type

Waste Type Waste Throughput per Year

1'300 m³ GG20

Bio Waste, Green Waste

18'000 t/a



DE, Gröbern

Start of operation Anaerobic Digestion 2007

Number of Digester(s) Net volume per digester Digester Type Waste Type

Waste Throughput per Year

1'300 m³ **GG20 Energy Crops** 17'000 t/a



DE, IlbenstadtStart of operation

Anaerobic Digestion

2007 Number of Digester(s) Net volume per digester Digester Type

Waste Type Waste Throughput per Year

1'300 m³ GG20

Bio Waste, Green Waste

18'250 t/a



CH, Oetwil am See 2

Start of operation Anaerobic Digestion 2007 Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

 340 m^3

Bio Waste, Food Waste, Green

Waste

5'000 t/a



DE, Regen

Start of operation Anaerobic Digestion 2007

Number of Digester(s) Net volume per digester

Digester Type Waste Type

1'300 m³

GG20

Bio Waste, Energy Crops, Green

Waste 18'000 t/a

Waste Throughput per Year



DE, Rostock

Start of operation Anaerobic Digestion 2007

Number of Digester(s) Net volume per digester Digester Type

Waste Type

1'300 m³ RM18

Organic Fraction of Municipal

Solid Waste

Waste Throughput per Year



CH, Utzenstorf

Start of operation

2007 Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type Waste Type

Waste Throughput per Year

Biomethane Usage

12'000 t/a Hourly Biomethane Production 42 Nm³/h

 720 m^3

GG12

Waste

Biomethane for gas-grid injection, Combined Heat and Power

Bio Waste, Green Waste, Liquid



DE, Erfurt

Gas Upgrading

Start of operation Combustion

Boiler

2006 Concept Fuel

> Number of Lines Throughput per line Thermal power per line

Concept Superheated Steam

Flue gas treatment

Reactant Throughput per line

Concept

Energy recovery Concept

Electric power output

Output

Water-cooled Grate

Municipal Solid Waste, Refuse

Derived Fuel

9.75 t/h 26.00 MW 3-pass boiler

29 t/h at 40 bar(a) and 400 °C SNCR, Fabric Filter, Semi-dry

Calcium Hydroxide, Lignite Coke

54'000 m3/h (STP) **Condensation Turbine** 4.90 MW (gross)

Steam, Hot Water, Electrical

Power



FR, Sète

Start of operation Flue gas treatment 2006 Concept Number of Lines

Fuel Reactant

Throughput per line

Dry Sorption Reactor, Fabric Filter

Municipal Solid Waste Sodium Bicarbonate 30'000 m3/h (STP)



JP, Ariake, Kumamoto Pref. Start of operation 2006

Combustion

Boiler

Concept Fuel

Number of Lines Throughput per line

Concept Steam

Fluidised Bed Gasification Municipal Solid Waste

1.04 t/h Water Injection



JP, Jonan Haseyama II

2006 Start of operation Combustion

Energy recovery

Concept Fuel Number of Lines Throughput per line

Thermal power per line Output

Air-cooled Grate Municipal Solid Waste

5.00 t/h 4.90 MW **Electrical Power**



JP, Tamura, Fukushima

Start of operation Combustion .

2006 Concept Fuel

Number of Lines Throughput per line

Energy recovery Output Air-cooled Grate Municipal Solid Waste

1.60 t/h Steam



JP, Tokyo (Shinagawa)

Start of operation Combustion

2006 Concept Fuel Number of Lines

Throughput per line Thermal power per line

Energy recovery Output Air-cooled Grate Municipal Solid Waste

12.50 t/h 15.00 MW

Hot Water, Electrical Power



CH, Lausanne (Tridel)

Start of operation Combustion

Boiler

2006 Concept Fuel

Water-cooled Grate

Municipal Solid Waste, Hospital Waste

Number of Lines Throughput per line

12.50 t/h 40.00 MW Thermal power per line

Concept 4-pass boiler with external

economizer

Superheated Steam 46 t/h at 52 bar(a) and 403 °C Concept Electrostatic Precipitator (2 Fields), Ext. Eco, Fly Ash

Treatment, Heat Exchanger, Heat exchanger 2, Heat exchanger 2 again, Heat exchanger 3, Heat exchanger again, SCR, Scrubber

Scrubber Reactant Caustic Soda Throughput per line 63'200 m3/h (STP)

Energy recovery

Flue gas treatment

Output

Hot Water, Electrical Power



CH, Aarberg Start of operation Anaerobic Digestion

2006

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³

GG20

Bio Waste, Food Waste, Green

Waste

20'000 t/a



CH, Langenthal

Start of operation Anaerobic Digestion

2006

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

 240 m^3

Bio Waste, Green Waste

5'600 t/a



CH, Ottenbach

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Digester Type Waste Type

960 m³

GG16

Bio Waste, Food Waste, Green

Waste 16'000 t/a

Waste Throughput per Year



CH, Pratteln

Start of operation Anaerobic Digestion 2006

Number of Digester(s) Net volume per digester Digester Type

Waste Type

960 m³ **GG16**

Bio Waste, Food Waste, Green

Waste

Waste Throughput per Year



DE, ReimlingenStart of operation

Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

Waste Type Waste Throughput per Year

1'300 m³ GG20 Energy Crops 27'000 t/a



DE, Weissenfels 2

Start of operation

Anaerobic Digestion

Number of Digester(s) Net volume per digester Digester Type

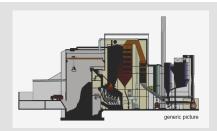
Waste Type

Waste Throughput per Year

 960 m^3 GG16

Bio Waste, Crop Residues

14'500 t/a



JP, Kushimoto/Kozagawa

Start of operation Combustion

2006 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

0.63 t/h



FR, Nantes Valorena

Start of operation Flue gas treatment 2005 Concept

Number of Lines

Fuel Reactant

Throughput per line

Dry Sorption Reactor, Fabric

Filter, SCR

Municipal Solid Waste Sodium Bicarbonate 56'500 m3/h (STP)



JP, Kashiwa, Chiba Start of operation 2005

Start of operation 2005 Combustion Concept

Concept Air-cooled Grate
Fuel Municipal Solid Waste
Number of Lines 2
Throughput per line 5 21 t/h

Throughput per line 5.21 t/h
Thermal power per line 2.50 MW

Energy recovery Output

Hot Water, Electrical Power



KR, Incheon South

Start of operation 2005 Combustion Concept Fuel

Number of Lines Throughput per line

Energy recovery Output

Air-cooled Grate Municipal Solid Waste 2

10.42 t/h Steam



JP, Odate, Akita

Start of operation 2005 Combustion Conce

Concept Fuel

Number of Lines Throughput per line

Boiler Concept Steam Energy recovery Output Air-cooled Grate Municipal Solid Waste

1.88 t/h Water Injection

Hot Water



TW, Yunlin

Energy recovery

Start of operation Combustion 2005 Concept Fuel Number of Lines

Air-cooled Grate Municipal Solid Waste

Throughput per line Thermal power per line

Output

15.80 MW Electrical Power

12.50 t/h



DE, Ludwigslust

Start of operation Combustion

Flue gas treatment

Energy recovery

Boiler

2005 Concept Fuel

Water-cooled Grate Municipal Solid Waste

Number of Lines 6.00 t/h Throughput per line 16.00 MW Thermal power per line Concept 3-pass boiler

Superheated Steam Concept

19 t/h at 40 bar(a) and 400 °C SNCR, Fabric Filter, Semi-dry

Reactor Calcium Hydroxide, Lignite Coke

Reactant Throughput per line

Output

Concept Electric power output 34'000 m³/h (STP) Condensation Turbine 3.00 MW (gross) **Electrical Power**



DE, Zorbau

Start of operation Combustion

Energy recovery

Boiler

2005 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Concept Superheated Steam

Flue gas treatment Concept

Throughput per line

Concept

Electric power output

Output

Water-cooled Grate Municipal Solid Waste

21.00 t/h 53.60 MW

3-pass boiler

63 t/h at 40 bar(a) and 400 °C SNCR, Semi-dry Reactor, Fabric

Filter

118'000 m³/h (STP) Condensation Turbine 28.30 MW (gross) **Electrical Power**



FR, Rennes L1+L2

Start of operation Flue gas treatment 2005 Concept

Number of Lines

Fuel Reactant

Throughput per line Output

Energy recovery

Fabric Filter, SCR, Dry Sorption

Reactor Municipal Solid Waste

Sodium Bicarbonate 40'400 m3/h (STP) Steam, Electrical Power



FR, Rennes L3

Start of operation Flue gas treatment

Energy recovery

2005 Concept

Number of Lines Fuel

Reactant Throughput per line

Output

Fabric Filter, SCR, Dry Sorption

Reactor

Municipal Solid Waste Sodium Bicarbonate 61'900 m3/h (STP) Steam, Electrical Power



SE, Uppsala (Block 5)

Start of operation Combustion

Flue gas treatment

Boiler

Concept

Fuel

Water-cooled Grate

Municipal Solid Waste, Hospital

Waste

Number of Lines

26.40 t/h Throughput per line Thermal power per line 73.33 MW Concept 4-pass boiler

Saturated Steam

Concept

100 t/h at 20 bar(a) and 212 °C Electrostatic Precipitator (2

Fields), Scrubber, Fabric Filter,

SCR

Scrubber Reactant Throughput per line

Energy recovery Output Lye, Limestone 148'900 m³/h (STP) Steam, Hot Water



US, Corn Plus, Winnebago, MN

Start of operation Combustion

Flue gas treatment

Energy recovery

2005 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Concept Output

Fluidised Bed Corn Syrup

22.70 t/h 38.00 MW

Dry Sorption Reactor, Fabric Filter

Steam



US, Hampton Roads, VA

Start of operation

Combustion

2005 Concept

Fuel

Fluidised Bed Sewage Sludge

Number of Lines Throughput per line 1.10 t/h Thermal power per line 2.60 MW Concept Scrubber

Flue gas treatment

Throughput per line

23'000 m3/h (STP)



CH, Jona

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

 330 m^3 ZAFE

Digester Type Waste Type

Bio Waste, Food Waste, Green

Waste

Waste Throughput per Year



ES, La Rioja Start of operation

Anaerobic Digestion

2005

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'050 m³ ZAFB

Organic Fraction of Municipal

Solid Waste 75'000 t/a



CH, Lenzburg

Start of operation Anaerobic Digestion 2005

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

 340 m^3

Bio Waste, Food Waste, Green

Waste, Liquid Waste

5'000 t/a



MQ, Martinique

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

750 m³

Bio Waste, Green Waste

20'000 t/a



CH, Uzwil 2

Start of operation Anaerobic Digestion

2005

Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

1'300 m³ ZAFB

Bio Waste, Food Waste, Green

Waste, Liquid Waste



DE, TREA Breisgau Start of operation 2004

Combustion

Flue gas treatment

Boiler

Concept

Fuel

Number of Lines Throughput per line

Thermal power per line

Concept

Superheated Steam

Concept

Fabric Filter, Scrubber

Scrubber Reactant Throughput per line

116'000 m³/h (STP)

Water-cooled Grate

22.00 t/h 61.10 MW

economizer

Municipal Solid Waste

3-pass boiler with external

74 t/h at 40 bar(a) and 400 °C

Electrostatic Precipitator (2 Fields), SCR, Semi-dry Reactor,



JP, Takamatsu, Kagawa Pref.

Start of operation Combustion

2004 Concept Fuel

Number of Lines Throughput per line Fluidised Bed Gasification Municipal Solid Waste

3 4.17 t/h



TW, Taitung

Start of operation Combustion

2004 Concept

Output

Number of Lines Throughput per line

Energy recovery

Fuel

6.25 t/h

Electrical Power

Air-cooled Grate Municipal Solid Waste



US, MCES, St. Paul, MN

Start of operation Combustion

2004

Concept Fuel

Fluidised Bed Sewage Sludge 3

Throughput per line Thermal power per line

9.40 MW SNCR, Fabric Filter, Scrubber

Concept

Scrubber Reactant Throughput per line

Number of Lines

40'190 m3/h (STP)

Energy recovery

Flue gas treatment

Output

Steam

4.00 t/h



NL, Alkmaar L4

Start of operation Combustion

Flue gas treatment

Boiler

2004 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Concept

Superheated Steam

Concept

Scrubber Reactant Reactant

Throughput per line Output

Energy recovery

Water-cooled Grate

Municipal Solid Waste

27.50 t/h 75.00 MW

4-pass boiler with external

economizer

89 t/h at 42 bar(a) and 405 °C Electrostatic Precipitator (2 Fields), Electrostatic Precipitator

(3 Fields), SCR, Scrubber

Caustic Soda **Activated Carbon** 155'900 m3/h (STP) Electrical Power



JP, Kyoto 1

Start of operation Anaerobic Digestion 2004 Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

2

1'150 m³

Food Waste, Organic Fraction of

Municipal Solid Waste

15'000 t/a



DE, Passau

Start of operation Anaerobic Digestion 2004 Number of Digester(s) Net volume per digester Digester Type

Waste Type

Waste Throughput per Year

980 m³ ZAFB

Bio Waste, Green Waste

Plants built by Hitachi Zosen since 2000

Hitachi Zosen INOVA



CH, Thun

Start of operation Combustion

Boiler

2003 Concept Fuel

Water-cooled Grate

Municipal Solid Waste, Sewage

Sludge

Number of Lines

Throughput per line Thermal power per line 18.40 t/h 46.00 MW

Concept 4-pass boiler with external

economizer

Superheated Steam 55 t/h at 40 bar(a) and 400 °C Electrostatic Precipitator (3 Concept Fields), SCR, Ext. Eco, Heat Exchanger, Scrubber, Heat exchanger again, Fabric Filter, Fly

Ash Treatment, Dry Sorption Reactor

Scrubber Reactant Lye

78'000 m³/h (STP) Throughput per line



FR, Poitiers

Flue gas treatment

Start of operation Combustion

2003 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

3.30 t/h



FR, Evreux

Start of operation Combustion

Flue gas treatment

Boiler

2003 Concept Fuel

Air-cooled Grate

Municipal Solid Waste, Sewage

Sludge

Number of Lines Throughput per line 5.63 t/h 14.40 MW Thermal power per line

Concept

Superheated Steam Concept

2-pass boiler 17 t/h at 40 bar(a) and 380 °C

Fabric Filter, SCR, Semi-dry Reactor, Dry Sorption Reactor Lignite Coke, Calcium Hydroxide, Reactant

Sodium Bicarbonate

Throughput per line Energy recovery

Concept

Output

Electric power output

31'000 m3/h (STP) Back-pressure Turbine 6.00 MW (gross) **Electrical Power**



Fluidised Bed Gasification

Fluidised Bed Gasification



JP, Fukue, Nagasaki Pref

Start of operation Combustion

2003 Concept Fuel

Number of Lines Throughput per line 1.20 t/h



JP, Ishikawahokubu, Ishikawa Pref.

Start of operation Combustion

2003 Concept Fuel

Number of Lines Throughput per line 3.33 t/h



FR, Perpignan

Flue gas treatment

Boiler

Start of operation 2003 Combustion

Concept Fuel

Air-cooled Grate Municipal Solid Waste

Number of Lines Throughput per line Thermal power per line

Concept

Superheated Steam Concept

32.40 MW 4-pass boiler

35 t/h at 40 bar(a) and 380 °C SNCR, Semi-dry Reactor, Fabric

Filter

12.10 t/h

Throughput per line 61'000 m³/h (STP) Energy recovery Concept Condensation Turbine Electric power output

21.00 MW (gross) Output **Electrical Power**



JP, Touga, Pref Shizuoka

Start of operation Combustion

2003 Fuel

Number of Lines Throughput per line Municipal Solid Waste

1.88 t/h



US, WWTP Lynn, MA

Start of operation 20 Combustion Combustion

Concept Fluidised Bed Fuel Sewage Sludge

Number of Lines 1 Throughput per line 1.07 t/h Thermal power per line 2.10 MW

Flue gas treatment Concept

Scrubber, Electrostatic Precipitator

(1 Field)

Throughput per line 40'100 m³/h (STP)



CH, Buchs SG L1

Start of operation 2003 Combustion Concept

Concept Water-cooled Grate
Fuel Municipal Solid Waste, Industrial

Waste

Number of Lines 1
Throughput per line 6.88 t/h
Thermal power per line 21.80 MW
Concept 3-pass boiler
Superheated Steam 30 t/h at 40 bar(a)

Superheated Steam 3
Energy recovery Output S

Steam, Hot Water, Electrical

Power

13.75 t/h

1.00 t/h



IT, Bologna

Boiler

Start of operation 2003 Combustion Concep

Concept Fuel Number of Lines

Number of Lines
Throughput per line

Thermal power per line

Boiler

Concept

Steam

Steam

44.80 MW 4-pass boiler 53 t/h at 50 bar(a)

Water-cooled Grate

Municipal Solid Waste



JP, Niijima, Tokyo Pref.

Start of operation 2003 Combustion Fuel

Number of Lines

Throughput per line



CH, Bachenbülach 2

Start of operation 2003

Anaerobic Digestion Number of Digester(s)

Net volume per digester

Waste Type

Waste Throughput per Year Waste 10'000 t/a

Gas Upgrading Technology Membrane Technology

Biomethane Usage

Biomethane for gas-grid injection, Combined Heat and Power

Bio Waste, Food Waste, Green

 340 m^3



DE, Weissenfels 1

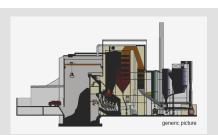
Start of operation 200

Anaerobic Digestion Number of Digester(s)

Net volume per digester 980 m³
Digester Type ZAFB

Waste Type Bio Waste, Green Waste

Waste Throughput per Year 12'500 t/a



JP, Yachimata II

Start of operation Combustion

Boiler

2003 Concept Fuel

Number of Lines
Throughput per line

Air-cooled Grate Municipal Solid Waste

2 2.60 t/h



DE, Bremerhaven Duotherm

Start of operation 2002 Combustion Concept

Concept Water-cooled Grate
Fuel Municipal Solid Waste
Number of Lines 1
Throughput por line 8 00 #/b

Throughput per line 8.00 t/h
Thermal power per line 23.30 MW
Concept 4-pass boiler
Superheated Steam 27 t/h at 40 b

Energy recovery Output

27 t/h at 40 bar(a) Electrical Power



JP, Sakurai, Nara Pref.

Start of operation Combustion

2002 Concept Fuel

Number of Lines Throughput per line 3.12 t/h



FR, Le Mans L2bis

Start of operation Combustion

Flue gas treatment

2002 Concept Fuel

Air-cooled Grate

Municipal Solid Waste, Hospital Waste

29 t/h at 30 bar(a) and 350 °C

Fluidised Bed Gasification

Number of Lines

9.00 t/h Throughput per line Thermal power per line 24.10 MW 3-pass boiler

Boiler Concept Superheated Steam

Concept

Fabric Filter, SCR, Semi-dry Reactor

Throughput per line 50'000 m3/h (STP) Electrical Power Energy recovery Output



JP, Nasu, Tochigi Pref.

Start of operation 2002 Combustion Fuel

Number of Lines Throughput per line

Energy recovery Output Municipal Solid Waste

2.50 t/h

Steam, Hot Water



JP, Okinoerabu, Kagoshima Pref. Start of operation 2002

Combustion

Boiler

Fuel

Number of Lines Throughput per line

Concept

Steam

Municipal Solid Waste

1.00 t/h Water Injection



CH, Emmenspitz L4

Start of operation Combustion

Concept

Fuel

Water-cooled Grate

Municipal Solid Waste, Industrial Waste, Sewage Sludge

32 t/h at 38 bar(a) and 385 °C

Number of Lines

10.00 t/h Throughput per line Thermal power per line 28.50 MW 3-pass boiler

Boiler Concept Superheated Steam

Flue gas treatment

Concept

SNCR, Fly Ash Treatment, Scrubber, NH4OH-Stripper, Electrostatic Precipitator

Scrubber Reactant

Throughput per line

Energy recovery Concept

Electric power output

Output

58'040 m3/h (STP) Back-pressure Turbine 7.70 MW (gross)

Steam, Hot Water, Electrical

Power



JP, Yamaguchi

Start of operation Combustion

2002 Concept Fuel

Number of Lines Throughput per line Fluidised Bed

Industrial Waste, Wood Waste

8.87 t/h



JP, Osaka (Maishima)

Start of operation Combustion

Flue gas treatment

Energy recovery

2001 Fuel

Number of Lines

Throughput per line

Concept

Output

Municipal Solid Waste

18.75 t/h

Fabric Filter, Heat Exchanger,

SCR, Scrubber Electrical Power



JP, Fukuoka Rinkai

Start of operation Combustion

Energy recovery

2001 Fuel

Number of Lines

Throughput per line

Output

Municipal Solid Waste

12.50 t/h **Electrical Power**



JP, Nishimurayama, Yamagata Pref.

Start of operation Combustion Fuel

Number of Lines

Throughput per line

Boiler Concept Steam

Output Energy recovery

Municipal Solid Waste

2.08 t/h Water Injection

Hot Water



JP, Tokyo (Chuo)

Start of operation 2001 Combustion Fuel

Number of Lines

Throughput per line Thermal power per line

Energy recovery Output Municipal Solid Waste

12.50 t/h 15.00 MW

Hot Water, Electrical Power



FR, Maubeuge

Start of operation 2001 Combustion Concept

Fuel

Number of Lines Throughput per line Thermal power per line

Concept

Superheated Steam Flue gas treatment

Concept

Throughput per line Energy recovery Output

Air-cooled Grate Municipal Solid Waste

5.50 t/h 14.10 MW 4-pass boiler

17 t/h at 36 bar(a) and 360 °C Semi-dry Reactor, Fabric Filter

30'500 m3/h (STP)

Steam, Hot Water, Electrical

Power



FR, Rouen

Boiler

Start of operation Combustion

2001 Concept Fuel

Output

Number of Lines

Throughput per line Thermal power per line Concept

Superheated Steam

Energy recovery

Boiler

Air-cooled Grate Municipal Solid Waste

14.50 t/h

38.80 MW 4-pass boiler 46 t/h at 36 bar(a) **Electrical Power**



FR, Salaise L3

Start of operation 2001 Combustion Concept

Fuel

Water-cooled Grate

Municipal Solid Waste, Industrial

Waste

Number of Lines

19.00 t/h Throughput per line Thermal power per line 48.60 MW 3-pass boiler

Boiler Concept

Superheated Steam Flue gas treatment Concept

Throughput per line

Output Energy recovery

77 t/h at 42 bar(a) and 350 °C

140'000 m³/h (STP) Steam, Electrical Power



IT, Trezzo

Boiler

Start of operation 2001 Combustion Concept

Fuel Number of Lines

Throughput per line Thermal power per line

Concept Superheated Steam

Output

Water-cooled Grate Municipal Solid Waste

16.16 t/h 41.20 MW 4-pass boiler

49 t/h at 40 bar(a) and 400 °C

Electrical Power



US, McKay Bay, Tampa, FL

Start of operation Combustion

Energy recovery

2001 Concept Fuel

Number of Lines Throughput per line Thermal power per line

Boiler

Steam

Concept

Air-cooled Grate

Municipal Solid Waste 4 9.46 t/h

26.30 MW 2-pass boiler 24 t/h at 45 bar(a)



CH, Oetwil am See 1

Start of operation Anaerobic Digestion

Number of Digester(s) Net volume per digester

Waste Throughput per Year

Waste Type

 750 m^3

Bio Waste, Food Waste, Green

Waste, Liquid Waste



AT, Roppen Start of operation

Anaerobic Digestion

2001

Number of Digester(s) Net volume per digester

Waste Type

Waste Throughput per Year

 750 m^3

Bio Waste, Green Waste

10'000 t/a



DE, Nuremberg L1-L3

Start of operation 2001 Combustion

Concept Fuel

Number of Lines Throughput per line

Thermal power per line Concept

Scrubber Reactant

Superheated Steam

Concept

41 t/h at 45 bar(a) and 400 °C Electrostatic Precipitator (3

Fields), SCR, Scrubber

Water-cooled Grate

10.50 t/h

35.00 MW

4-pass boiler

Municipal Solid Waste

Lye

64'250 m3/h (STP) Throughput per line

Output Steam



JP, Ibaraki III

Flue gas treatment

Energy recovery

Start of operation Combustion

Boiler

2001 Concept

Fuel

Rotary Kiln

Industrial Waste, Refuse Derived

Fuel

Number of Lines Throughput per line 4.17 t/h



JP, Minamikawachi-2, Osaka Pref. Start of operation 2000

Combustion

Boiler

Fuel

Number of Lines

Throughput per line

Concept Steam

Municipal Solid Waste

3.96 t/h Water Injection





KR, Buchon Daejang-Dong Start of operation 2000

Start of operation Combustion Fuel

Number of Lines

Throughput per line

Energy recovery Output Municipal Solid Waste

12.50 t/h **Electrical Power**



JP, Amagasaki II, Hyogo Pref.

Start of operation Combustion

2000 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

6.25 t/h



JP, Hitachi, Ibaraki Pref.

Start of operation Combustion

2000 Concept Fuel

Number of Lines Throughput per line Air-cooled Grate Municipal Solid Waste

4.17 t/h



JP, Nishikaigan, Aomori Pref.

Start of operation Combustion

2000 Fuel

> Number of Lines Throughput per line

Boiler Concept Steam

Municipal Solid Waste

2.75 t/h Water Injection





TW, Hsichou Changhua Start of operation 2000

Combustion Fuel

> Number of Lines Throughput per line

Energy recovery Output Municipal Solid Waste

18.75 t/h **Electrical Power**



TW, Houli Taichung

2000 Start of operation Combustion Fuel

Number of Lines

Throughput per line

Energy recovery Output Municipal Solid Waste

18.75 t/h **Electrical Power**



US, Palo Alto, CA

Start of operation 2000 Combustion

Concept Fuel

Number of Lines Throughput per line

Concept Throughput per line Multiple Hearth Sewage Sludge

1.20 t/h Scrubber

18'500 m³/h (STP)



JP, Chiba II

Flue gas treatment

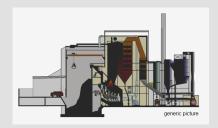
Start of operation Combustion

2000 Concept Fuel

Number of Lines Throughput per line Thermal power per line Unknown Hospital Waste

1.75 t/h 10.17 MW





JP, Nankonanbu Start of operation 20

Combustion

2000 Concept Fuel

Number of Lines Throughput per line

Air-cooled Grate Municipal Solid Waste

1.25 t/h

Hitachi Zosen Inova AG

Hardturmstrasse 127 8005 Zurich Switzerland P +41 44 277 11 11 F +41 44 277 13 13 info@hz-inova.com

Hitachi Zosen Inova U.S.A. LLC

10100 Global Way Suite 210 Knoxville, TN 37932 United States P +1 678 987 25 00 F +1 678 987 25 99 info@hz-inova.com

Hitachi Zosen KRB AG

Industriestrasse 6 9470 Buchs/SG Switzerland P +41 81 750 45 00 F +41 81 750 45 01 info-krb@hz-inova.com

Hitachi Zosen Inova Australia Pty Ltd

Level 17 40 Mount Street North Sydney, NSW 2060 Australia P +61 (02) 8003 4110 info@hz-inova.com