IEA Bioenergy
Technology Collaboration Programme

Status report on thermal gasification of biomass and waste 2025
Output: Heat & Power (electrical)

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Annex 1
Gasification facilities for CHP production with Heat & Power (electrical) Output - operational, under construction / under commissioning, on hold

Output: Heat & Power (electrical)

	Operational
	Planned
	Under construction / under commissioning
	On hold / Non operational

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CATEGORY	INFORMATION
PROJECT OWNER	Aerni Pratteln
PROJECT NAME	CHP Pratteln
STATUS	Non operational
STARTUP	2009
LOCATION	Switzerland
CITY	Pratteln
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips dried
OUTPUT 1	Power (electricity) (0.13 MWel)
OUTPUT 2	Heat (0.26 MWth)
TECHNOLOGY BRIEF	Downdraft Kuntschar/Wegscheid/Aerni modified
ADDITIONAL INFORMATION	Closed down due to technical reasons. Operational 2009–2014.

CATEGORY	INFORMATION
PROJECT OWNER	AEW Energie AG
PROJECT NAME	Pellet Gasifier AEW Rheinfelden
STATUS	Operational
STARTUP	2018
LOCATION	Switzerland
CITY	Rheinfelden
ZIP	4310
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets (110 kg/h)
OUTPUT 1	Power (electricity) (0.165 MWel)
OUTPUT 2	Heat (0.26 MWth)
OUTPUT ADDITIONAL INFO	CHP unit 0.165 MWel + 0.26 MWth for district heating
TECHNOLOGY BRIEF	Burkhardt pellet gasifier CHP (fluidized bed in co-current flow)
ADDITIONAL INFORMATION	www.aew.ch/home.html, http://burkhardt-energy.com/hp538/Technik.htm
CONTACT INFORMATION	marcel.kraenzlin@aew.ch, louis.luz@aew.ch

CATEGORY	INFORMATION
PROJECT OWNER	AEW UK
PROJECT NAME	Hoddesdon Advanced Thermal Treatment
STATUS	Under construction / commissioning (as of 2021, later operational, but now mothballed)
STARTUP	Originally planned for 2020; construction began 2015, operational in 2021, mothballed 2022
LOCATION	United Kingdom
CITY	Hoddesdon
TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Biomass Power Ltd. Step-grate
RAW MATERIAL	Other
INPUT 1	Commercial and industrial waste (105,000 t/y)
OUTPUT 1	Power (electricity) (10 MWel)
TECHNOLOGY BRIEF	EPC and operation through Bouygues Energies & Systems
ADDITIONAL INFORMATION	BIG (Bioenergy Infrastructure Group) involved in financing; Biomasspower.co.uk; plant mothballed in 2022 due to underperformance and technical issues
CONTACT INFORMATION	Mike Lyon +44 1785 240092

CATEGORY	INFORMATION
PROJECT OWNER	Agnion Technologies GmbH
PROJECT NAME	CHP Agnion Biomasse Heizkraftwerk Pfaffenhofen
STATUS	Operational
STARTUP	2001
LOCATION	Germany
CITY	Pfaffenhofen
ZIP	85276
TYPE	TRL 4-5 Pilot
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Waste wood (80,000 t/y)
OUTPUT 1	Heat (28 MWth)
OUTPUT 2	Power (electricity) (6.1 MWel)
TECHNOLOGY BRIEF	The agnion Heatpipe-Reformer is a gasification technology addressing allothermal reformer heat transport via heatpipes, enabling high heat transport density and decoupling of gasification and combustion.
CONTACT INFORMATION	-

CATEGORY	INFORMATION
PROJECT OWNER	ARBRE Energy Limited (AEL)
PROJECT NAME	IGCC ARBRE Energy Eggborough
STATUS	Idle (ceased operations in 2002)
STARTUP	2001
LOCATION	United Kingdom
CITY	Eggborough, North Yorkshire
ZIP	DN14
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP (Integrated Gasification Combined Cycle - IGCC)
RAW MATERIAL	Biomass / biomass-coal blends
INPUT 1	Many different wood species (43,000 t/y)
OUTPUT 1	Power (electricity) (9 MWel)
PARTNERS	SEC; Kelda
TECHNOLOGY BRIEF	Wood delivered chipped by truck; fuel supply, preparation and feeding system included weigh-bridge, reception pit, A-frame storage (three days bulk storage), dryer, and gasification system. Gasification at ~850°C produced syngas for a combined cycle (gas and steam turbines). Waste heat used for wood drying.
ADDITIONAL INFORMATION	Plant was only briefly operational due to economic, financial, and technical issues. Ceased operations in 2002. Site remains largely intact and has been considered for redevelopment as a waste management facility with advanced thermal treatment.
CONTACT INFORMATION	IGCC Eggborough ambreCTL

CATEGORY	INFORMATION
PROJECT OWNER	Autogasnord
PROJECT NAME	-
STATUS	Operational
LOCATION	Italy
CITY	Caluso
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.4 MWel)
OUTPUT 2	Heat (0.6 MWth)
PARTNERS	Agroenergia / CIP Group / Energy calor / Sitech Italia
TECHNOLOGY BRIEF	Pyrogasification
ADDITIONAL INFORMATION	www.autogasnord.it
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	Azienda agricola Camardo
PROJECT NAME	-
STATUS	Operational
STARTUP	2012
LOCATION	Italy
CITY	Pomarico
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.3 MWel)
TECHNOLOGY BRIEF	Pyrogasifier
ADDITIONAL INFORMATION	www.bioewatt.com
CONTACT INFORMATION	www.bioewatt.com
CATEGORY	Information

CATEGORY	INFORMATION
PROJECT OWNER	Azienda Agricola Isca di Calvello
PROJECT NAME	Urbas Calvello
STATUS	Operational
STARTUP	2015
LOCATION	Italy
CITY	Calvello
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.199 MWel)
TECHNOLOGY BRIEF	Wood gasification via thermochemical processes in a reactor; raw gas filtered for dust/tars, then used in a gas engine for CHP. Higher electrical efficiency due to no intermediate medium (e.g., steam or heat oil).
CONTACT INFORMATION	Gianfranco Misuriello +39 3334711383

CATEGORY	INFORMATION
PROJECT OWNER	Azienda Agricola San Vittore
PROJECT NAME	-
STATUS	Operational
LOCATION	Italy
CITY	Vigevano
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.5 MWel)
OUTPUT 2	Heat (0.4 MWth)
TECHNOLOGY BRIEF	Downdraft gasifier
CONTACT INFORMATION	Not known

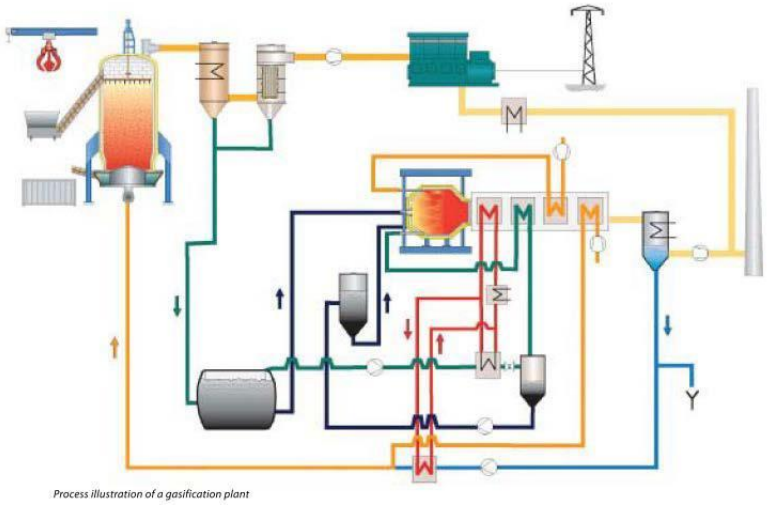
CATEGORY	INFORMATION
PROJECT OWNER	Azienda Tenca dei Fratelli Zanotti / AB energy
PROJECT NAME	Orzinuovi
STATUS	Operational
STARTUP	2009
LOCATION	Italy
CITY	Orzinuovi
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics (forestry waste)
INPUT 1	Forestry waste
OUTPUT 1	Power (electricity) (0.3 MWel)
TECHNOLOGY BRIEF	Downdraft gasifier – open core
ADDITIONAL INFORMATION	http://www.crpa.it/media/documents/crpa_www/Progetti/Seq-Cure/Documentazione/Deliverable_2008/Deliverable_02.pdf
CONTACT INFORMATION	dott. Fabio Santelli T +39 031.758247 F +39 031.7600548 E-mail: info@bio-e-watt.com

CATEGORY	INFORMATION
PROJECT OWNER	Azienda Tessile Parmense
PROJECT NAME	GAS 1000
STATUS	Idle
LOCATION	Italy
CITY	Parma
TYPE	TRL 9 Commercial
TECHNOLOGY	Fixed bed – downdraft gasifier with internal combustion engine (ICE)
RAW MATERIAL	Other (not specified)
OUTPUT 1	Power (electricity) (1 MWel)
OUTPUT 2	Heat (2 MWth)
TECHNOLOGY BRIEF	Fixed bed downdraft gasification process with a gas engine; designed for combined heat and power (CHP)
ADDITIONAL INFORMATION	www.bioenergy-world.com/europe/2008/IMG/pdf/28_Bettella_CAEMA.pdf
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	Baas Energie BV
PROJECT NAME	Kombi Power System Baas
STATUS	Operational
STARTUP	2017
LOCATION	Netherlands
CITY	Ens
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.5 MWel)
OUTPUT 2	Heat (4.5 MWth), used for greenhouse heating
OUTPUT ADDITIONAL INFORMATION	Heat for greenhouse
TECHNOLOGY BRIEF	ReGaWatt updraft gasifier; produces up to 500 kWel and 3,800–4,500 kWth heat via combined heat and power with an ORC system; notable for high overall efficiency (>95%) and very low emissions even without additional flue gas filtration technology.
ADDITIONAL INFORMATION	The system was chosen for its low operating and discharge costs, high efficiency, and low emissions. The greenhouse operation (Baas Pot- en Tuinplanten Kwekerij) covers over 50 hectares and required a reliable, year-round energy supply extension.
CONTACT INFORMATION	info@regawatt.de, +49 9443 929 215; Mr. Dieter Baas, +31 527 251212

CATEGORY	INFORMATION
PROJECT OWNER	Babcock & Wilcox Volund
PROJECT NAME	CHP Updraft Gasifier Yamagata
STATUS	Operational
STARTUP	2007
LOCATION	Japan
CITY	Yamagata
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics (wood chips)
INPUT 1	Wood chips (65 metric tons/day)
OUTPUT 1	Heat (8 MWth)
OUTPUT 2	Power (electricity) (2 MWel)
TECHNOLOGY BRIEF	Updraft gasifier, air-blown; high operational stability with over 120,000 hours of runtime.
ADDITIONAL INFORMATION	Part of a series of plants in Japan by JFE; produces ~500 MWh/month of electricity.
CONTACT INFORMATION	Robert Heeb (roh@volund.dk)

CATEGORY	INFORMATION
PROJECT OWNER	Babcock & Wilcox Volund
PROJECT NAME	CHP B&W Harboore
STATUS	Operational
STARTUP	1996
LOCATION	Denmark
CITY	Harboore
ZIP	7673
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (1 MWel)
OUTPUT 2	Heat (3.5 MWth)
TOTAL INVESTMENT EXPLANATION	100.6 million DKK for electromechanical parts
TECHNOLOGY BRIEF	Originally designed for district heating only; CHP capability added in 2000; updraft gasifier (Dr. Gratzke), air blown
CONTACT INFORMATION	Robert Heeb +45 76143596, +45 21418733, roh@volund.dk



Process illustration of a gasification plant

CATEGORY	INFORMATION
PROJECT OWNER	Babcock & Wilcox Volund
PROJECT NAME	CHP Updraft gasifier Daio
STATUS	Operational
LOCATION	Japan
CITY	Kani-city
STATE	Gifu prefecture
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Heat (12 MWth)
TECHNOLOGY BRIEF	Updraft gasifier, air blown
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	Bioenergie Schnellingen
PROJECT NAME	Bioenergie Schnellingen
STATUS	Operational
STARTUP	2015
LOCATION	Germany
CITY	Haslach
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.4 MWel)
OUTPUT 2	Heat (0.518 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow
CONTACT INFORMATION	+49 7832 975130, +49 7832 9751328

CATEGORY	INFORMATION
PROJECT OWNER	Biomasse Energie GmbH
PROJECT NAME	FICFB Villach
STATUS	Idle
LOCATION	Austria
CITY	Villach
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (3.7 MWel)
OUTPUT 2	Heat (6.7 MWth)
TECHNOLOGY BRIEF	FICFB gasifier
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	BioSynergi Proces ApS
PROJECT NAME	BioSynergi CHP Demonstration Plant
STATUS	Idle (dismantled after 2017)
STARTUP	2016
LOCATION	Denmark
STREET	Kirsebæralle 17
CITY	Hillerod
ZIP	3400
TYPE	TRL 6-7 Demonstration
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
INPUT ADDITIONAL INFO	Fresh forest wood chips (40–55% moisture content)
OUTPUT 1	Power (electricity) (0.3 MWel)
OUTPUT 2	Heat (0.75 MWth)
TOTAL INVESTMENT EXPLANATION	Supported by Danish RD&D fund “EUDP” and ForskEl start-up fund
PARTNERS	Hillerod Forsyning/Hillerod Varme A/S, BioSynergi Proces ApS
TECHNOLOGY BRIEF	Patented open-core downdraft gasifier with gas cooler/filtering systems feeding an ICE genset. Heat recovery from engine cooling, gas cooling, and flue gas condensation. Designed for unmanned operation with 86% overall efficiency. Closed in 2017 due to technical challenges and funding shortages.

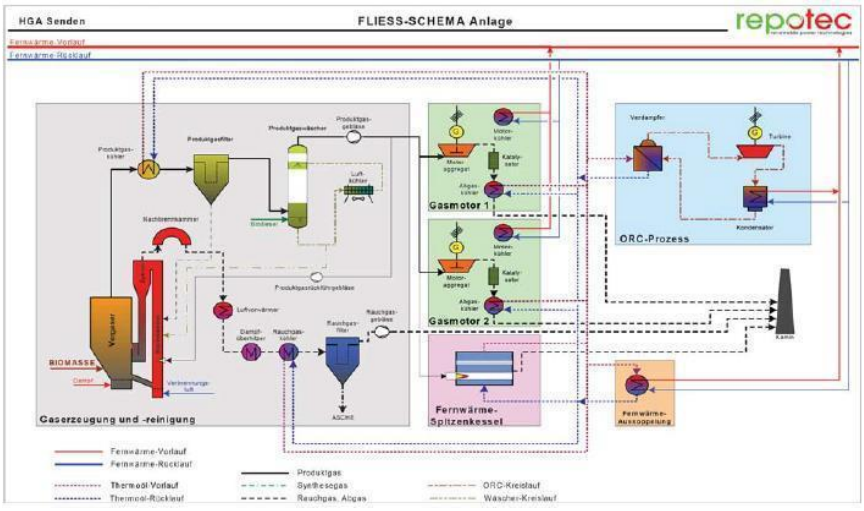
CATEGORY	INFORMATION
PROJECT OWNER	Biowaerme Eberndorf
PROJECT NAME	CHP Urbas Eberndorf
STATUS	Operational
STARTUP	2015
LOCATION	Austria
CITY	Eberndorf
ZIP	Eberndorf
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Organic residues and waste streams
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.3 MWel)
OUTPUT 2	Heat (0.6 MWth)
OUTPUT ADDITIONAL INFORMATION	Additionally 0.13 MWel + 0.25 MWth
PARTNERS	Urbas Stahl & Anlagenbau, Voelkermarkt
TECHNOLOGY BRIEF	Wood gas is produced from wood via thermochemical processes in a reactor, filtered for dust and tars, then used in a gas engine + generator for CHP. No intermediate medium required, resulting in higher electrical efficiency than steam or ORC-based CHP.
CONTACT INFORMATION	Ing. Peter Urbas (p.urbas@urbas.at)

CATEGORY	INFORMATION
PROJECT OWNER	Biowaerme Mallnitz GmbH
PROJECT NAME	Urbas Mallnitz
STATUS	Operational
STARTUP	2013
LOCATION	Austria
CITY	Mallnitz
ZIP	9822
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.25 MWel)
OUTPUT 2	Heat (0.54 MWth)
TECHNOLOGY BRIEF	Wood gas produced via thermochemical processes in a reactor, filtered to remove dust and tars, then used in a gas engine + generator for CHP. No intermediate medium required, resulting in higher electrical efficiency than steam or ORC-based systems.
CONTACT INFORMATION	Anton Glantschnig Tel. +43 664 156 78 58

CATEGORY	INFORMATION
PROJECT OWNER	Bio&Watt
PROJECT NAME	-
STATUS	Operational
STARTUP	2010
LOCATION	Italy
CITY	Oltrepo Pavese
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.3 MWel)
TECHNOLOGY BRIEF	Pyrogasifier
ADDITIONAL INFORMATION	www.bioewatt.com
CONTACT INFORMATION	No known

CATEGORY	INFORMATION
PROJECT OWNER	Birmingham Bio-power
PROJECT NAME	Birmingham Bio-power
STATUS	Operational
STARTUP	2018
LOCATION	United Kingdom
CITY	Birmingham
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Nexterra (close-coupled)
RAW MATERIAL	Lignocellulosics
INPUT 1	Waste wood
OUTPUT 1	Power (electricity) (10.3 MWel)
OUTPUT ADDITIONAL INFO	4 gasifiers feeding to boiler
TOTAL INVESTMENT EXPLANATION	£18M from Green Investment Bank, £47M other investment
TECHNOLOGY BRIEF	EPC by MWH Treatment, Development by Cogen
ADDITIONAL INFORMATION	cogenuk.com
CONTACT INFORMATION	Des Mitchell info@cogenuk.com +44 1782 384898

CATEGORY	INFORMATION
PROJECT OWNER	Blue Energy Syngas GmbH
PROJECT NAME	Holzheizkraftwerk Senden
STATUS	Non operational
STARTUP	2011
LOCATION	Germany
CITY	Neu-Ulm
ZIP	89081
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Waste wood, clean wood (14.3 MW)
OUTPUT 1	Power (electricity) (4.6 MWel)
OUTPUT 2	Heat (15 MWth)
PARTNERS	Repotec GmbH
TECHNOLOGY BRIEF	FICFB (allothermal, steam-blown); gas engine (4 MWel) and ORC (0.6 MWel)
ADDITIONAL INFORMATION	www.blue-energy-europe.com
CONTACT INFORMATION	CHP Stadtwerke Ulm/Neu-Ulm



CATEGORY	INFORMATION
PROJECT OWNER	Buergerenergie St. Peter
PROJECT NAME	Buergerenergie St. Peter
STATUS	Operational
STARTUP	2013
LOCATION	Germany
CITY	St. Peter
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.18 MWel)
OUTPUT 2	Heat (0.27 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow (Burkhardt gasifier)
CONTACT INFORMATION	Tel 07660 9417450, info@buergerenergie-st-peter.de, m.bohnert@buergerenergie-st-peter.de

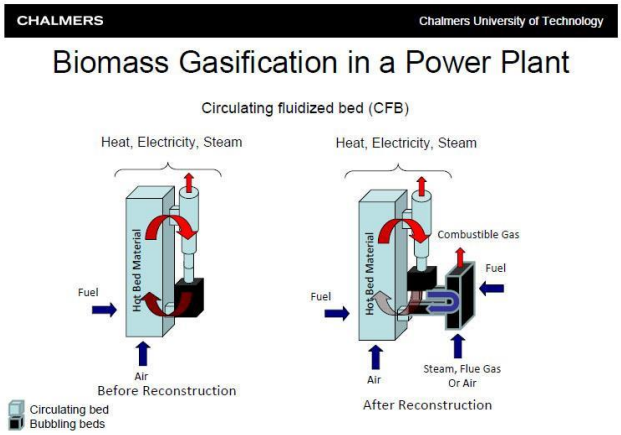
CATEGORY	INFORMATION
PROJECT OWNER	Burkhardt Cham
PROJECT NAME	Burkhardt Cham
STATUS	Operational
STARTUP	2009
LOCATION	Germany
CITY	Landkreis Cham
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.18 MWel)
OUTPUT 2	Heat (0.27 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow
CONTACT INFORMATION	info@burkhardt-gmbh.de, 09185 94 01-0

CATEGORY	INFORMATION
PROJECT OWNER	Burkhardt Neumarkt
PROJECT NAME	Burkhardt Neumarkt
STATUS	Operational
STARTUP	2010
LOCATION	Germany
CITY	Neumarkt Landkreis
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.18 MWel)
OUTPUT 2	Heat (0.27 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow
CONTACT INFORMATION	info@burkhardt-gmbh.de, 09185 94 01-0

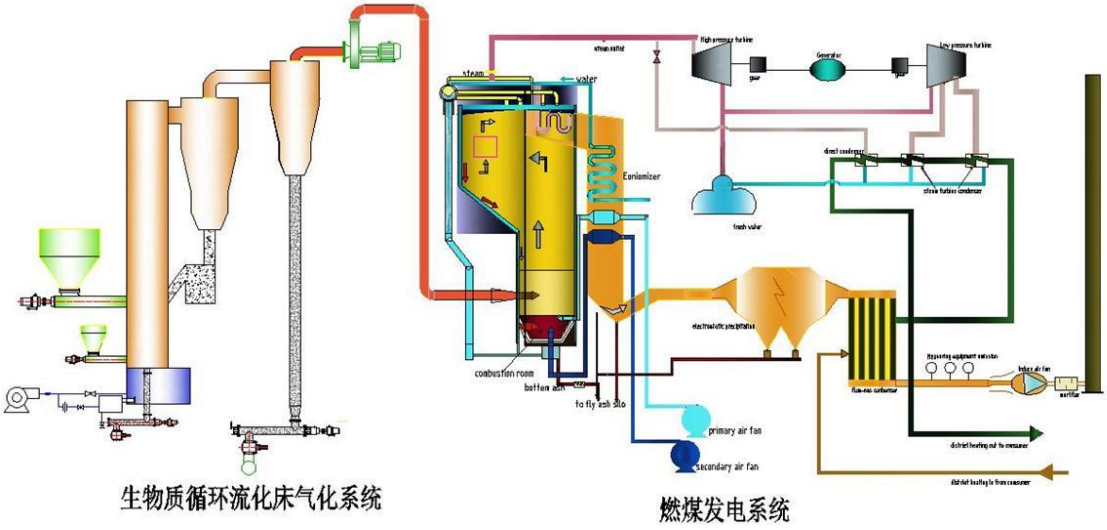
CATEGORY	INFORMATION
PROJECT OWNER	Burkhardt Nuernberger Land
PROJECT NAME	Burkhardt Nuernberger Land
STATUS	Operational
STARTUP	2009
LOCATION	Germany
CITY	Landkreis Nürnberger Land
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.18 MWel)
OUTPUT 2	Heat (0.27 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow
CONTACT INFORMATION	info@burkhardt-gmbh.de, 09185 94 01-0

CATEGORY	INFORMATION
PROJECT OWNER	Centro Cisa
PROJECT NAME	Castel DAAiano
STATUS	Operational
STARTUP	2008
LOCATION	Italy
CITY	Castel D´Aiano
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.035 MWel)
OUTPUT 2	Heat (0.14 MWth)
PARTNERS	Provincia Bologna; Consorzio Cosea
TECHNOLOGY BRIEF	Updraft gasifier + Stirling engine
CONTACT INFORMATION	Eng. Sergio Palmieri / Filippo Marino, CISA – Centro Innovazione per la Sostenibilità Ambientale, Piazza Libertà 13, 40046 Porretta Terme (BO), Tel/Fax 0534 521104, cisa@comune.porrettaterme.bo.it, Progetto Bo110 Obiettivo2 - Provincia di Bologna

CATEGORY	INFORMATION
PROJECT OWNER	Chalmers Technical University
PROJECT NAME	Centre for Indirect Gasification of Biomass
STATUS	Operational
STARTUP	2008
LOCATION	Sweden
STREET	Chalmersplatsen 1
CITY	Göteborg
TYPE	TRL 4-5 Pilot
TECHNOLOGY	Other Gasification Technology
RAW MATERIAL	Lignocellulosics
INPUT 1	Woody biomass
OUTPUT 1	Heat (4 MWth)
PARTNERS	Göteborg Energi, Valmet, EON Sweden, Stena Metal, Akademiska hus
TECHNOLOGY BRIEF	Indirect gasification system integrated with CFB co-generation boilers; hot sand from combustor transferred to gasifier, with recirculation of char/cold sand.
ADDITIONAL INFORMATION	Research facility focused on advancing biomass gasification technology.
CONTACT INFORMATION	Henrik Thunman (henrik.thunman@chalmers.se, +46 31 772 11451); www.chalmers.se



CATEGORY	INFORMATION
PROJECT OWNER	China Huadian Corporation Ltd.
PROJECT NAME	Biomass Gasification Integrated with Coal Combustion for Power Generation
STATUS	Operational
STARTUP	2018
LOCATION	China
CITY	Xiangyang
ZIP	441100
TYPE	TRL 9 Commercial
TECHNOLOGY	Fluid Bed
RAW MATERIAL	Agricultural residues
INPUT 1	Straw and rice husks (56,000 t/y)
OUTPUT 1	Power (electricity) (12 MWel)
TECHNOLOGY BRIEF	Agricultural waste gasified in a fluidized bed gasifier; producer gas co-combusted with coal for electricity.
CONTACT INFORMATION	Prof. Shoujun Zhang (http://www.hfdebo.com)



生物质循环流化床气化系统　　燃煤发电系统

CATEGORY	INFORMATION
PROJECT OWNER	Ciamber
PROJECT NAME	-
STATUS	Operational
LOCATION	Italy
CITY	Forno di Zoldo
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (1 MWel)
OUTPUT 2	Heat (0.8 MWth)
PARTNERS	Edilgoima srl
TECHNOLOGY BRIEF	Downdraft gasifier with 4 Cummins power generation 1710-G engines
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	Comune Quingentole
PROJECT NAME	-
STATUS	Operational
STARTUP	2006
LOCATION	Italy
CITY	Quingentole
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.07 MWel)
OUTPUT 2	Heat (0.14 MWth)
TECHNOLOGY BRIEF	Downdraft gasifier
ADDITIONAL INFORMATION	www.bioenergy-world.com/europe/2008/IMG/pdf/28_Bettella_CAEMA.pdf, www.caemaenergia.com
CONTACT INFORMATION	www.comune.quingentole.mn.it

CATEGORY	INFORMATION
PROJECT OWNER	Cortus AB
PROJECT NAME	WoodRoll Demonstration
STATUS	Idle
STARTUP	2018
LOCATION	Sweden
CITY	Köping
TYPE	TRL 4-5 Pilot
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Lignocellulosics
INPUT 1	Woody biomass (100 kg/h)
OUTPUT 1	Heat (0.5 MWth)
PARTNERS	Nordkalk AB, Cortus AB, Torkapparater AB, Saxlund AB, Calderys AB, Siemens AB, Kanthal AB, ÅF AB, Sandvik AB
TECHNOLOGY BRIEF	Three-stage process with thermal integration: indirect gasification producing tar-free, medium calorific value (MCV) gas without air or oxygen. Stages: drying (using flue gas), pyrolysis (thermal decomposition to gas and char), and high-temperature steam gasification of char. Heat is transferred indirectly, resulting in clean, undiluted product gas. Fully integrated pilot since late 2015.
ADDITIONAL INFORMATION	www.cortus.se; Location: Nordkalk AB, Nya Hamnvaegen, 73129 Köping
CONTACT INFORMATION	Rolf Ljunggren, ph: +46 70 694 4898, email: rolf.ljunggren@cortus.se

CATEGORY	INFORMATION
PROJECT OWNER	Cortus Energy AB
PROJECT NAME	Probiostal
STATUS	Operational
STARTUP	2023
LOCATION	Sweden
CITY	Höganäs
TYPE	TRL 9 Commercial
TECHNOLOGY	Cortus WoodRoll process (biomass gasification to renewable energy gas and biochar)
RAW MATERIAL	Forest residues (forestry waste)
INPUT 1	Forestry waste
OUTPUT 1	Heat (6 MWth)
OUTPUT ADDITIONAL INFORMATION	Output 2: biochar for use in steel process (as a renewable reduction agent replacing fossil coke)
FUNDING EXPLANATION	Funding from Energimyndigheten (Swedish Energy Agency) and Naturvårdsverket (Swedish EPA), plus industrial partners and other sources
PARTNERS	ABB, Calderys, Höganäs AB, Södra skogsägarna, Sveaskog, SSAB, Outokumpu
TECHNOLOGY BRIEF	The project uses the Cortus WoodRoll process, which gasifies forest residues to produce renewable synthesis gas (syngas) and biochar. The syngas is used as a fossil-free energy gas for high-temperature industrial processes, while the biochar can replace fossil coke in steel and metal powder production. The facility is directly integrated with Höganäs AB's metal powder production, aiming to significantly reduce CO_2 emissions by replacing fossil fuels and raw materials.
ADDITIONAL INFORMATION	The project is a milestone for industrial-scale renewable gas and biochar production in Sweden, with the potential to reduce Höganäs AB's CO_2 emissions by about 10,000 tons per year.
CONTACT INFORMATION	Rolf Ljunggren, rlj@cortus.se, +46(0)8 588 866 30

CATEGORY	INFORMATION
PROJECT OWNER	co-Ver Energy Holding
PROJECT NAME	Lake Maggiore Tecnoparco
STATUS	Operational
STARTUP	2008
LOCATION	Italy
CITY	Verbania
TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.25 MWel)
TECHNOLOGY BRIEF	Pyrogasifier with ultra high gasification temperature
ADDITIONAL INFORMATION	http://www.co-ver-energy.it/comunicazione/discoverymagazine/Magazine_CO-VER_Energy_Holding_10.08.pdf
CONTACT INFORMATION	CO-VER Energy Holding Headquarters, Via 42 Martiri, 165, 28924 Verbania (VB), Italy; Phone +39 0323 585511; Fax +39 0323 585535; coverenergyholding@co-ver-energy.it

CATEGORY	INFORMATION
PROJECT OWNER	DBI-Virtuhcon GmbH
PROJECT NAME	FlexiEntrained (GSP) Pilot Plant
STATUS	Operational
STARTUP	2018
LOCATION	Germany
CITY	Freiberg
TYPE	TRL 4-5 Pilot
TECHNOLOGY	Fuel Gas (Heat)
TECHNOLOGY ADDITIONAL INFO	Entrained flow gasifier
RAW MATERIAL	Other (hard coal, lignite, biomass, coke, char, municipal waste, sewage sludge, RDF)
INPUT 1	Hard coal, lignite, biomass, coke, char, municipal waste, sewage sludge, RDF (450 kg/h)
OUTPUT 1	Heat (5 MWth)
PARTNERS	Institute of Energy Process Engineering (IEC), TU Bergakademie Freiberg
TECHNOLOGY BRIEF	26 bar(g) pressure, water-cooled cooling screen, spray quench system, Sulfurox plant, wastewater treatment, pneumatic feeding test rig
CONTACT INFORMATION	info-evt@iec.tu-freiberg.de

CATEGORY	INFORMATION
PROJECT OWNER	Duchi Fratelli Societa Agricola / Agroenergia
PROJECT NAME	-
STATUS	Operational
STARTUP	2010
LOCATION	Italy
CITY	Gadesco Pieve Delmona
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.96 MWel)
OUTPUT 2	Heat (3.2 MWth)
PARTNERS	Agroenergia
TECHNOLOGY BRIEF	3 downdraft open core gasifiers, each generating 320 kWe power
CONTACT INFORMATION	Not known
CATEGORY	Information
PROJECT OWNER	Duchi Fratelli Societa Agricola / Agroenergia

CATEGORY	INFORMATION
PROJECT OWNER	Ecoloop GmbH
PROJECT NAME	Ecoloop GmbH
STATUS	Non operational
STARTUP	2020
LOCATION	Germany
CITY	Lauingen
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (28 kg/h)
INPUT 2	EPS (expanded polystyrene) (11.4 kg/h)
OUTPUT 1	Power (electricity) (0.068 MWel)
OUTPUT 2	Heat (0.123 MWth)
PARTNERS	RWTH Aachen
TECHNOLOGY BRIEF	Fixed Bed / Counterflow Power / CHP
CONTACT INFORMATION	roland.moeller@ecoloop.eu

CATEGORY	INFORMATION
PROJECT OWNER	Emamejeriet AB
PROJECT NAME	Emamejeriet (Ema dairy)
STATUS	Operational
STARTUP	2015
LOCATION	Sweden
CITY	Hultsfred
TYPE	TRL 8 First-of-a-kind commercial demonstration
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Volter gasifier
RAW MATERIAL	Forest residues
OUTPUT 1	Power (electricity) (0.04 MWel)
OUTPUT 2	Heat (0.1 MWth)
OUTPUT 3	Cooling (70 kW)
PARTNERS	Energikontor Sydost
ADDITIONAL INFORMATION	http://www.energikontorsydost.se/hultsfred
CONTACT INFORMATION	Karoline Alvanger, karoline.alvanger@energikontorsydost.se, Tel: +46 709 21 60 52

CATEGORY	INFORMATION
PROJECT OWNER	EMPA Duebendorf
PROJECT NAME	CHP Duebendorf
STATUS	Cancelled
LOCATION	Switzerland
TYPE	TRL 9 Commercial
TECHNOLOGY	Downdraft Woodpower gasifier
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (0.7 MWel)
PARTNERS	EKZ / Woodpower
TECHNOLOGY BRIEF	Downdraft Woodpower gasifier; project cancelled after 2 million CHF investment
ADDITIONAL INFORMATION	Project stopped
CONTACT INFORMATION	None

CATEGORY	INFORMATION
PROJECT OWNER	Energia Uno
PROJECT NAME	Urbas Terni
STATUS	Operational
STARTUP	2015
LOCATION	Italy
CITY	Terni
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.199 MWel)
OUTPUT 2	Heat (0.34 MWth)
CONTACT INFORMATION	Marco Cinaglia, Phone: +39 3408191329

CATEGORY	INFORMATION
PROJECT OWNER	Energie Oberwart
PROJECT NAME	FICFB Oberwart
STATUS	On hold
STARTUP	2008
LOCATION	Austria
CITY	Oberwart
ZIP	7400
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (8.7 MW)
OUTPUT 1	Power (electricity) (2.8 MWel)
OUTPUT 2	Heat (4.1 MWth)
PARTNERS	Ortner Anlagenbau
TECHNOLOGY BRIEF	FICFB gasifier: steam as oxidizing agent in gasification zone, air in combustion zone
CONTACT INFORMATION	Ing. DI (FH) Dr. Klaus Bosch, Tel.: +43 (0) 2682 9015-752

CATEGORY	INFORMATION
PROJECT OWNER	Energy Works
PROJECT NAME	Energy Works Hull
STATUS	Operational
STARTUP	2021 (construction began 2016, full operation after commissioning and delays)
LOCATION	United Kingdom
CITY	Hull
TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Outotec bubbling fluidised bed staged gasification (close-coupled)
RAW MATERIAL	Commercial and industrial waste (refuse-derived fuel, RDF)
INPUT 1	Commercial and industrial waste (240,000 t/y)
OUTPUT 1	Power (electricity) (24–25 MWel, exported to grid)
OUTPUT 2	Steam (10 MWth), plant is “heat ready” for district heating or industrial steam
ADDITIONAL INFORMATION	Processes 240,000 tonnes of waste per year, powers ~43,000 homes, offsets 30,000 t CO_2/year, creates 25 permanent jobs, site includes Energy Academy for education/research (in partnership with University of Hull).
TOTAL INVESTMENT EXPLANATION	Project cost ~£200M, including £20M from European Regional Development Fund; developed by Spencer Group, EPC by M+W Group, Outotec provided main process technology; B&V replaced M+W as construction contractor; BIG involved in financing.
TECHNOLOGY BRIEF	Advanced staged gasification with Outotec fluidised bed, integrated with steam boiler, turbine/generator, air-cooled condenser, and flue gas treatment. Facility is “heat ready” for future district heating.
CONTACT INFORMATION	energyworkshull.co.uk

CATEGORY	INFORMATION
PROJECT OWNER	E.ON Gasification Development AB
PROJECT NAME	Bio2G
STATUS	Cancelled (project did not proceed to construction).
LOCATION	Sweden
CITY	Scania (Skåne province); planned sites included Malmö or Landskrona.
TYPE	TRL 9 Commercial
TECHNOLOGY	Pressurised oxygen-blown fluidized bed gasification, followed by hot gas cleaning (tar reforming, HAT filter), cold gas cleaning (water scrubber, acid gas removal), compression, water-gas shift (WGS), and methanation (TREMP-type).
RAW MATERIAL	Woody biomass (mainly forest residues: tops, branches, bark, sawdust, stumps, etc.).
INPUT 1	Woody biomass (planned input: 300–350 MWth, approx. 1,000,000 tons/year wet).
OUTPUT 1	SNG (substitute/bio-methane) (planned output: 200 MW).
OUTPUT 2	Heat (district heating) (planned output: 10–50 MWth, typically 50 MWth).
ADDITIONAL INFORMATION	Output 1: SNG/bio-methane for grid injection or transport fuel.
PARTNERS	Andritz Carbona Oy and Haldor Topsoe AS (technology and project development partners).
TECHNOLOGY BRIEF	The plant was designed for pressurised oxygen-blown gasification of woody biomass in a fluidized bed, with extensive gas cleaning (hot and cold), followed by methanation to produce SNG. The process included biomass drying and chipping, and was designed for integration with the natural gas grid and local district heating. The project aimed at 1.6 TWh/year SNG production, with high efficiency and significant GHG reduction potential. The project was cancelled due to policy and market uncertainties.
ADDITIONAL INFORMATION	Total planned investment: ~450 million EUR. The location was chosen for access to the gas grid and good logistics (road, rail, harbor). The plant would have required about 50 employees and was intended as a reference for first-mover commercial-scale bio-SNG production in Sweden.
CONTACT	Björn Fredriksson-Möller, +46 40 255 716, bjorn.moller@eon.se.

CATEGORY	INFORMATION
PROJECT OWNER	Eska Graphic Board
PROJECT NAME	Waste Paper Rejects Gasification
STATUS	Operational
STARTUP	2017
LOCATION	Netherlands
CITY	Hoogezand
TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology
RAW MATERIAL	Lignocellulosics
INPUT 1	Paper reject (3 t/h)
OUTPUT 1	Heat (12 MWth)
TECHNOLOGY BRIEF	Air-blown Circulating Fluidised Bed (CFB) gasification at atmospheric pressure; syngas combusted in waste heat boiler to produce saturated steam (16 bar); thermal efficiency ~85%.
CONTACT INFORMATION	Bert Bodewes (B.Bodewes@eskagraphicboard.com)

CATEGORY	INFORMATION
PROJECT OWNER	Ettenberger Fulda
PROJECT NAME	Ettenberger Fulda
STATUS	Operational
LOCATION	Germany
CITY	Fulda
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.025 MWel)
OUTPUT 2	Heat (0.052 MWth)
PARTNERS	Ettenberger GmbH
TECHNOLOGY BRIEF	Tiered gasification process in combination
CONTACT INFORMATION	holzgas@ettenberger.de, 0661 29107040

CATEGORY	INFORMATION
PROJECT OWNER	Fernwaerme Neumarkt Ges.m.b.H. & Co.KG
PROJECT NAME	CHP Urbas Neumarkt
STATUS	Operational
STARTUP	2008
LOCATION	Austria
CITY	Neumarkt
ZIP	8820
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Forest residues
INPUT 1	Clean wood, biomass
OUTPUT 1	Power (electricity) (0.24 MWel)
OUTPUT 2	Heat (0.58 MWth)
PARTNERS	Urbas Stahl & Anlagenbau, Voellkermarkt
TECHNOLOGY BRIEF	Wood gas is produced from wood via thermochemical processes in a reactor, filtered for dust and tars, then used in a gas engine + generator for CHP. No intermediate medium required, resulting in higher electrical efficiency than steam or ORC-based CHP.
CONTACT INFORMATION	CHP Neumarkt BM Herbert Ofner, Tel.: +43 664 4501564

CATEGORY	INFORMATION
PROJECT OWNER	FPG-HYBRID srl
PROJECT NAME	Pyro-Gasification
STATUS	Operational
STARTUP	2023
LOCATION	Italy
CITY	Savignano sul Panaro
ZIP	41056
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Other (plastic waste)
INPUT 1	Plastic waste (3,000 t/y)
OUTPUT 1	Power (electricity) (0.5 MWel)
OUTPUT 2	Heat (0.9 MWth)
TECHNOLOGY BRIEF	Pyrolysis + Gasification + Cracking
ADDITIONAL INFORMATION	www.piroflamegas.com
CONTACT INFORMATION	info@piroflamegas.com

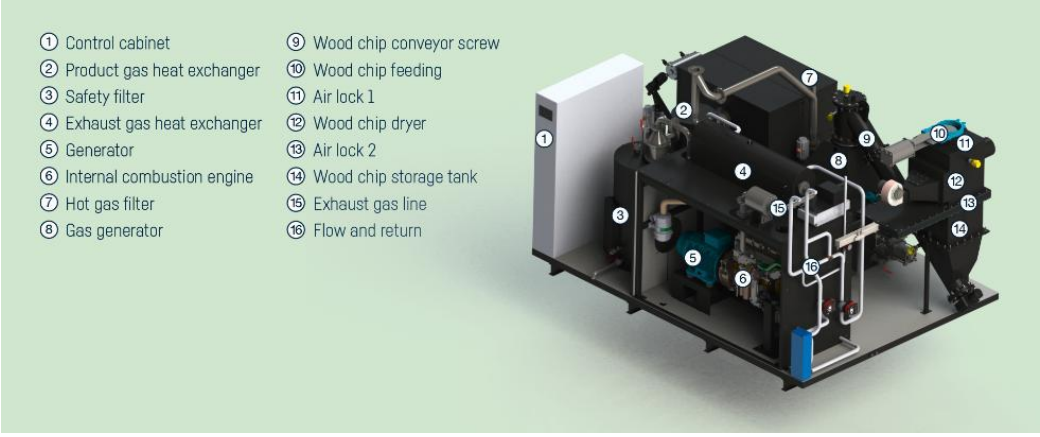
CATEGORY	INFORMATION
PROJECT OWNER	Friedrich Wahl GmbH & Co. KG
PROJECT NAME	CHP Urbas Sulzbach-Laufen
STATUS	Operational
STARTUP	2009
LOCATION	Germany
CITY	Sulzbach-Laufen
ZIP	74429
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.13 MWel)
OUTPUT 2	Heat (0.28 MWth)
PARTNERS	Urbas Stahl & Anlagenbau, Völkermarkt
TECHNOLOGY BRIEF	The gasifier operates as a downdraft gasifier, an improved version of the Imbert design. Wood is converted to wood gas through thermochemical processes in a specially designed reactor; the raw gas is filtered for dust and tars, then used in a gas engine and generator for CHP. Unlike steam turbine or ORC-based CHP, this process does not require an intermediate working medium, resulting in higher electrical efficiency.
CONTACT INFORMATION	Sabine Mertzlufft, Tel. +49 7976 9858 40

CATEGORY	INFORMATION
PROJECT OWNER	Fulcrum BioEnergy
PROJECT NAME	Sierra Biofuels
STATUS	Under construction (as of 2022; operations began but plant later shut down in 2024)
STARTUP	2022
LOCATION	United States
CITY	Reno
ZIP	89434
STATE	Nevada
TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Synthesis
RAW MATERIAL	Other (sorted municipal solid waste, MSW)
INPUT 1	Sorted MSW (175,000 t/y)
OUTPUT 1	FT liquids (Fischer-Tropsch liquids, 41,640 m^3/y)
OUTPUT 2	Power (electricity)
TECHNOLOGY BRIEF	TRI gasification (20 TPH throughput) coupled with Johnson Matthey DAVY fixed-bed Fischer-Tropsch synthesis. Phase I produces FT wax; Phase II targets full range of FT fuels including sustainable aviation fuel (SAF), renewable diesel, and naphtha.
ADDITIONAL INFORMATION	Plans for 12 additional projects were under development. Plant faced financial/operational challenges; operations ceased and assets are being auctioned as of 2024.
CONTACT INFORMATION	https://www.fulcrum-bioenergy.com/sierra-biofuels, Fulcrum BioEnergy Sierra Biofuels Plant, info@inentec.com

CATEGORY	INFORMATION
PROJECT OWNER	Gazotech
PROJECT NAME	Maraicher serriste Eloi Industrie
STATUS	Operational
STARTUP	2022
LOCATION	France
CITY	Cleder
ZIP	29233
TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Gas (Heat)
TECHNOLOGY ADDITIONAL INFO	Substitution of natural gas in a 2.5 MW thermal boiler for greenhouse heating
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood waste (850 kg/h)
OUTPUT 1	Heat (2.5 MWth)
TECHNOLOGY BRIEF	Fixed bed gasification (ASET Technology)
CONTACT INFORMATION	Maël Disa-Vingataramin - mael@gazo.tech

CATEGORY	INFORMATION
PROJECT OWNER	Gazotech
PROJECT NAME	Distillerie La Cavale
STATUS	Operational
STARTUP	2022
LOCATION	France
CITY	Limoux
ZIP	11300
TYPE	TRL 9 Commercial
TECHNOLOGY	Gasification
RAW MATERIAL	Agricultural residues
INPUT 1	Grape pomace (400 kg/h)
OUTPUT 1	Heat (1.2 MWth)
OUTPUT 2	Other (biochar, 28 kg/h)
OUTPUT ADDITIONAL INFO	Other output is biochar
TECHNOLOGY BRIEF	Fixed bed gasification (ASET technology)
CONTACT INFORMATION	Maël Disa-Vingataramin - mael@gazo.tech

CATEGORY	INFORMATION
PROJECT OWNER	Glock Energie GmbH
PROJECT NAME	Griffen CHP
STATUS	Operational
STARTUP	2019
LOCATION	Austria
CITY	Griffen
ZIP	9112
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	6 CHP units
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (288 kg/h)
OUTPUT 1	Power (electricity) (0.3 MWel)
OUTPUT 2	Heat (0.66 MWth)
TECHNOLOGY BRIEF	Fixed bed gasification; production of electricity and heat from wood. The plant consists of 6 units, each with an input of 48 kg/h and output per unit of 50 kWel and 110 kWth.
CONTACT INFORMATION	GLOCK Oekoenergie GmbH, office@glock-oeko.com, +43 2247 90300-600



CATEGORY	INFORMATION
PROJECT OWNER	GO Dupuy + Active SMO
PROJECT NAME	Site de Transformationv des algues Sargasses
STATUS	Planned
STARTUP	2026
LOCATION	France
CITY	Guadeloupe
ZIP	97100
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Other Gasification Technology
TECHNOLOGY ADDITIONAL INFO	Gasification with CO_2 sequestration
RAW MATERIAL	Other (Sargassum algae)
INPUT 1	Sargassum algae (33,000 t/y)
OUTPUT 1	Hydrogen (2,550 t/y)
OUTPUT 2	Power (electricity) (28 MW)
OUTPUT 3	Other (5,000 t/y)
OUTPUT ADDITIONAL INFO	Hydrogen, heat for own consumption, activated carbon
TECHNOLOGY BRIEF	The site will use SMO plasma gasification and pyrolysis technology (developed by NST/NT) to process sargassum algae, sequester CO_2, and produce hydrogen, electricity, and activated carbon. The process also aims to mitigate environmental impacts from sargassum algae.

CATEGORY	INFORMATION
PROJECT OWNER	Graebner Esslingen
PROJECT NAME	Graebner Esslingen
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Landkreis Esslingen
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics (wood pellets)
INPUT 1	Wood pellets
OUTPUT 1	Power (electricity) (0.03 MWel)
OUTPUT 2	Heat (0.06 MWth)
PARTNERS	Hans Gräbner Apparatebau
CONTACT INFORMATION	09274 909 251

CATEGORY	INFORMATION
PROJECT OWNER	Graebner Hochsauerland
PROJECT NAME	Graebner Hochsauerland
STATUS	Operational
STARTUP	2005
LOCATION	Germany
CITY	Hochsauerlandkreis
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics (wood pellets)
INPUT 1	Wood pellets
OUTPUT 1	Power (electricity) (0.03 MWel)
OUTPUT 2	Heat (0.06 MWth)
PARTNERS	Hans Gräbner Apparatebau
CONTACT INFORMATION	Tel.: 09274 909 251 Fax: 09274 909 8938

CATEGORY	INFORMATION
PROJECT OWNER	Graebner Rosenheim
PROJECT NAME	Graebner Rosenheim
STATUS	Operational
STARTUP	2009
LOCATION	Germany
CITY	Landkreis Rosenheim
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.03 MWel)
OUTPUT 2	Heat (0.06 MWth)
PARTNERS	Hans Gräbner Apparatebau
CONTACT INFORMATION	09274 909 251

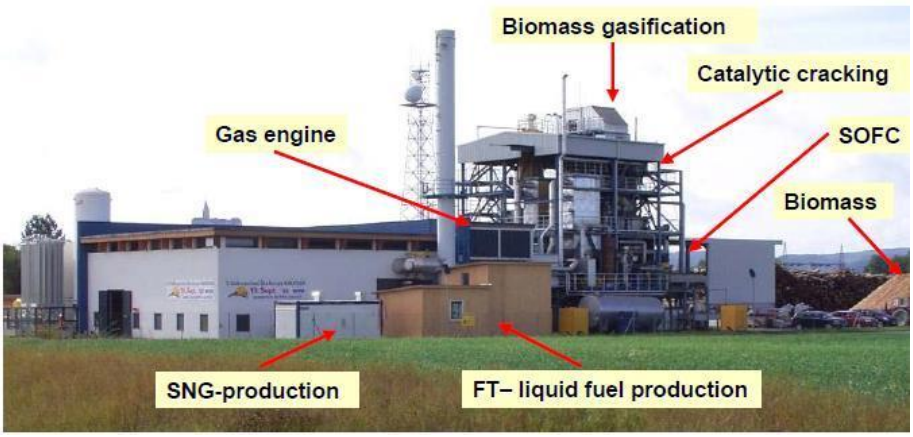
CATEGORY	INFORMATION
PROJECT OWNER	GRESCO Power Solution GmbH
PROJECT NAME	HGKW Bad Wildungen
STATUS	Operational
STARTUP	2014
LOCATION	Germany
CITY	Bad Wildungen
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Fixed bed gasification
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (180 kg/h)
OUTPUT 1	Power (electricity) (0.3 MWel)
OUTPUT 2	Heat (0.5 MWth)
OUTPUT ADDITIONAL INFO	BHKW (Gas engine)
CONTACT INFORMATION	Klaus.bosch@gresco-power.com, Tel. 0043 677 62020190

CATEGORY	INFORMATION
PROJECT OWNER	GRETHA
PROJECT NAME	Nongbua DFB gasifier
STATUS	Operational
STARTUP	2018
LOCATION	Thailand
CITY	Nakhon Sawan
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Dual fluidized bed gasification (DFB), developed by Vienna University of Technology; technology supplier: Güssing Renewable Energy
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (3.8 MWth)
INPUT 2	Various biomass types to be tested (e.g., sugarcane leaf, corncob, RDF)
OUTPUT 1	Power (electricity) (1 MWel)
OUTPUT 2	Heat (1.25 MWth)
TECHNOLOGY BRIEF	The Nongbua plant uses DFB gasification, similar to the Güssing plant in Austria. It features improved fuel feeding, biomass dryer, gasifier and tar scrubber design, and heat exchanger system. The plant is flexible for various biomass feedstocks. Typical operation: gasifier at 800–870°C, combustor at 870–950°C, calcined olivine as bed material. Product gas is cooled, filtered, and can be used for CHP or further processing.
ADDITIONAL INFORMATION	First DFB gasifier in Thailand to operate with multiple biomass types; investment cost ~4.2 million EUR (160 MTHB); product gas has low nitrogen due to steam gasification; flexible for power, heat, and gas production.
CONTACT INFORMATION	Dr. Janjira Hongrapipat, Technical Director, Gussing Renewable Energy (Thailand) Co., Ltd. No.75, Chan Kao Road, Chongnonsi Sub District, Yanawa District, Bangkok 10120, Thailand. Office: +66 2 652 5256, Mobile: +66 85 122 5653

CATEGORY	INFORMATION
PROJECT OWNER	GTI Gas Technology Institute
PROJECT NAME	GTI gasifier Des Plaines
STATUS	Operational
LOCATION	United States
CITY	Des Plaines
ZIP	60016
STATE	Illinois
TYPE	TRL 4-5 Pilot
TECHNOLOGY	Gasification (Bubbling Fluidized Bed, Carbona process)
RAW MATERIAL	Lignocellulosics
INPUT 1	Pellets, wood chips (24 t/d)
OUTPUT 1	Heat (5 MWth)
OUTPUT 2	Gasoline-type fuels (38 m^3/y)
FUNDING	USD 2,000,000
PARTNERS	Carbona (Finland and USA, based on VTT Finland cooperation), Velocys (Fischer-Tropsch Technology), UPM (funding), Andritz-Carbona
TECHNOLOGY BRIEF	Carbona biomass gasification process, based on GTI licenses and further developed by Carbona. Bubbling fluidized bed gasifier, operating at 840–1100°C, producing syngas for heat and liquid fuels. Includes sulfur removal, tar reforming, water-gas shift, compression, CO_2 removal, and Fischer-Tropsch synthesis. Pilot plant produces about 25 gal/d gasoline; first commercial application under Skive BGGE Small Modular Biopower.
ADDITIONAL INFORMATION	Gasification, sulfur removal, and tar reforming at 1000 kg/h; WGS, compression, CO_2 removal, and heat exchange at about 1400 scfh (1/50th of gasifier stream). Demonstrated over 1,000 hours of integrated operation, producing over 10,000 gallons of gasoline-equivalent fuels.

CATEGORY	INFORMATION
PROJECT OWNER	Guascor Italia
PROJECT NAME	Rossano Calabro (CS)
STATUS	Operational
STARTUP	2003
LOCATION	Italy
CITY	Rossano Calabro
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Olive husk, industry wood, agro-forest residues (annual biomass consumption: 35,868 t/a)
OUTPUT 1	Power (electricity) (4.2 MWel)
TECHNOLOGY BRIEF	Three independent systems: biomass feeding and gasification, biogas cleaning, and biogas conditioning/electric generation. Gasifier is fed by wood residues and olive husk.
CONTACT INFORMATION	Guascor Italia, Via Orvieto, 12 - Pomezia (RM), Tel. 06/9162780, Fax. 06/91251042, commerciale@guascor.it

CATEGORY	INFORMATION
PROJECT OWNER	Guessing Renewable Energy
PROJECT NAME	FICFB Guessing
STATUS	On hold
STARTUP	2002
LOCATION	Austria
CITY	Güssing
ZIP	7540
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (3 t/h)
OUTPUT 1	Power (electricity) (2 MWel)
PARTNERS	Austrian Energy
TECHNOLOGY BRIEF	FICFB (Fast Internally Circulating Fluidized Bed) divides the bed into gasification and combustion zones, producing low-N_2, high-H_2 gas. Several research projects use slip streams of the product gas.
CONTACT INFORMATION	Ing. Reinhard Koch, r.koch@eee-info.net
CATEGORY	Information
PROJECT OWNER	Guessing Renewable Energy



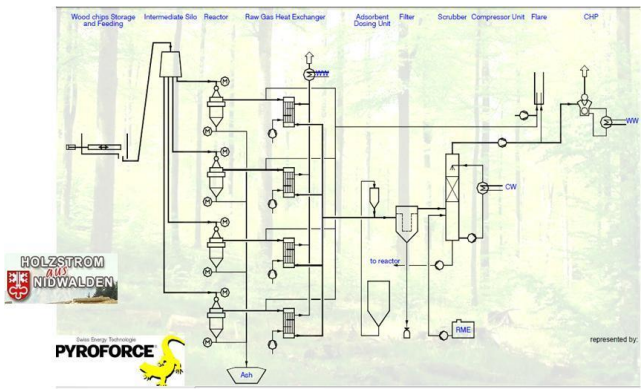
CATEGORY	INFORMATION
PROJECT OWNER	H2Herten GmbH
PROJECT NAME	Blue Tower Technology Herten
STATUS	On hold
STARTUP	2009
LOCATION	Germany
CITY	Herten
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Other Gasification Technology (multi-stage reforming process)
RAW MATERIAL	Lignocellulosics (roadside greenery)
INPUT 1	Roadside greenery
INPUT 2	Syngas (13 MW thermal input)
OUTPUT 1	Hydrogen (150 m^3/h)
OUTPUT 2	Heat (approx. 37,500 MWh/a electricity equivalent)
PARTNERS	Blue Tower GmbH, Dresden
TECHNOLOGY BRIEF	Green waste (roadside greenery) is decomposed at ~600°C, with 80% converted to gas and remaining solids to coke, which is reused for process heat. The gas is purified into a hydrogen-rich "blue gas" (~50% H_2) at ~950°C using steam. The hydrogen-rich gas can be concentrated to pure hydrogen or used in gas engines for electricity. With a 13 MW thermal input, the process yields 150 m^3/h hydrogen and 37,500 MWh/a electricity, supplying up to 12,000 homes. The project set new technical and economic standards but was put on hold due to financial and technical challenges, including the insolvency of a key shareholder.
ADDITIONAL INFORMATION	Total investment: ~€24.6 million; project was subsidized by the state of North Rhine-Westphalia (€7.1 million). The plant was designed as a reference for sustainable hydrogen and power production from waste biomass, but construction and commissioning were halted after the insolvency of Solar Millennium AG.
CONTACT INFORMATION	info@htvg.de

CATEGORY	INFORMATION
PROJECT OWNER	HEH Holzenergie
PROJECT NAME	CHP Pfalzfeld
STATUS	Under construction
LOCATION	Germany
CITY	Pfalzfeld
ZIP	56291
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (1 MWel)
PARTNERS	Mothermik CHP Technology GmbH
TECHNOLOGY BRIEF	Fixed bed downdraft gasifier, air blown
CONTACT INFORMATION	-

CATEGORY	INFORMATION
PROJECT OWNER	H.H. Kaeser GmbH
PROJECT NAME	Holzgasanlage 2 Kaeser Gasel
STATUS	Operational
STARTUP	2017
LOCATION	Switzerland
STREET	Büschigasse 123
CITY	Gasel
ZIP	3144
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (133 kg/h)
OUTPUT 1	Power (electricity) (0.14 MWel)
OUTPUT 2	Heat (0.24 MWth)
OUTPUT ADDITIONAL INFO	CHP unit (0.14 MWel + 0.24 MWth) for commercial chip wood drying unit
TOTAL INVESTMENT	EUR 680,000
TOTAL INVESTMENT EXPLANATION	Investment includes CHP gasifier unit, connection to heating device and power.
TECHNOLOGY BRIEF	Downdraft Ligento Gasifier
ADDITIONAL INFORMATION	http://www.hhkaeser.ch/hh-kaser
CONTACT INFORMATION	info@hhkaeser.ch

CATEGORY	INFORMATION
PROJECT OWNER	H.H. Kaeser GmbH
PROJECT NAME	Holzgasanlage 1 Kaeser Gasel
STATUS	Operational
STARTUP	2015
LOCATION	Switzerland
STREET	Bodenackerstrasse 1
CITY	Gasel
ZIP	3144
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP (downdraft fixed-bed gasifier)
RAW MATERIAL	Lignocellulosics (wood chips)
INPUT 1	Wood chips (133 kg/h, approx. 3.2 t/d)
OUTPUT 1	Power (electricity) (0.14 MWel)
OUTPUT 2	Heat (0.24 MWth)
OUTPUT ADDITIONAL INFO	CHP unit (0.14 MWel + 0.24 MWth) for commercial chip wood drying unit
TOTAL INVESTMENT	EUR 680,000
TOTAL INVESTMENT EXPLANATION	Investment includes: CHP gasifier unit, connection to heating device and power.
TECHNOLOGY BRIEF	Downdraft Ligento Gasifier
ADDITIONAL INFORMATION	http://www.hhkaeser.ch/hh-kaser
CONTACT INFORMATION	info@hhkaeser.ch

CATEGORY	INFORMATION
PROJECT OWNER	Holzstrom aus Nidwalden
PROJECT NAME	CHP Pyroforce Nidwalden
STATUS	Operational
STARTUP	2007
LOCATION	Switzerland
CITY	Stans
ZIP	6371
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Dried chips from demolition wood
OUTPUT 1	Power (electricity) (1.38 MWel)
OUTPUT 2	Heat (1.2 MWth)
PARTNERS	Pyroforce
TECHNOLOGY BRIEF	2-zone downdraft Pyroforce gasifier; the plant has 2 independent CHP gasifier lines, each with 4 parallel gasifiers and a raw gas cooler. The cooled wood gas is filtered and fuels one Jenbacher gas engine.
ADDITIONAL INFORMATION	The plant structure allows for redundancy and continuous operation, maximizing efficiency and reliability.
CONTACT INFORMATION	Bernhard Boecker-Riese (boecker-riese@br-engineering.ch), Hans Bieri (holzverstromung@korporation-stans.ch)



CATEGORY	INFORMATION
PROJECT OWNER	Holzstrom GmbH
PROJECT NAME	CHP Urbas Neukirchen
STATUS	Operational
STARTUP	2011
LOCATION	Austria
CITY	Neukirchen
ZIP	5145
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.35 MWel)
OUTPUT 2	Heat (0.6 MWth)
PARTNERS	Urbas StahlAnlagenbau, Voelkermarkt
TECHNOLOGY BRIEF	Wood gas is produced via thermochemical processes in a specially designed reactor, then filtered to remove dust and tars. The cleaned gas fuels a gas engine + generator for CHP. No intermediate working medium is needed, resulting in higher electrical efficiency compared to steam or ORC-based CHP.
CONTACT INFORMATION	Johann Wurhofer, Tel.: +43 664 2425408

CATEGORY	INFORMATION
PROJECT OWNER	HoSt
PROJECT NAME	CFB Tzum
STATUS	Idle
STARTUP	2006
LOCATION	Netherlands
CITY	Tzum
ZIP	8804
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Other (chicken manure)
INPUT 1	Chicken manure
OUTPUT 1	Heat (3 MWth)
TECHNOLOGY BRIEF	3 MWth circulating fluidized bed (CFB) gasifier, gas used in a low-NOx gas boiler for heat and electricity. Heat used on-site, power to grid. Operated 3500 h in 2007. Improvements included ash removal and fuel drying. Main challenge: supply of sufficiently dry chicken manure.
ADDITIONAL INFORMATION	HoSt also constructed a second chicken manure gasifier in Portugal as part of a 1 MWe CHP plant in 2010.
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	Hotel Haffhus
PROJECT NAME	Hotel Haffhus
STATUS	Operational
STARTUP	2018
LOCATION	Germany
CITY	Ueckermuende
ZIP	17373
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (19 kg/h)
INPUT ADDITIONAL INFO	Wood chips in accordance with ISO 17225-4 A1 P16S-P31S
OUTPUT 1	Power (electricity) (0.018 MWel)
OUTPUT 2	Heat (0.044 MWth)
TECHNOLOGY BRIEF	Production of heat and electricity from wood; fixed bed gasifier
ADDITIONAL INFORMATION	www.glock-oeko.com
CONTACT INFORMATION	GLOCK Ökoenergie, office@glock-oeko.com, +43 2247 90300-600

CATEGORY	INFORMATION
PROJECT OWNER	HS Energieanlagen GmbH
PROJECT NAME	CHP Heatpipe Reformer Neufahrn bei Freising
STATUS	Operational
LOCATION	Germany
CITY	Neufahrn bei Freising
ZIP	85375
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP (Heat pipe reformer, fluidized bed; allotherm, steam blown CHP)
RAW MATERIAL	Lignocellulosics
INPUT 1	Waste wood, clean wood
OUTPUT 1	Power (electricity) (0.11 MWel)
OUTPUT 2	Heat (0.25 MWth)
PARTNERS	Hartl KG
TECHNOLOGY BRIEF	Heat pipe reformer with allothermal (externally heated) steam gasification in a fluidized bed. Heat is transferred from the combustion chamber into the gasifier via heat pipes, enabling efficient, high-quality syngas production. Heat is supplied to a nearby electrical distributor and the HS Energieanlagen GmbH office.
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	ICQ/SIAG/ERBA
PROJECT NAME	-
STATUS	Operational
STARTUP	2009
LOCATION	Italy
CITY	Torre S.Susanna
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Other Gasification Technology (Pyrogasifier)
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.5 MWel)
OUTPUT 2	Heat (2 MWth)
TECHNOLOGY BRIEF	Biomass plant with syngas production from molecular dissociation and pyrogasification of wood chips, generating 2,000 kWth of gas. Developed under a PON-funded project to optimize a three-phase biomass gasification process (drying, pyrolysis, gasification) for high-quality syngas production for internal combustion engines.
ADDITIONAL INFORMATION	http://77.43.21.234/files/files_news2/00034.pdf
CONTACT INFORMATION	Tel.: +39 (0) 6 8404301, Fax: +39 (0) 6 840430231, info@gruppoicq.com

CATEGORY	INFORMATION
PROJECT OWNER	IDEX
PROJECT NAME	Synnov
STATUS	Non operational
STARTUP	2021
LOCATION	France
CITY	Villers-sous-Montrond
ZIP	25620
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP (Thermolysis; planned upgrade to EQTEC gasification technology)
TECHNOLOGY ADDITIONAL INFO	The original plant used non-EQTEC thermolysis/gasification technology, which failed performance and endurance tests. IDEX acquired the plant and plans to replace core technology and ancillary equipment with EQTEC gasification technology.
RAW MATERIAL	Other (wood waste and solid derived fuel, SDF; up to 60,000 t/y)
INPUT 1	Wood waste and SDF (60,000 t/y)
OUTPUT 1	Heat (12.5 MWth)
OUTPUT 2	Power (electricity) (7 MWel)
ADDITIONAL INFORMATION	The installation operated intermittently between 2018 and 2020 during commissioning. Following inconclusive endurance and performance tests and a dispute with the original supplier, the plant was sold to IDEX. The site is now planned for major technology replacement and recommissioning with EQTEC technology. The project is intended to be France's largest gasification-based CHP plant, processing diverse waste streams. Legal action was initiated after the original supplier failed to deliver a fully operational plant.
CONTACT INFORMATION	Stephane GUILLET, stephane.guillet@idex.fr

CATEGORY	INFORMATION
PROJECT OWNER	Ilomantsin Laempoe Oy
PROJECT NAME	District heating plant
STATUS	Operational
STARTUP	1996
LOCATION	Finland
CITY	Ilomantsi
ZIP	82900
TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology (two updraft fixed bed gasifiers)
RAW MATERIAL	Lignocellulosics (peat, wood chips)
INPUT 1	Peat, wood chips
OUTPUT 1	Heat (6 MWth)
TECHNOLOGY BRIEF	The biomass (peat, wood chips) is gasified in two updraft fixed bed gasifiers. The product gas is combusted in a boiler.
CONTACT INFORMATION	Olli Summala, Tel. +358 40 104 3301

CATEGORY	INFORMATION
PROJECT OWNER	Institute of Energy Process Engineering and Chemical Engineering (IEC), TU Bergakademie Freiberg
PROJECT NAME	FlexiSlag Pilot Plant
STATUS	Operational
STARTUP	2013
LOCATION	Germany
CITY	Freiberg
TYPE	TRL 4-5 Pilot
TECHNOLOGY	Fuel Gas (Heat)
TECHNOLOGY ADDITIONAL INFO	Slagging fixed-bed gasifier, 40 bar, BGL reactor
RAW MATERIAL	Other (biomass waste, coal, petcoke, municipal and plastic waste)
INPUT 1	Biomass waste (2 t/h)
INPUT 2	Coal, petcoke (2 t/h)
INPUT 3	Municipal and plastic waste (2 t/h)
OUTPUT 1	Heat (10 MWth)
OUTPUT 2	Other (gas, 2,300 m^3/h)
OUTPUT ADDITIONAL INFO	Output 2: Gas
TECHNOLOGY BRIEF	The FlexiSlag Pilot Plant is a next-generation slagging fixed-bed gasifier based on the BGL principle, operating at up to 40 bar and 10 MWth. It is designed for high flexibility in feedstock, including biomass, coal, petcoke, municipal, and plastic waste. The plant enables research and process optimization for ash/slag behavior, gas quality, and waste water under industrial conditions, supporting both fundamental and applied R&D for industry and technology development.
CONTACT INFORMATION	info-evt@iec.tu-freiberg.de

CATEGORY	INFORMATION
PROJECT OWNER	Jalasjaerven Laempoe Oy
PROJECT NAME	District heating
STATUS	Operational
STARTUP	2013 (facility since 1986, new gasifier installed in 2013)
LOCATION	Finland
ZIP	61600
TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology (updraft fixed bed gasifier)
RAW MATERIAL	Lignocellulosics
INPUT 1	Peat, wood chips, pellets
OUTPUT 1	Heat (6 MWth)
TECHNOLOGY BRIEF	Biomass is gasified in an updraft fixed bed gasifier; the product gas is combusted in a boiler.
CONTACT INFORMATION	Petri Viinikainen, Tel. +358 40 0263543, info@jalasjarvenlampo.fi

CATEGORY	INFORMATION
PROJECT OWNER	JEHL + SG Energie + consortium
PROJECT NAME	MethaJehl
STATUS	Planned
LOCATION	France
CITY	Artolsheim
ZIP	67390
TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	CleanCarbonConversion + methanation
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood waste (10,000 t/y)
OUTPUT 1	SNG (2.97 MW)
OUTPUT 2	Heat (1.14 MW)
OUTPUT ADDITIONAL INFO	Biomethane for grid injection
PARTNERS	Jehl TP, groupe Schmidt, GRDF, Vialis, GRT Gaz, CleanCarbonConversion (technology)
TECHNOLOGY BRIEF	The MethaJehl project utilizes high-temperature pyrolysis (pyrogazéification) of dry wood residues coupled with a methanation step, using CleanCarbonConversion technology. The process produces renewable biomethane (SNG) for injection into the gas grid, supporting France's energy transition and circular economy goals. The project is an example of local valorization of non-recyclable biomass waste through advanced gasification and methanation, enabling the production of non-intermittent, storable, and transportable renewable gas as a substitute for fossil natural gas.
CONTACT INFORMATION	yannick.ferriere@sg-energies.eco

CATEGORY	INFORMATION
PROJECT OWNER	Josef Bucher AG Escholzmatt
PROJECT NAME	Holzverstromungsanlage Bucher Escholzmatt
STATUS	Operational
STARTUP	2015
LOCATION	Switzerland
CITY	Escholzmatt
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (4,700 m^3/y)
OUTPUT 1	Power (electricity) (0.13 MWel)
OUTPUT 2	Heat (0.26 MWth)
OUTPUT ADDITIONAL INFO	CHP unit (0.13 MWel + 0.26 MWth) for district heating
TOTAL INVESTMENT EXPLANATION	Investment includes building, heat and power gasifier unit, connection to district heating and power, as well as feedstock bunker and handling devices.
TECHNOLOGY BRIEF	Downstream Wegscheidt Gasifier
ADDITIONAL INFORMATION	http://www.bucherholz.ch
CONTACT INFORMATION	jbagholz@bluewin.ch

CATEGORY	INFORMATION
PROJECT OWNER	Jura BHKW Hiller
PROJECT NAME	Jura BHKW Hiller
STATUS	Operational
STARTUP	2018
LOCATION	Germany
CITY	Parsberg
ZIP	92331
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (48 kg/h)
OUTPUT 1	Power (electricity) (0.05 MWel)
OUTPUT 2	Heat (0.11 MWel)
TECHNOLOGY BRIEF	Fixed bed gasification
CONTACT INFORMATION	GLOCK Oekoenergie GmbH, office@glock-oeko.com, +43 2247 90300-600

CATEGORY	INFORMATION
PROJECT OWNER	Kauhajoen Lämpöhuolto Oy
PROJECT NAME	District heating plant
STATUS	Operational
STARTUP	1985
LOCATION	Finland
CITY	Kauhajoki
ZIP	61800
TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology (two updraft fixed bed gasifiers: 5 MWth and 8 MWth)
RAW MATERIAL	Lignocellulosics (peat, wood chips)
INPUT 1	Peat, wood chips
OUTPUT 1	Heat (13 MWth)
TECHNOLOGY BRIEF	The biomass (peat, wood chips) is gasified in two updraft fixed bed gasifiers (5 MWth and 8 MWth). The product gas is combusted in a boiler to produce district heat.
CONTACT INFORMATION	Kauhajoen Lämpöhuolto Oy, toimisto@lampohuolto.fi, Tel. +358 207 459 776

CATEGORY	INFORMATION
PROJECT OWNER	Kiteen Laempoe Oy
PROJECT NAME	District heating plant
STATUS	Operational
STARTUP	1986
LOCATION	Finland
CITY	Kitee
ZIP	82500
TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology (updraft fixed bed gasifier)
RAW MATERIAL	Lignocellulosics (wood chips, sod peat)
INPUT 1	Wood chips, sod peat
OUTPUT 1	Heat (6 MWth)
TECHNOLOGY BRIEF	The biomass (wood chips, peat) is gasified in an updraft fixed bed gasifier. The product gas is combusted in a boiler. The heating plant generates 6 MW of heat.
CONTACT INFORMATION	Olli Summala, Tel. +358 40 104 3301

CATEGORY	INFORMATION
PROJECT OWNER	Kokemaen Laempoe Oy
PROJECT NAME	CHP power plant
STATUS	Operational
STARTUP	2004
LOCATION	Finland
CITY	Kokemäki
ZIP	32800
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP (Novel fixed-bed gasification, forced fuel flow)
RAW MATERIAL	Lignocellulosics (biomass residues, sawdust to large chips)
INPUT 1	Biomass residues, sawdust to large chips
OUTPUT 1	Heat (6 MWth)
PARTNERS	Condens Oy (2004-2008)
TECHNOLOGY BRIEF	Condens Oy and VTT developed a new type of fixed-bed gasifier based on forced fuel flow. The plant was equipped with a gas reformer, filter, and scrubber for gas cleaning. Three 0.6 MW gas engines were installed for power production and a gas boiler for heat recovery. The gasifier operated with a wide range of biomass residues. Electricity generation did not meet expectations; after Condens Oy withdrew in 2008, the facility continued as a district heating plant (now 7.2 MWth capacity).
CONTACT INFORMATION	Kokemäen Lämpö Oy, CEO Jukka Järvenpää, Tel. +358 400 637 543

CATEGORY	INFORMATION
PROJECT OWNER	Kopf Syngas GmbH and Co. KG
PROJECT NAME	KSV Mannheim
STATUS	Non operational
STARTUP	2015
LOCATION	Germany
CITY	Mannheim
ZIP	68159
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Other (sewage sludge)
INPUT 1	Sewage sludge (5,000 t/y)
OUTPUT 1	Heat (1.5 MWth)
PARTNERS	KOPF SynGas GmbH and Co. KG
TECHNOLOGY BRIEF	Fluidized bed gasification. Currently stopped and under redesign.
CONTACT INFORMATION	info@kopf-syngas.de, Tel.: +49 7071 54954 50, Fax: +49 7071 54954 60

CATEGORY	INFORMATION
PROJECT OWNER	Kuntschar Wolfshagen
PROJECT NAME	Kuntschar Wolfshagen
STATUS	Operational
STARTUP	2006
LOCATION	Germany
CITY	Wolfhagen
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.2 MWel)
OUTPUT 2	Heat (0.27 MWth)
PARTNERS	Kuntschar Energieerzeugung GmbH
TECHNOLOGY BRIEF	Fixed bed gasifier
CONTACT INFORMATION	info@kuntschar-holzgas.de, +49(0)5692 997739-0

CATEGORY	INFORMATION
PROJECT OWNER	Kuntschar Wolfshagen
PROJECT NAME	Kuntschar Wolfshagen
STATUS	Operational
STARTUP	2006
LOCATION	Germany
CITY	Wolfhagen
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.2 MWel)
OUTPUT 2	Heat (0.27 MWth)
PARTNERS	Kuntschar Energieerzeugung GmbH
TECHNOLOGY BRIEF	Fixed bed gasifier
CONTACT INFORMATION	info@kuntschar-holzgas.de, +49(0)5692 997739-0

CATEGORY	INFORMATION
PROJECT OWNER	KWS Ostalb
PROJECT NAME	KWS Ostalb
STATUS	Operational
STARTUP	2013
LOCATION	Germany
CITY	Ostalbkreis
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.3 MWel)
OUTPUT 2	Heat (0.45 MWth)
PARTNERS	KWS Strohmenger GmbH
CONTACT INFORMATION	Tel. +49 - 9134 - 9962 - 0, Fax. +49 - 9134 - 996226, mail: info@kws-strohmenger.de

CATEGORY	INFORMATION
PROJECT OWNER	Lahti Energia Oy
PROJECT NAME	Kymijaervi II
STATUS	Operational
STARTUP	2012
LOCATION	Finland
CITY	Lahti
ZIP	15170
TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Organic residues and waste streams
INPUT 1	SRF (Solid Recovered Fuel)
OUTPUT 1	Power (electricity) (50 MWel)
OUTPUT 2	Heat (90 MWth)
PARTNERS	Valmet
TECHNOLOGY BRIEF	The Kymijaervi II plant uses CFB gasification technology with innovative gas cooling and cleaning. SRF is gasified at 850-900°C in two CFB gasifiers (2x80 MW), producing product gas that is cooled and cleaned before combustion in a natural gas boiler. The process removes impurities that cause boiler corrosion, allowing clean gas combustion. The plant's total fuel input is 160 MW, with outputs of 50 MW electricity and 90 MW district heat. Valmet supplied the gasification, gas cleaning, steam boiler, and flue gas cleaning systems.
CONTACT INFORMATION	Juhani Isakkson, Valmet (juhani.isaksson@valmet.com, tel. +358 40 8304402); Hemmo Takala, Lahti Energia Oy

CATEGORY	INFORMATION
PROJECT OWNER	Lahti Energia Oy
PROJECT NAME	Kymijaervi I
STATUS	Operational
STARTUP	1998
LOCATION	Finland
CITY	Lahti
ZIP	15170
TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood waste
OUTPUT 1	Heat (70 MWth)
PARTNERS	Amec Foster Wheeler
TECHNOLOGY BRIEF	The Kymijärvi I plant features an atmospheric 60 MW CFB gasifier (Amec Foster Wheeler), operational since 1998. The gasifier runs at 800–1000°C, producing product gas from wood waste, which is combusted in a 360 MWth coal boiler, replacing coal for power and district heat production. The system achieves over 95% annual availability and has proven reductions in CO_2, SO_2, dust, and NOx emissions compared to coal-only combustion.
CONTACT INFORMATION	Hemmo Takala, Lahti Energia Oy, Tel. +358 50 5981221, hemmo.takala@lahtienergia.fi

CATEGORY	INFORMATION
PROJECT OWNER	Lamprecht
PROJECT NAME	Lamprecht GmH
STATUS	Operational
STARTUP	2015
LOCATION	Italy
CITY	Kastelbell
ZIP	3902
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.199 MWel)
OUTPUT 2	Heat (0.32 MWth)
TECHNOLOGY BRIEF	Wood gas is produced from wood via thermochemical processes in a specially designed reactor, then filtered for dust and tars. The cleaned gas is used in a gas engine + generator for CHP. Unlike steam or ORC-based CHP, this process does not require an intermediate medium, resulting in higher electrical efficiency.
CONTACT INFORMATION	Oskar Pfeifer, info@lamprecht-holz.com

CATEGORY	INFORMATION
PROJECT OWNER	Levenseat Renewable Energy Ltd
PROJECT NAME	Levenseat EfW
STATUS	Operational
STARTUP	2020
LOCATION	United Kingdom
CITY	Edinburgh (Forth by Lanark, Scotland)
TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Outotec fluidised bed gasification (close-coupled); first UK plant to combine fluidised bed gasification with Refuse Derived Fuel (RDF) processed by an adjacent Materials Recycling Facility (MRF).
RAW MATERIAL	Other (Commercial and Industrial waste, processed into RDF)
INPUT 1	Commercial and Industrial waste (215,000 t/y processed; minimum 100,000 t/y RDF produced for EfW plant).
OUTPUT 1	Power (electricity) (12.5 MWel).
ADDITIONAL INFORMATION	- £111 million project, backed by Green Investment Bank, Foresight Group, Zouk Capital, and Levenseat Limited. - EPC contractor: M+W Group. - Adjacent MRF recovers plastics, metals, paper, and card for recycling; produces RDF for the EfW plant. - Designed to process 42 t/h waste, diverting over 1.4 million tonnes from landfill and saving 1.3 million - Generates enough electricity to supply almost 18,000 homes.
CONTACT INFORMATION	admin@levenseat.co.uk, +44 1501 771185

CATEGORY	INFORMATION
PROJECT OWNER	Ligento Nuernberg
PROJECT NAME	Ligento Nuernberg
STATUS	Operational
LOCATION	Germany
CITY	Nürnberg
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.14 MWel)
OUTPUT 2	Heat (0.24 MWth)
PARTNERS	Ligento green power GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow
CONTACT INFORMATION	info@ligento.de, 0911 2403005-0

CATEGORY	INFORMATION
PROJECT OWNER	Mekrijaervi Research Station
PROJECT NAME	District heating plant
STATUS	Operational
STARTUP	2005
LOCATION	Finland
CITY	Ilomantsi
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (dry, good quality)
OUTPUT 1	Power (electricity) (0.03 MWel)
OUTPUT 2	Heat (0.08 MWth)
PARTNERS	Volter
TECHNOLOGY BRIEF	Wood chips are gasified and converted to wood gas, which is burned. The plant generates 80 kW heat and 30 kW electricity. The small-CHP is also used for research purposes.
CONTACT INFORMATION	Mekrijaervi Research Station, mekri@uef.fi, Tel. +358 2944 53684

CATEGORY	INFORMATION
PROJECT OWNER	Metso Fibre (Metsä Fibre, part of Metsä Group)
PROJECT NAME	Bioproduct Mill Aanekoski
STATUS	Operational
STARTUP	2017
LOCATION	Finland
CITY	Äänekoski
ZIP	44100
STATE	Finland
TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Gas (Heat)
ADDITIONAL INFO	CFB (Circulating Fluidized Bed) gasification by Valmet
RAW MATERIAL	Lignocellulosics (bark from debarking wood in the mill)
INPUT 1	Bark
INPUT ADDITIONAL INFO	Bark is produced in the mill during wood debarking
OUTPUT 1	Heat (87 MWth)
ADDITIONAL INFO	Product gas used to fire a lime kiln in the mill
TECHNOLOGY BRIEF	The Äänekoski Bioproduct Mill uses state-of-the-art CFB gasification technology from Valmet to convert bark, a by-product of the pulp process, into product gas. This gas is then used as fuel for the lime kiln, making the mill fossil fuel-free. The mill is highly energy-efficient, producing 2.4 times more bioenergy than it consumes, and supports a wide range of bioproducts in addition to pulp, including tall oil, turpentine, sulphuric acid, biogas, and biofuel pellets. The mill has a pulp production capacity of 1.3 million tonnes per year and achieves 240% energy self-sufficiency, exporting surplus electricity and heat.
ADDITIONAL INFORMATION	Largest forest industry investment in Finland (€1.2 billion); employs ~2,500 people in the value chain. The mill is a platform for future bioproducts and supports the local bioeconomy ecosystem.
CONTACT	juhani.isaksoon@valmet.com

CATEGORY	INFORMATION
PROJECT OWNER	Metso Fibre Oy, Joutseno Mill
PROJECT NAME	Lime kiln gasifier
STATUS	Operational
STARTUP	2012
LOCATION	Finland
CITY	Joutseno
TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Lignocellulosics (bark)
INPUT 1	Bark
OUTPUT 1	Heat (48 MWth)
PARTNERS	Andritz (supplier)
TECHNOLOGY BRIEF	The plant uses a 48 MW atmospheric air-blown Circulating Fluidized Bed (CFB) gasifier from Andritz. Bark, a by-product from the mill's debarking process, is dried in a belt dryer using mill waste heat (evaporation rate 12 t/h, reducing moisture from ~50% to ~15%), then gasified at 750–800°C. The resulting producer gas replaces natural gas in the lime kiln, enabling the mill to operate with 95% renewable fuel, significantly reducing CO_2 emissions and improving lime quality. The system is designed for flexibility, accommodating varying fuel properties and efficiently managing NOx and SOx without post-combustion cleaning.
ADDITIONAL INFORMATION	The gasification retrofit made the Joutseno mill the first carbon-neutral pulp mill in Finland during normal operations, reducing annual fossil CO_2 emissions by about 70,000 tonnes. The plant processes about 11 t/h of dried bark, replacing nearly all fossil gas in the lime kiln and achieving a short payback time.
CONTACT INFORMATION	Veli-Matti Pietarinen, Andritz veli-matti.pietarinen@andritz.com Tel: +358 40 8606 523

CATEGORY	INFORMATION
PROJECT OWNER	MEVA Innovation
PROJECT NAME	VIPP Demonstration
STATUS	Operational (note: some sources indicate the plant has since been deconstructed)
STARTUP	2012
LOCATION	Sweden
CITY	Hortlax
TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Biomass pellets
OUTPUT 1	Power (electricity) (1.2 MWel)
OUTPUT 2	Heat (2.2 MWth)
PARTNERS	Pite Energi, Cummins Ltd, Envibat AB
TECHNOLOGY BRIEF	Crushed pellets are pneumatically fed with air into a cyclone gasifier. The resulting gas is cooled and quenched in a co-current scrubber using bio-oil. After liquid separation, the gas is cleaned in a Wet Electrostatic Precipitator (WESP) before being routed to a gas engine. The VIPP system is designed for high efficiency, flexible fuel use, and rapid load changes, producing clean syngas suitable for engine combustion.
ADDITIONAL INFORMATION	The system processes about 960 kg of pellets per hour to deliver 1.2 MW electricity and 2.2 MW heat. The VIPP (Vortex Intensive Power Process) technology is based on cyclone gasification, enabling the use of various biomass fuels and achieving high conversion efficiencies. The demonstration included collaboration with Cummins for engine integration and was tailored for small-scale, distributed energy production.
CONTACT INFORMATION	Niclas Davidsson, info@mevaenergy.se, niclas.davidsson@mevaenergy.se, +46 708 40 72 41

CATEGORY	INFORMATION
PROJECT OWNER	Muensterland Energy Gmbh
PROJECT NAME	Muensterland Energy Gmbh
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Ladbergen
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (6 MWel)
OUTPUT 2	Heat (8.6 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow
CONTACT INFORMATION	info@muensterland-energy.de; +49 (0) 5485 8348910

CATEGORY	INFORMATION
PROJECT OWNER	Naturenergie Hersbruck GmbH & Co. KG
PROJECT NAME	Naturenergie Hersbruck GmbH & Co. KG
STATUS	Operational
STARTUP	2012
LOCATION	Germany
CITY	Hersbruck
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP (Combined Heat and Power)
RAW MATERIAL	Lignocellulosics (wood chips)
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.4 MWel)
OUTPUT 2	Heat (1.1 MWth)
TECHNOLOGY BRIEF	The plant uses the Kombi Power System®, developed by Gammel Engineering, featuring a unique combination of a hot air turbine and a downstream ORC turbine (GuORC). Wood chips are gasified in a countercurrent (Gegenstrom) gasifier, with the resulting gas combusted to generate both electricity and heat. The system achieves very low dust and CO emissions (<2 mg/Nm³ dust, 0.01 g/Nm³ CO), well below legal limits, without the need for additional flue gas cleaning. The CHP plant is a key element in Hersbruck's local climate strategy and district heating network. Due to technical issues, the turbine was decommissioned in 2016, but the gasifier and boiler continue to supply heat.
PARTNERS	Gammel Engineering GmbH
ADDITIONAL INFORMATION	The plant is a pilot project for innovative, low-emission biomass CHP. It supplies the base load for one of four district heating networks in Hersbruck, supporting local climate goals. Total investment was around €5 million. The system was the first worldwide to combine a hot air turbine and downstream ORC for biomass CHP.
CONTACT INFORMATION	Am Schloss 14, 91239 Henfenfeld, Germany; Tel. +49 (0) 9151 814816

CATEGORY	INFORMATION
PROJECT OWNER	NUON/Vattenfall
PROJECT NAME	Wood co-gasification in IGCC
STATUS	Non operational (shut down 2013)
LOCATION	Netherlands
CITY	Buggenum
ZIP	6082
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology (Shell entrained flow gasification in IGCC)
RAW MATERIAL	Biomass / biomass-coal blends (wood dust, refined pellets, torrefied/steam-exploded biomass, coal)
OUTPUT 1	Power (electricity) (up to 250–253 MWel)
ADDITIONAL INFORMATION	The Buggenum IGCC (Willem-Alexander) plant was a 253 MWe demonstration facility using Shell dry-feed entrained flow gasification and Siemens gas turbine. Biomass co-gasification trials began in 2002, with modifications allowing up to 10% wood dust (energy basis) by 2006. By 2007, the plant operated at ~10% biomass, and trials were conducted to increase to 30% and even 70% (using pre-treated biomass). The plant demonstrated successful continuous co-gasification of up to 30% wood. In 2011, activities started to increase the co-firing share to 50% or more, but upstream feeding and process issues limited performance. The plant was closed in April 2013 due to low energy prices and high operating costs.
PARTNERS	NUON/Vattenfall
TECHNOLOGY BRIEF	Integrated Gasification Combined Cycle (IGCC) with Shell entrained flow gasification. The plant included a 28 bar Shell coal gasification process, Sulfinol acid gas removal, and Siemens gas turbine. The air separation unit provided 95% O_2 for the gasifier. Biomass was introduced via modified storage and feeding systems. The plant achieved 43% net electric efficiency and was a first-of-its-kind demonstration for large-scale biomass co-gasification in IGCC.
CONTACT INFORMATION	http://www.nuon.com/ +31 26 845 02 71

CATEGORY	INFORMATION
PROJECT OWNER	Nurmes
PROJECT NAME	Micro-scale biomass gasification CHP Volter
STATUS	Operational
STARTUP	2012
LOCATION	Finland
CITY	Nurmes
ZIP	75500
TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.04 MWel)
OUTPUT 2	Heat (0.1 MWth)
TECHNOLOGY BRIEF	Wood chips are gasified in a downdraft gasifier at 900–1200°C. The product gas is cooled, filtered, and burned to provide electricity. The thermal energy from the generator is used for farm water heating and wood chip drying.
ADDITIONAL INFORMATION	http://www.efarm.fi/kohteet/e-farm-kuittilan-tila-nurmes/
CONTACT INFORMATION	matti.arffman@e-farm.fi, +358 44 783 1700

CATEGORY	INFORMATION
PROJECT OWNER	OKI Pulp and Paper Mill / APP
PROJECT NAME	OKI
STATUS	Operational
STARTUP	2016
LOCATION	Indonesia
STREET	Jl. Letda Abdul Rozak
CITY	Palembang
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology
TECHNOLOGY ADDITIONAL INFO	Product gas cofiring in a lime kiln
RAW MATERIAL	Lignocellulosics
INPUT 1	Acacia bark
INPUT 2	Acacia wood
OUTPUT 1	Heat (110 MWth)
OUTPUT 2	Heat (110 MWth)
TECHNOLOGY BRIEF	Valmet delivered two CFB gasifiers (each 110 MWth) using acacia bark and wood as feedstock. The product gas is used to fuel the lime kiln, replacing fossil fuels. Bark dryers utilize excess mill heat. The system significantly reduces CO_2 emissions and fossil fuel use in the lime kiln process.
ADDITIONAL INFORMATION	https://www.valmet.com/energyproduction/gasification/biomass-gasification-eliminates-fossil-fuels-in-the-pulp-mill/
CONTACT INFORMATION	juhani.isaksson@valmet.com

CATEGORY	INFORMATION
PROJECT OWNER	PoliTO
PROJECT NAME	Wood Gasifier
STATUS	Operational
LOCATION	Italy
CITY	Alessandria
PRODUCTION TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood forestry (4,100 t/y)
OUTPUT 1	Power (electricity) (0.64 MWel)
PARTNERS	IPLA
TECHNOLOGY BRIEF	Experimental process developed by PoliTO. The plant is fed with 4,100 t/y forestry biomass and demonstrates wood gasification for electricity generation.
ADDITIONAL INFORMATION	-
CONTACT INFORMATION	Not known

CATEGORY	INFORMATION
PROJECT OWNER	Pritscher Landshut
PROJECT NAME	Pritscher Landshut
STATUS	Operational
STARTUP	1995
LOCATION	Germany
CITY	Landkreis Landshut
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.045 MWel)
OUTPUT 2	Heat (0.12 MWth)
PARTNERS	Spanner Re^2 GmbH
CONTACT INFORMATION	+49 (0) 8773 707 98 288

CATEGORY	INFORMATION
PROJECT OWNER	PROVADEMSE
PROJECT NAME	GASCLEAN
STATUS	Operational
STARTUP	2014
LOCATION	France
CITY	Villeurbanne
ZIP	69100
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Gasification
RAW MATERIAL	Other (biomass and solid derived fuels)
INPUT 1	Biomass and solid derived fuels (15 kg/h)
OUTPUT 1	Heat (0.1 MW)
TOTAL INVESTMENT EXPLANATION	CAPEX €180,000 + OPEX €15,000
TECHNOLOGY BRIEF	Demonstration pilot plant designed to characterize output from gasification of biomass and solid derived fuels.
ADDITIONAL INFORMATION	https://www.provademse.com/_files/ugd/4c769d_21ee3908e5524a56950978bded4196aa.pdf
CONTACT INFORMATION	emmanuel.vernus@provademse.com
CATEGORY	Information

CATEGORY	INFORMATION
PROJECT OWNER	Qalovis Altenberge
PROJECT NAME	Qalovis
STATUS	Operational
STARTUP	2012
LOCATION	Germany
CITY	Altenberge
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT ADDITIONAL INFO	Unadulterated wood, residual wood from forestry and landscape wood chips
OUTPUT 1	Power (electricity) (0.036 MWel)
OUTPUT 2	Heat (0.12 MWth)
PARTNERS	Qalovis GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow; gas utilization via combustion chamber and Stirling motor.
CONTACT INFORMATION	m.huelscher@qalovis.com, info@qalovis.com, +49 2505 93626-20, +49 2505 93626-0

CATEGORY	INFORMATION
PROJECT OWNER	Rau GmbH
PROJECT NAME	Urbas Balingen
STATUS	Operational
STARTUP	2013
LOCATION	Germany
CITY	Balingen
ZIP	72336
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.25 MWel)
OUTPUT 2	Heat (0.55 MWth)
TECHNOLOGY BRIEF	Wood gas is produced from wood via thermochemical processes in a specially designed reactor, filtered for dust and tars, and used in a gas engine + generator for CHP. No intermediate working medium is needed, resulting in higher electrical efficiency compared to steam or ORC-based CHP.
CONTACT INFORMATION	Joahim Rau, Tel. +49 7433988214

CATEGORY	INFORMATION
PROJECT OWNER	RegaWatt
PROJECT NAME	RegaWatt Abensberg
STATUS	Operational
STARTUP	2010
LOCATION	Germany
CITY	Abensberg
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (2 MWel)
OUTPUT 2	Heat (4.3 MW)
PARTNERS	RegaWatt GmbH
TECHNOLOGY BRIEF	Fixed bed in countercurrent flow; gas utilization via motor, gas turbine, and combustion chamber.
CONTACT INFORMATION	094439290

CATEGORY	INFORMATION
PROJECT OWNER	RISE ETC
PROJECT NAME	PEGB Pilot, FOX
STATUS	Operational
STARTUP	2011
LOCATION	Sweden
STREET	Industrigatan 1
CITY	Piteå
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Fuel Gas (Heat)
TECHNOLOGY ADDITIONAL INFO	Research and development unit, no product
RAW MATERIAL	Biomass / biomass coal blends
INPUT ADDITIONAL INFO	Woody biomass
OUTPUT 1	Heat (1 MWth) (PEGB pilot)
OUTPUT 2	Heat (0.02 MWth) (FOX)
PARTNERS	MEVA Innovation (PEGB pilot), IVAB (FOX)
TECHNOLOGY BRIEF	Pressurized entrained flow gasifier (PEGB) and fixed bed gasifier (FOX)
ADDITIONAL INFORMATION	https://www.ri.se/en/test-demo/gasification
CONTACT INFORMATION	Fredrik Weiland (fredrik.weiland@ri.se)

CATEGORY	INFORMATION
PROJECT OWNER	RiverRidge
PROJECT NAME	Full Circle Energy Facility
STATUS	Operational
STARTUP	2020
LOCATION	United Kingdom
CITY	Belfast
PRODUCTION TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Biomass Power Ltd. step-grate gasification; three RDF gasifiers/boilers, 20.8 MWth each
RAW MATERIAL	Other (commercial and industrial waste, processed as Refuse Derived Fuel - RDF)
INPUT 1	Commercial and industrial waste (150,000 t/y; design up to 160,000 t/y RDF)
OUTPUT 1	Power (electricity) (15 MWel)
ADDITIONAL INFORMATION	£107M investment (Green Investment Bank, Equitix, P3P Partners); EPC/operation by Bouygues Energy & Services; supplies electricity to Bombardier and the NIE Grid; largest EfW project in Northern Ireland; facility processes waste from over 155,000 households and powers 14,500–21,000 homes; flue gas cleaning includes SNCR and dry abatement; operational since 2020.
CONTACT INFORMATION	info@riverridge.co.uk, +44 2895 313 313

CATEGORY	INFORMATION
PROJECT OWNER	Romande Energie
PROJECT NAME	Puidoux Woodgasifier
STATUS	Operational
STARTUP	2018
LOCATION	Switzerland
CITY	Puidoux
ZIP	1070
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Updraft gasifier
RAW MATERIAL	Lignocellulosics
INPUT ADDITIONAL INFO	Wood chips
OUTPUT 1	Power (electricity) (0.89 MWel)
OUTPUT 2	Heat (4.5 MWth)
OUTPUT ADDITIONAL INFO	Heat used for district heating
TECHNOLOGY BRIEF	ReGaWatt updraft gasifier system. The plant includes a gas engine genset (770 kW) and an ORC turbine (120 kW), maximizing electrical output. Heat is supplied to the district heating network. The system allows for high efficiency and flexible operation.
CONTACT INFORMATION	Caimi Giulio, Giulio.Caimi@romande-energie.ch

CATEGORY	INFORMATION
PROJECT OWNER	Romande Energie Services SA
PROJECT NAME	Kombi Power System Charmey
STATUS	Operational
STARTUP	2020
LOCATION	Switzerland
CITY	Val-de-Charmey
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.77 MWel) (genset)
OUTPUT 2	Power (electricity) (0.12 MWel) (ORC)
OUTPUT 3	Heat (4.5 MWth)
OUTPUT ADDITIONAL INFO	Power genset, power ORC; heat used for district heating
TECHNOLOGY BRIEF	ReGaWatt updraft gasifier system. The plant combines a gas engine genset and an ORC turbine to maximize electrical output. Heat is supplied to the district heating network.
CONTACT INFORMATION	info@regawatt.de, +49 9443 929 215

CATEGORY	INFORMATION
PROJECT OWNER	RWE Essent
PROJECT NAME	Wood gasifier Geertruidenberg
STATUS	Idle
STARTUP	2005
LOCATION	Netherlands
CITY	Geertruidenberg
ZIP	4931
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Other Gasification Technology (Lurgi Circulating Fluidized Bed - CFB)
RAW MATERIAL	Other (waste wood, RDF)
INPUT 1	Waste wood, RDF (150,000 t/y)
OUTPUT 1	Power (electricity) (34 MWel)
PARTNERS	Essent
TECHNOLOGY BRIEF	At the Amer Power Station, an 83–85 MWth low-pressure Lurgi CFB gasifier (operating at 750–850°C) converts about 150,000 t/y demolition wood to product gas, replacing 70,000 t/y of coal in the 600 MWe Amer-9 pulverized coal CHP plant. The raw gas is partially cooled to ~450°C, with particulate removal by cyclones, and then fed to the coal boiler. Initial plans for advanced gas cleaning were simplified. The gasifier typically operates ~5000 h/year, but faced operational challenges (fuel feeding, tar fouling). Regulatory issues (Waste Incineration Directive) led to temporary shutdowns; operation resumed after wood gas was listed as clean biomass under strict conditions.
ADDITIONAL INFORMATION	The gasifier provides about 5% of the plant's energy via indirect co-firing. The plant uses waste wood category B (including painted wood, MDF, plywood, glass, metal, inorganics). The subsidy for renewable power ended in 2013, and the future of the gasifier depends on new regulations or market conditions. Essent is a major importer of biomass and a leader in sustainability standards for biomass use in the Netherlands.
CONTACT INFORMATION	W. Willeboer, RWE Essent, wim.willeboer@essent.nl

CATEGORY	INFORMATION
PROJECT OWNER	SEK Koblenz
PROJECT NAME	KSV Koblenz
STATUS	Under construction
STARTUP	2018
LOCATION	Germany
CITY	Koblenz
PRODUCTION TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Other (sewage sludge)
INPUT 1	Sewage sludge (3,300 t/y)
OUTPUT 1	Power (electricity) (0.33 MWel)
OUTPUT 2	Heat (0.39 MWth)
PARTNERS	KOPF SynGas GmbH and Co.KG
TECHNOLOGY BRIEF	Fluidized bed gasification process
CONTACT INFORMATION	info@kopf-syngas.de, Tel.: +49 7071 54954 50, Fax: +49 7071 54954 60

CATEGORY	INFORMATION
PROJECT OWNER	SG Energie + consortium
PROJECT NAME	Stellantis Mulhouse
STATUS	Planned
LOCATION	France
CITY	Sausheim / Mulhouse
ZIP	68100
PRODUCTION TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood waste (17,000 t/y)
OUTPUT 1	Heat (1.14 MWth)
OUTPUT 2	Clean syngas (4.57 MWth)
PARTNERS	Stellantis, Mulhouse Alsace Agglomération, Gazotech
TECHNOLOGY BRIEF	Regawatt technology
CONTACT INFORMATION	yannick.ferriere@sg-energies.eco

CATEGORY	INFORMATION
PROJECT OWNER	Sindal District Heating Company
PROJECT NAME	Dall Energy CHP plant in Sindal
STATUS	Operational
STARTUP	2018
LOCATION	Denmark
CITY	Sindal
PRODUCTION TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	Staged updraft gasification
RAW MATERIAL	Organic residues and waste streams
INPUT 1	Forestry by-products, wood processing industry by-products, garden & park waste (20-60% moisture content) (15,000 t/y)
INPUT 2	Input 1 (5.5 MW)
OUTPUT 1	Heat (5 MWth)
OUTPUT 2	Power (electricity) (0.8 MWel)
TOTAL INVESTMENT EXPLANATION	Total investment ~€9 million (plant: €5.5 million, rest for building and transmission line)
TECHNOLOGY BRIEF	Dall Energy staged updraft gasifier with partial oxidation, afterburner, thermal oil heater, and scrubber system for heat recovery. Third generation of Dall Energy Furnace technology, offering low-cost fuel use, very low dust, broad load range, low NOx/CO, low maintenance, and low power consumption.
ADDITIONAL INFORMATION	www.dallenergy.com, http://www.sindal-varmeforsyning.dk/
CONTACT INFORMATION	Dall Energy, Mr. Jens Dall Bentzen, Managing Director, jdb@dallenergy.com, www.dallenergy.com

CATEGORY	INFORMATION
PROJECT OWNER	Skive District Heating Company
PROJECT NAME	Skive CHP plant
STATUS	Operational
STARTUP	2008
LOCATION	Denmark
CITY	Skive
ZIP	7800
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets (28 MWth capacity, actual input 20 MWth)
OUTPUT 1	Power (electricity) (6 MWel)
OUTPUT 2	Heat (13 MWth)
FUNDING EXPLANATION	DoE, EC, Danish Energy Agency
PARTNERS	Andritz Carbona, Haldor Topsøe A/S, Aaen Consulting Engineers, local district heating consumers, Danish Energy Agency, European Commission, US Department of Energy
TECHNOLOGY BRIEF	Bubbling fluidized bed (BFB) gasifier produces gas from wood-based biomass, which is used in reciprocating engines for combined heat and power. Heat supplies the local district heating network; electricity is sold to the grid.
CONTACT INFORMATION	Skive District Heating Company, Thorsvej 11, DK 7800 Skive, Att. Mr. Tage Meltofte, skivefjernvarme@skivefjernvarme.dk, +45 9752 0966

CATEGORY	INFORMATION
PROJECT OWNER	Spanner Bamberg
PROJECT NAME	Spanner Bamberg
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Landkreis Bamberg
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.045 MWel)
OUTPUT 2	Heat (0.12 MWth)
PARTNERS	Spanner Re^2 GmbH
TECHNOLOGY BRIEF	Spanner Wood Cogeneration System: fixed-bed process in cocurrent flow, using natural wood chips and pellets for efficient combined heat and power production. Compact CHP systems (HV30-V1.1, HV45-V1.1) designed for easy installation and increased efficiency.
CONTACT INFORMATION	+49 (0) 8773 707 98 288

CATEGORY	INFORMATION
PROJECT OWNER	Spanner Landshut
PROJECT NAME	Spanner Landshut
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Landkreis Landshut
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.025 MWel)
OUTPUT 2	Heat (0.5 MWth)
PARTNERS	Pritscher Holzgas GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow
CONTACT INFORMATION	pritscher@freenet.de, 0049 (0)8773 200

CATEGORY	INFORMATION
PROJECT OWNER	Special Purpose Vehicule (MGGE)
PROJECT NAME	Mont-Godinne Hospital (Xylowatt)
STATUS	Operational
STARTUP	2018
LOCATION	Belgium
CITY	Mont-Godinne
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	CHPC (heat, power, cold); NOTAR® v.3 gasifier
RAW MATERIAL	Lignocellulosics
INPUT 1	Clean wood chips (class A) (690 kg/h)
INPUT 2	Recycled wood (731 kg/h)
OUTPUT 1	Power (electricity) (0.75 MWel)
OUTPUT 2	Heat (1.2 MWth)
OUTPUT 3	Other (0.4 MWth) (cold)
OUTPUT ADDITIONAL INFO	Power, heat, and cold (trigeneration)
TECHNOLOGY BRIEF	The NOTAR® gasifier is a patented, medium-scale, downdraft gasification technology producing tar-free syngas from biomass. It uses a multi-stage process with separate pyrolysis, combustion, and reduction zones, resulting in high-quality syngas for efficient and clean combined heat, power, and cooling generation. The system supplies the hospital with 24/7 renewable energy, covering 40% of its electricity, 65% of its hot water, and 40% of its cooling needs, significantly reducing CO_2 emissions.
ADDITIONAL INFORMATION	First trigeneration unit in Belgium powering a hospital with renewable energy from local biomass; financed by Belfius and EIB; covers major portions of the hospital's energy needs and supports circular economy and climate goals.

CONTACT INFORMATION	Poskin Pierre-David +32 472 52 96 24

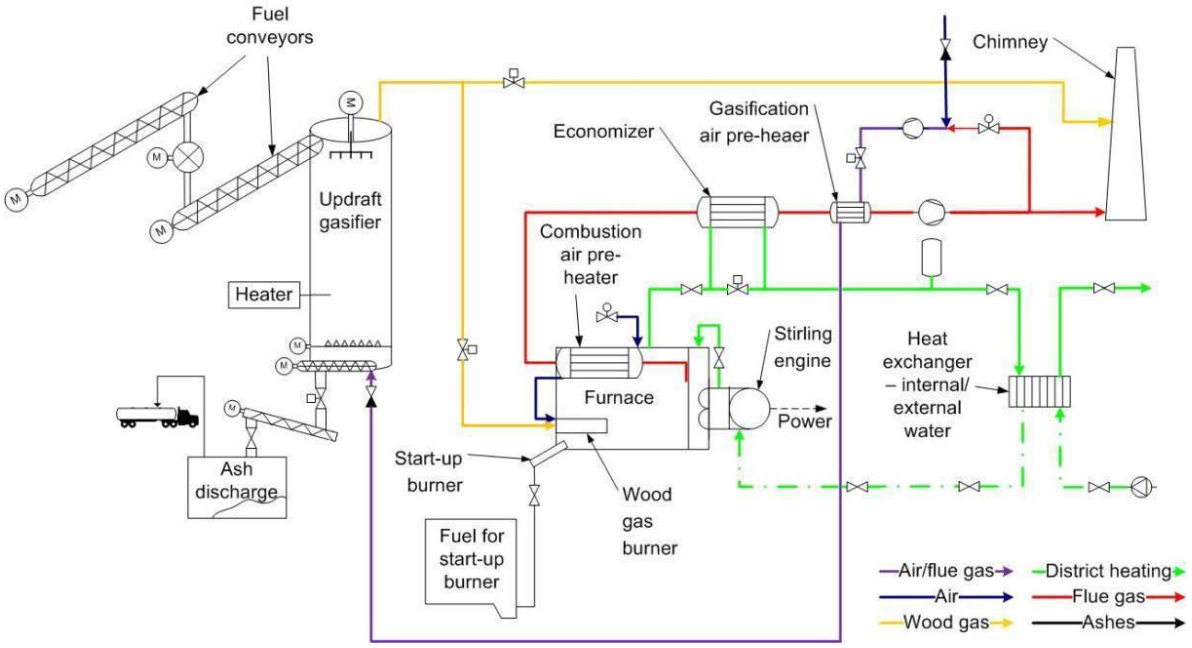
CATEGORY	INFORMATION
PROJECT OWNER	Stadtwerke Duesseldorf
PROJECT NAME	CHP Arnsberg-Wildhausen
STATUS	Under construction
LOCATION	Germany
CITY	Arnsberg-Wildhausen
ZIP	59823
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (0.27 MWel)
PARTNERS	Biomass Engineering Ltd., UK; Biomass Energiesysteme, Dortmund
TECHNOLOGY BRIEF	Fixed bed downdraft gasifier, air blown
CONTACT INFORMATION	Not specified

CATEGORY	INFORMATION
PROJECT OWNER	STADTWERKE KONSTANZ GmbH
PROJECT NAME	CHP Urbas Konstanz
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Konstanz
ZIP	78467
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Organic residues and waste streams
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.14 MWel)
OUTPUT 2	Heat (0.3 MWth)
PARTNERS	Urbas Stahl & Anlagenbau
TECHNOLOGY BRIEF	Wood gas is produced via thermochemical processes in a specially designed reactor, filtered for dust and tars, and used in a gas engine + generator for CHP. This process requires no intermediate working medium, resulting in higher electrical efficiency compared to conventional biomass combustion CHP.
CONTACT INFORMATION	CHP Konstanz, DI Olaf Westerhoff, Tel.: +49 7531 803 226

CATEGORY	INFORMATION
PROJECT OWNER	Stadtwerke Rosenheim GmbH
PROJECT NAME	CHP Stadtwerke Rosenheim
STATUS	Operational
STARTUP	2015
LOCATION	Germany
CITY	Rosenheim
ZIP	83022
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (42 t/h)
OUTPUT 1	Power (electricity) (0.05 MWel)
OUTPUT 2	Heat (0.095 MWth)
TECHNOLOGY BRIEF	Since 2007, the plant has developed a fluidized bed reactor that combines concurrent and eddy flow. Gas produced from wood chips is utilized via a motor for combined heat and power generation. The process enables efficient, flexible, and low-emission energy production from local renewable resources.
CONTACT INFORMATION	Rolf Waller, rolf.waller@swro.de

CATEGORY	INFORMATION
PROJECT OWNER	Steiner A. & Cie AG
PROJECT NAME	-
STATUS	Operational
STARTUP	2013
LOCATION	Switzerland
CITY	Ettiswill
ZIP	6218
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.045 MWel)
OUTPUT 2	Heat (0.105 MWth)
TECHNOLOGY BRIEF	Downdraft Spanner gasifier
CONTACT INFORMATION	Urs Steiner, steiner-saegerei@bluewin.ch

CATEGORY	INFORMATION
PROJECT OWNER	Stirling DK
PROJECT NAME	Carlow
STATUS	Operational
STARTUP	2011
LOCATION	Ireland
CITY	Carlow
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.035 MWel)
TECHNOLOGY BRIEF	Updraft gasifier and one Stirling engine
CONTACT INFORMATION	Jakob Falther, jbf@stirling.dk, +45 88 18 48 06



CATEGORY	INFORMATION
PROJECT OWNER	Stirling DK
PROJECT NAME	CHP Flensburg
STATUS	Idle
STARTUP	2009
LOCATION	Germany
CITY	Langballig
ZIP	24977
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Updraft gasifier and two Stirling engines
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.07 MWel)
TECHNOLOGY BRIEF	The plant combines an updraft gasifier with two Stirling engines. Producer gas from wood chips is combusted in a chamber adapted for low-energy, high-tar gas, driving the Stirling engines for electricity production. The system is designed to utilize uncleaned producer gas, converting tars to useful energy and improving overall efficiency.
CONTACT INFORMATION	Annabell Möller, am@stirling.dk, +45 88 18 48 07
CATEGORY	Information
PROJECT OWNER	Stirling DK
PROJECT NAME	CHP Flensburg

CATEGORY	INFORMATION
PROJECT OWNER	SynCraft
PROJECT NAME	CraftWerk Vierschach
STATUS	Operational
STARTUP	2014
LOCATION	Austria
STREET	Boznerstrasse 6
CITY	Vierschach
ZIP	39038
STATE	Italy
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (0.95 MWth), including bark and fines (G30/G50)
OUTPUT 1	Power (electricity) (0.3 MWel)
OUTPUT 2	Heat (0.4 MWth)
TECHNOLOGY BRIEF	Staged floating-fixed-bed gasifier. The plant uses commercially available, dried wood chips (including bark and fines). Product gas is used in an Agenitor 312 gas engine by 2G, designed for high-efficiency wood gas utilization. The floating-bed technology provides high-quality, virtually tar-free product gas, minimizes gas cleaning needs, and allows for flexible feedstock use and high system efficiency.
ADDITIONAL INFORMATION	The plant generates about 1 million kWh of green electricity and 1.5 million kWh of heat annually, supporting local energy needs. Serves as a demonstration for long-term efficiency and low maintenance operation.
CONTACT INFORMATION	Marcel Huber, marcel.huber@syncraft.at

CATEGORY	INFORMATION
PROJECT OWNER	SynCraft
PROJECT NAME	CraftWerk Innsbruck
STATUS	Operational
STARTUP	2016
LOCATION	Austria
STREET	Josef-Mayer-Nusser Weg 30
CITY	Innsbruck
ZIP	6020
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (0.892 MWth)
OUTPUT 1	Power (electricity) (0.261 MWel)
OUTPUT 2	Heat (0.395 MWth)
TECHNOLOGY BRIEF	Staged floating fixed-bed gasifier. The CHP unit features a turbo-charged, 8-cylinder, 16.7-liter engine, achieving 300 kW electrical output in its first week of operation. The system is optimized for high efficiency and flexible feedstock use.
CONTACT INFORMATION	marcel.huber@syncraft.at

CATEGORY	INFORMATION
PROJECT OWNER	SynCraft
PROJECT NAME	CraftWerk Hatlerdorf
STATUS	Operational
STARTUP	2014
LOCATION	Austria
STREET	Hatlersstrasse 66
CITY	Dornbirn
ZIP	6850
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (0.65 MWth), including bark and fines (G30/G50)
OUTPUT 1	Power (electricity) (0.25 MWel)
OUTPUT 2	Heat (0.35 MWth)
TECHNOLOGY BRIEF	Staged floating fixed-bed gasifier. The plant uses dried wood chips (including bark and fines). Product gas is used in an Agenitor 406 gas engine by 2G, with 40% electrical efficiency. The technology provides high-quality, low-tar product gas and flexible feedstock use.
ADDITIONAL INFORMATION	www.syncraft.at
CONTACT INFORMATION	marcel.huber@syncraft.at

CATEGORY	INFORMATION
PROJECT OWNER	SynCraft
PROJECT NAME	CraftWerk Stadl
STATUS	Operational
STARTUP	2017
LOCATION	Austria
CITY	Stadl an der Mur 115
ZIP	8862
STATE	Austria
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (1.3 MWth), 330 kg/h
OUTPUT 1	Power (electricity) (0.4 MWel)
OUTPUT 2	Heat (0.615 MWth)
TECHNOLOGY BRIEF	Staged floating-fixed-bed gasifier. The plant uses commercial wood chips (including bark and fines) to supply the entire heat base load of the local district heating network. Achieves 92% fuel utilization and about 30% electrical efficiency. Produces 2.5 million kWh electricity and 5.9 million kWh heat annually. Generates biochar as a valuable by-product, supporting a closed CO_2-neutral energy cycle.
ADDITIONAL INFORMATION	The heat is supplied to Stadl's district heating network; electricity is fed into the regional grid.
CONTACT INFORMATION	marcel.huber@syncraft.at

CATEGORY	INFORMATION
PROJECT OWNER	SynCraft
PROJECT NAME	CraftWerk Schwaz
STATUS	Operational
STARTUP	2009
LOCATION	Austria
STREET	Hermine Berghofer-Strasse 31
CITY	Schwaz
ZIP	6130
STATE	Austria
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.1 MWel)
OUTPUT 2	Heat (0.5 MWth)
OUTPUT ADDITIONAL INFO	0.5 MWth fuel heat
TECHNOLOGY BRIEF	SYNCRAFT®Werk Alpha is the development platform for floating bed gasification technology. The plant enables ongoing R&D on technology improvements and alternative biogenic raw materials (bark, straw, waste wood). It has a thermal capacity of 500 kW and can operate without supervision.
ADDITIONAL INFORMATION	www.syncraft.at
CONTACT INFORMATION	Marcel Huber, marcel.huber@syncraft.at

CATEGORY	INFORMATION
PROJECT OWNER	Thermochem Recovery International
PROJECT NAME	technology development laboratory and pilot plant - thermochemical
STATUS	Operational
STARTUP	2007
LOCATION	United States
STREET	International Drive
CITY	Durham
ZIP	27712
STATE	North Carolina
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Fuel Synthesis
RAW MATERIAL	Lignocellulosics
INPUT 1	Cellulosics, Municipal wastes, syngas (4 t/d)
OUTPUT 1	FT liquids (0.002 t/y)
OUTPUT 2	Mixed alcohols
OUTPUT 3	Power (electricity)
TOTAL INVESTMENT	USD 30,000,000
FUNDING	USD 20,000,000
PARTNERS	Commercial and US government clients
TECHNOLOGY BRIEF	Thermochemical conversion, catalytic liquids synthesis, hot and cold syngas cleaning
CONTACT INFORMATION	Tim Hansen, hansen@southernresearch.org, https://tri-inc.net/steam-reforming-gasification/

CATEGORY	INFORMATION
PROJECT OWNER	Tournai city
PROJECT NAME	Tournai Swimming Pool (Xylowatt)
STATUS	Non operational
STARTUP	2009
LOCATION	Belgium
CITY	Tournai
PRODUCTION TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Power / CHP
TECHNOLOGY ADDITIONAL INFO	NOTAR® v.2 gasifier, Combined Heat & Power
RAW MATERIAL	Lignocellulosics
INPUT 1	Clean wood chips (class A) (240 kg/h)
OUTPUT 1	Power (electricity) (0.26 MWel)
OUTPUT 2	Heat (0.47 MWth)
TECHNOLOGY BRIEF	The NOTAR® gasifier is a patented, medium-scale downdraft gasification technology producing tar-free syngas from biomass. It uses a multi-stage process with separate pyrolysis, combustion, and reduction zones, resulting in high-quality syngas for efficient and clean combined heat and power generation.
ADDITIONAL INFORMATION	https://www.xylowatt.com/
CONTACT INFORMATION	Poskin Pierre-David +32 472 52 96 24

CATEGORY	INFORMATION
PROJECT OWNER	TU Dresden
PROJECT NAME	High-temperature reactor according to the principle of circulating fluidized bed
STATUS	Operational
LOCATION	Germany
CITY	Dresden
PRODUCTION TYPE	TRL 1-3 Research
TECHNOLOGY	Circulating fluidized bed (nearly atmospheric), weight belt feeder, blower over air preheater, self-ignition, 1 MW combustion chamber, cyclone, fabric filter, activated char filter
RAW MATERIAL	Other (regular fuel dry lignite (TBK), coal, wood chip, substitute fuels)
INPUT 1	Regular fuel dry lignite (TBK), coal, wood chip, substitute fuels
OUTPUT 1	Power (electricity) (0.3 MWel)
TECHNOLOGY BRIEF	The facility is a modular, nearly atmospheric circulating fluidized bed reactor with a 1 MW combustion chamber. It includes a weight belt feeder, air preheater, cyclone, fabric filter, and activated char filter. The system is designed for flexible operation under both combustion and gasification conditions, with comprehensive measuring ports for process analysis and flue gas cleaning systems for emission control.
CONTACT INFORMATION	daniel.bernhardt@tu-dresden.de / evt@mailbox.tu-dresden.de
CATEGORY	Information
PROJECT OWNER	TU Dresden
PROJECT NAME	High-temperature reactor according to the principle of circulating fluidized bed
STATUS	Operational
LOCATION	Germany

CATEGORY	INFORMATION
PROJECT OWNER	TU Dresden
PROJECT NAME	TC2 process
STATUS	Operational
LOCATION	Germany
CITY	Dresden
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Other Gasification Technology
TECHNOLOGY ADDITIONAL INFO	Bubbling fluidized bed gasification. First stage: pressurized fluidized gasification, cyclone, combustion chamber. Second stage: turbo-compound-concept (identical to gas turbine process).
RAW MATERIAL	Other
INPUT 1	Sewage sludge
OUTPUT 1	Power (electricity) (1 MWel)
FUNDING EXPLANATION	Within the framework of national funded projects of the “Sächsische Aufbaubank (SAB)”
CONTACT INFORMATION	daniel.bernhardt@tu-dresden.de / evt@mailbox.tu-dresden.de

CATEGORY	INFORMATION
PROJECT OWNER	TU Freiberg
PROJECT NAME	FlexiCOORVED Pilot Plant
STATUS	Operational
LOCATION	Germany
CITY	Freiberg
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Other Gasification Technology
TECHNOLOGY ADDITIONAL INFO	Fluidized-bed gasifier; atmospheric, internal circulated fluidized bed with a moving bed gasification zone; designed for feedstocks with high ash content.
RAW MATERIAL	Other
INPUT 1	Sewage sludge as well as biomass-containing waste with high ash content
OUTPUT 1	Heat (0.06 MWth)
CONTACT INFORMATION	info-evt@iec.tu-freiberg.de

CATEGORY	INFORMATION
PROJECT OWNER	urbas Energietechnik
PROJECT NAME	CHP Demonstrationsanlagen URBAS
STATUS	Operational
STARTUP	2001
LOCATION	Austria
CITY	Ruden
ZIP	9113
PRODUCTION TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.15 MWel)
OUTPUT 2	Heat (0.3 MWth)
PARTNERS	Urbas Stahl&Anlagenbau, Voelkermarkt
TECHNOLOGY BRIEF	A combustible gas, wood gas, is produced from wood through thermochemical processes in a specially designed reactor. The raw gas is filtered to remove dust and tars, then used in a gas engine and generator for combined heat and power. Unlike other biomass CHP technologies that require an intermediate working medium (e.g., steam or thermal oil), wood gas cogeneration in this system does not, resulting in higher electrical efficiency throughout the system.
CONTACT INFORMATION	Ing. Peter Urbas, DI Wolfgang Felsberger, Tel. +43 4232 25210

CATEGORY	INFORMATION
PROJECT OWNER	Vaskiluodon Voima Oy, Vaasa
PROJECT NAME	Vaskiluodon Voima Biomass Gasification Plant
STATUS	Operational
STARTUP	2012
LOCATION	Finland
STREET	Kirkkopuistikko 0
CITY	Vaasa
ZIP	65100
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Lignocellulosics
INPUT 1	Biomass substituting coal
OUTPUT 1	Heat (140 MW)
PARTNERS	Valmet (technology supplier)
TECHNOLOGY BRIEF	Biomass feedstock is dried in a belt dryer and gasified in a large CFB gasifier. The product gas is combusted directly with coal in the existing pulverized coal boiler, displacing 25–40% of the coal. The plant generates both electricity (230 MW) and heat (170 MW) through co-production.
ADDITIONAL INFORMATION	The project reduces carbon emissions by about 230,000 t/year and is the world's largest biomass gasification plant of its kind. The plant operates with high reliability (98–99% availability) and is increasing gasifier capacity from 140 to 180 MW. The integration allows flexible fuel use and significant emission reductions.
CONTACT INFORMATION	Juhani Isaksson, Valmet, juhani.isaksson@valmet.com, tel. +358 40 8304402

CATEGORY	INFORMATION
PROJECT OWNER	Volter
PROJECT NAME	Kempele Ecovillage
STATUS	Operational
STARTUP	2009
LOCATION	Finland
CITY	Kempele
ZIP	90440
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips (dry, good quality)
OUTPUT 1	Power (electricity) (0.03 MWel)
OUTPUT 2	Heat (0.08 MWth)
TECHNOLOGY BRIEF	The power plant converts wood chips to wood gas, which is then burned to provide electricity. The thermal energy from the generator heats water for floor heating in the houses. The system supplies all energy needs for the ten-house village year-round, making it self-sufficient and off-grid. A wind turbine provides backup electricity.
ADDITIONAL INFORMATION	Kempele Ecovillage is Finland's first energy self-sufficient residential area, operating with nearly zero emissions and disconnected from the national grid. The CHP-plant uses Volter's wood gasification technology, replacing fossil fuels with local wood chips. The project demonstrates reliable, comfortable, and ecological living even in harsh climates.
CONTACT INFORMATION	Jarno Haapakoski, Volter, +358 40 739 0461, jarno.haapakoski@volter.fi

CATEGORY	INFORMATION
PROJECT OWNER	VTT Technical Research Centre of Finland Ltd
PROJECT NAME	Pressurized FB for synthesis gas production
STATUS	Operational
STARTUP	2007
LOCATION	Finland
CITY	Espoo
ZIP	02330
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Other Gasification Technology (Pressurized CFB gasifier by steam-oxygen)
RAW MATERIAL	Lignocellulosics
INPUT 1	Bark, forest residues, pellets
OUTPUT 1	Heat (0.5 MWth)
PARTNERS	Several industrial partners
TECHNOLOGY BRIEF	The VTT-developed pressurized circulating fluidized-bed gasification process uses steam-oxygen to convert wood-based feedstocks (bark, forest residues, pellets) into raw synthesis gas. The gas is filtered at approximately 600°C before catalytic reforming of tars and hydrocarbons. The system operates at 0.25–0.6 MPa and 860–930°C, achieving over 98% carbon conversion under optimal conditions. Feedstock particle size, pressure, and bed material (dolomite, MgO, sand) significantly influence tar formation and filter operability.
ADDITIONAL INFORMATION	The process supports syngas applications and industrial demo-projects, and has been used to test various operational modes, including co-production of biochar and synthesis gas. The technique is part of VTT's sustainable approach to converting forestry waste into transport fuels and chemicals, reducing CO_2 emissions by up to 90% compared to fossil fuels.
CONTACT INFORMATION	esa.kurkela@vtt.fi, +358 40 502 6231; ilkka.hiltunen@vtt.fi, +358 400 226 730

CATEGORY	INFORMATION
PROJECT OWNER	VTT Technical Research Centre of Finland Ltd
PROJECT NAME	Dual fluidized-bed steam gasification pilot plant
STATUS	Operational
STARTUP	2013
LOCATION	Finland
STREET	Ruukinmestarintie 2
CITY	Espoo
ZIP	02330
PRODUCTION TYPE	TRL 4-5 Pilot
TECHNOLOGY	Other Gasification Technology (Dual Fluidized-Bed steam gasification)
RAW MATERIAL	Lignocellulosics
INPUT 1	Bark, forest residues, pellets
OUTPUT 1	Heat (0.35 MWth)
TECHNOLOGY BRIEF	Dual Fluidized-Bed (DFB) steam gasifier for process development. Operates at atmospheric pressure with a feed capacity up to 80 kg/h. Includes hot filtration and gas reforming for clean syngas production. Suitable for a wide range of biomass feedstocks and supports R&D and process optimization for advanced gasification technologies.
ADDITIONAL INFORMATION	The facility is used for pilot-scale testing, gas cleaning development, and supports national and European R&D projects targeting transport fuels and chemicals production from biomass.
CONTACT INFORMATION	Esa Kurkela (esa.kurkela@vtt.fi), Ilkka Hiltunen (ilkka.hiltunen@vtt.fi)

CATEGORY	INFORMATION
PROJECT OWNER	VVBGC AB (Växjö Värnamo Biomass Gasification Centre AB)
PROJECT NAME	Vaexjoe Vaernamo Biomass Gasification Center AB
STATUS	Idle
STARTUP	1995
LOCATION	Sweden
CITY	Värnamo
ZIP	33153
PRODUCTION TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Woody biomass, agrowaste
OUTPUT 1	Power (electricity) (6 MWel)
OUTPUT 2	Heat (8 MWth)
OUTPUT 3	Clean syngas (1,000 m^3/h)
PARTNERS	Foster Wheeler, E.ON for CHP
TECHNOLOGY BRIEF	The plant was built for CHP production using an IGCC concept. It featured an air-blown pressurized CFB gasifier (~18–20 bar, 950°C), lock hopper fuel feed, hot gas filtration, and integration with a gas turbine (4.2 MWe) and steam turbine (1.8 MWe). The system demonstrated stable operation on wood, straw, and RDF, with over 3,600 hours in full IGCC mode and 8,500+ hours of gasifier operation. The plant was mothballed in 2000 due to economics, later repurposed for R&D (CHRISGAS project) to explore oxygen-blown gasification for hydrogen/syngas production, but further upgrades were not realized due to lack of financing.
ADDITIONAL INFORMATION	The plant achieved 32% net electrical efficiency and 83% total net efficiency (LCV), verified high-pressure gasification, hot gas filtration, and successful gas turbine operation on low-calorific gas. It was a key demonstration of biomass IGCC viability and remains available for research, though currently idle.
CONTACT INFORMATION	Gunnar Crona, info@vvbgc.se, +46 370 69 41 00

CATEGORY	INFORMATION
PROJECT OWNER	Waermeversorgung Grossenhain / POW AG
PROJECT NAME	CHP Grossenhain
STATUS	Operational
LOCATION	Germany
CITY	Grossenhain
ZIP	01558
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
OUTPUT 1	Power (electricity) (6 MWel)
OUTPUT 2	Heat (21 MWth)
PARTNERS	VER Verfahrensingenieure GmbH, Dresden
TECHNOLOGY BRIEF	CombiPower Process; fluidized bed (FB) gasification. System uses air-blown gasification with preheated air up to 620°C and oxygen enrichment up to 50% by volume for high-efficiency CHP production from lignocellulosic biomass.
ADDITIONAL INFORMATION	Air-blown; preheated air up to 620°C; oxygen enrichment up to 50% by volume

CATEGORY	INFORMATION
PROJECT OWNER	Wegscheid Aschaffenburg
PROJECT NAME	Wegscheid Aschaffenburg
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Landkreis Aschaffenburg
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.12 MWel)
OUTPUT 2	Heat (0.23 MWth)
PARTNERS	Holzenergie Wegscheid GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow
CONTACT INFORMATION	Tel. +49 (0) 8584 98861-0, E-Mail: info@holzenergie-wegscheid.de

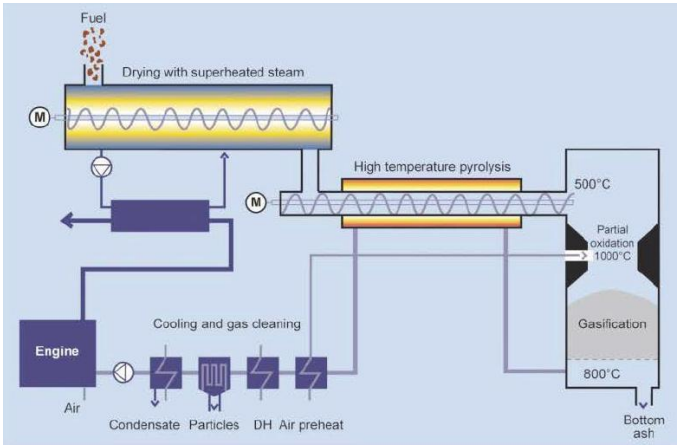
CATEGORY	INFORMATION
PROJECT OWNER	Wegscheid Bamberg
PROJECT NAME	Wegscheid Bamberg
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Bamberg
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.12 MWel)
OUTPUT 2	Heat (0.23 MWth)
PARTNERS	Holzenergie Wegscheid GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow. The plant uses wood pellets and wood chips as feedstock. Wood is gasified in a specially designed reactor, producing wood gas that is filtered for dust and tars before use in a gas engine and generator for combined heat and power. The process does not require an intermediate working medium, resulting in higher electrical efficiency. The system is fully automatic, designed for continuous operation, and the heat is used locally, for example, to supply the Bambados adventure waterpark in Bamberg.
CONTACT INFORMATION	Tel. +49 (0) 8584 98861-0, E-Mail: info@holzenergie-wegscheid.de

CATEGORY	INFORMATION
PROJECT OWNER	Wegscheid Bayreuth
PROJECT NAME	Wegscheid Bayreuth
STATUS	Operational
LOCATION	Germany
CITY	Bayreuth
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.125 MWel)
PARTNERS	Holzenergie Wegscheid GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow
CONTACT INFORMATION	info@holzenergie-wegscheid.de, Tel. 08592 93 95 18

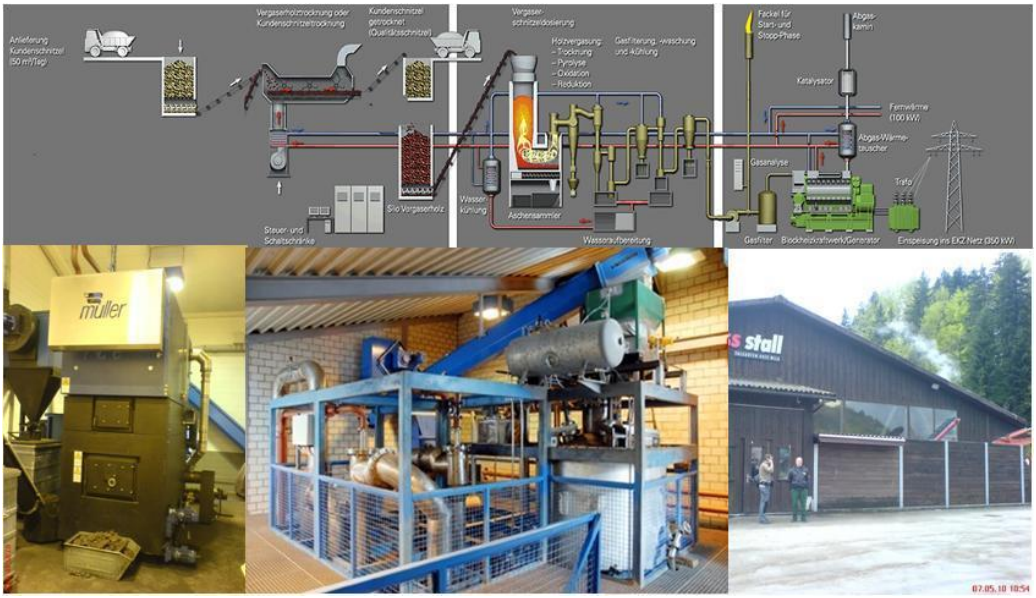
CATEGORY	INFORMATION
PROJECT OWNER	Wegscheid Demo
PROJECT NAME	Wegscheid Demo
STATUS	Operational
STARTUP	2009
LOCATION	Germany
CITY	Wegscheid
PRODUCTION TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.125 MWel)
OUTPUT 2	Heat (0.23 MWth)
PARTNERS	Holzenergie Wegscheid GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow
CONTACT INFORMATION	Tel. +49 (0) 8584 98861-0, E-Mail: info@holzenergie-wegscheid.de

CATEGORY	INFORMATION
PROJECT OWNER	Wegscheid Passau
PROJECT NAME	Wegscheid Passau
STATUS	Operational
STARTUP	2009
LOCATION	Germany
CITY	Landkreis Passau
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.12 MWel)
OUTPUT 2	Heat (0.23 MWth)
PARTNERS	Holzenergie Wegscheid GmbH
TECHNOLOGY BRIEF	Fixed-bed process in cocurrent flow
CONTACT INFORMATION	info@holzenergie-wegscheid.de

CATEGORY	INFORMATION
PROJECT OWNER	Weiss
PROJECT NAME	Hillerod two stage gasifier
STATUS	Non operational
LOCATION	Denmark
CITY	Hillerod
ZIP	3400
PRODUCTION TYPE	TRL 6-7 Demonstration
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood chips
OUTPUT 1	Power (electricity) (0.5 MWel)
TECHNOLOGY BRIEF	Staged downdraft gasifier developed and patented by DTU, scaled up by Weiss and DTU, licensed by COWI. The plant used wet forest wood chips (40–55% moisture), featured a gas cooler and filtering for ICE genset, and produced heat at three points (engine cooling, gas cooling, flue gas condensation). Designed for unmanned, automatic operation with nominal overall efficiency of 86%. The plant was dismantled after Weiss filed for bankruptcy and ceased operations.
ADDITIONAL INFORMATION	Plant was dismantled; Weiss filed bankruptcy and ceased operations.
CONTACT INFORMATION	www.dtu.dk, www.cowi.dk, cowi@cowi.dk



CATEGORY	INFORMATION
PROJECT OWNER	Woodpower in Wila
PROJECT NAME	CHP Wila
STATUS	Non operational
STARTUP	2007
LOCATION	Switzerland
CITY	Wila
ZIP	8492
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Dried chips from waste wood
OUTPUT 1	Power (electricity) (0.35-0.38 MWel)
PARTNERS	EKZ
TECHNOLOGY BRIEF	Downdraft Woodpower gasifier. The plant was operational from 2007 to 2011, then ceased operation and was dismantled in 2012.



CATEGORY	INFORMATION
PROJECT OWNER	WUN Bioenergy
PROJECT NAME	WUN Bioenergy
STATUS	Operational
STARTUP	2012
LOCATION	Germany
CITY	Schönbrunn
PRODUCTION TYPE	TRL 9 Commercial
TECHNOLOGY	Power / CHP
RAW MATERIAL	Lignocellulosics
INPUT 1	Wood pellets
INPUT 2	Wood chips
OUTPUT 1	Power (electricity) (0.36 MWel)
OUTPUT 2	Heat (0.54 MWth)
PARTNERS	Burkhardt
TECHNOLOGY BRIEF	Fluidized bed process in cocurrent flow. Includes an ORC turbine; heat is used for wood pellets production.
CONTACT INFORMATION	Tel 09232 - 88 77 00, Fax 09232 - 88 77 20, info@wun-bioenergie.de

CATEGORY	INFORMATION
PROJECT OWNER	ZAB Balingen
PROJECT NAME	KSV Balingen
STATUS	Operational
STARTUP	2011
LOCATION	Germany
CITY	Balingen
PRODUCTION TYPE	TRL 8 First-of-a-kind commercial
TECHNOLOGY	Fuel Gas (Heat)
RAW MATERIAL	Other
INPUT 1	Sewage sludge 1 (1,700 t/y)
INPUT 2	Sewage sludge 2 (300 t/y)
INPUT 3	Sewage sludge 3 (300 t/y)
OUTPUT 1	Heat (0.46 MWth)
PARTNERS	KOPF SynGas GmbH and Co. KG
TECHNOLOGY BRIEF	Fluidized bed gasification process. The system uses a two-stage process: pyrolysis produces gas and char, with char gasified by steam at high temperature. Heat for gasification is provided indirectly by combustion of pyrolysis gas, resulting in tar-free, high-calorific product gas with no nitrogen dilution. The process is optimized for sewage sludge and includes indirect heating for the dryer and pyrolyser.
CONTACT INFORMATION	info@kopf-syngas.de, Tel.: +49 7071 54954 50, Fax: +49 7071 54954 60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