

Reference list - Biowaste and kitchen waste -

Biogas Plant	Location	Year	Input	Digester	Co-generator	Features	Responsibility
Biogasanlage KAWAGOE	Japan	2019/20	Kitchen waste	Glas coated steel tank 2 x 1,700 m ³	Gas engine 3 x 360 kWel	Industrial biogas plant: 1 digester, 1 secondary digeste, mesophilic process	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operator training
Biogas Plant HUNTSTOWN	Ireland	2018/19	Thermal pressurised brown bin and food waste	Steel tank 4 x 4,650 m	Gas engine 2 x 2,4 MWel	Industrial biogas plant: 4 digester, 2 secondary digester, external gas holder, specials Grit removal, input material cooling, 2 buffer tanks	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operator training
Biogas Plant DERBY	Great Britain	2017/18	Kitchen waste solid and liquid, viscera (Cat. 2 waste), paper & cards, straw	Concrete tank 2 x 5,300 m ³	Biogas upgrading system	Industrial biogas plant for the digestion of hydrolysed waste. Thermal pressure hydrolysis process, buffer tank, cooling tank, mesophilic operation	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operators
Biogas Plant FUKUOKA	Japan	2016/17	Kitchen waste, industrial waste	Enameled steel tank 2 x 5,000 m ³	Gas engine 2 x 1,056 kWel	Biogas plant digesting organic waste: 2 digester, 1 secondary digester with gas holder roof, mesophilic operation	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operators
Biogas Plant WUHU	China	2016/17	Kitchen waste	Steel tank, welded 2 x 3,400 m ³	Biogas upgrading system	Biogas plant digesting organic waste: 2 digester, 1 storage tank (by client), 2 hydrolysis tanks (by client), oil separation with heat recovery system	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operators
Biogas Plant CHIBA AGRI	Japan	2016	kitchen waste, pig manure	Enameled steel tank 2 x 1,900 m ³	Gas engine 2 x 250 kWel	Biogas plant digesting organic waste: 2 digester, 1 secondary digester with gas holder roof, mesophilic operation	Basic evaluation, pre- and draft planning
Biogas Plant CAN KARNEYAMA	Japan	2016	kitchen waste, cattle manure	Enameled steel tank 3,900 m ³	Gas engine 2 x 360 kWel	Biogas plant digesting organic waste: 1 digester, 1 secondary digester with gas holder roof, mesophilic operation	Basic evaluation, pre- and draft planning
Digestion plant BACKNANG	Germany	2016	Separately collected household waste	Horizontal digester 2 x 1,600 m ³ ; Kompogas process	Gas engine 2 x 800 kWel	Damage report on reduced biogas production caused by high ammonia concentration	Expert report

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Biogas Plant HENGSHUI	China	2016	Distillers grain, yellow straw, vegetable waste, cow manure	Enameled steel tank 18 x 6,600 m ³		Biogas plant digesting organic waste: 4 reception pits, 6 buffer tanks, 2 hydrolysis tanks, 18 digester, 7 secondary digester with gas holder roof, thermophilic operation	Basic evaluation, pre planning
Biogas Plant HONSHU	Japan	2016	Kitchen waste, industrial waste	Enameled steel tank 2 x 5,000 m ³	Gas engine 4 x 500 kWel	Biogas plant digesting organic waste: 2 digester, 1 secondary digester with gas holder roof, mesophilic operation, separation and dryingsystem for digestate	Basic evaluation, pre- and draft planning
Biogas Plant MCDONNELL (Expansion)	Ireland	2014/15	Kitchen waste, animal by-products (ABP), cattle slurry, poultry manure, corn silage	Concrete tank 3,200 m ³	Gas engine 250 kWel (existing on site)	Expansion of a biogas plant digesting food waste by 1 digester, gas desulphurisation, pump room and equipment	Basic evaluation, pre-, draft and execution planning, additional consulting services
Biogas Plant IM BRAHM II (Expansion)	Germany	2014	Kitchen waste, pig manure	Concrete tank 2 x 1,200 m ³	Gas engine 4 x 190 kWel	Expansion of a biogas plant by 1 storage tank and 1 co-generator	Pre-planning, approval and execution planning, consultancy services, supervision of construction, training for operators
Biogas Plant DAISEN	Japan	2013/14	Pig manure, fats, sewage sludge, industrial kitchen waste	Glas coated steel tank 5,000 m ³	Gas engine 2 x 370 kWel	Biogas plant digesting kitchen waste: 1 digester, 1 secondary digester with gas holder roof, expansion of an existing biogas plant, mesophilic operation	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operators
Biogas Plant QINHUANGDAO	China	2013/14	Kitchen waste	Black steel, welded 2 x 3,400 m ³	Biogas upgrading system, biomethane used for vehicle fuel	Biogas plant digesting kitchen waste: pre-treatment, hydrocyclone, 1 hydrolysis tank, 2 digester, 1 storage tank, digestate treatment, mesophilic process, external heating and cooling	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, training for operators
Biogas Plant SHINKO	Japan	2013	Kitchen waste, industrial waste	Digester 5,000 m ³	Gas engine 1, 864 kWel	On site technical support of a waste digestion plant in Japan	Technical support and expert report
Biogas Plant DEQINGYAN	China	2012/13	Pretreated chicken manure, bio-waste, corn straw, recirculating digestate	Stainless steel 2 x 2,600 m ³	Biogas upgrading system, biomethane used in households	Biogas plant digesting organic waste: 2 digester, 2 secondary digester, external gas storage, biogas upgrading and utilisation in households	Basic evaluation, pre-planning, draft planning, execution planning, tendering Basic evaluation, pre-, draft- and execution planning, tendering
Biogas Plant TONGZHOU	China	2012/13	Organic kitchen- and municipal waste, black water	Glas coated steel tanks 4 x 3,100 m ³	Gas conditioning, utilisation of biogas in households	Biogas plant digesting organic waste: pre-treatment, 4 digester, digestate storage, external gas holder, biogas upgrading and utilization in households	Basic evaluation, pre-planning
Biogas Plant HARBIN	China	2012	Biowaste, Straw	Boxes, 12 x 425 m ³	Box dry fermentation, mesophilic	PSA purification equipment	Technical support and consultancy

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Biogas Plant SOUTHERN GERMANY	Germany	2012	Biowaste	Concrete tanks 3 x 7,500 m ³ (existing on site)	Existing on site	Pre-treatment and pasteurisation of biowaste for digestion in existing digesters of a WWTP.	Basic evaluation, pre-planning
Biogas Plant HELSINKI	Finland	2011/12	Biowaste, household and industrial kitchen waste	Glas coated steel tanks 2 x 2,700 m ³	Existing on site	Biogas plant digesting organic waste: 2 hydrolysis tanks, 2 digester, 1 secondary digester, mesophilic operation, (optional: digestate drying plant)	Basic evaluation, pre-, draft-, approval and execution planning, tendering
Biogas Plant WALLRAPP (Expansion)	Germany	2011	Pig manure, expired foodstuff (food, bread)	Lipp-Digester 1,100 m ³	Dual fuel co-generator 100 kWel Gas engine 185 kWel	Expansion of a biogas plant for digesting food waste by 1 secondary digester	Basic evaluation, pre-, draft-, approval and execution planning, additional consulting services
Biogas Plant IM BRAHM (Expansion)	Germany	2010	Pig manure, horse manure, kitchen waste	Concrete tank 1,200 m ³	Gas engine 3 x 190 kWel	Expansion of a biogas plant by co-generator, digester and storage tank	Basic evaluation, pre-, draft-, approval and execution planning, tendering, participating in contract awarding process, site management/project controlling
Biogas Plant SCHWABEN	Germany	2010	Biowaste, cuttings	Concrete tank 2,700 m ³	Gas engine 526 kWel	Biogas plant digesting organic waste: dry digestion, horizontal digester, sand removal, mesophilic operation	Basic evaluation, pre-planning
Biogas Plant EARTH RENU	Canada	2010	Kitchen waste, fats, glycerin	Glas coated steel tanks 2 x 5,000 m ³	Biogas upgrading system	Industrial biogas plant: 2 digester, 1 secondary digester, pasteurisation	Basic evaluation, pre-planning
Biogas Plant IFFEZHEIM	Germany	2010	Biowaste	Concrete tank 10 x 600 m ³ (garage type)	Gas engine 2 x 600 kWel	Expansion of composting plant by a dry digestion plant.	Basic evaluation, pre-planning
Biogas Plant PETERBOROUGH	Great Britain	2009	Kitchen waste, canteen waste, expired food products	Glas coated steel tank 2,800 m ³	Gas engine 800 kWel	Biogas plant digesting organic waste: biowaste treatment, 1 hydrolysis tank, 1 digester, pasteurisation, biofilter, mesophilic operation	Basic evaluation, pre-planning
Biogas Plant LISTOWEL	Canada	2009	Kitchen waste, market waste, manure, other organic waste	Glas coated steel tanks 2 x 5,000 m ³	Biogas upgrading system, injektion into grid	Industrial biogas plant: 2 digester, 1 secondary digester, 1 storage tank, mesophilic operation	Basic evaluation, pre-planning
Biogas Plant MCDONNELL (Expansion)	Ireland	2014/15	Kitchen waste, animal by-products (ABP), cattle slurry, poultry manure, corn silage	Concrete tank 3,200 m ³	Gas engine 250 kWel (existing on site)	Expansion of a biogas plant digesting food waste by 1 digester, gas desulphurisation, pump room and equipment	Basic evaluation, pre-, draft and execution planning, additional consulting services
Biogas Plant SEATTLE	USA	2008	Biowaste	Enamelled steel tank 4,900 m ³	Gas engine 2 x 536 kWel	Biogas plant digesting organic waste: biowaste treatment system, 1 hydrolysis tank, 1 digester, 1 secondary digester, mesophilic operation	Basic evaluation, pre-planning

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Biogas Plant VATTENFALL	Germany	2008	Green waste	Box fermenter, 1.000 m ³	Gas-Otto-Motor 500 kW _{el}	Biogas plant digesting green waste by dry fermentation	System comparison
Biogas Plant PORTA (Expansion)	Spain	2007	Pig manure, food waste	Concrete tank 1,400 m ³	Gas engine 2 x 191 kW _{el}	Expansion of a biogas plant digesting food waste by co-generator and gas cooling	Basic evaluation, pre-, draft- and execution planning, additional consulting services
Biogas Plant GÖTTINGEN	Germany	2007	Percolate of biowaste compost	Concrete tank 1,900 m ³	Gas engine 254 kW _{el}	Integration of a biogas plant in an existing compost plant incl. heat utilisation	Basic evaluation, pre-, draft-, approval and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up, consultancy
Biogas Plant NOYON	France	2007	Sewage sludge, fats, food residuals, process water	Glas coated steel tank 3,500 m ³	Gas engine 716 kW _{el}	Industrial biogas plant: 1 digester, 1 secondary digester with gas holder, digestate treatment with separation and drying of solid phase, mesophilic operation, heat utilisation	Basic evaluation, pre-, draft-, approval and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up
Biogas Plant DUBLIN	Ireland	2007	Kitchen- and garden waste, food waste, sewage water	Glas coated steel tank 4,600 m ³	Gas engine 2 x 500 kW _{el}	Biogas plant digesting organic waste: biowaste treatment system, 1 hydrolysis tank, 1 digester, 1 secondary digester, pasteurisation	Basic evaluation, pre-planning
Biogas Plant PORTA	Spain	2006	Pig manure, food waste	Concrete tank 1,400 m ³	Gas engine 191 kW _{el}	First agricultural biogas plant in Spain	Basic evaluation, pre-, draft- and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up
Biogas Plant IM BRAHM	Germany	2004/5	Pig manure, kitchen waste, horse manure	Concrete tank 1,200 m ³	Dual fuel co-generator 2 x 190 kW _{el}	Biogas plant digesting organic waste: 1 digester, 1 secondary digester, mesophilic operation, heat utilisation (pasteurisation kitchen waste, heating of buildings)	Basic evaluation, pre-, draft-, approval and execution planning, tendering, participating in contract awarding process, site management/project controlling, start-up
Biogas Plant KOGEL	Germany	2004	Kitchen waste, canteen waste, packaged food	Concrete tank 2 x 2,800 m ³	Gas engine 1 MW _{el}	Biogas plant digesting organic waste: 2 digester, 1 secondary digester, 2 storage tanks	Basic evaluation, pre-planning
Biogas Plant GROSS MUEHLINGEN (Expansion)	Germany	2003	Manure, organic waste	Steel tanks, 2 x 750 m ³	Gas engine, 730 kW _{el}	Expansion of an existing biogas plant by pasteurisation, storage tanks, hydrolysis tank, process control system for the whole plant	Basic evaluation, pre-, draft- and approval planning, additional consulting services
Biogas Plant PAJU	Korea	2002	Manure and kitchen waste		Gas engines, 470 kW _{el}	Work on a consultative capacity for a general contractor for the assessment of a co-fermentation biogas plant	Consultancy on the expansion of an existing biogas plant, preparation of a study
Biogas Plant HEILIGENKREUZ	Austria	2002	Manure, fats, corn, glycerin, kitchen waste, grass, concentrate of fruits, waste of bakeries	Concrete tank, 1,100 m ³	Gas engines, 511 kW _{el}	Biogas plant for digesting organic waste: 1 hydrolysis tank, 1 digester, 1 secondary digester, heat utilisation in the village	Basic evaluation, pre-, draft-, approval and execution planning of main components, measurement and process technology, start-up

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Biogas Plant BERLIN-MARIENFELDE	Germany	1999-2000	Kitchen waste, fats, depackaged food	Stainless steel tanks 4 x 60 m ³	Gas engine, 2 x 90 kWel	Biogas plant digesting organic waste: 1 digester, 1 secondary digester	Basic evaluation, pre-, draft and execution planning for buffer- and hydrolysis tank, digesters
Biogas Plant BRAUNSCHWEIG	Germany	1997 - 1999	Municipal biological waste (OFMSW)	2 x 1.600 m ³ horizontal digesters	Gas sale	Biogas plant digesting organic waste: Dry fermentation, Kompogas process	Process engineering for pretreatment system and digestion system, detailed engineering, optimisation, operation of plant, commissioning. Process development and implementation of sand removal.
Biogas Plant EITTING	Germany	1997 - 1999	Municipal biological waste (OFMSW)	2 x 1.600 m ³ horizontal digesters	Gas sale	Dry fermentation; Kompogas process	Optimisation and commissioning.
Small digestion Plant W&A	Germany	1997-1999	Black water, kitchen waste	6 m ³	Gas oven	Biogas plant digesting organic waste (blackwater of several houses, vacuum toilets, kitchen waste) by one 6 m ³ digester, modular system	Basic evaluation, pre-, draft- and execution planning incl. pre-fabrication and final assembly, site management/project controlling, start-up (for TBW GmbH)
Digestion Plant BEG BIOENERGIE GMBH	Germany	1997/ 1998	Biowaste, separately collected in households, sewage sludge	Steel tanks, 3 x 350 m ³		Biogas plant digesting organic waste: IMK-process, two-stage with aerobic hydrolysis, sedimentation tank, external gas storage tank	Basic evaluation, pre-, draft- and execution planning for digesters, sedimentation tank, gas holder, process optimisation after start-up
Biogas Plant GAERTEC	Germany	1997	Kitchen waste, organic industrial residues	Steel tank, 150 m ³	Dual fuel co-generator, 27 kWel	Biogas plant digesting organic waste: Pilot plant, Freese system	Basic evaluation, pre-, draft- and execution planning, tendering and construction of digester
Biogas Plant BARZ	Germany	1996-1998	Manure, kitchen waste	Concrete tanks, 20 m ³ and 250 m ³	Dual fuel co-generator, 45 kWel	Biogas plant digesting organic waste: 2 digester, pasteurisation	Basic evaluation, pre-, draft-, approval and execution planning, site management/project controlling, start-up (for TBW GmbH)
Biogas Plant PREUSSAG - NOELL AG	Germany	1995 - 1997	Municipal biological waste (OFMSW), market wastes		Anaergie process - Vertical 2-stage digester	Dry and wet fermentation	Process design and process optimisation, start up, operation of pilot plant, research.
Biogas Plant RoRo-ENERGIE	Germany	1996-1998	Biowaste, separately collected in households, residues from breweries	Concrete tank, 1,000 m ³	Dual fuel co-generators, 2 x 95 kWel	Biogas plant digesting organic waste: pre-treatment for all input substrates, pasteurisation, 1 central located digester, 1 storage tank, other digester decentralized	Basic evaluation, pre-, draft-, approval and execution planning (for TBW GmbH)
Biogas Plant BLUEMEL (Kompostbetrieb)	Germany	1994/ 1995	Biowaste, separately collected in households	Concrete tanks, 2 x 800 m ³	Dual fuel go-generators, 2 x 160 kWel	Biogas plant digesting organic waste: 2 digester	Basic evaluation, pre-, draft-, approval and execution planning, site management/project controlling, start-up (for TBW GmbH)
Digestion Plant Technical University of HAMBURG-HARBURG	Germany	1993/ 1994	Biowaste, separately collected in households	Steel tank, 100 m ³		Pilot biogas plant: 1 digester, ATF-dry fermentation	Basic evaluation, pre-, draft-, approval and execution planning, site management/project controlling, start-up (for TBW GmbH)
Biogas Plant SCHLÖTTER	Germany	1992/ 1993	Manure, other organic waste	Glass fiber tank, 100 m ³	Dual fuel co-generator, 27 kWel	Biogas plant digesting organic waste: 1 digester, Baader system, gas holder above 400 m ³ manure storage tank	Pre-, draft-, approval and execution planning, site management/project controlling, start-up

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Biogas Plant v. BODELSCHWING'SCHE ANSTALTEN	Germany	1991	Manure, kitchen waste	Steel tank, 100 m ³	Dual fuel co- generator, 27 kWel	Biogas plant digesting organic waste: 1 digester, gas bag	Assembly of tubes, pumps, mixers, heating and gas systems