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Isometric pre-approved

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powermax

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ABOUT POWERMAX

Powermax——Your Comprehensive Energy Solutions Partner Driving the Global Green Transition

Wuxi Powermax Renewable Energy Technology Co., Ltd. (Powermax) is an international technology enterprise specializing in biomass-to-energy conversion and comprehensive energy solutions. Leveraging nearly 40 years of profound technical expertise, we are committed to providing global clients with efficient, clean, and sustainable energy conversion technologies and innovative business models, empowering enterprises worldwide to achieve energy transition and maximize carbon asset value.

40 Years of Technical Expertise and a "Dual-Core" Global Strategy

Powermax's core technology is built upon the team's nearly four decades of deep industry engagement. Under the strategic vision of CEO Mr. Charles Qian, the company operates on a "Dual-Core Synergy" model: our domestic entity, Wuxi Teneng Power Machinery Co., Ltd., continuously refines foundational manufacturing processes, while our international entity, Powermax, fully aligns with global standards to expand overseas markets. This strategy ensures that every system we deliver combines exceptional reliability with agile global responsiveness.

OUR VISION

Driven by innovation in energy conversion, **Powermax** is expanding our comprehensive solutions for biomass, biogas, and multi-fuel applications across the globe.
We aim to be your most trusted international partner, delivering reliable equipment, integrated system engineering, and innovative models to maximize energy efficiency and create sustainable value.
Empowering every energy source to create greater value.

OUR MISSION

Driven by reliable energy conversion tech and systematic engineering, we provide site-specific, high-efficiency energy solutions globally. Our promise: every project successfully implemented, built for long-term operation, and designed for continuous value creation.
Turning technology into reliable energy. Maximizing long-term project value.

Company Address: Chuangrong Mansion, Danshan Road, Anzhen Subdistrict, Xishan District, Wuxi, Jiangsu, China

Factory Address: No. 26 Jingrui Road, Xibei Town, Xishan District, Wuxi, Jiangsu, China

Powermax Biowatt®
Compact Biomass Gasification Power Generation System Solutions

(Biowatt 100 & Biowatt 300 & Biowatt 500 & Biowatt 1000)

- The Biowatt 100 & Biowatt 300 & Biowatt 500 & Biowatt 1000 complete system is built into multiple skid-mounted container-type frames that make transportation installation simple and easier.
- Easy to operate and transport, the system can be unloaded and installed rapidly for quick operation.
- No need for a factory building, on-site installation only takes 7-10 working days.

SMART

Change the way you generate and use energy.
Create exactly what you need, rather than creating an extra amount.
Maximize the use of neglected energy resources.
Use local, renewable resources.
Be environmentally conscious and economically viable.

Clean Energy Solutions

SMART
DESIGN

Completely compact design and simple operation.

SMART
ENERGY

Local clean energies that can be used without waste.

SMART
ECONOMY

Quick and simple Installation reduce investment cost.

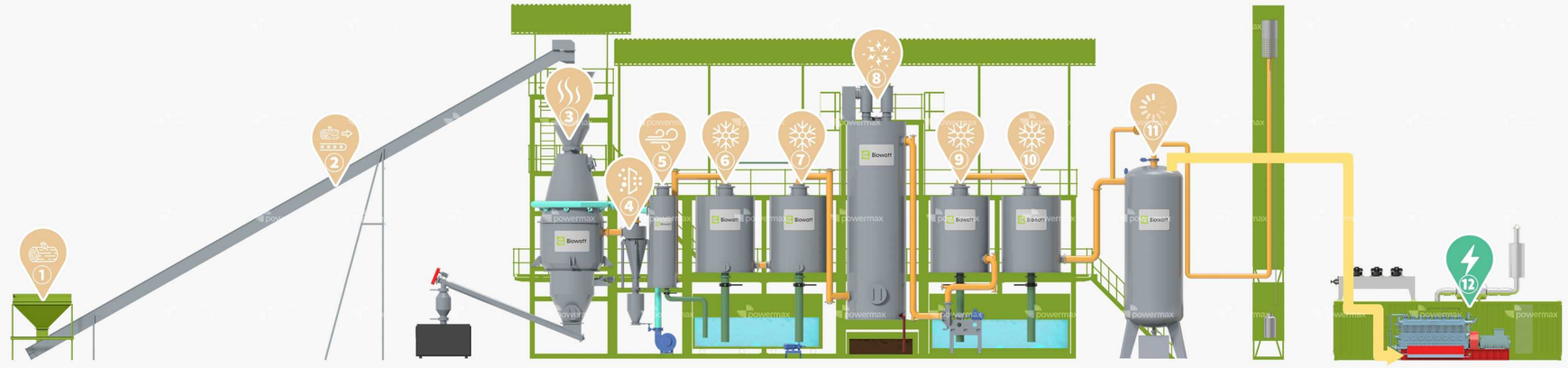
SMART
INSTALLATION

Its frame design facilitates simple loading and transportation, significantly reducing on-site civil construction.

Powermax Biowatt®
Compact Biomass Gasification Power Generation System Solutions

All components are pre-installed, investors can achieve fast returns. This not only simplifies installation, but also allows for very quick start-up, so you can benefit immediately. The system offers great flexibility because it provides a modular design and the ability to trigger biomass power plants for maximum performance. Containerized power generation systems can be optimally tailored to unique situations and environments. The broad power capacity allows for further customization.

Tar Tank
Water Tank
Biomass Syngas



Temporary silo
Stores biomass feedstock, regulates material flow, and increases production efficiency.

Transportation
Transportation of biomass raw material.

Gasification
Pyrolysis and gasification of biomass raw materials to generate combustible gases such as carbon monoxide and hydrogen.

Cyclone
Remove particles dust from gas flow.

Air exchanger
Heating air gasification agent to improve gasification efficiency.

I Indirect Cooler
The first temperature indirect cooling treatment on biomass combustible syngas.

I Indirect Cooler
The first temperature indirect cooling treatment on biomass combustible syngas.

ESP
The high-voltage electric field action electrically charges the tar and dust in the gas and adsorbs them on the electrode plates to achieve the objective of gas purification.

II Indirect Cooler
The second temperature indirect cooling treatment on biomass combustible syngas.

II Indirect Cooler
The second temperature indirect cooling treatment on biomass combustible syngas.

Buffer tank
It buffers combustible syngas and ensures that electricity can be output with relative stability.

Power generation
Convert combustible gas into electrical energy output.

COMBINED HEAT AND POWER (CHP)

CHP, also known as combined heat and power, is an efficient, clean, and reliable way to generate electricity and thermal energy from a single fuel source. Cogeneration can significantly improve a facility's operating efficiency and reduce energy costs.

	Thermal energy	Electric energy
Biowatt100	208kW	100kW
Biowatt300	624kW	300kW
Biowatt500	1,040kW	500kW
Biowatt1000	2,080kW	1,000kW

HIGH COST PERFORMANCE

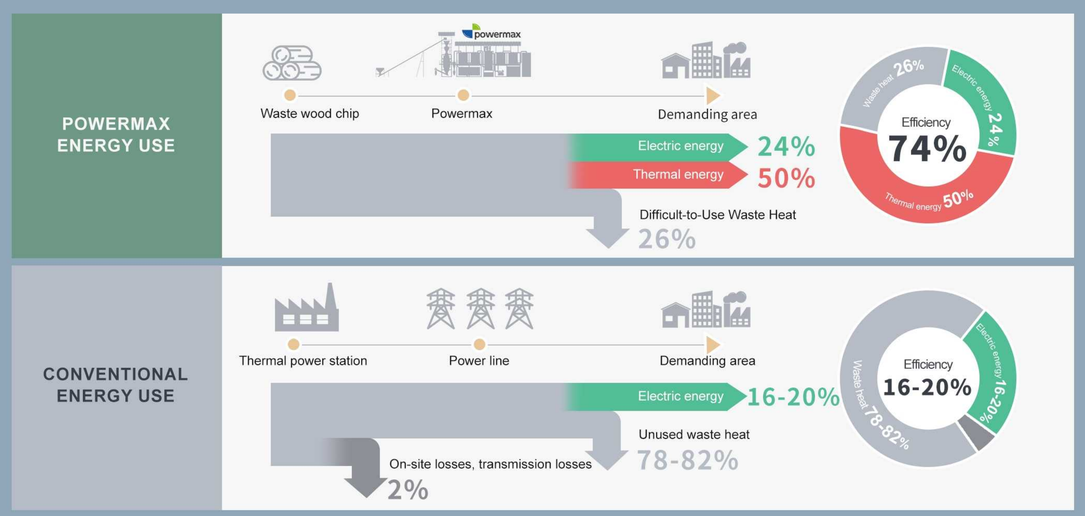
Powermax Biowatt Compact Biomass Gasification Power Generation System delivers remarkable economic advantages among biomass power-generation solutions. It integrates biomass feedstock processing with CHP, making it an ideal option for combined heat and power supply applications.

FOOTPRINT
Small

COST-EFFECTIVE
High

HIGH ENERGY EFFICIENCY

Powermax achieves an energy efficiency of 74%. A conventional centralized energy use, such as thermal power generation, usually causes energy loss during transmission while Powermax can achieve distributed energy utilization, so power generation can be used without wasting power generation and heating. In addition, thermal energy can also be used within facilities to achieve high energy efficiency.



CARBON OFFSET

Compared to coal and petroleum resources, biomass gas is a clean energy source. Zero carbon dioxide emissions during the process that produces small amounts of NOx and SOx. Tar, dust, and condensate are comprehensively treated after collection through the facility.

	Reduce CO_2 annually	Equivalent to approximately
Biowatt100	740t	17,000 trees
Biowatt300	2,220t	51,000 trees
Biowatt500	3,700t	85,000 trees
Biowatt1000	7,400t	170,000 trees

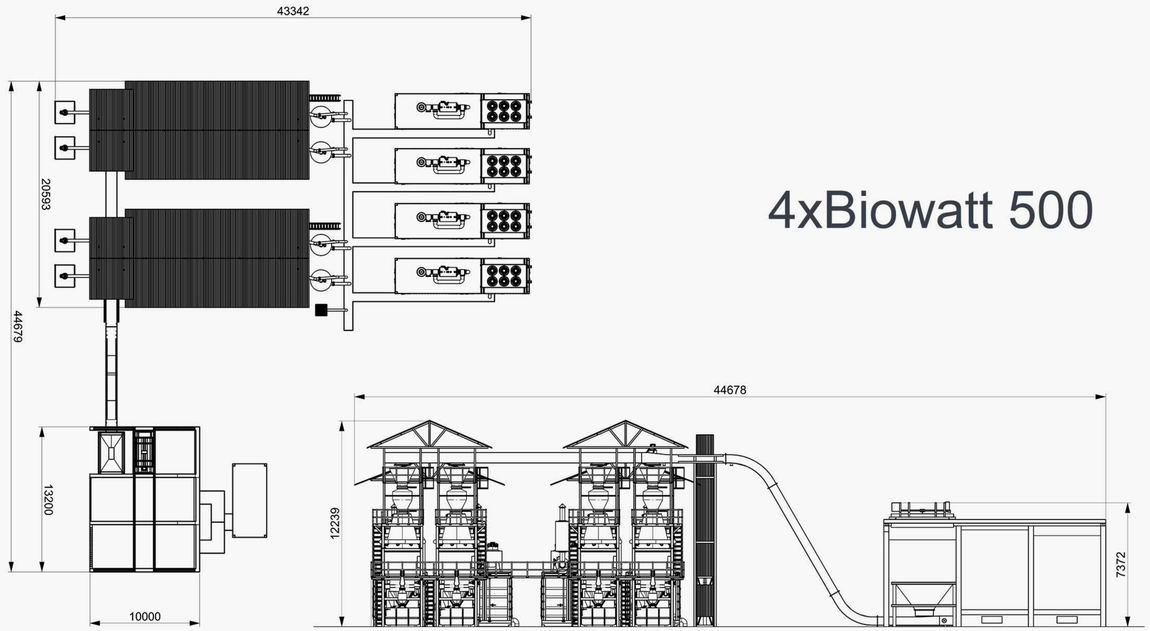
AUTOMATIC CONTROL & PRODUCTION SECURITY

Feed-React-Power generation-Heating and Application, fully automated control, easy to operate. Installed with fault alarm system, interconnection interlock, and remote control system.

Taking 2MW as an Example

Different Power Generation Schemes

Powermax Biowatt Compact Biomass Gasification Power Generation Systems are a "fast-to-use" solution that quickly meets investors & users needs for biomass power generation and heat supply. The compact skid-mounted design is suitable for underdeveloped areas because it can operate off-grid. Especially in today's context of increasing global energy security concerns, high oil prices, and fuel shortages, the cost of biomass gasification power generation is only 10-30% of diesel power generation, making it an ideal alternative to diesel-based systems.



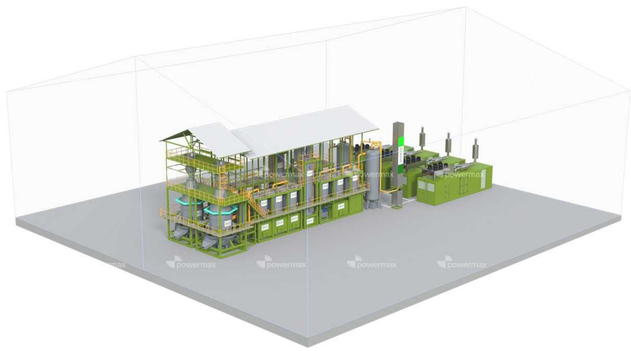
4xBiowatt 500

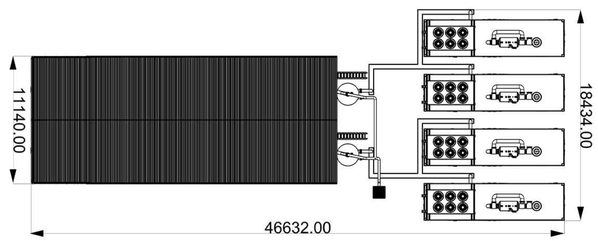
1 Option

500kW*4

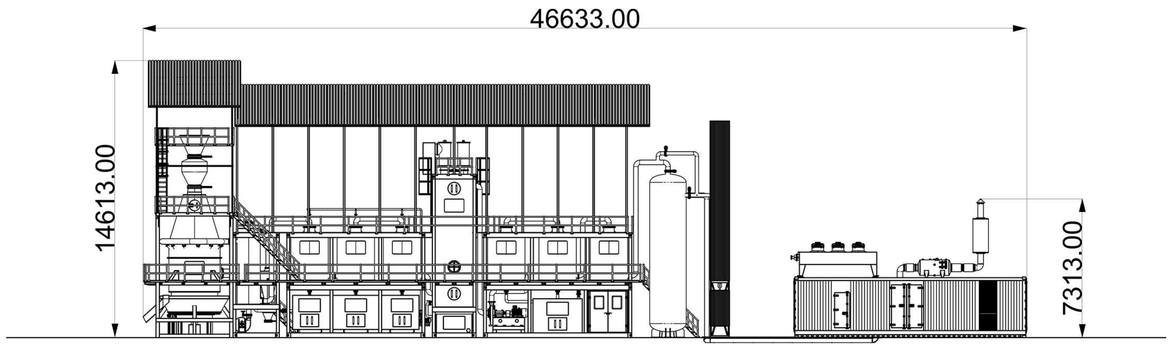
2 Option

1MW*2





2xBiowatt 1000

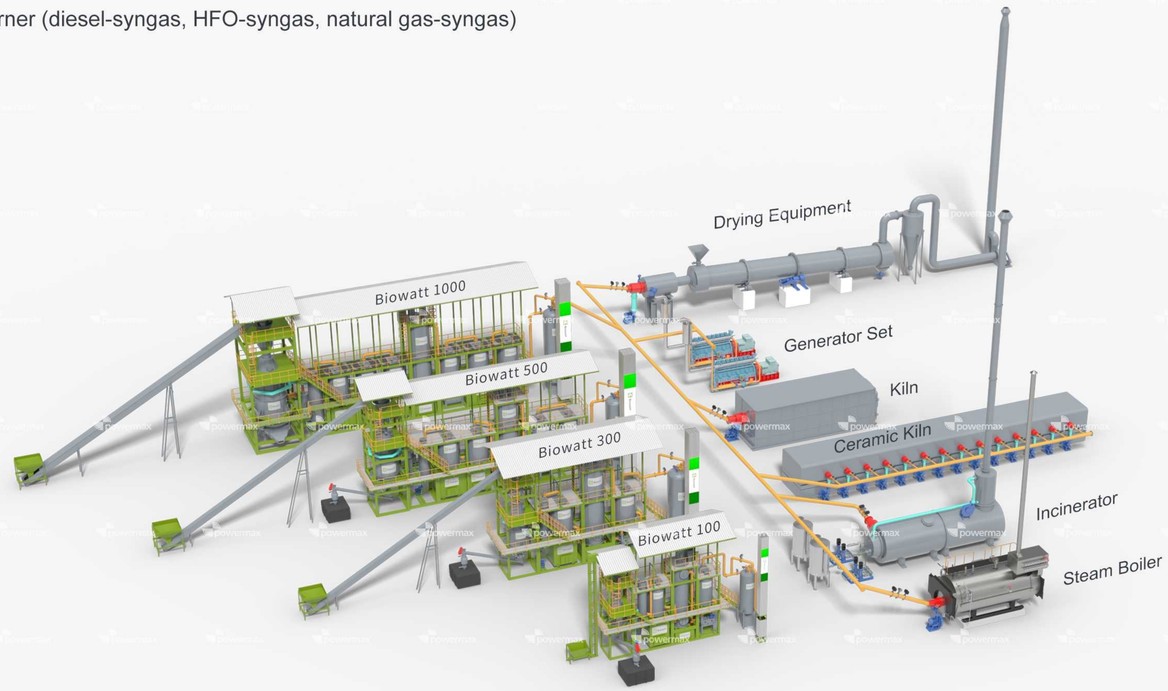


- Complete solution for biomass power generation and heat supply.
- Easy installation with factory pre-assembly.
- Start/stop at any time.
- Compact and space-saving design.
- No need for a factory building, suitable for many countries.
- System components such as transport system, de-ashing system, or fuel dryer are available in combination with all Powermax equipment.

Biomass Green Energy

(NET ZERO)

Biomass gasifier is widely used for replacing your existing fossil fuel energy system to reduce your carbon footprint, Powermax can provide 100% biomass syngas burner, dual-fuel burner or mixing burner (diesel-syngas, HFO-syngas, natural gas-syngas)



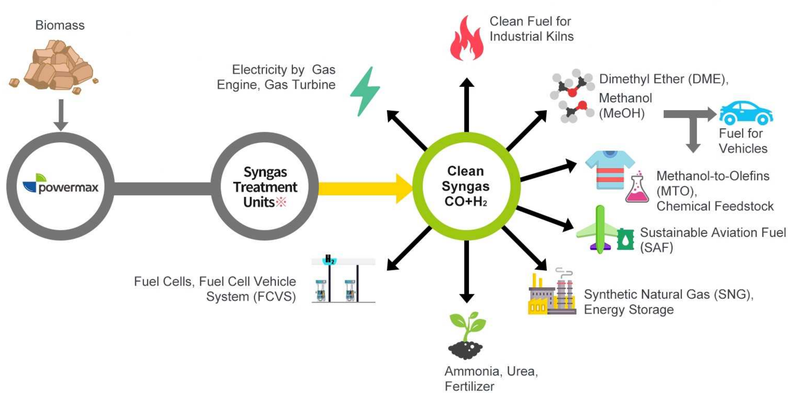
Main applications include:

Annealing furnaces, industrial kiln, hot air furnaces, incinerators, heating furnaces, rotary kilns, and generator sets.

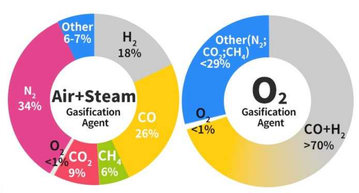
Biowatt Compact Biomass Gasification System For Heating Application

Model	Biowatt 100	Biowatt 300	Biowatt 500	Biowatt 1000
Biomass Consumption (Kg/hr)	100-150	300-450	500-750	1000-1500
Gas Production (Nm^3/h)	250-300	750-900	1250-1500	2500-3000
Fuel Size (mm)	20-80	20-80	20-80	20-80
Moisture Content (WB)	⩽15%	⩽15%	⩽15%	⩽15%
Gas Heat Value ($Kcal/Nm^3$)	1200	1200	1200	1200
Cold Gas Energy Output (Kcal/h)	300,000	900,000	1,500,000	3,000,000
Cold Gas Energy Output (MW/h)	0.35	1.05	1.75	3.49
Biochar Output % (wood chip for example)	⩽8%	⩽8%	⩽8%	⩽8%
Floor Area (m^2)	40-50	65-80	90-110	180-200
L*W*H (mm)	8480*1850*6000	11100*2300*8579	17850*2700*9409	23907*4500*10669

Application of Powermax



Powermax Syngas compositions (dry, volume basis) from biomass show high CO and H_2 compositions which lead to high calorific value syngas.



※ **The syngas treatment system can be customized based on specific syngas applications.**

Power Generation

- Grid-connected and Sell
- Power Generation for Factorys
- Power Generation for Villages
- Power Generation for Irrigation and Pumping

Thermal Application

- Industrial Furnaces / Kilns
- Industrial Ovens
- Industrial Dryer / Hot Air Generators
- Industrial Boiler (Hot Water, Steam, Thermal Oil)

Chemical Industry

- Dimethyl Ether
- Methanol
- MTO, Chemical Feedstock
- SNG, Energy Storage
- Ammonia, Urea, Fertilizer
- Fuel cells, FCVS
- SAF (Sustainable Aviation Fuel)

Taking 2MW as an Example

Off-grid Power Management

① Powermax Biowatt® Compact Biomass Gasification Power Generation Systems

② User

③ Solar Energy

④ Energy Storage

⑤ Wind Energy

⑥ Syngas Generator Set

Our hybrid power solutions combine renewable energy sources(such as solar, wind, biomass energy) and energy storage systems together, storing surplus energy and utilizing biomass-powered gasifiers and gas generators to provide instant power replenishment. The hybrid system can make wind and solar power more reliable. Our energy management systems(EMS) can optimize hybrid systems and ensure their reliable operation anytime, anywhere.

Powermax provides complete hybrid power plants for off-grid or on-grid applications where security of power supply is of the essence. These effective solutions use clean fuels which combine with highly gas-efficient gensets and renewable energy systems to generate power. Energy storage systems keep excess power from waste while ensuring a reliable power supply. An energy management system could efficiently coordinate production to meet customers' demands.

Benefits at a Glance:

- Increase power supply reliability
- Increase gas efficiency
- Reduce emissions and improve CO_2 footprint
- Enhance system flexibility and fuel independence
- Support a wide range of operating modes
- Reduce energy cost

Grid-tied Power Management

① Powermax Biowatt® Compact Biomass Gasification Power Generation Systems

② User

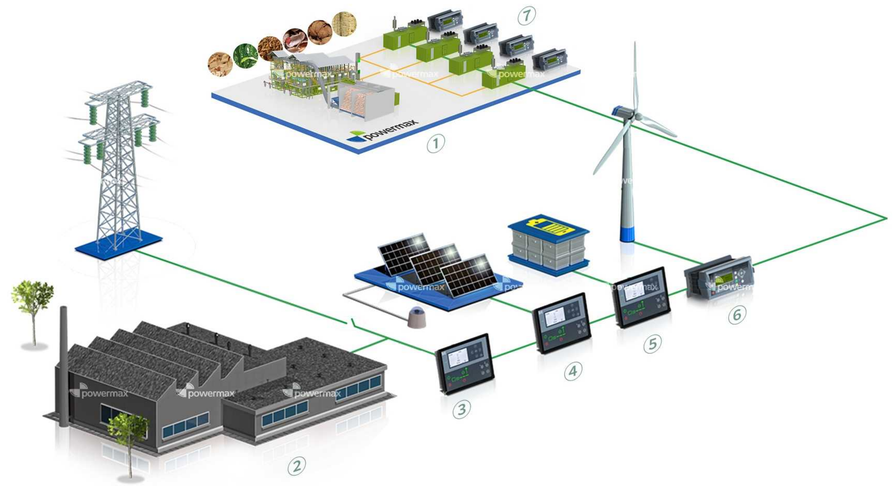
③ Power Grid

④ Solar Energy

⑤ Energy Storage

⑥ Wind Energy

⑦ Syngas Generator Set



During cloudy days in monsoon season, when solar energy storage plant is forced to idle for lack of sunlight, the biomass power station can continue to generate electricity and feed it into the grid as needed, thereby maximizing the utilization of grid capacity. More importantly, biomass power plants help prevent power bottlenecks and transfer power generation in a timely manner.

This hybrid power system is more effective and more reliable as compared to any other single mode of power generation system. The power delivered by hybrid model of PV/WIND/BI0MASS is more stable and economical than the current system. The system is more environmental friendly as the waste products do not contain any harmful gases or products. The system uses all the renewable energy sources for electric generations, which are the need of the time. The use of energy from wind, solar and biomass will help to reduce our dependency on fossil fuels.

Benefits at a Glance:

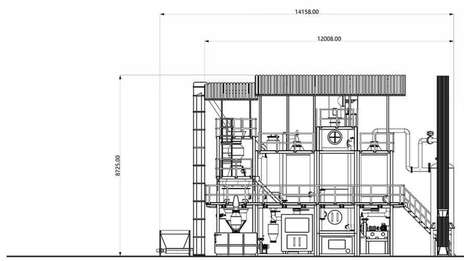
- Low to no CO_2 emissions
- Enhance flexibility and fuel independence
- Saves fuel
- Reduce fuel consumption
- Provide efficient and reliable power supply
- Reduce energy cost

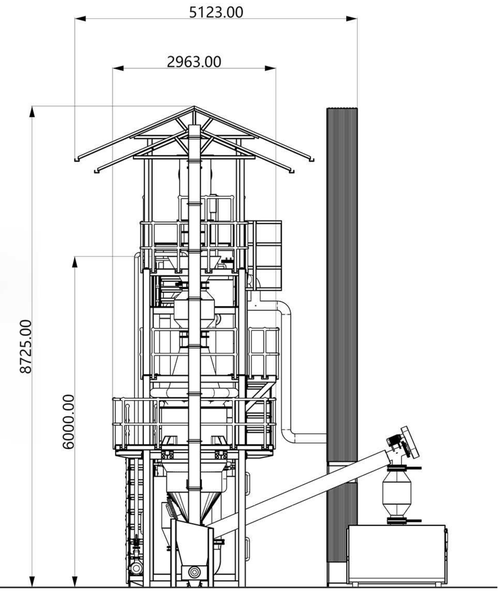
Product Parameters

Biowatt 100

Rated Power (kW)	100
Rated Voltage (V)	220/380/400/440/6300/6600/11000/13800
Rated Frequency (Hz)	50/60
Biomass Consumption (Kg/hr)	100-150
Gas Production (Nm^3/h)	250-300
Ash Discharge Type	Dry ash discharge / wet ash discharge
Length (mm)	12100
Height (mm)	6000-8900
Width (mm)	2963-5200
Floor Area (m^2)	40-50

❈ The actual size of the equipment may vary depending on site conditions.

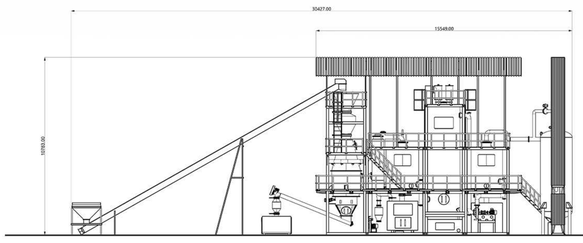


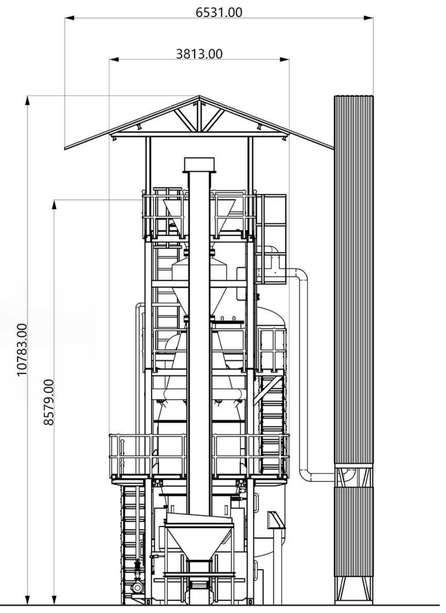


Biowatt 300

Rated Power (kW)	300
Rated Voltage (V)	220/380/400/440/6300/6600/11000/13800
Rated Frequency (Hz)	50/60
Biomass Consumption (Kg/hr)	300-450
Gas Production (Nm^3/h)	750-900
Ash Discharge Type	Dry ash discharge / wet ash discharge
Length (mm)	16000
Height (mm)	8600-11000
Width (mm)	3813-6600
Floor Area (m^2)	65-80

❈ The actual size of the equipment may vary depending on site conditions.





Raw Material

Fuel	Biomass
Fuel Supply Caliber (mm)	Biowatt 100: 964 Biowatt 300: 1524
Moisture Content (WB)	≤ 15%
Fuel Size (mm)	20~80
Biochar Output	≤8% (wood chip for example)

Gas Engine

Engine Displacement	Biowatt 100: 27L 6-cylinder Biowatt 300: 71.5L 12-cylinder

Generator

Model	Alternator
Voltage	400 VAC
Frequency (Hz)	50/60
Current (A)	Biowatt 100: 180/164 Biowatt 300: 541/492
Engine Speed (rpm)	1000/900
Power Factor	0.8
Cooling Method	Air cooling / Water cooling

Heat Transfer Medium Connection Specifications

Pipe Flange Size (mm)	Biowatt 100: (Inlet size) 60 (Outlet dimension) 76 Biowatt 300: (Inlet size) 76 (Outlet dimension) 89
Inlet Temperature (℃)	35~55, Maximum 65
Outlet Temperature (℃)	80~90, Maximum 98

SMS-alarm

SIM Card	Standard SIM Card

Internet Connection

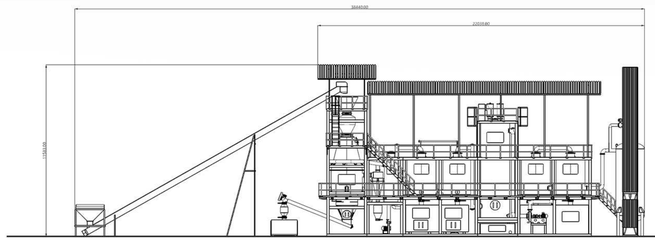
Recommendation	Deuter communication speed of ADSL or higher

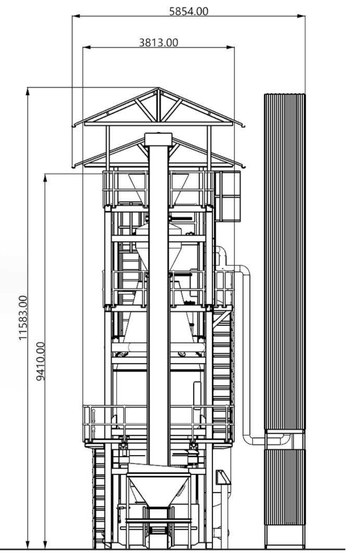
Product Parameters

Biowatt 500

Rated Power (kW)	500
Rated Voltage (V)	220/380/400/440/6300/6600/11000/13800
Rated Frequency (Hz)	50/60
Biomass Consumption (Kg/hr)	500-750
Gas Production (Nm^3/h)	1250-1500
Ash Discharge Type	Dry ash discharge / wet ash discharge
Length (mm)	23000
Height (mm)	9500-12000
Width (mm)	3813-6000
Floor Area (m^2)	90-110

❈ The actual size of the equipment may vary depending on site conditions.

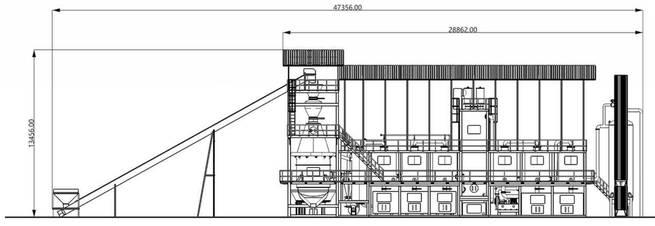


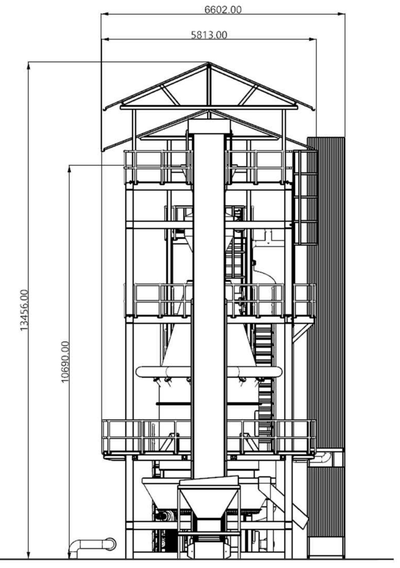


Biowatt 1000

Rated Power (kW)	1000
Rated Voltage (V)	220/380/400/440/6300/6600/11000/13800
Rated Frequency (Hz)	50/60
Biomass Consumption (Kg/hr)	1000-1500
Gas Production (Nm^3/h)	2500-3000
Ash Discharge Type	Dry ash discharge / wet ash discharge
Length (mm)	30000
Height (mm)	11000-14000
Width (mm)	5813-6700
Floor Area (m^2)	180-200

❈ The actual size of the equipment may vary depending on site conditions.





Raw Material

Fuel	Biomass
Fuel Supply Caliber (mm)	Biowatt 500: 1524 Biowatt 1000: 1550
Moisture Content (WB)	≤ 15%
Fuel Size (mm)	20~80
Biochar Output	≤ 8% (wood chip for example)

Gas Engine

Engine Displacement	Biowatt 500: 215L 8-cylinder Biowatt 1000: 215L 8-cylinder

Generator

Model	Alternator
Voltage	400 VAC
Frequency (Hz)	50/60
Current (A)	Biowatt 500: 902/820 Biowatt 1000: 902/820
Engine Speed (rpm)	600
Power Factor	0.8
Cooling Method	Air cooling / Water cooling

BIOWATT1000 uses two sets of 500kW gas gensets.

Heat Transfer Medium Connection Specifications

Pipe Flange Size (mm)	Biowatt 500: (Inlet size) 76 (Outlet dimension) 89 Biowatt 1000: (Inlet size) 76 (Outlet dimension) 89
Inlet Temperature (℃)	35~55, Maximum 65
Outlet Temperature (℃)	70~80, Maximum 85

SMS-alarm

SIM Card	Standard SIM Card

Internet Connection

Recommendation	Deuter communication speed of ADSL or higher

Biomass Energy

Biomass is a renewable, carbon neutral-energy source.

Biomass energy currently meets only 10% of the world's energy consumption demand.

By 2050, biomass energy will become an important energy source, with its share of demand rising to 30%.

Types of Biomass and Waste for the Powermax System:

Biomass

BRIQUETTING

Rice husk

Wood chip

Sugarcane bagasse

Bamboo processing waste

Bamboo chip

Forest wood

Coconut shell

Corn straw

Corn cob

Cotton stalk

Palm Tree Waste

Empty fruit bunch

Palm fiber

Palm shell

Refuse Derived Fuel (RDF)

Municipal solid waste

Grain stalk

Hazelnut shell

Olive nut shell

Peach kernel

Coconut husk

Peanut shell

Sorghum stalk

Branch

Urban furniture waste

Walnut shell

Case Show

2MW Biomass Gasification Power Generation Project (Indonesia)

12MW Rice Husk Gasification Power Plant (Myanmar)

100KW Biomass Gasification Power Generation Project (Wuxi)

3MW Wood Chips Gasification Power Plant (Malaysia)

500KW Biomass Gasification Power Generation Project (Taiwan)

Project In Development

1. 10MW Canadian gasification power generation project
2. 70 sets of 1MW gasification power generation projects in Kenya
3. 6MW gasification power generation project in the United States
4. 20 sets of 2MW gasification power generation projects in Taiwan
5. 50 sets of 1MW biomass gasification power generation projects in Indonesia