POWERMAX COALWATT®

Mine-mouth modular coal gasification power and CHP system for replacing expensive diesel generation

Wuxi Powermax Renewable Energy Technology Co.,Ltd.
Wuxi Teneng Power Machinery Co., Ltd.

COALWATT

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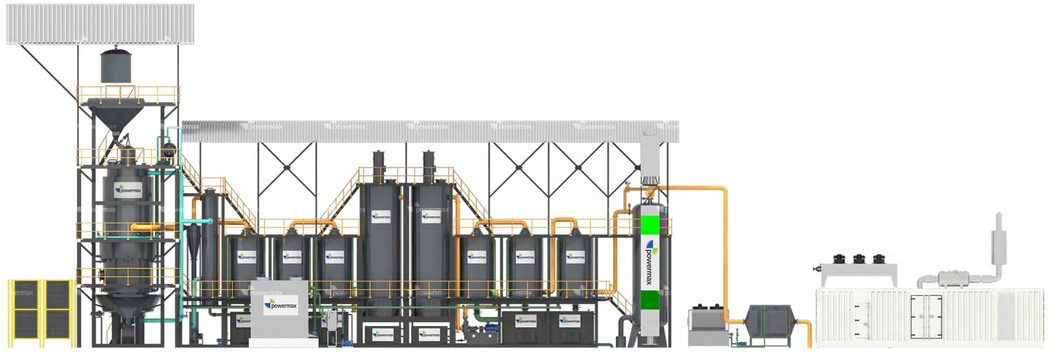

POWERMAX COALWATT® is a modular coal gasification power generation system designed for remote coal mines, coal washing plants, mineral processing facilities and off-grid industrial users. The system converts locally available coal into producer gas for power generation in gas engine generator sets, providing a practical alternative to high-cost diesel generation and unreliable grid power.

Standard modules range from 500 kW to 2 MW and can be combined into multi-module power plants of up to 20 MW or more. Factory-prefabricated gasification, gas cleaning and power-generation modules reduce on-site construction work and shorten the installation schedule.

2026/08/21

CLEAN COAL ENERGY

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POWERING YOUR FUTURE WITH MODULAR GASIFICATION SYSTEM
500kW/1000kW/2000kW Modular Systems | Rapid Deployment | Global Solutions

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Global Energy Challenges and Solutions

Global Challenges: Unstable power supply in remote areas? Long construction period of traditional power plants? Stress on carbon emissions?

Our Solutions:

✅ Modular frame coal gasification power generation system: flexibly adaptable to various fuels such as coal, biomass, waste, etc.

✅ Rapid deployment: Factory-prefabricated modules can typically be mechanically assembled on site within 7–10 days after foundations, civil works, utilities and site infrastructure have been completed, surpassing 6-24 months construction period of traditional power plants.

✅ Higher fuel utilization than conventional small-scale coal-fired steam power systems, subject to project configuration.

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SMART MODULAR DESIGN

Containerized components, globally accessible for marine and land transportation.

Support on-demand capacity expansion (one module: from 500kW to 2000kW).

SMART ENERGY

Local clean energies that can be fully used and recycled.

Compatible with low-grade coal, straw, sawdust, etc., to reduce cost according to local conditions.

SMART ECONOMY

Quick and simple Installation, low investment cost, less water consumption, less contaminants.

Automatic control, remote monitoring, automatic load adjustment, low labor cost.

SMART INSTALLATION

Frame design facilitates, simple loading and transportation, minimized or no on-site civil construction.

No need of factory building. Factory-prefabricated modules can typically be mechanically assembled on site within 7–10 days after foundations, civil works, utilities and site infrastructure have been completed.

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CUSTOMIZED SOLUTIONS FOR YOUR ENERGY NEEDS

Parameters of Single-Stage Coal Gasification System

Model	:	Coalwatt-SS500	Coalwatt-SS1000	Coalwatt-SS2000
Rated Power (kW)	:	500	1000	2000
Application Scenarios	:	Small communities/farms	Medium factories/mines	Large industrial parks
Coal Consumption (Kg/h)	:	270-310	540-620	1080-1240
Gas Output (Nm^3/h)	:	900-1100	1800-2200	3600-4400
Ash Discharge Type	:	Dry ash discharge / Wet ash discharge		
Applicable coal	:	Anthracite Coal, Coke		
Coal Size(mm)	:	13-25, 25-50		
Net heating Value(low)	:	5200-6070KJ/Nm^3(1250-1450Kcal/Nm^3)		
Floor Area (m^2)	:	280	363	440

Parameters of Double-Fire Coal Gasification System

Model	:	Coalwatt-DF500	Coalwatt-DF1000	Coalwatt-DF2000
Rated Power (kW)	:	500	1000	2000
Application Scenarios	:	Small communities/farms	Medium factories/mines	Large industrial parks
Coal Consumption (Kg/h)	:	270-340	540-680	1080-1360
Gas Output (Nm^3/h)	:	900-1200	1800-2400	3600-4800
Ash Discharge Type	:	Dry ash discharge / Wet ash discharge		
Applicable coal	:	Meager coal, lean coal, gas coal, long flame coal, weakly coking coal, non-caking bituminous coal, brown coal.		
Coal Size(mm)	:	13-25, 25-50		
Net heating Value(low)	:	5000-6000KJ/Nm^3		
Floor Area (m^2)	:	280	468	494

Note: Based on 24/7 operation; data may vary by fuel type.

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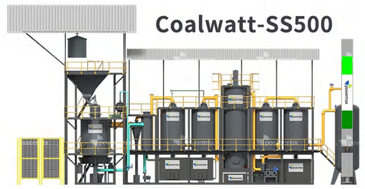
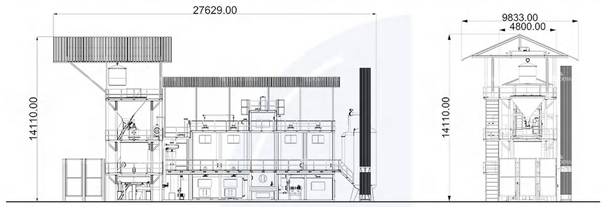
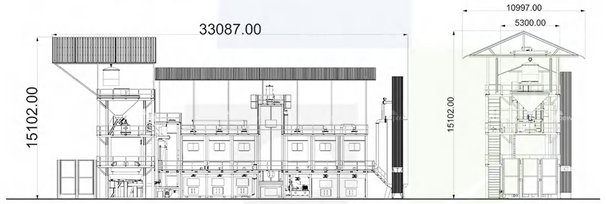
Single-Stage Gasifier

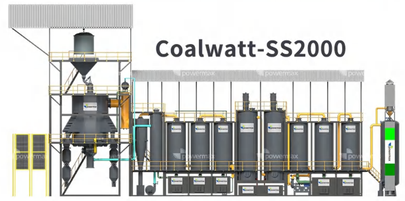


Coalwatt-SS500

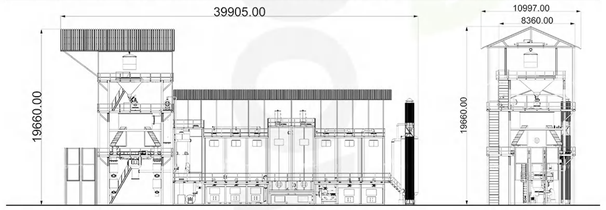


Coalwatt-SS1000



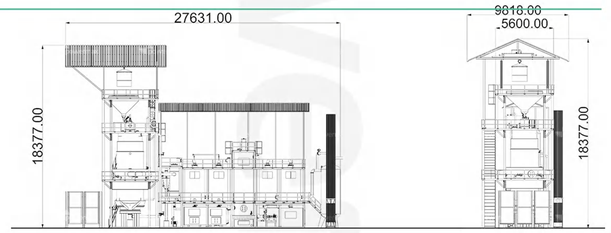


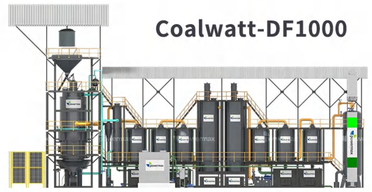
Coalwatt-SS2000



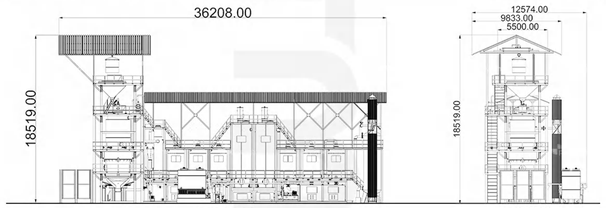
Double-Fire Gasifier

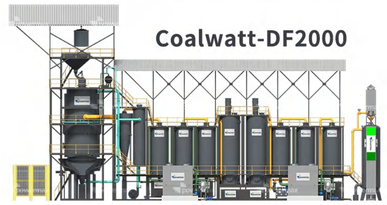
Coalwatt-DF500



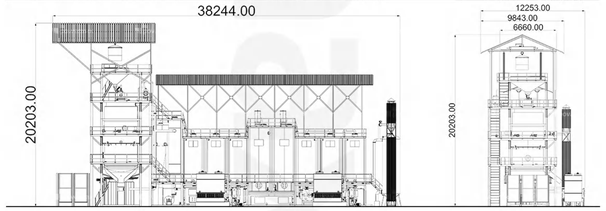


Coalwatt-DF1000





Coalwatt-DF2000



(Unit: mm)

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From Coal to Clean Energy: an environmental friendly and economical solution using local resources

Optimize resource utilization

Reduce harmful emissions

Promote economic growth

OPTIMIZING RESOURCE UTILIZATION: Utilize local coal resources to reduce transportation costs and energy consumption, while promoting the development of the local economy.

ENVIRONMENTAL BENEFITS: Compared with traditional coal-fired power generation, the coal gasification process can effectively reduce the emission of GHG such as CO2, sulfur oxides and nitrogen oxides, and minimize the impact on air quality.

ECONOMIC FEASIBILITY: The technology of coal gasification power generation is proven, and the return on investment is considerable. It can provide a stable power supply to the local area, while creating employment opportunities and promoting economic growth.

FLEXIBILITY AND ADAPTABILITY: Coal gasification power generation system can be combined with other renewable resources to form a diversified energy structure and improve energy utilization efficiency.

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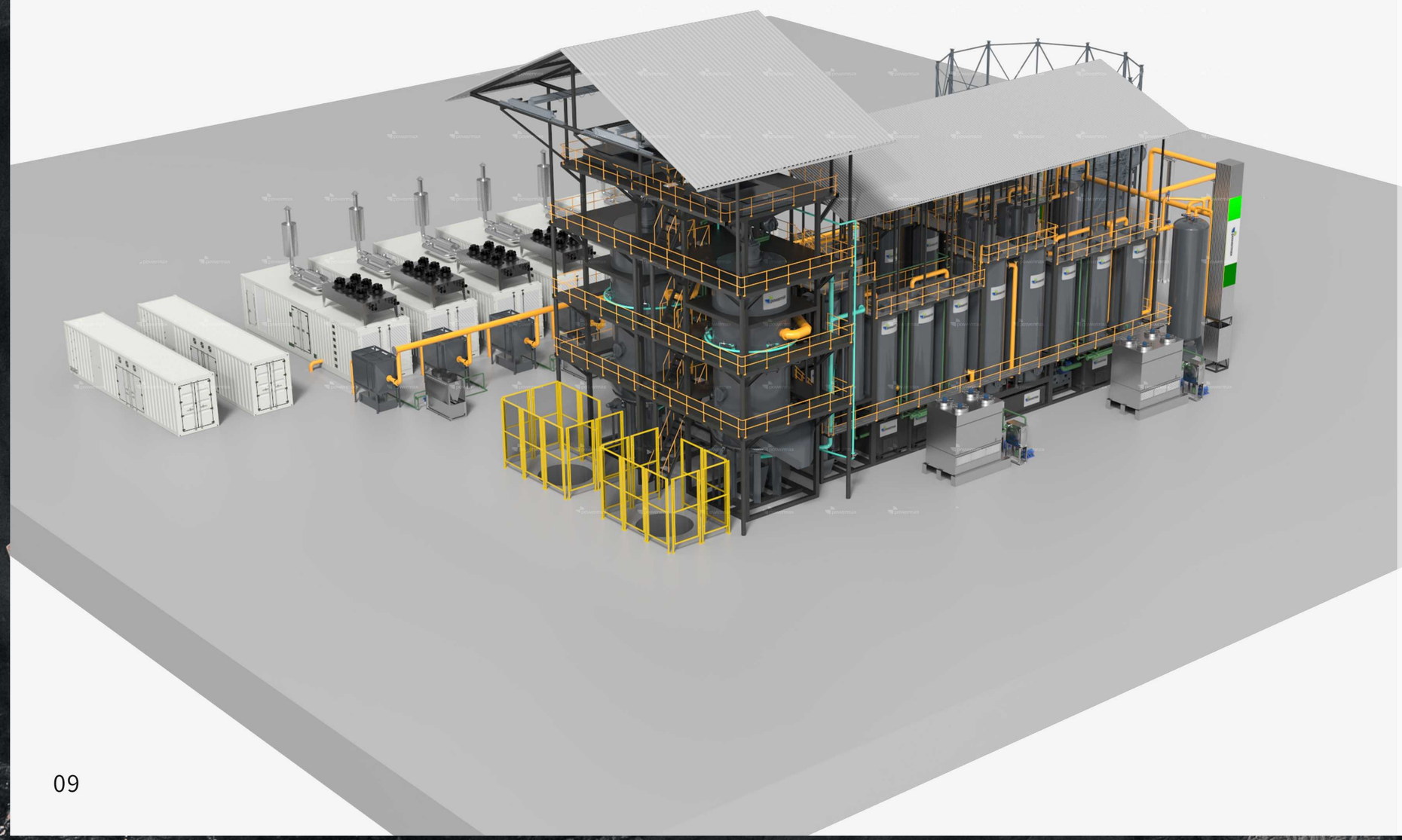
TAKING 4MW AS AN EXAMPLE

2 UNITS COALWATT2000 WITH 8 SETS 500KW COAL GAS GENERATORS

(OPTIONAL: 2 UNITS COALWATT2000 WITH 4 SETS 1000KW COAL GAS GENERATORS)



Case 1:

Model
Coalwatt-DF2000

Structural Design Type
Double-Fire Gasifier

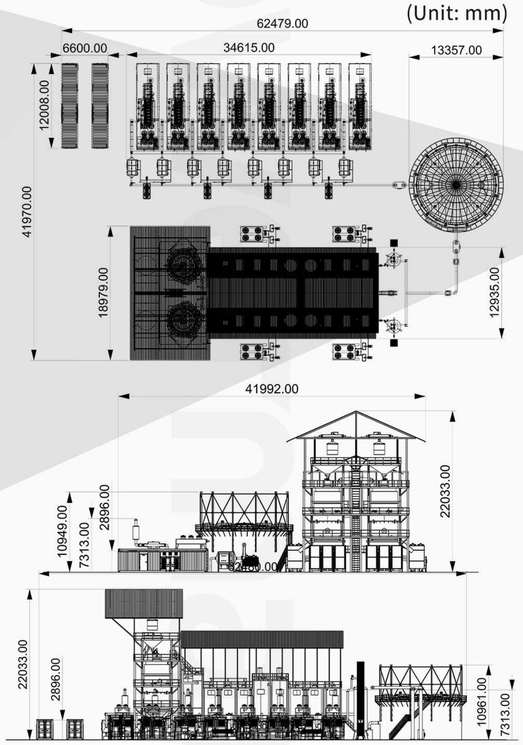
Fuel
Coal

Quantity
2 units

Gas Generator
8 sets

Maximum Floor Area
2,646 m²

(Unit: mm)



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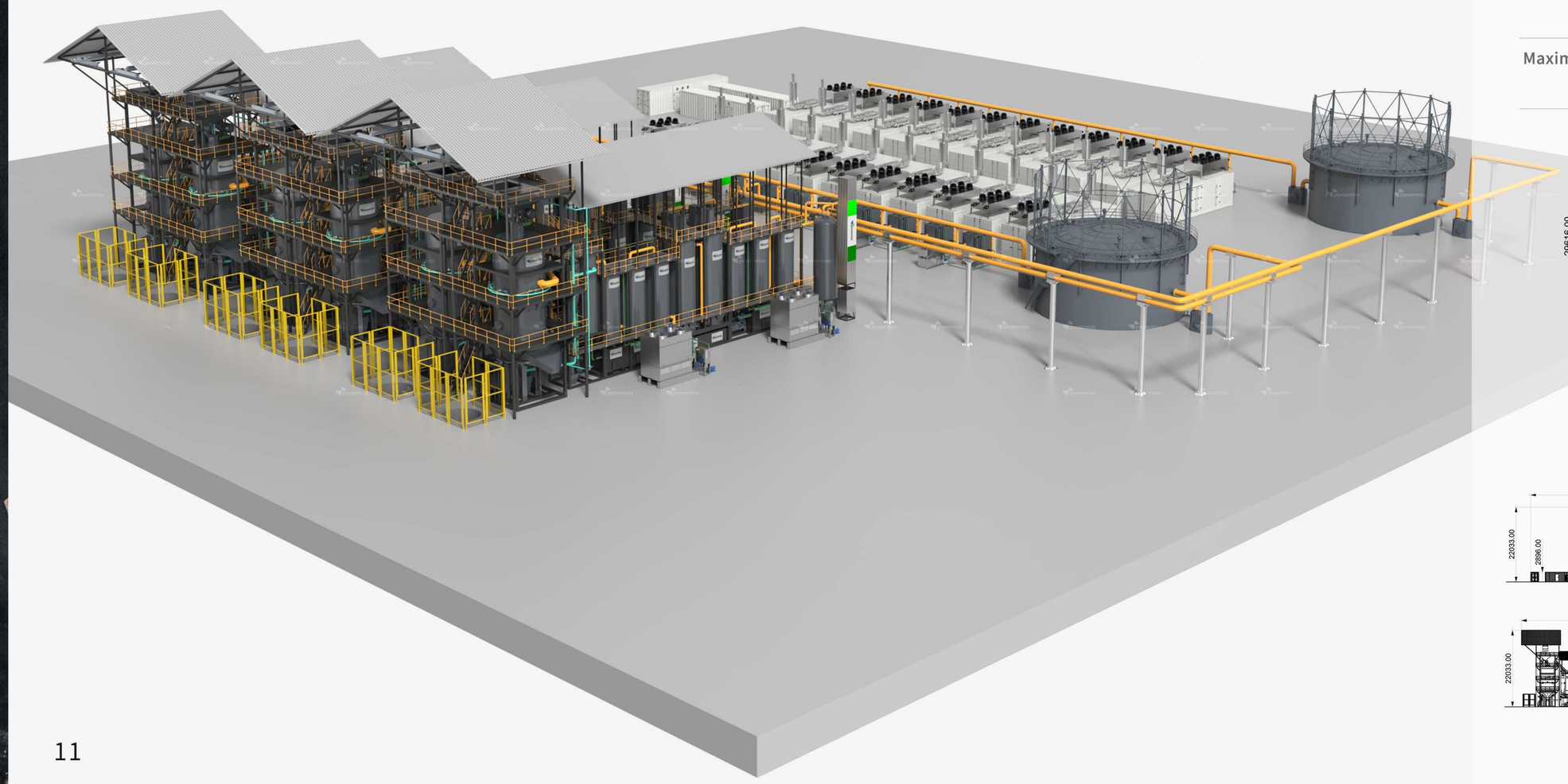
TAKING 12MW AS AN EXAMPLE

6 UNITS COALWATT2000 WITH 24 SETS 500KW COAL GAS GENERATORS

(OPTIONAL: 6 UNITS COALWATT2000 WITH 12 SETS 1000KW COAL GAS GENERATORS)



Case 2:

Model
Coalwatt-DF2000

Structural Design Type
Double-Fire Gasifier

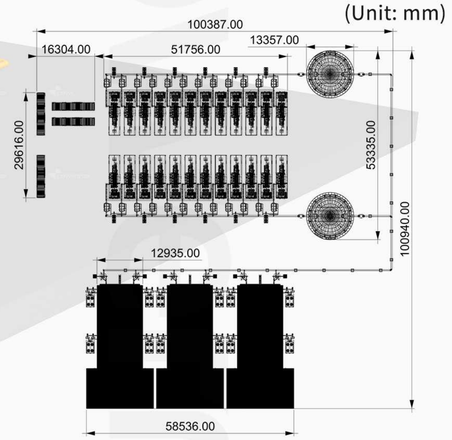
Fuel
Coal

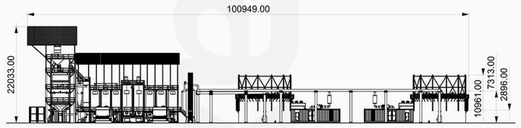
Quantity
6 units

Gas Generator
24 sets

Maximum Floor Area
10,201 m²

(Unit: mm)





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TAKING 20MW AS AN EXAMPLE

10 UNITS COALWATT2000 WITH 40 SETS 500KW COAL GAS GENERATORS

(OPTIONAL: 10 UNITS COALWATT2000 WITH 20 SETS 1000KW COAL GAS GENERATORS)

Case 3:

Model
Coalwatt-DF2000

Structural Design Type
Double-Fire Gasifier

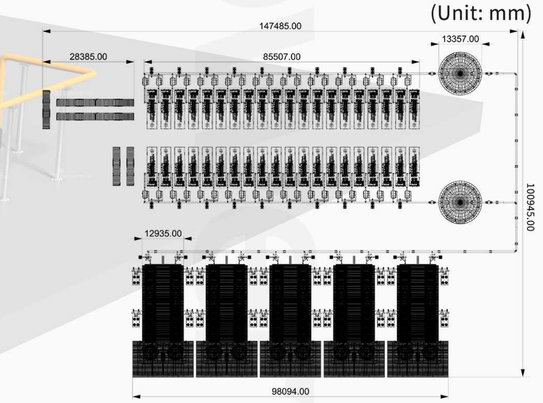
Fuel
Coal

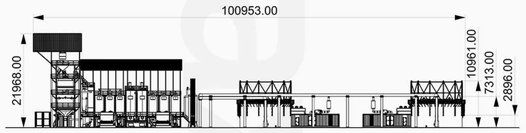
Quantity
10 units

Gas Generator
40 sets

Maximum Floor Area
14,948 m²

(Unit: mm)





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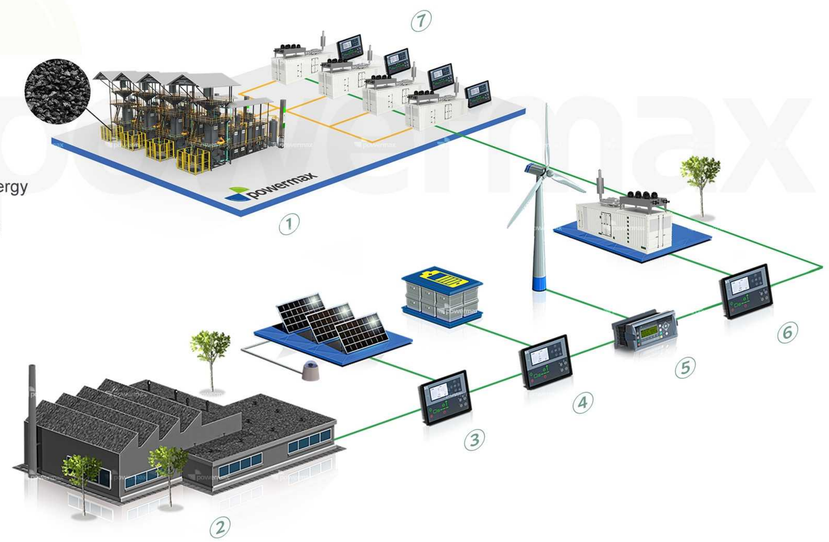
TAKING 2MW AS AN EXAMPLE (4xCoalwatt 500)

—— Off-grid Power Management

① Powermax Coalwatt® Compact Coal Gasification Power Generation Systems
② User
③ Solar Energy
④ Energy Storage
⑤ Wind Energy
⑥ Petroleum-derived Energy
⑦ Syngas Generator Set



Our hybrid power solutions integrate renewable energy sources such as solar, wind and biomass with dispatchable coal gasification, energy storage and backup generation. The hybrid system can make wind and solar power more reliable. Our energy management systems (EMS) can optimize hybrid systems and ensures reliable operation at anytime, anywhere.

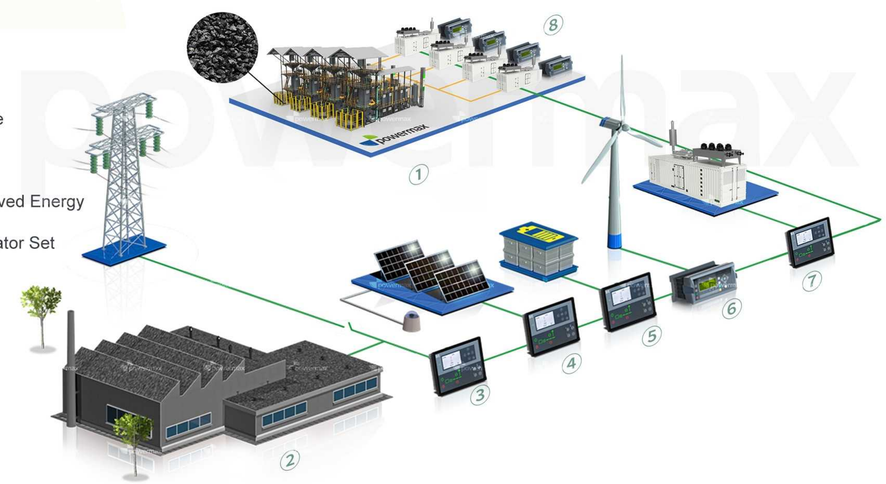
Powermax provides complete hybrid power plants for off-grid or on-grid applications where security of power supply is of essence. These effective solutions using clean fuels combine with highly gas-efficient gensets and renewable energy systems to generate power. Energy storage systems keep excess power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

Benefits at a Glance:

- Increased reliability
- Increased gas efficiency
- Less emissions and better CO_2 footprint
- Enhanced flexibility and fuel independence
- Wide range of operating modes
- Reduced cost of energy

—— On-grid Power Management

① Powermax Coalwatt® Compact Coal Gasification Power Generation Systems
② User
③ Power Grid
④ Solar Energy
⑤ Energy Storage
⑥ Wind Energy
⑦ Petroleum-derived Energy
⑧ Syngas Generator Set



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

This hybrid power system is more effective and more reliable compared with any other single mode of power generation system. The power delivered by hybrid model of PV/WIND/Bl0MASS/COAL is more stable and economical than the current system. The system is more environmental friendly as the waste products can all be processed to meet the emission standand. The system uses all the clean & renewable resources for electric generations, which are the need of the time.

Benefits at a Glance:

- Low to no carbon emissions
- Saves fuel
- Efficient and reliable power supply
- Enhanced flexibility and fuel independence
- Wide range of operating modes
- Reduced cost of energy

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Modular Gasification Power Generation Sytem: Key Users & Solutions of Global Markets

1.Power Utilities: Cleaner Energy, Smarter Grids

Why Choose Us:

- Operational Agility: Smoothly integrate gasification with existing grids for flexible load balancing.
- Fuel Diversity: Switch between coal, biomass, or waste fuels to optimize costs.
- Key statistics: Factory-prefabricated modules can typically be mechanically assembled on site within 7–10 days after foundations, civil works, utilities and site infrastructure have been completed. VS 18-month traditional plant builds.

2.Industrial Enterprises: Heat & Power On-Demand for Heavy Industries

Ideal For:

🏭 Chemicals, Metals, Cement: Meet 24/7 energy demands with dual-output (heat + electricity).
⛏️ Remote Mining: Off-grid reliability in harsh environments.

Competitive Edge:

- Cost Savings: Slash energy expenses by 25% using low-grade coal or industrial byproducts.
- Scalability: Expand from 500kW to 2000kW per module as production grows.

3.Coal Producers: Transform Coal into High-Value Energy

Strategic Value:

⚡ Monetize Reserves: Convert raw coal into premium syngas for power export or hydrogen production.
🌍 Global Market Access: Fast and convenient shipment & installation of modular units worldwide.

Tech Highlight: Designed for continuous industrial power generation, with multi-module configurations available to improve plant availability during maintenance.

4. Governments & Energy Developers: Accelerate Regional Energy Transition

Successful Deployments:

🌴 Island Electrification: Power remote communities in 10 days (e.g., Pacific Islands).
🏗️ Urban Revitalization: Replace aging coal plants with modular systems to cut emissions.

Policy Alignment: Achieve UN SDG 7 (Affordable Energy) with rapid and scalable solutions.

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Powermax Coalwatt® Coal gasification power generation is a method that converts solid fuels such as coal to combustible gas. This method can not only effectively utilize the abundant local coal resources, but also reduce the impact on the environment to a certain extent, reflecting environmental awareness and economic feasibility.

Coal gasification power generation cases

200KW Coal Gasification Power Generation Project

5MW Coal Gasification Power Generation Project

Biomass gasification power generation cases

12MW Rice Husk Gasification Power Generation Project

3MW Wood Chip Gasification Power Generation Project

1MW Wood Chip Gasification Power Generation Project

9MW Wood Chip Power Plant