THE ACTUAL CASE OF EFB

This client has purchased our briquetting machine to produce EFB briquettes in Gua Mangsang area of Malaysia using raw EFB, with a production capacity of 3T/H. Meanwhile, they installed our gasification system at their factory in Kota Bharu to produce 5000-6000Nm3/H cleaning syngas, which was supplied to three sets of 3Ton diesel boilers to replace diesel fuel, reducing carbon dioxide emissions and fuel costs greatly.

Contact Us

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No.26 Jingrui Rd, Xibei Town, Xishan District, Wuxi, Jiangsu, China.

powermax

ISO SGS CE

EFB

Solid Waste Energy From Palm Oil Industry

"GREEN COAL"

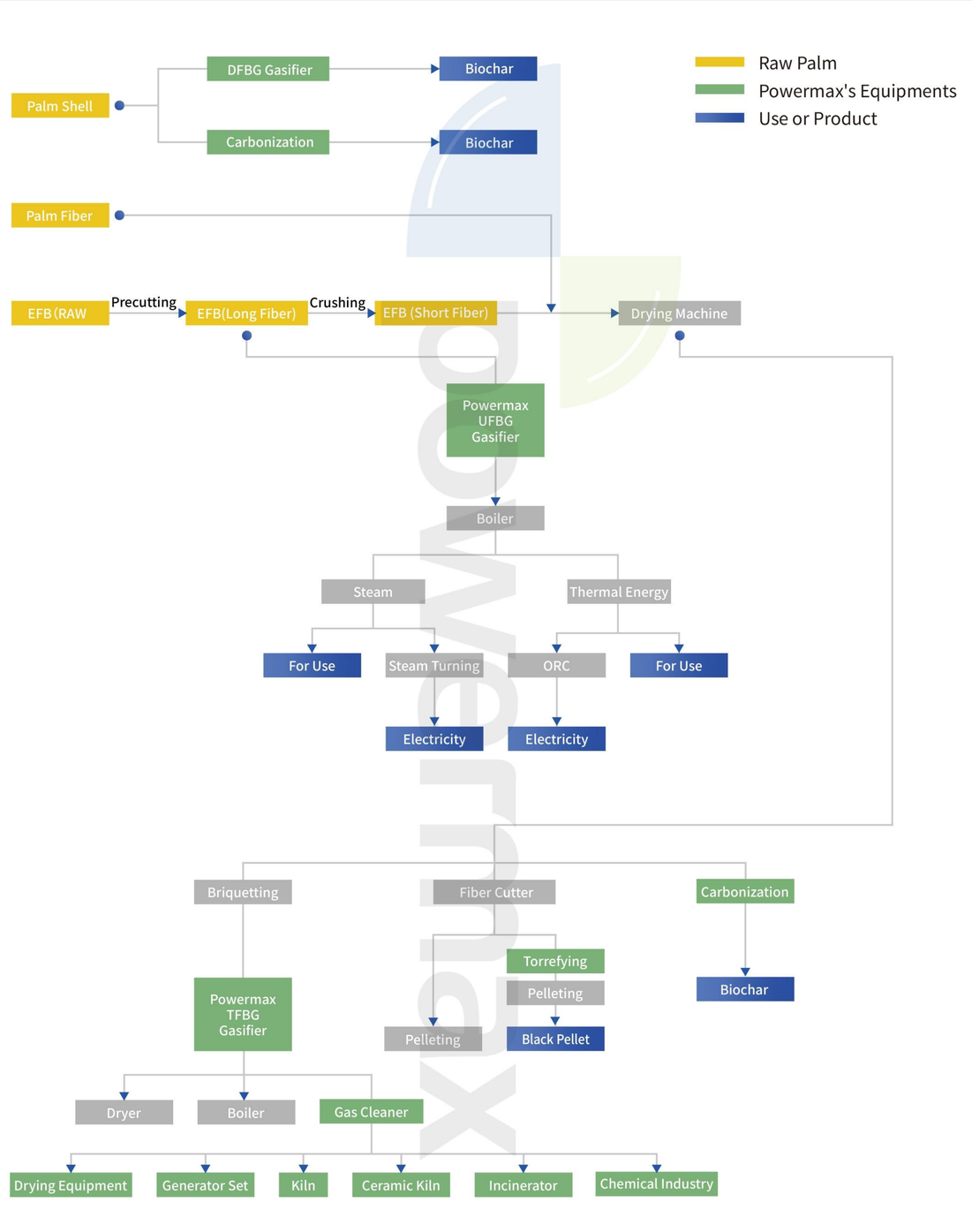
ZERO WASTE SOLUTIONS

CLEAN · GREEN · RENEWABLE

Powermax is a renewable, alternative, waste-to-energy total solution provider.

GREEN COAL—— EFB BRIQUETTE FUEL AND POWER AND HEAT GENERATION SYSTEM

The Specific Plan for EFB Power Generation and Heating Generation



"GREEN COAL"

Palm Shell

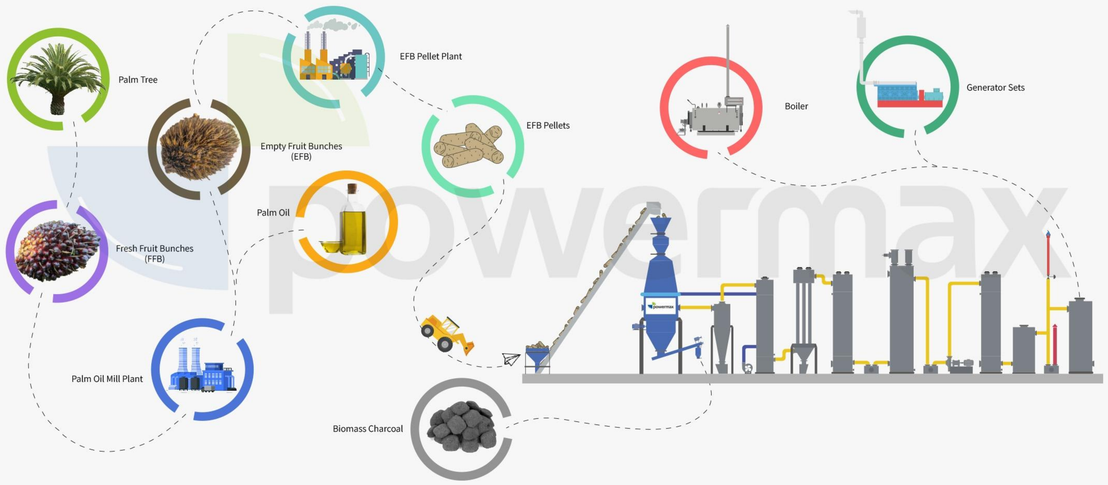
- The production yield is around 6% to FFB(Full Fruit Bunch).
- Are great feedstock for our gasifier, with a moisture content<20%.
- Are of high calorific value, no need of pretreatment before gasifying.

EFB RAW

- The production yield is around 20-25% to FFB(Full Fruit Bunch).
- Moisture content is around 50%.
- Needs crushing, drying and briquetting before feeding into our Downdraft Fixed Bed Gasifier for electricity generation.
- Only needs simple chop before feeding into our Updraft Fixed Bed Gasifier for heat generation.

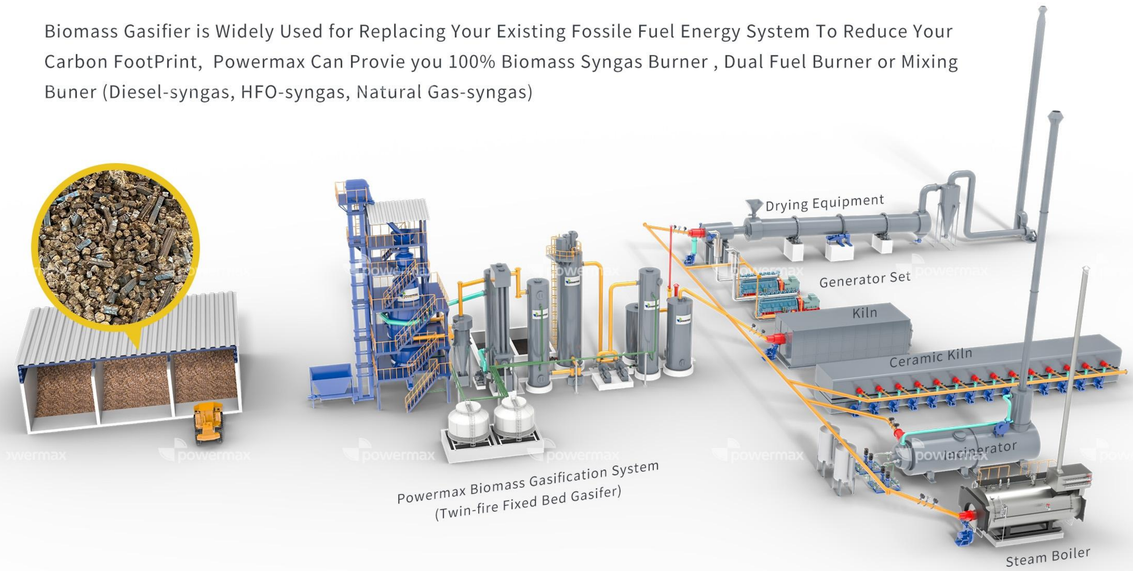
Palm Fiber

- The production yield is around 14% to FFB(Full Fruit Bunch).
- Moisture content is around 40-42%.
- Needs drying and briquet-ting before feeding into our Downdraft Fixed Bed Gasifier for electricity gen-eration.

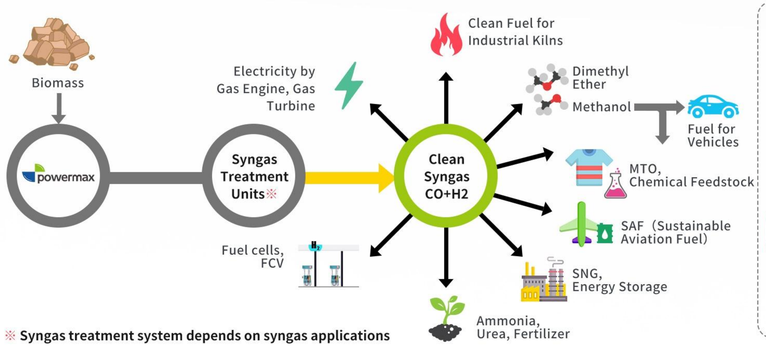


BIOMASS GREEN ENERGY(NET ZERO)

Biomass Gasifier is Widely Used for Replacing Your Existing Fossile Fuel Energy System To Reduce Your Carbon FootPrint, Powermax Can Provie you 100% Biomass Syngas Burner , Dual Fuel Burner or Mixing Buner (Diesel-syngas, HFO-syngas, Natural Gas-syngas)

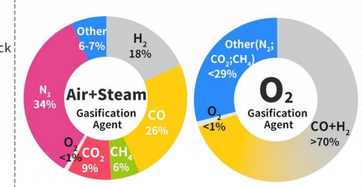


APPLICATION OF POWERMAX



※ Syngas treatment system depends on syngas applications

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



Power Generation

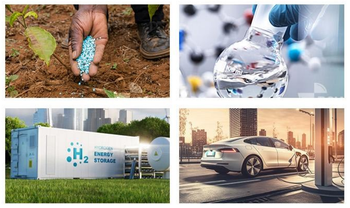
- Generation of Power and Selling it to Grid
- Generation of Power for Factory
- Generation of Power for Village Electrification
- Generation of Power for Irrigation and Pumping Activities

Thermal Application

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

Chemical Industry

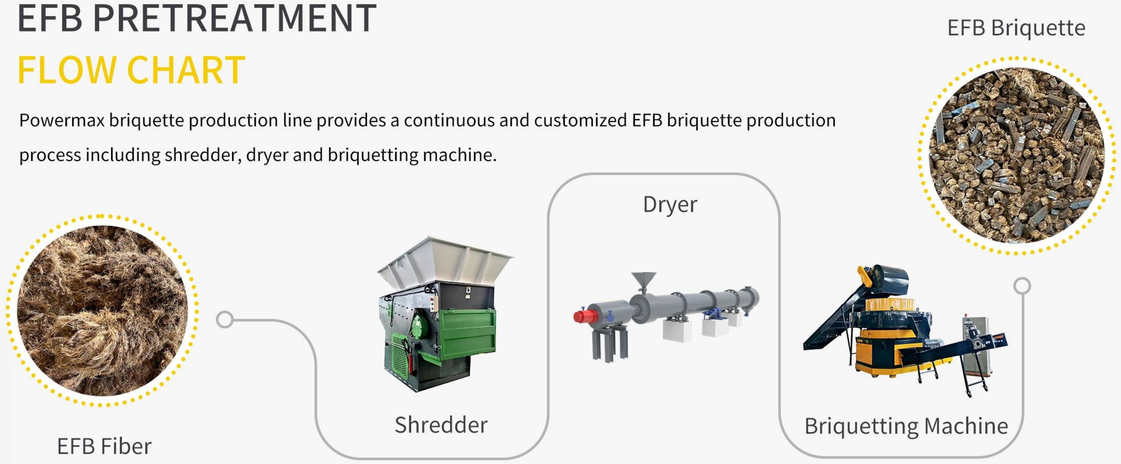
- Dimethyl Ether
- Methanol
- MTO, Chemical Feedstock
- SNG, Energy Storage
- Ammonia, Urea, Fertilizer
- Fuel cells, FCV
- SAF（Sustainable Aviation Fuel）



EFB BRIQUETTING PLANT

EFB PRETREATMENT FLOW CHART

Powermax briquette production line provides a continuous and customized EFB briquette production process including shredder, dryer and briquetting machine.



With this system, EFB with high moisture could be converted to valuable and dried short fiber with low moisture and be briquetted into EFB briquette with market selling value as biomass fuel suitable to mix with coal fuel.

EFB briquette fuel is a green coal and a new type of clean energy. EFB briquette power generation system converts EFB waste from palm oil mill into charcoal, wood vinegar, tar, biomass gas and electricity.

TECHNICAL SPECIFICATION OF SHREDDER

Machine Model Number	YFSS- 1000
Rated Operating Capacity(T)	1-3T/H
Motor	75KW / 415V /50HZ
Mesh Size	60mm
Stator Knives Qty	3pcs
Rotor Knives Qty	64pcs
Machine Dimension	3218*1983*2053mm
Control System	Mitsubishi PLC automatic control
Electrical Appliance	Schneider or ABB

Start up power to be provided by clients.

TECHNICAL SPECIFICATION OF DRYER

Technical Specification of Dryer	
Drive Motor	BWED74-289-7.5
Blower	15kW
Power of Hot Blast Stove	400000kCal
Size of Drying Roller	1.8m Diameter × 10m Length
Capacity	1 Ton/h

Start up power to be provided by clients.

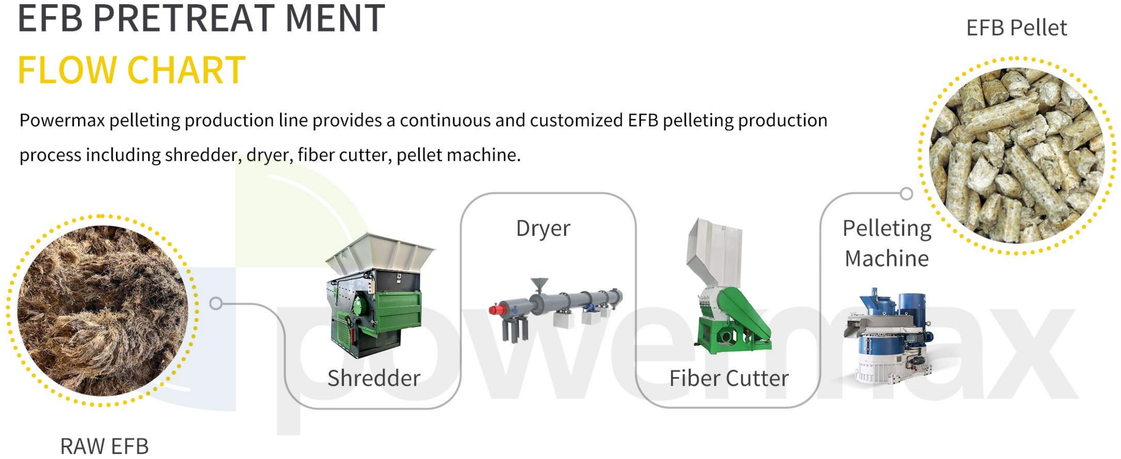
TECHNICAL SPECIFICATION OF BRIQUETTER

Machine (Reducer Type)	11J-3500A	11J-5000A	11J-6000A
Power	110KW	160KW	200KW
Holes(Pieces)	72	101	120
EFB Production Rate	2 Ton/h	3 Ton/h	4 Ton/h
Briquette Size (mm)	32×32	32×32	32×32

EFB PELLETING PLANT

EFB PRETREAT MENT
FLOW CHART

Powermax pelleting production line provides a continuous and customized EFB pelleting production process including shredder, dryer, fiber cutter, pellet machine.



TECHNICAL SPECIFICATION OF SHREDDER

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Motor	75KW / 415V /50HZ
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Rotor Knives Qty	64pcs
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Control System	Mitsubishi PLC automatic control
Electrical Appliance	Schneider or ABB

Start up power to be provided by clients.

TECHNICAL SPECIFICATION OF DRYER

Technical Specification of Dryer	
Drive Motor	BWED74-289-7.5
Blower	15kW
Power of Hot Blast Stove	400000kCal
Size of Drying Roller	1.8m Diameter × 10m Length
Capacity	1 Ton/h

Start up power to be provided by clients.

TECHNICAL SPECIFICATION OF FIBER CUTTER

Model	YF-FFM1000	YF-FFM1200	YF-FFM1400
Main Motor	55kw/415v/50hz/3-phase	75kw/415v/50hz/3-phase	110kw/415v/50hz/3-phase
Hopper Inlet	1000x600mm	1100×1200mm	1200×1400mm
Hydraulic Motor	1.5kw	1.5kw	3kw
Rotor Knife	5x2pcs	5x2pcs	5x2pcs
Stator Knife	2x2pcs	2x2pcs	2x2pcs
Rotor Rotating Diameter	520mm	600mm	600mm
Rotor Rotating Speed	550r/min	550r/min	550r/min
Production Capacity	0.5-1.2 t/H (according to different screen hole size)	0.8-1.0t/h (screen hole diameter 8mm)	1-1.5t/h (screen hole diameter 8mm)
Machine Dimension	1860x1793x3563mm	2300×2100×3570mm	2300×2100×3570mm
Machine Weight	4200kgs	4500kgs	6000kgs

TECHNICAL SPECIFICATION OF PELLET MACHINE

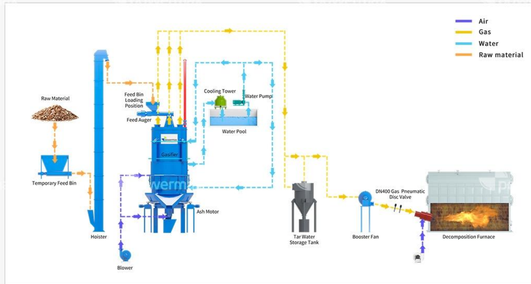
Model	XGJ560	YF-FFM1200
Power(kw)	132	250
Capacity(t/h)	1.3-1.5	3-4

POWERMAX - UFBG

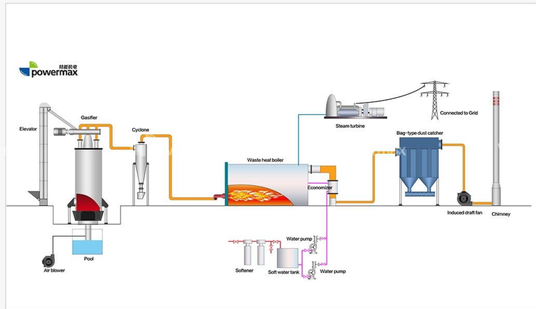
Biomass(EFB Raw) Gasification Heating and Power Generation Solution

HOT GAS APPLICATION

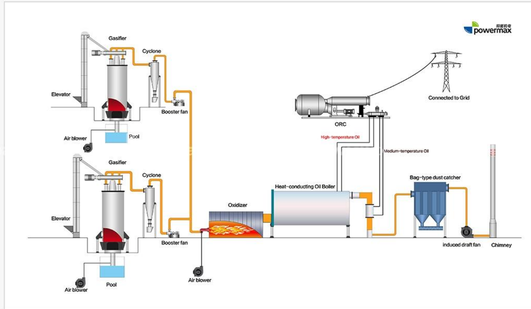
Flow Chart:



Biomass Gasification Boiler Steam Turbine Power Plant:



Biomass Gasifier Heater ORC Power Plant:



Parameters:

UFBG GASIFICATION BOILER(EFB RAW)								
Model		UFBG-4T	UFBG-6T	UFBG-8T	UFBG-10T	UFBG-12T	UFBG-15T	UFBG-20T
Gasifier Type		Updraft Fixed Bed Gasifier						
Size Requirement		50-100 mm						
MC		30-55%						
Biomass Consumption		1200-1800	1800-2700	2400-3600	3000-4500	3600-5400	4500-6750	6000-9000
Gas Production		1600-1800	2400-2700	3200-3600	4000-4500	4800-5400	6000-6750	8000-9000
Gas Heat Value		1300-1500 Kcal/Nm³						
Gas Composition		CO: 22-27%; H_2: 11-17%; CO_2: 6-12%; CH_4: 3-5%; N_2: 45-52%;						
Ash Removal		Wet Ash Removal System						
Flame Temperature		800-1200 °C						
Thermal Energy Output	Kcal	2,400,000	3,600,000	4,800,000	6,000,000	7,200,000	9,000,000	12,000,000
	KW	2790	4186	5581	6977	8372	10465	13953
Steam Turbine		500KW (1.25Mpa;300°C)	1000KW (2.5Mpa;400°C)	2000KW (2.5Mpa;400°C)			3000KW (2.5Mpa;400°C)	
Steam Production		3.34t	4.74t	6.32t	7.9t	9.48t	11.85t	15.79t
Power Generation		380KW	809KW	1204KW	1505KW	1806KW	2258KW	3008KW

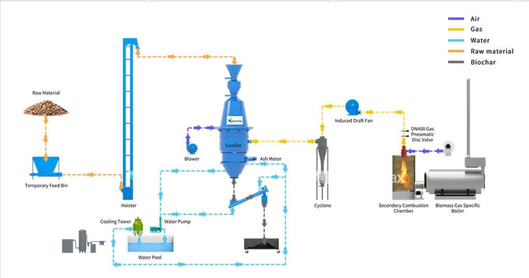
POWERMAX - TFBG

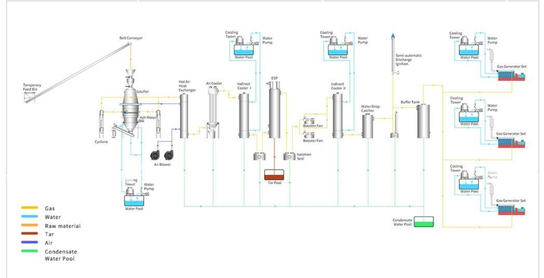
Biomass(EFB Briquettes) Gasification Heating and Power Generation Solution

HOT GAS APPLICATION

COLD GAS APPLICATION

Flow Chart:





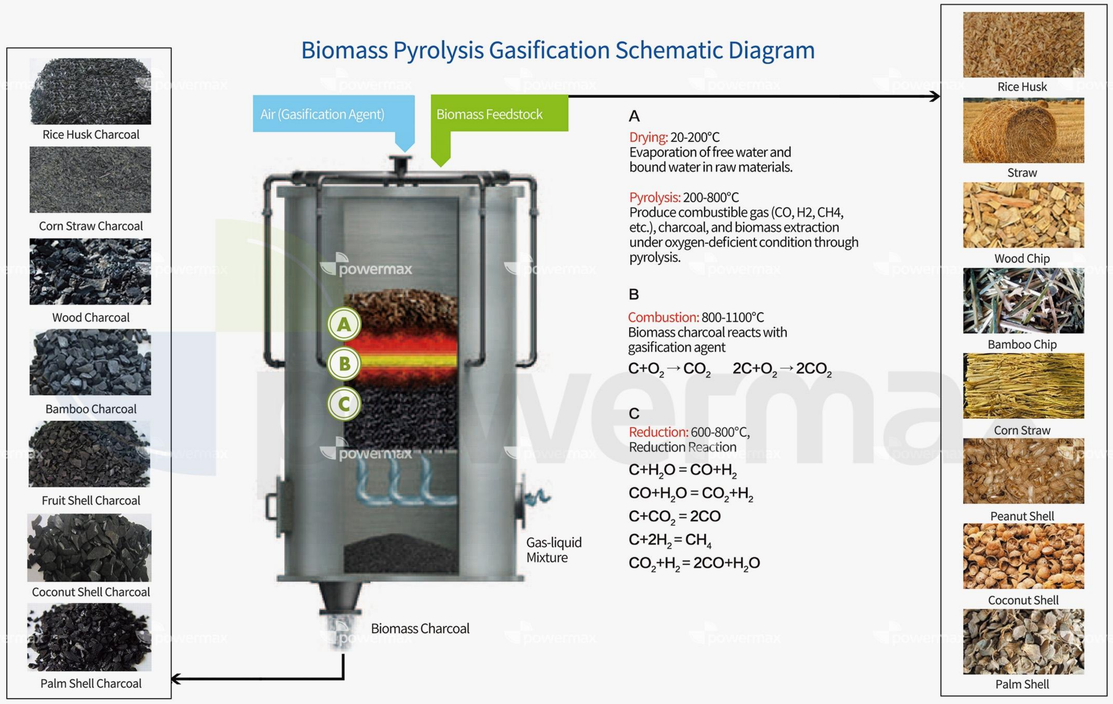
Parameters:

TFBG series Biomass Gasification Power Generation System											
Model	100TFBG	200TFBG	300TFBG	400TFBG	500TFBG	600TFBG	800TFBG	1000TFBG	1200TFBG	1500TFBG	2000TFBG
Gasifier Type	Twin-Fire Fixed Bed Gasifier										
Size Requirement	Diameter: 20mm-80mm；Length: 10mm-80mm										
MC	≤20%										
Biomass Consumption	110-120	220-240	330-360	440-480	550-600	660-720	880-960	1100-1200	1320-1440	1650-1800	2200-2400
Gas Production	250-300	500-600	750-900	1000-1200	1250-1500	1500-1800	2000-2400	2500-3000	3000-3600	3750-4500	5000-6000
Gas Heat Value	1100-1200 Kcal/Nm³										
Gas Composition	CO: 15-20%; H_2: 15-20%; CO_2: 8-12%; CH_4: Up to 3%; N_2: 45-50%;										
Ash Removal	Dry/Wet Ash Removal System										
Gas Purification System Type	Dry Type										
Power Generation	100	200	300	400	500	600	800	1000	1200	1500	2000
Frequency	50/60 Hz										
Voltage	220 / 400 / 440 / 6300 / 6600 / 11000 / 13800										
Model of Generator Set	100GFLS	100GFLS	300GFLS	400GFLS	500GFLS	300GFLS	400GFLS	500GFLS	400GFLS	500GFLS	500GFLS
Qty Of Genset	1 Set	2 Set	1 Set	1 Set	1 Set	2 Set	2 Set	2 Set	3 Set	3 Set	4 Set
Flame Temperature	800-1200 °C										
Thermal Energy Output Kcal	300,000	600,000	900,000	1,200,000	1,500,000	1,800,000	2,400,000	3,000,000	3,600,000	4,500,000	6,000,000
Thermal Energy Output KW	349	698	1047	1395	1744	2093	2791	3488	4186	5233	6977

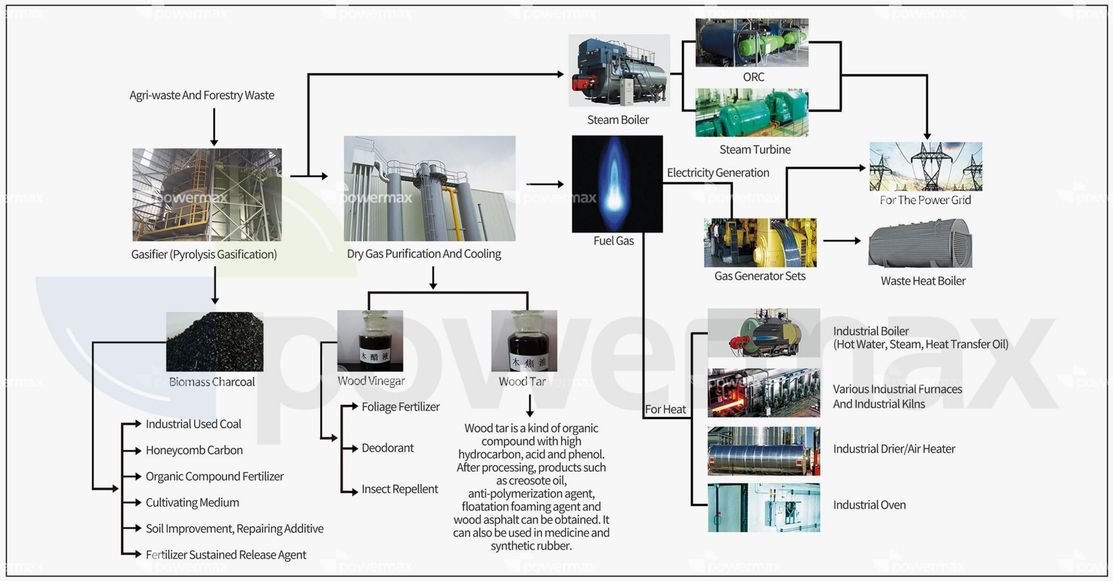
POWERMAX - DFBG

Biomass Gasification Heating and Power Generation Solution

Biomass Pyrolysis Gasification Schematic Diagram



Process Flows of "Poly Generation" of Biomass Pyrolysis Gasification

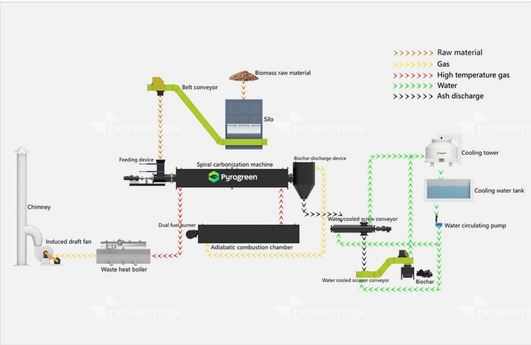


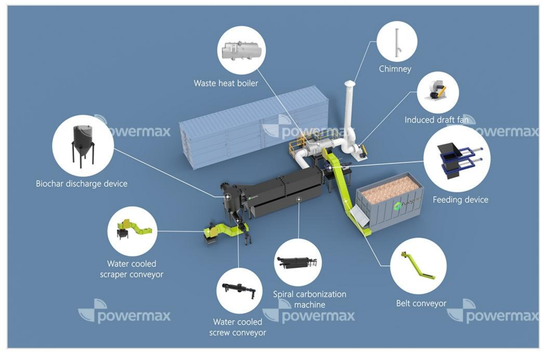
POWERMAX - CARBONIZATION / TORRIFICATION

Biomass Carbonization Solution

SCREW TYPE CARBONIZATION/TORRIFICATION SYSTEM

Flow Chart:



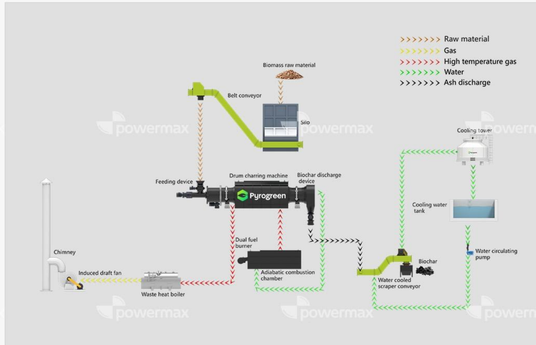


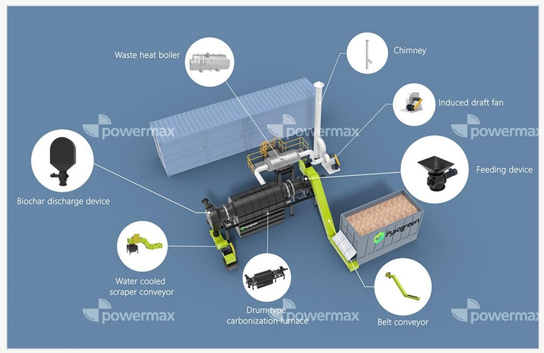
Parameters:

Screw Carbonizer		
Feed Rate	1m³/h(300kg)	5m³/h(1500kg)
Footprint(L*H)	15m*10.5m	18m*12.5m
Working Mode	Continuous	
Feed Requirements	Size≤20mm(5-8mm is optimal), MC≤15%	
Construction	Screw Type	
Control Mode	PLC Control System	
Material	SS310S+SS304	
Pressure	Micro Negative Pressure	
Heating fuel	Diesel, natural gas, heavy oil,etc	
Heating Mode	Indirect Heating	
Noise(dB)	≤80	
Cooling Mode	Circulating Water Cooling	

ROTARY DRUM CARBONIZATION/TORRIFICATION SYSTEM

Flow Chart:





Parameters:

Drum Carbonizer					
Feed Rate	0.6m³/h(200kg)	1m³/h(300kg)	1.5m³/h(500kg)	3m³/h(1000kg)	5m³/h(1500kg)
Footprint(L*H)	12m*10.5m	15m*10.5m	16m*11m	17m*12m	18m*12.5m
Working Mode	Continuous				
Feed Requirements	Size≤50mm, MC≤15%				
Construction	Single Rotary Drum Type				
Control Mode	PLC Control System				
Material	SS310S+Carbon Steel				
Pressure	Micro Negative Pressure				
Heating fuel	Diesel, natural gas, heavy oil,etc				
Heating Mode	Indirect Heating				
Noise(dB)	≤80				
Cooling Mode	Circulating Water Cooling				
Rotation Mode	External Gear Rotation				