BiogenSys

TECHNICAL SPECIFICATIONS

E 5 – 50 KW MOBILE POWER UNIT

the future of decentralized energy **BiogenSys**

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Technical specifications
E5 50 kW Mobile Power Unit

Operating mode:	Downdraft fixed-bed gasifier
Type:	1 x E5 System

Equipment performance

Nominal power output:	50 kWel
Nominal heat output:	120 kWth
Total efficiency:	86%
Electrical efficiency:	25%
Thermal efficiency:	61%
Temperature of heat output:	90°C / 60°C
Electrical Output:	400 V / 50 Hz
Operating hours:	8000 h/a

Emissions

Sound:	60 dB(A)
Ash remaining approx:	0.3 - 0.4 kg/h

Feedstock and utilities

Feedstock:	G20 Grade A Waste Wood Shred (Moisture Content <10% , Ash Content <3%)
Feedstock Consumption:	ca. 44 - 46 kg/h
Power:	3 Phase, 80 Amps
Cooling water:	Antifreeze MITAN Alpine c11 (50 Vol-% recommended)
Motor oil:	Fuchs Titan Ganymet Ultra
Filter:	Jetfilter with engine exhaust

Producer gas

Gas Composition (Wood Gas):	CO 23% / CO2 9% / H2 19% / CH4 1.8%
Average calorific value:	>5200 kJ/m^3
Temperature of syngas at reformer exit:	700°C to 800°C
Temperature of syngas after quenching:	80°C to 100°C
Temperature of syngas/air mixture:	40°C to 60°C

Miscellaneous

Control Unit:	Fully automated operation
Time of commissioning:	2 - 72 hrs
Authorization requirement:	Depends on region

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Engine

Type:	Origin, 8.2L
Construction type:	V 8
Process:	Gasoline engine
Cubic capacity:	8.2 liter
Rated rpm:	1500 rpm at 50 Hz / 1780 at 60 Hz
Cooling:	Recirculating water
Sound pressure level:	60 dB(A)
Exhaust gas temperature:	120°C
Oilfilling:	10.5 liter

Generator

Type:	Synchronous generator
Type of operation:	Mains parallel operation
Nominal power:	50 kW, 55 KVA
Cos Phi:	1.0 (100%)
Nominal voltage:	400 V
Frequency:	50 Hz
Pole number:	4
Operating mode:	S1
Protection class:	IP23
Monitoring:	ComAp

Connection

Electr. input:	400 V, 50 Hz (three-phase rotary current)
Electr. output:	400 V, 50 Hz (three-phase rotary current)
Electr. fuse protection:	Generator 100 A Switchboard 80 Ah
Cable dimensioning:	Generator: 35 mm^2 Switchboard: 35 mm^2 (<30 m cable length) 50 mm^2 (<200 m cable length)
Thermal return line:	1 1/4” inlet with inner thread
Thermal supply line:	1 1/4” inlet with inner thread
Exhaust Gas line:	3” flange
Control system:	Schneider

Service and Operation

Ash Removal:	Automatic extraction and filling of 2m3 ISO Big bag.
Oil Exchange:	Every 1,500 hrs

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E5 SYSTEM without enclosure

Dimensions:	2.3 m x 2.0 m x 2.3 m

E5 SYSTEM with enclosure (Plug & Play Solution)

Enclosure Type:	20 ft HC Container
Required space:	15 m^2
Dimensions:	6.058 m x 2.438 m x 2.896 m
Weight:	approx. 6 tons

Required conditions at installation site

In order to guarantee a smooth commission of the system onsite, the customer provides the following site installations:

- Foundation with sufficient access to all system components
- Sufficient housing / roofing only
  (required for E5 System without enclosure)
- Sufficient air supply with appropriate circulation rate
  (required for E5 System without enclosure)
- Three phase connection with 400 V, 125 A, 50 Hz
- Broadband connection for data delivery
- DHCP setup with static IP-address for the system (such as 192.168.1.200)
  - Please provide the following information:
    - Router (brand, type, model etc.)
    - ADSL external or router integrated
    - Internet/Lan Infrastructure on site
    - IP address range or Gateway of the Router
- Water connection
    - 90°C flow and max. 70°C return-flow
    - Pipe DIN32 or bigger
    - Flow rate > 5000 l/h
- External pellet storage with a connection box for a vaccum pellet feed system.
  We recommend a capacity of at least 30t.

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E5 50 kW Mobile Power Unit
Connections on Container