

BiogenSys



TECHNICAL SPECIFICATIONS

MODEL T –
CLEAN AND HIGH EFFICIENT HEAT
FROM BIOMASS

the future of decentralized energy

Technical specifications

Model T – clean and high efficient heat from biomass

Operating mode: Downdraft fixed-bed gasifier
Type: Model T system

Equipment performance

Total Nominal heat output: 235 kWth
Total efficiency: 85%
Temperature of heat output: 90°C / 60°C
Operating hours: 8000 h/a
Heat recovered from syngas cooling: 36 kWth
Heat generated by boiler: 199 kWth

Feedstock and utilities

Feedstock: EN-A1 6mm Wood Pellet
Feedstock Consumption: ca. 50 kg/h
Power: 3 Phase, 16 Amps

Producer gas

Composition (Wood Gas): CO 22.5% / CO₂ 9% / H₂ 19% / CH₄ 1.8%
Average calorific value: 8500 kJ/m³
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: 72 hrs
Authorization requirement: Depends on region

Boiler

Type: Gas injection boiler
Cooling: Recirculating water
Exhaust gas temperature: 120°C

Connection

Electr. input:	400 V, 50 Hz (three-phase rotary current)
Electr. fuse protection:	16A Switchboard 80 Ah
Thermal return line:	2" inlet with inner thread
Thermal flow line:	2" inlet with inner thread
Exhaust Gas line:	DN150 flange

Model T SYSTEM without enclosure

Dimensions per Model T-unit:	2.30 m x 2.00 m x 1.50 m
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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
- Sufficient air supply with appropriate circulation rate
- Three phase connection with 400 V, 16 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 60°C return-flow
 - Pipe DIN50 or bigger
 - Flow rate > 2000 l/h
- External 30t pellet silo or bunker with a connection box for a vacuum pellet feed system.

Scope of delivery

The Model T is delivered as a fully functioning system including all components required for operations.

- High temperature reformer
- Gas injection boiler
- Fuel lock system
- Hot air blower system
- Feed-in system
- Safety system for over pressure with bursting disc
- Electric ball valves for automatic prevention of gas
- Pumping system
- Gas heat exchanger
- Grate motor
- Security flaring system
- High performance dry filtration system for ash removal
- Exhaust gas heat exchanger
- Air and gas tight ash container
- Switch cabinet
- Pressure and temperature sensors
- Fill-level sensor
- CO-warning central system
- Remote monitoring
- Central Processing Unit with software for fully automated operations
- Un-interrupted Power Supply unit for emergency power supply for safe shut down