ENTRADE
THE CLEAN ENERGY COMPANY

ENTRADE

TECHNICAL SPECIFICATIONS

E3 V 2.0 – 25 KW MOBILE POWER UNIT

the future of decentralized energy **ENTRADE**

Technical specifications
E3 v 2.0 – 25 kW Mobile Power Unit

Operating mode:	Downdraft fixed-bed gasifier
Type:	1 x E3 System

Equipment performance

Total installed capacity:	26 kWel
Declared net capacity:	25 kWel
Nominal heat output:	60 kWth
Heat output from CHP part:	43 kWth
Heat output from reformer:	17 kWth
Total efficiency:	85%
Electrical efficiency:	25%
Thermal efficiency:	60%
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:	0.2 – 0.4 kg/h

Feedstock and utilities

Feedstock:	Din EN Plus 6mm A1 or certified E-Fuel biomass waste pellets
Feedstock Consumption:	23 kg/h
Power:	Electrical power (3 Phase, 64 Amps)
Cooling water:	Antifreeze MITAN Alpine c11 (50 Vol-% recommended)
Motor oil:	Fuchs Titan Ganymet Ultra
Gas filter:	Cyclone filter: Entrade gas filter “Police“: Mann Luftfilter C 17 225/3.4

Producer gas

Gas Composition (Wood Gas):	CO 23% / CO_2 9% / H_2 19% / CH_4 1.8%
Average calorific value:	>5200 kJ/m^3
Temperature of syngas at reformer exit:	700°C to 800°C
Temperature of syngas after cooling:	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

Engine

Type:	General Motors 4.3L
Construction type:	V 6
Process:	Gasoline engine
Cubic capacity:	4.3 liter
Rated rpm:	1500 rpm
Cooling:	Recirculating water
Sound pressure level:	60 dB(A)
Exhaust gas temperature:	120°C
Oilfilling:	4.3 liter

Generator

Type:	Asynchronous generator
Type of operation:	Mains parallel operation
Nominal power:	Electr. (max.): 25 kW, 31.25 KVA
Cos Phi:	0,85 (100%)
Nominal voltage:	400 V
Frequency:	50 Hz
Pole number:	4
Operating mode:	S1
Protection class:	IP55
Monitoring:	PTC

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	63 A
	Switchboard	80 Ah
Cable dimensioning:	Generator:	16 mm^2
	Switchboard:	25 mm^2 (<30 m cable length)
		35 mm^2 (<200 m cable length)
Thermal return line:	1″ inlet with inner thread	
Thermal supply line:	1″ inlet with inner thread	
Exhaust Gas line:	2″ flange	
Control system:	Schneider	

Service and Operation

Ash Removal:	Every 60 to 80 hrs (with manual ash removal system)
Oil Exchange:	Every 200 to 250 hrs

E3 SYSTEM without enclosure

Dimensions per E3-unit:	1.86 m x 1.56 m x 2.00 m

E3 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

OPTIONAL

Internal feedstock storage:	*2.10 m x 2.10 m x 2.00 m*
Filling volume of feedstock storage:	*max. 4.0 - 5.2 m^3*
Storage capacity of feedstock:	*max. 2.6 - 3.4 ton at 0.65 ton/m^3*
	(lasting approx. 5 – 6.5 days)

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 E3 System witout enclosure)
- Sufficient air supply with appropriate circulation rate
  (required for E3 System witout enclosure)
- Three phase connection with 400 V, 64 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 DIN25 or bigger
    - Flow rate > 2000 l/h

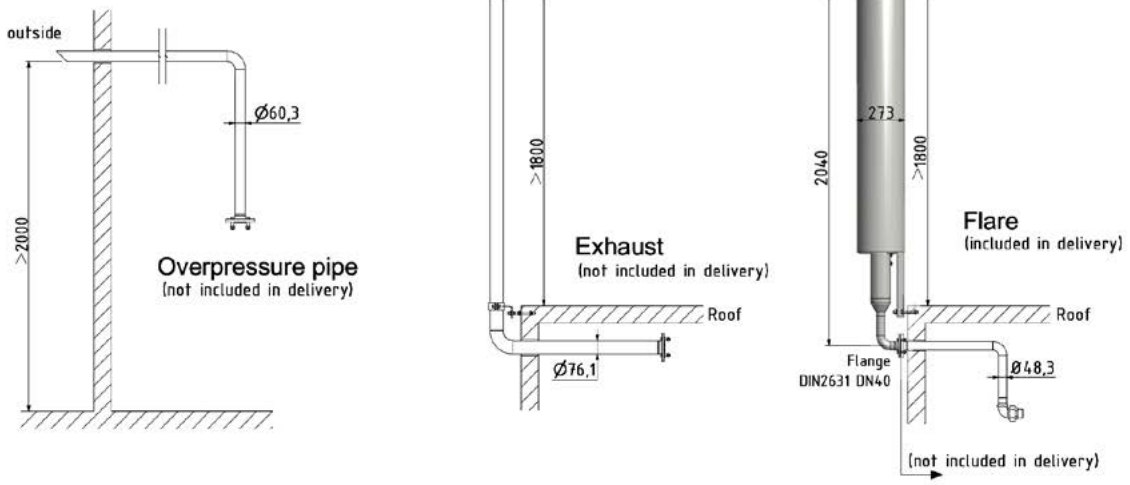
Scope of delivery

The E3 25 kW is delivered as a fully functioning system including all components required for operations.

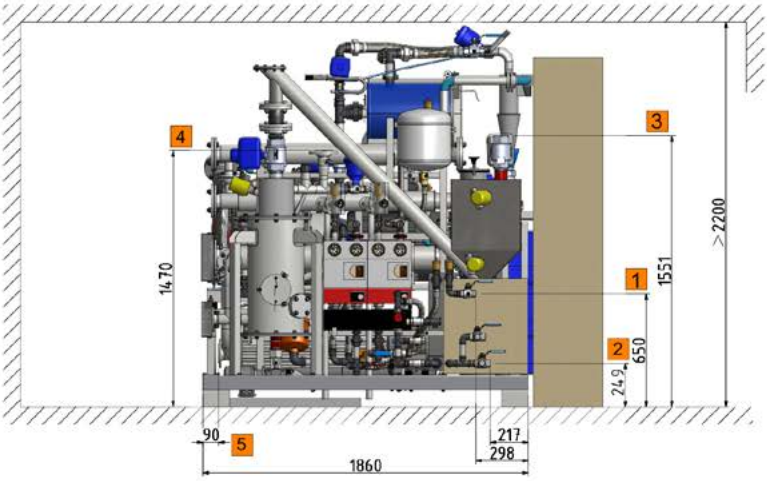
• 20ft High Cube Container

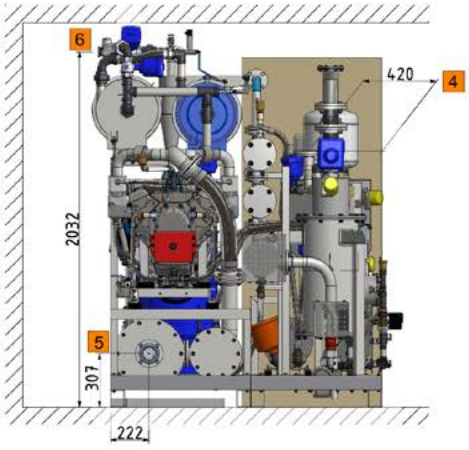
The following components comprise one E3 25 kW system:
• High temperature reformer
• Gasoline engine
• Asynchronous generator
• Divisible pallet system
• Fuel lock system
• Hot air blower system
• Auger system
• fully automated vacuum pellet feed
• Safety system for over pressure with bursting disc
• Electric ball valves for automatic prevention of gas
• Pumping system
• Gas heat exchanger
• Grate motor
• Security flaring system
• High performance cyclone filtration system for ash removal
• Dry filter system
• Exhaust gas heat exchanger
• Sound absorbers
• Air and gas tight ash container
• Switch cabinet
• Soft starter
• Pressure and temperature sensors
• Fill-level sensor
• Touch panel for the control unit
• CO-warning central system
• Grid protection relais
• Remote monitoring
• Central Processing Unit with software for fully automated operations
• Uninterupted Power Supply unit for emergency power supply for safe shut down

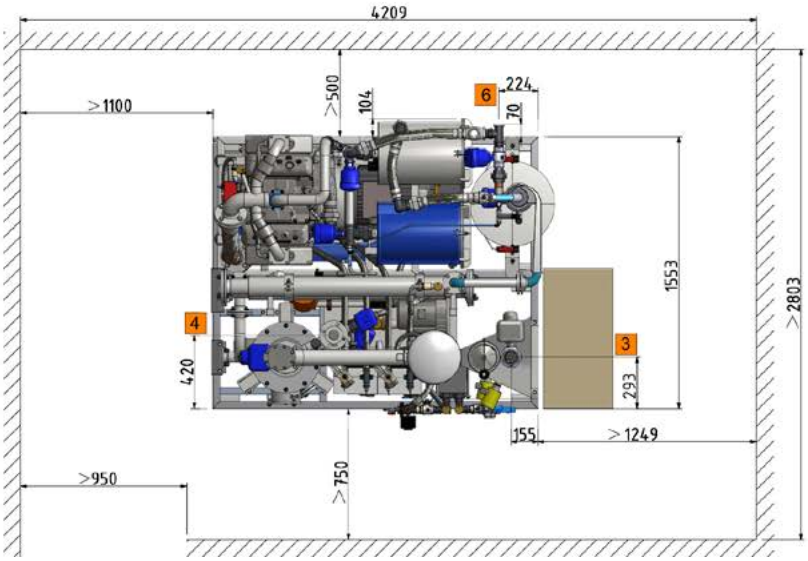
E3 v 2.0 – 25 kW Mobile Power Unit
Assembly dimensions E3 System without enclosure



1. Hot water out Rp 1" inside thread
2. Cold water returnflow Rp 1" inside thread
3. Pellet feed Rp 2 1/2" inside thread
4. Overpressure flange DIN 2633 DN50
5. Exhaust flange DIN 2631 DN65
6. Flare Rp 1 1/2" inside thread







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Connections on Container – E3 System with enclosure