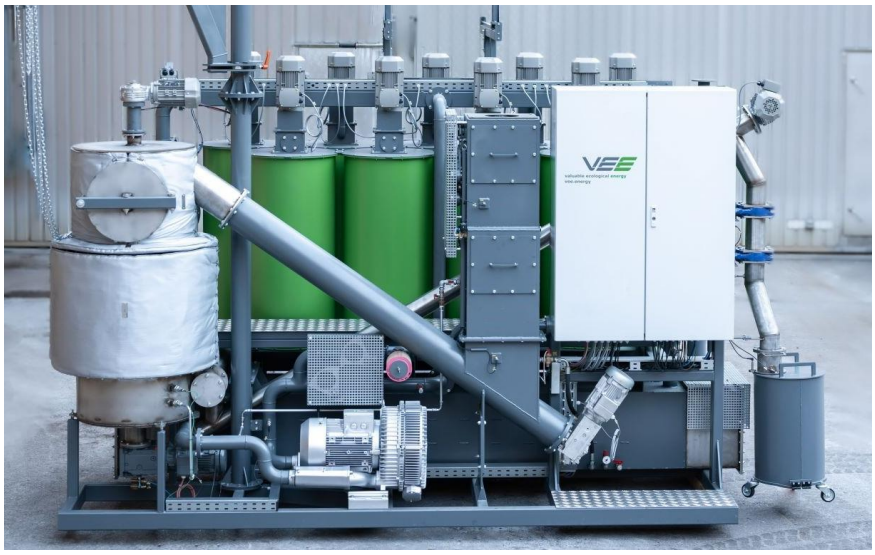
wp3.250 - Synthesis Gas System (wood gas)

The 4-valve-technology brings a further increase in efficiency

The system is made of high-quality components and materials for a long service life. The core of the system is a DC fixed-bed gasifier that has been developed over many years in combination with a specially adapted gas filtering system. System solutions have also been developed for other plant components, such as the fuel lock (port), gas cooling and coal dust discharger, that are less susceptible to malfunctions and very easy to maintain. For the CHP, we use gas engines from MAN with electronic ignition and high-quality synchronous generators. In the case of the wp3.250, the 4-valve-technology brings a further increase in efficiency.

The system can be operated and monitored locally or via smartphone or via the Internet, warning and fault messages are transmitted via e-mail or SMS.



Competitive advantages

- ✓ Overall solution: wood chip drying and sieving, gasification unit, CHP unit and charcoal disposal
- ✓ Operation with standard wood chips incl. fines and bark (according to specification)
- ✓ Very high system availability
- ✓ High electrical efficiency (> 29.5%)
- ✓ Minimal self-consumption of electricity (approx. 4% of output el.)
- ✓ Maintenance-friendly and compact design with little space requirements
- ✓ Low maintenance due to high-quality components
- ✓ No condensates and residues other than charcoal
- ✓ All system components / functions are integrated into one control system
- ✓ Complete documents for official approval procedures
- ✓ Service and remote maintenance, spare parts in stock
- ✓ Warranty

What's new in wp3. Series

- ✓ Gasifier with impurity discharging system, smaller stones and pieces of metal are ejected during the process, the system achieves more full load hours due to less cleaning effort
- ✓ Lifting devices for filter and gasifier maintenance are directly attached, so there is no need for equipment on the ceiling and pipes can be routed directly above the system
- ✓ CHP unit with 4-valve-technology motor brings higher electrical efficiency
- ✓ Larger exhaust gas heat exchanger provides higher thermal efficiency

Technical data

Nominal electrical output 3x400V	250 kW	
Thermal output (water circuit 90°C)	483 kW	
Nominal fuel capacity of wood chips (G30 – 50)	847 kW	
Electrical efficiency	29.5 %	
Thermal efficiency (water circuit 90°C)	57 %	
Gas output (cold gas efficiency)	720 kW (85 %)	
Gas volumetric flow	480 Nm³/h	
CHP efficiency	34.7 %	
Ideal water content of wood chips	7 %	
Wood chip consumption - spruce/fir	22.9 srm* per day	(ca. 163 kg / atro** / h)
Wood chip consumption - beech	15.7 srm* per day	(ca. 169 kg / atro** / h)
Power consumption (without drying)	10.0 kW	
Power adjustability range	70 – 100 %	

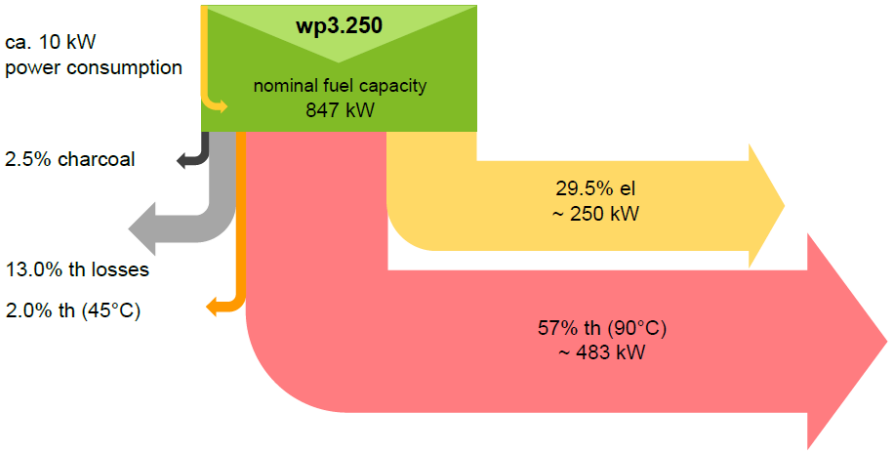
*srm = loose cubic meter **atro = absolutely dry

Dimensions and space requirements

In addition to the specified dimensions, a minimum distance of 1,2 meters is recommended between the systems or system modules and equally to the building walls. This facilitates the access to the systems and guarantees efficient maintenance and service work.

Gasification unit (L x W x H) L x W x H without required space for lifting equipment	4.08 x 2.50 x 2.49 m
CHP unit (L x W x H) L x W x H without required space for lifting equipment	3.56 x 1.90 x 2.34 m
Required room hight min.	4 m
Floor space ca.	55 m²

Efficiency scheme - Combined heat and power generation



CHP emission values (Standard version with oxidation catalytic converter)

Gas volume flow rate	1375 Nm³/h dry
Exhaust gas temperature	180 °C
Carbon monoxide (CO)*	< 1500 mg/Nm³ down to < 200 mg/Nm³ with catalytic converter
Nitrogen oxides (NOx)*	< 500 mg/Nm³ lean operation down to < 200 mg/Nm³ with SCR catalyser + AdBlue
Dust*	< 8 mg/Nm³ (except start-up)
NMHC*	< 100 mg / Nm³

* Reference oxygen content: 5 vol% O_2.
* Lower emission values available on request.

Maintenance intervals

Maintenance interval gasifier	1 500 h
Maintenance time gasifier	ca. 3 h / maintenance, cooling-down period ca. 12 h
Maintenance interval CHP	800 h
Maintenance time CHP	1 h / maintenance
General maintenance	1 x year, ca. 1 day effort

Wear parts and consumables

Depending on the fuel used, the specifications of the wear parts and the consumption of operating materials and supplies, may deviate significantly from the values given.

Filter elements (wood gas and air)	Service life ca. 10 000 h
Gasifier air nozzles	Service life ca. 12 000 h
Gasifier rust with shaft	Service life ca. 15 000 h
Engine oil (and oil filter)	ca. 1 200 l per year
Spark plugs	Service life ca. 5 000 h
Catalysts	Service life ca. 20 000 h
AdBlue®	0 – 18 000 l per year depending on the exhaust emission regulations
Sealings, etc.	

All information in this product datasheet is to be understood as guide values and when using an optimal fuel in accordance with "VEE_272 Specification Wood Chips G30 – 50".