THE TWO CATEGORIES IN SHORT

OUTPUT DATA • CONSUMPTION • MASS

AHT MODEL RANGE	R 111	R 116
Electrical output $_{el}$	200 - 250 kW	400 - 500 kW
Thermal output $_{th}$	185 - 230 kW	360 - 450 kW
Electrical efficiency (Engine efficiency) [1,2,3]	29 % (38 %)	30 % (38 %)
Thermal efficiency [1,2,3]	58 %	58 %
Efficiency of the whole plant $_{el + th}$	87 %	88 %
Total space requirements [Reactor, gas purification & CHP]	250 m²	350 m²
Minimum height requirements	10 m	11 m
Biomass consumption	170 - 210 kg/h	340 - 425 kg/h
Gas capacity	340 - 425 Nm³/h	680 - 800 Nm³/h
Thermal capacity (optional)	50 - 65 kW	90 - 130 kW

[1] Depending on the composition and consistency of the biomass used.
[2] At 15% moisture content.
[3] Depending on choosen engine

DIMENSIONS (L x W x H in m) [3,4]		
Reactor	4,5 x 3,5 x 7,8	4,5 x 3,5 x 8,8
Gas purification	12 x 3,45 x 6,6	12 x 3,45 x 6,6
CHP	9,5 x 3 x 3	12 x 3,2 x 3

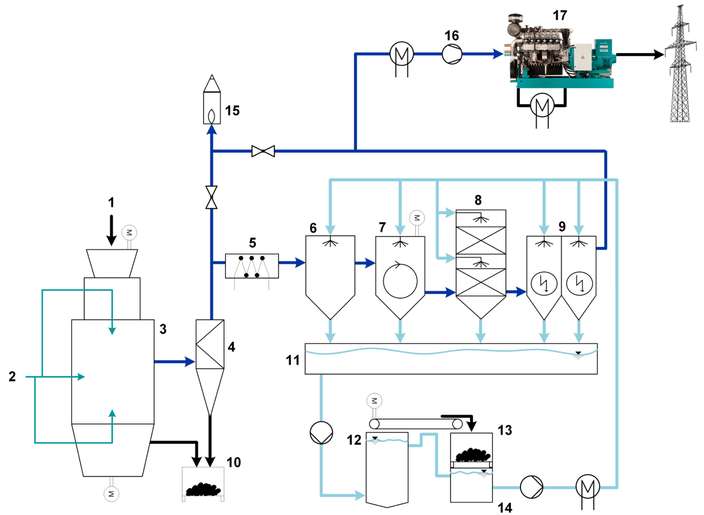
[3] Plant dimensions, without storage, without loading.
[4] Dimensions without exhaust system.

FLEXIBILITY

The AHT BMPP distinguishes itself with its exceptional **level of performance** and **efficiency**. Sometimes however this alone is not enough. It is for this reason that we have a flexible approach to the plant as a whole. It is implemented to **suit individual circumstances** and can be adapted to the needs of the customer. From the installation site through to the individually defined interfaces, e.g., for heat extraction, the AHT BMPP offers the flexibility every project demands.

THE BMPP PLANT SCHEMATIC

AN OVERVIEW OF THE WHOLE PROCESS



1. Input material feed
2. Air intake
3. Syngas producer
4. Cyclone separator
5. Hot gas - heat exchanger (optional)
6. Gas precooler
7. Gas washer
8. Main gas cooler
9. Electrostatic precipitator
10. Ash and particle accumulator
11. Waste water container
12. Floatation container
13. Floating substance accumulator
14. Floatation accumulator
15. Gas flare
16. Gas fan
17. CHP

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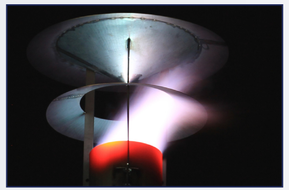


AHT

Renewable Energy Production

CLEAN GAS SOLUTIONS

AHT R 111 • AHT R 116

BRIEF PROFILE AHT – GAS PRODUCTION HISTORY

A.H.T. Syngas Technology – Your specialist for gas production and processing plants for the generation of electrical and thermal energy.

In the implementation of this sophisticated technology we draw from over 100 years of experience and development of the well-proven twin-fire process from Klöckner-Humboldt-Deutz (KHD). Thanks to a combination of many years' experience and continued innovative development a particularly effective and reliable biomass power station has emerged, which is unrivalled in this category.

INPUT MATERIALS

For the production of synthesis gas, a wide range of biomasses of coarse size can be used.

+ Material size: 40 - 150 mm
+ 20 mm thickness
+ Low proportion of fine material
+ Moisture content: 10 - 20 % atro
+ Homogeneous, consistent fragment size

Currently applicable input materials include:

+ Coarse wood chippings, manufactured in an energy efficient manner
+ Waste from the woodworking industry

Further biomasses have already been tested, e.g.:

+ Residual materials in compact form, such as fermentation waste from biogas plants
+ Residual wood from forests
+ Wood from short rotation plantations
+ Fine input materials compacted into briquettes / large pellets
+ Processed waste materials from agriculture, such as rapeseed cake, rapeseed straw and maize straw, grain husks and chaff as well as coconut shells
+ Waste from the food industry

We would be happy to submit a proposal to create a concept with your input materials. A smoother type of input material forms the basis of the biomass power plant's high availability and optimum efficiency.

SUSTAINABLE TECHNOLOGY

Reliable and responsible energy production concerns us all. We, too, are driven by our responsibility for future generations to develop increasingly better solutions and innovations.

With its ability to very efficiently process biomass input materials into electricity and heat, the AHT biomass power plant (BMPP) provides a further important component in the sustainable provision of renewable resources. For the future, AHT continues to commit to the further development of this technology and thereby to an even more sustainable means of supplying energy.

THE AHT–BMPP

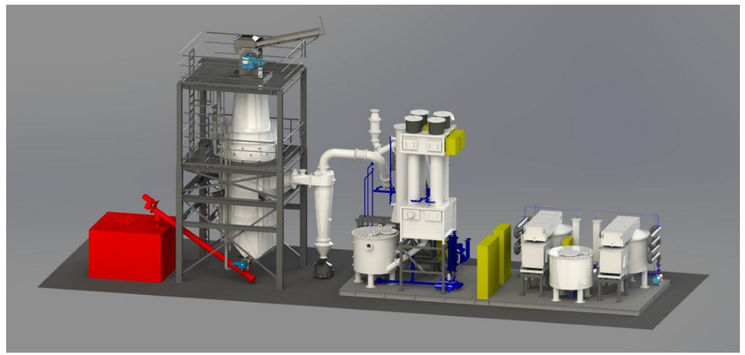
RELIABILITY, EFFICIENCY AND INNOVATION

Thanks to our continuously developed and improved double combustion gas producer, a particularly clean gas is already produced during the gas extraction stage before being stripped of all foreign particles in the wet wash.

The clean gas extracted is then the perfect fuel for the connected biomass power plant. AHT uses highly efficient BHPPs, e.g. from the SCHNELL company.

The combination of all these components leads to a constant and effective processing of the biomass fuel and the subsequent maximum yield of electricity and heat.

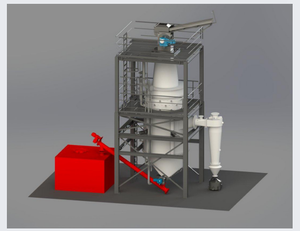
- *More innovative and effective gas producer with the most up-to-date double combustion technology.*
- *Highly efficient gas purification with electrostatic filter.*
- *Reliable and efficient BHPP plant with or without pilot injection technology.*



BENEFITS OF THE SYSTEM

+ *Well-proven, continuously optimised technology*
+ *Modern twin-fire gas production technology for a particularly clean gas*
+ *Reliable gas purification in the removal of problematic residual material*
+ *Efficient motor technology*
+ *Highest efficiency*

GAS PRODUCTION



The centerpiece of gas production is the twin-fire gas producer. The process of producing gas occurs in the reactor at temperatures of up to 1,200°C.

Corresponding temperature zones form in the reactor under the influence of controlled addition of atmospheric oxygen. The decomposition reactions take place within these zones, thereby converting the input material into a combustible process gas. During the production of the gas, the double combustion process already lays the foundations for a clean process gas through a combination of an increasing and decreasing level of gas production.

Unwanted tars and other harmful materials are cracked in a high temperature zone, which converts as much of the material as possible into gas.

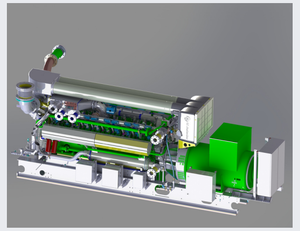
GAS PURIFICATION

The produced process gas is stripped of the remaining by-products through a process of gas purification. Here, a combination of wet gas scrubbing and cooling filters the gas.
In the final purification stage, the downstream, specially developed wet electrostatic precipitators remove the remaining harmful aerosols.

The benefits of high gas purity:

+ Operationally reliable transport of the gas over long distances
+ Highly efficient processing in the BHPP
+ Highest efficiencies

COMBINED HEAT & POWER PLANT



The Combined Heat and Power Plant (CHP) produces electricity and heat by combustion of the purified gas.

The innovative technology increases efficiency:
During the production of the process gas in the biomass power plant, the CHP achieves an electrical efficiency of over 40 %, depending on the area of use and choosen CHP.