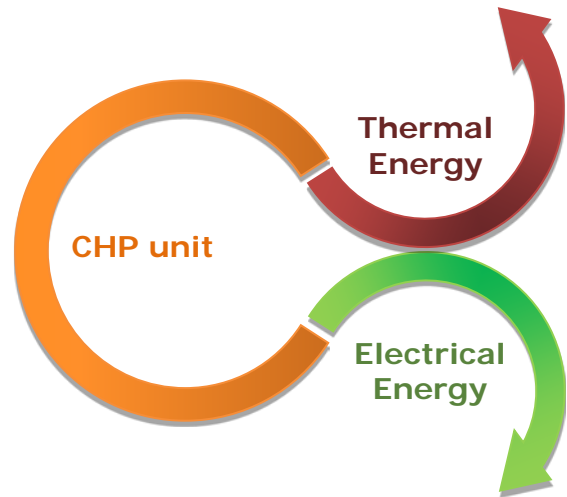


Cogeneration Plant from **WOODCHIPS**

VAP System is a cogeneration plant (CHP) able to produce electrical energy and thermal energy from woodchips.

To feed the plant is not necessary to use high quality wood, it can be used processing **waste wood, bark, branches** or other waste products, supplied in sufficient quantity to ensure the necessary calories.



VAP System allow to:

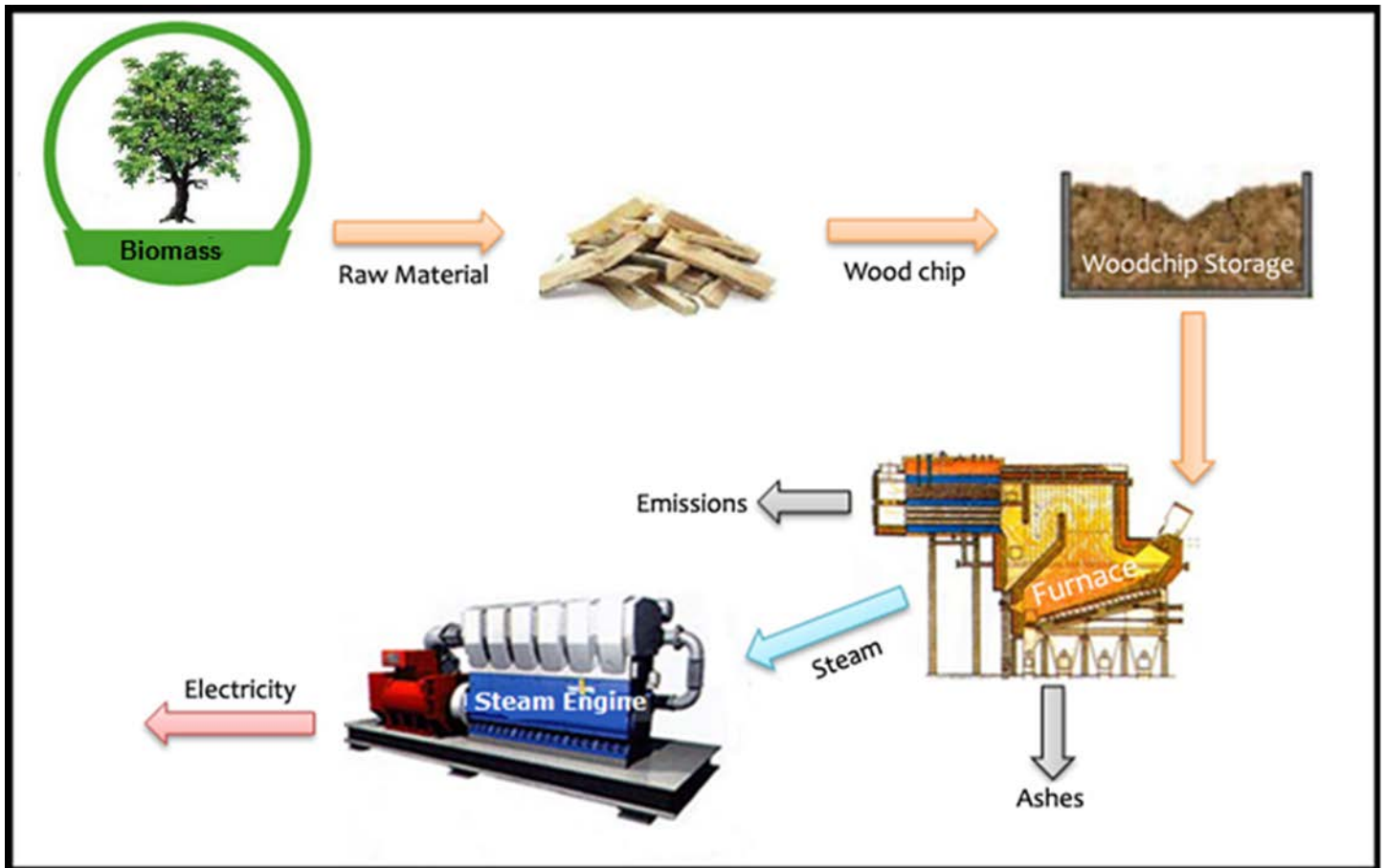
- energy production from **renewable sources**;
- **raw material** use even with 40% moisture content or higher;
- direct production of **electricity**;
- direct production of **heat**.

VAP System includes:

- high efficiency wood chip **furnace**;
- combustion **exhaust fumes** chimney;
- air-water **heat exchanger** for the fumes heat energy recover;
- close circuit **steam engine**;
- **steam condensation** system;
- electrical **alternator**;
- **sensors** and **main control switchboard**.

**There is no need of steam accumulator tank,
because it is utilized immediately and condensed in a close circuit.**

General functional diagram



VAP System has insignificant air pollution, that comes from woodchips combustion in the furnace. The system is equipped also with a cyclone filter to complete emission abatement.

VAP System has reduced noisiness because there is not an internal combustion engine.

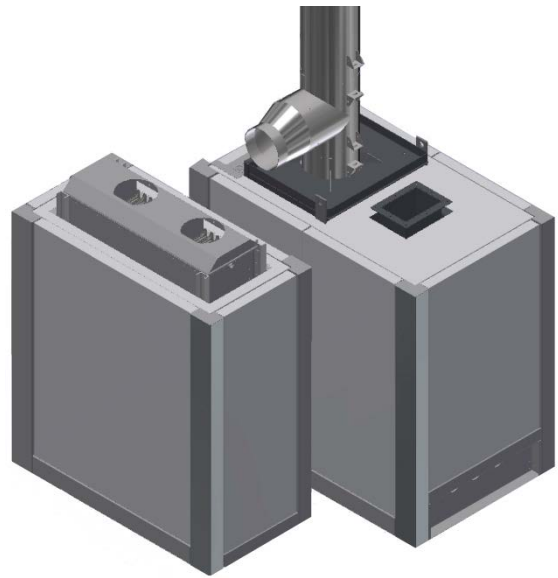
VAP System requires a small surface to be installed, equal to a 20" container which be added a woodchips storage tank.

VAP System doesn't require frequent maintenance, but it is available a 24 hour technical service, 7 days a week.

Furnace

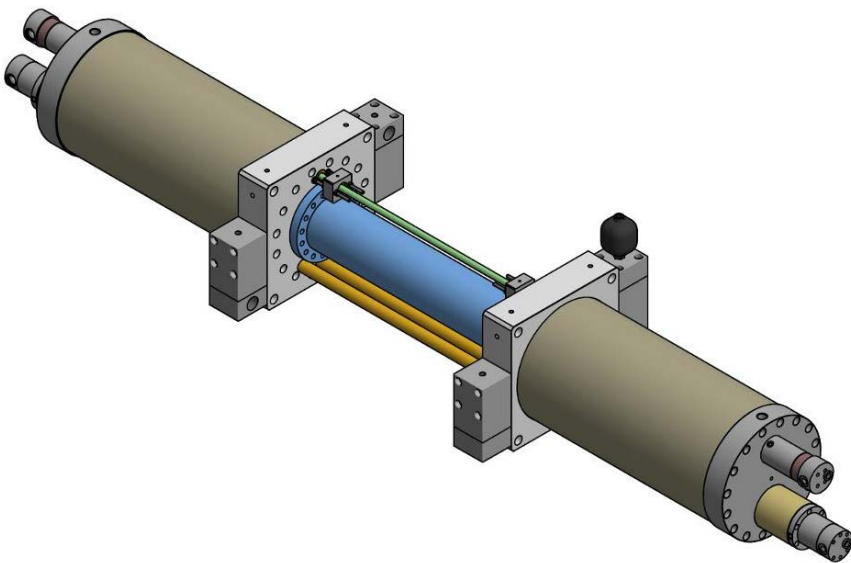
The furnace was been specifically designed to produce the steam required to run the CHP.

	VAP 500 model	VAP 1000 model	
Max furnace power	555	1110	kW
Max steam production	700	1400	kg/h
Max steam pressure	50	50	bar
Max steam temperature	500	500	°C
Combustion chamber temperature	1200	1200	°C
Heat exchanger power	700	1400	kW
Weight	3520	3520	kg



Steam engine

The heart of the system is the steam engine, specifically develop with high tech components to resist at high temperature/high pressure work conditions.



VAP MACHINE 100 model		
Engine	30	rpm
Cylinders	2	
Displacement	16	l
Cooling oil quantity	60	l
Weight	3000	kg

The system guarantees an electrical efficiency higher than 20%.

For 100 kWe there are 300 kWt available.