TRIOGEN
technology supplier

B: POWER
EPC contractor

Biomass Application Case Study

BIOMASS CHP PLANT

PROPOPULO SLOWAKIA

At this biomass CHP site, the Triogen ORC Power Plant is situated in a sawmill factory. The sawmill utilizes the residual biomass (in the form of saw dust) for combustion in an incinerator. The incinerator has a fuel input of 1110 kW using the untreated saw dust. The saw dust has a moisture content of approx. 40–55 wt % w.b.. The Triogen Power Plant uses the heat from the combustion process to produce electricity and hot water. The heat produced by this plant is used to supplying heat for drying kilns as well as space heating for the offices. The electricity produced is utilized by the sawmill itself, making this facility an excellent example of what can be achieved by embracing a Circular Economy approach. Thus the sawmill has reduced the costs associated with buying electricity from the grid. In addition, surplus electricity generated above their own consumption needs is supplied to the central electricity grid.

In the near future, the plant has plans to further maximize the use of their residual heat by adding an additional drying kiln powered by the remaining heat capacity of the Triogen ORC Power Plant.

Wooden planks

Sawdust

"We reduce costs via lower electric power take-off and generate revenues from the renewable power supplement on excess electricity sold to the grid." *Kristián Slimák CEO PROPOPULO PP a.s.*

Key facts:

The Triogen ORC Power Plant receives the heat input from the incinerator by means of direct evaporation, meaning it is connected directly to the incinerator which provides flue gasses at 530 °C (after the mixer), with a dust content of less than 200mg / Nm^3. The ORC Power Plant generates power up to its electrical capacity of 130 kW and coolant water at a temperature of 75°C, with a heat content of 660 kW of thermal energy.

Furnace

ORC

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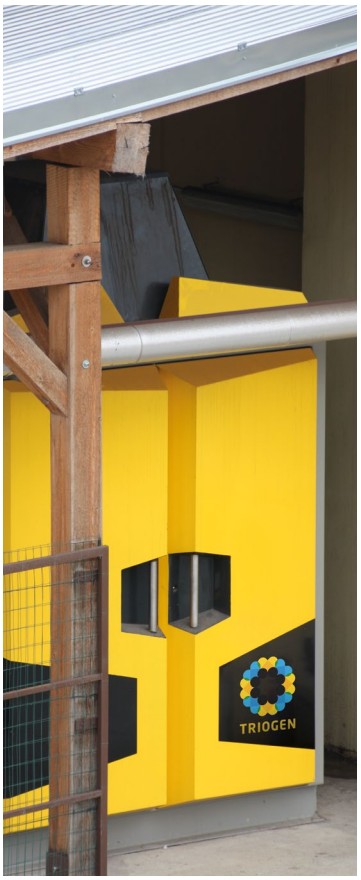
Drying kiln

SITE SETUP**:	
Site type	Biomass CHP
Feedstock	Sawdust
Heat source	Furnace
Heat Source Capacity	1,25 MWth

"The Triogen ORC secures power production that provides significant positive benefit to our companies economic results." *Kristián Slimák CEO PROPOPULO PP a.s.*

ORC FACTS:	
EPC contractor: B:POWER	
Completion of commissioning	1 Aug 2014
Flue gas temp into evaporator	530°C
Flue gas temp out of evaporator	200°C
Heat Intake ORC	900 kWth

BENEFITS:	
Electricity provided to the grid	
Power	130 kWe
Guaranteed Power to Grid	119 kWe
Production from 1-8-2014 to 13-10-2015	1.150.177 kWh
Electric capacity factor*	93%
Heat supplied to drying kiln	
Heat use	wood drying in kilns
Water temp to kiln	75°C
Water temp return from kiln	62°C
Energy provided	660 kWth



* % of theoretically possible power production if furnace and ORC would run at maximum capacity every hour of the year without downtime, maintenance etc. site closure excluded. For reference, gas engines and large power plants average 90–95%.

** See also **http://pila.ppas.sk/vyroba-elektrickej-energie-tepla.html** for more information

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