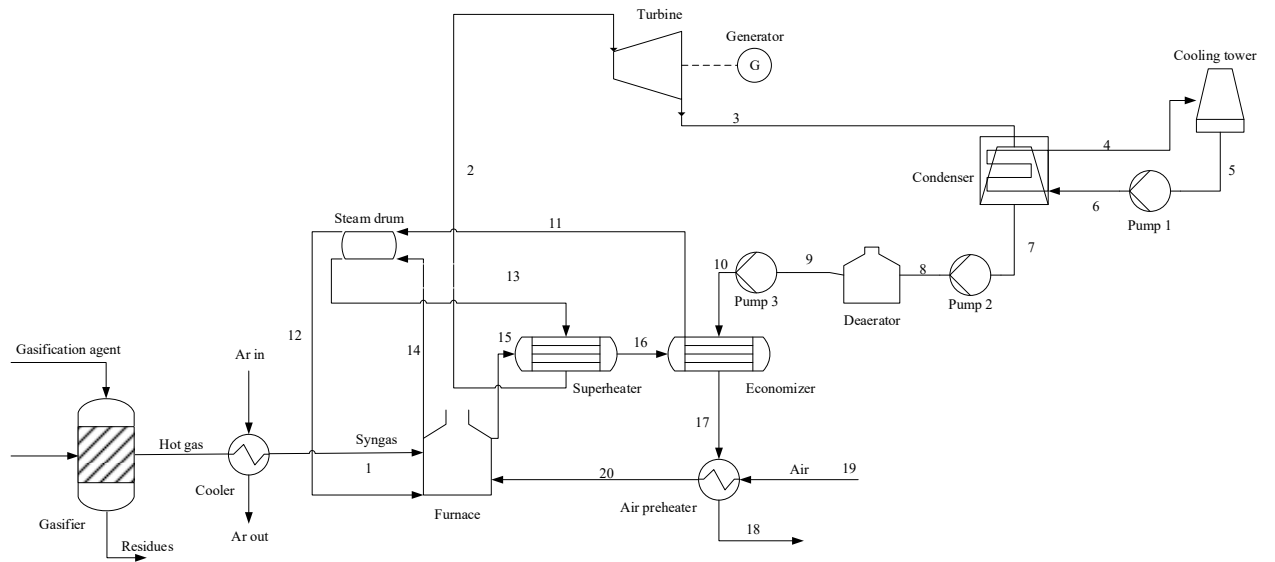


## Supplementary Material

The scheme of the power plant, composed by the gasifier, conditioning system (gas cooler), and Rankine cycle, is presented in Figure S1.



**Figure S1.** Power Plant Scheme

The main parameters used for the boiler components modeling, included in the Rankine cycle model, are presented in Table S1.

**Table S1.** Input parameters for the modeling of boiler components.

<b>Boiler component</b>	<b>Parameter</b>	<b>Value</b>
Economizer	Desired temperature for the water leaving	127 °C
Air preheater	Effectiveness	80%
Superheater	Pressure drop fraction	3%
Furnace	Pressure drop fraction	3%
Furnace	Thermal losses	5%
Stream drum	Desired drum blowdown fraction of steam	0%

For each input variable of the economic evaluation of the generation system studied, the types of probability distribution listed in Table S2 were used, with their respective parameters. The simulations were performed with 100,000 iterations and a confidence level of 95%.

**Table S2.** Input parameters for economic assessment

<b>Item</b>	<b>Distribution</b>	<b>Parameter 1</b>	<b>Parameter 2</b>	<b>Parameter 3</b>
O&M – Power cycle (\$/kWh)	Triangular	Min: 0.018	Most prob: 0.019	Max: 0.020
O&M – Gasifier (%CAPEX)	Triangular	Min: 3.60	Most prob: 4.60	Max: 5.70
(BRL: R\$) to US\$ Exchange	Weibull	Location: 4.61	Scale: 0.84	Shape: 3.8452
Electricity rate (R\$)	Logistic	Avg.: 0.87628	Scale: 0.19442	-
Active power (kW) – Air case	Triangular	Min: 92.5	Most prob: 141.0	Max: 189.4
Active power (kW) – O <sub>2</sub> case	Triangular	Min: 129.9	Most prob: 166.6	Max: 203.4