Olive cake gasification

The technology developed by Bioliza shows a great potential for the olive and pomace oil sector as well as for the forest industry sector. The technology is designed to supply less than 1 MW_e while operating around 10 to 11 months around the year. This type of plant is able to reach high efficiencies (> 75 %) due to the thermal energy recovery from the cooling and exhaust of the engines.

The raw material entering the process is dried fatty pomace that the plant can manage 7,500 tonnes around the year. The output of the process includes a blend of ash and biochar that can be used for soil improvement. The output also includes a liquid fraction composed of water and fossil fuels of different nature and a gaseous fraction syngas, which is mainly formed from a mixture of CO, CO_2, H_2, CH_4 and N_2 that can be used for thermal or electric purposes.

Technology is suitable for the agro-industrial sector due to its modularity, meaning that it is possible to install engines from 150 kW_e to 5 MW_e. Therefore, it is an appropriate technology for a wide range of industries producing biomass and consuming thermal energy and electricity.

Operational cost is 0.01 €/kWh for the engines and around 45.000 €/year for the gasification system. Regarding the personnel needed, just one operator per shift is needed. A project with the characteristics mentioned will require a total investment of around 2.5 M€, the payback period should be reached in 5 to 7 years with an IRR of 10-12 %. The initiative profitability will be highly affected by the total investment, the supply characteristics, the biomass cost, the operation and maintenance costs, the electric energy savings, the tolls, or the income obtained from the electricity sale.

KEY WORDS

Integration, pruning collection, vineyard pruning

COUNTRY

Spain

AUTHORS

Maider Gomez (Circe)
mgomez@fcirce.es
Daniel García (Avebiom)
Pablo Rodero (Avebiom)
Alicia Mira (Avebiom)

DOWNLOAD

www.branchesproject.eu

ADDITIONAL INFORMATION

This type of plant can reach a high energy efficiency, around 70-75 %, when using the residual thermal energy coming from the cooling system and engine exhaust gases. The main components of the plant include first of all the biomass feeding system which should take into account three aspects; the moisture content should be lower than 20 %, particle size should be homogeneous and there should be an avoidance of impurities (such as sand, stones, metals, etc.), although depending on the type of gasifier selected, the suitability range of these parameters can greatly differ. The second main component is the gasifier (down draft), since it allows syngas with a lower tar content, which enables an easier cleaning process. The gas treatment and cleaning system is composed by different types of filters, capacitors, coolers, etc. The final component of the plant is the engine.

Besides its suitability for agro-industrial biomass valorisation as previously mentioned, the plant is also appropriate to valorise agricultural residues generated on the fields such as the residues from olive pruning.

Coordinator: Johanna Routa - (Luke) johanna.routa@luke.fi
Dissemination: itabia@mclink.it
www.branchesproject.eu

ABOUT BRANCHES

BRANCHES is a H2020 "Coordination Support Action" project, that brings together 12 partners from 5 different countries. The overall objective of **BRANCHES** is to foster knowledge transfer and innovation in rural areas (agriculture and forestry), enhancing the viability and competitiveness of biomass supply chains and promoting innovative technologies, rural bioeconomy solutions and sustainable agricultural and forest management.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000375

THE PARTNERSHIP

Luke Luonnonvarakeskus · National Research Council of Italy Institute of BioEconomy Department of Biology, Agriculture and Food Science · VTT · University of Warmia and Mazury in Olsztyn · DBFZ · circe Research Centre for Energy Resources and Consumption · ITABIA Italian Biomass Association · MTK · aveBiom Spanish Biomass Association · UFZ · W-M ODR · BioEconomy Cluster