SMARt-CHP

Problem statement

Demonstrate an innovative, small-scale, mobile power production unit, which uses the agricultural residues generated in rural areas.

Executive summary

The SMARt-CHP prototype is a mobile and modular 5kWel and 12 KWth CHP unit that fits in the size of a container and combines the technologies of gasification and internal combustion engines.

Technology description

The SMARt-CHP unit consists of a gasification reactor combined with an internal combustion engine and adjusted to work on producer gas for electrical power and heat. The unit was built in Thessaloniki and transported to the premises of the two associated beneficiaries. The feedstock was made up of grape, peach and olive kernels that had been collected from the region of Western Macedonia. The unit has operated for more than 3000 hours with a variety of solid waste streams from agro-industry such as grape pomace, olive and peach kernels, almond shells etc. Also, the unit would operate close to the place of feedstock origin, thus minimising transportation and logistic costs.

Market deployment considerations

Residual biomass can constitute an extra income for farmers based on the current market prices of electricity and heat, while simultaneously contributing to CO2 emissions reduction and ecological impacts on the environment.

Environmental considerations

Technology feedstock

agri-residues, food waste, wood chips

Type of process

thermal process

Technology output

biochar, electrical energy, heat

Scale

Farm

Technology Readiness Level

6

Countries

Greece

Year

2012

Stakeholder

University

Technology owner/developer

Aristotle University of Thessaloniki

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