

Greek spin-off offers feedstock-flexible small-scale waste-to-energy cogeneration technology

Summary

Profile type	Company's country	POD reference
Technology offer	Greece	TOGR20230821006
Profile status	Type of partnership	Targeted countries
PUBLISHED	Research and development cooperation agreement Investment agreement	• World
Contact Person	Term of validity	Last update
Rita ELSTE - TOMSONE	21 Aug 2023 20 Aug 2024	21 Aug 2023

General Information

Short summary

A spin-off company from a Greek research institute has developed a waste-to-energy technology that enables agrofood manufacturers to use their raw residual biomass for on-site small-scale energy production. It is interested in setting up partnerships for further research and development of this technology in order to be able to commercialise it, as well as potential investors who would be willing to provide financial support for developing this technology.

Full description

This spin-off of a Greek university has developed a technology that enables the use of raw residual biomass for small and/or micro-scale energy production.

Modern agrifood industries face high energy bills and produce large quantities of residual solid organic waste. Although these residues could be utilized in the industries' manufacturing processes, (thus cutting costs and providing added value), they are simply being disposed of as waste.

This hi-tech spin-off sprang from the aim of offering products and services that will help address climate change issues in general and the waste of potentially valuable resources in particular. This led to the development of a power production unit that allows the complete use of raw materials throughout the production process cycle of agrifood SMEs, utilizing solid organic residues for on-site heat and power production. The Greek SME's vision is to enable

small scale decentralized energy production from biomass waste, thus allowing industries to exploit the maximum of their feedstock, while at the same time reducing their environmental footprint.

The system combines the technologies of gasification and internal combustion engines, which are brought together under an automated control system, allowing continuous energy production, particularly in small-scale and micro-sized applications. The technology is based on many years of applied research conducted by a Greek university aimed at exploring the potential of using methods and techniques applied in the exhaust gas after-treatment of automotive diesel engines, to clean the product of biomass gasification. Results demonstrated a promising potential for surpassing the technical constraints and limitations of conventional gasification-based co-generation plants, mainly regarding their use for small-scale energy recovery of residual biomass.

The resulting unit developed by the Greek company is a power generator, that can be easily installed on-site and which converts solid organic residues into energy. The 25kWel unit produces 187,500 kWh electric energy and 502,500 kWh thermal energy annually, consuming approximately a total of 187.5 tons of dry solid organic residue. It is a totally stand-alone unit, which is ideal for agrifood SMEs with access to solid organic residues and which have substantial heat and power needs all year round.

The Greek client is looking for partners in order to conduct further research and development of this technology with the ultimate aim of being able to commercialise it. Also of interest would be potential investors who would be willing to provide financial support for developing this technology.

Advantages and innovations

This technology offers multiple advantages:-

- it enables the end-user (manufacturer) to produce energy where and when it is needed
- it recovers and utilises waste products from the manufacturing process wherever and whenever they are available
- what manufacturing companies in the agrifood sector are currently throwing away as waste can be transformed into a valuable commodity, thus decreasing both energy and waste disposal costs, while improving profitability and the overall environmental impact
- minimal need for pre-treatment of residual biomass, such as residues from oil and rice manufacture, as well as grape marcs (residual biomass from the pressing of fresh grapes), and coffee grounds, etc. Therefore, it can be used directly as fuel for energy production
- waste management costs are converted into additional revenue, improving profitability and giving a clear competitive advantage, upgrading the environmental image of the end user, through a simple, integrated, autonomous and problem-free process, that is environmentally-friendly.

In terms of specific technical features:-

- Easy to set up and use (just plug in and play): minimum to zero infrastructure needed for installation & operation.
- Flexibility: the unit is versatile regarding the quality and type of feedstock residuals recovered, including mixed residues.
- Modular: the specified unit sizes are able to meet a wide range of customer needs.
- Automated: low maintenance and surveillance costs due to smart control system.

Technical specification or expertise sought

Stage of development

Available for demonstration

IPR Status

IPR granted

Sustainable Development goals

- **Goal 13: Climate Action**
- **Goal 12: Responsible Consumption and Production**
- **Goal 7: Affordable and Clean Energy**
- **Goal 11: Sustainable Cities and Communities**

Partner Sought

Expected role of the partner

Ideal partners would be:-

- SMEs in the agrifood sector with high combined heat and power (CHP) needs
- original equipment manufacturers (OEMs) that provide equipment and services in the agrifood sector
- investors.

The Greek client would also be interested in offering commercial agreement with technical assistance to companies in the agrifood sector with high combined heat and power (CHP) needs.

Type of partnership

Research and development cooperation agreement
Investment agreement

Type and size of the partner

- **SME 11-49**
- **SME 50 - 249**
- **Big company**

Dissemination

Technology keywords

- **04005012 - Waste to energy - other**

Market keywords

- **06003006 - Combined heat and power (co-generation)**

Targeted countries

- **World**

Sector groups involved

- **Renewable Energy**
- **Agri-Food**

Media

Images



[biomass residual unit.JPG](#)

IDEAL FOR AGRO-FOOD SMES WITH HIGH CHP NEEDS
 WINE, OIL, RICE, ETC.



[biomass recovery1.JPG](#)