

VIDA PROJECT

Webinar: Sustainable farming
waste management and energy efficiency |
JULY 2nd | 10.00 – 11.00 (CET)



VIDA

value-added innovation
in food chains

KAPA ENGINEERING srls

AGROWASTE 2 ENERGY



The challenge

The **disposal of poultry manure** is a very important issue for **chicken farmers**, who have to store it, and then transport it to the waste-to-energy plants. The disposal of manure costs European states over 2 billion euros in transport; the disposal cycle releases 25 million tons of greenhouse gases into the atmosphere.

The processing of the poultry manure thus creates **health issues** in the farms, as well as **pollution**. The common incinerators transform the manure into special waste, generating polluting gases, recycling only a small part of the initial material. On the other hand, the direct use of the manure in the fields can alter the chemical and saline balance of the land.

Traditional incinerators require large components (such as steam turbines), high costs and large investments while they are only suitable for large quantities of waste. Furthermore, qualified personnel with specific technical knowledge are required for their operation. The use of conventional waste-to-energy systems in small and medium-sized enterprises, such as those in the agricultural sector (agro-SMEs), for the production of local energy is therefore practically excluded.

The objectives

KAPA ENGINEERING aims to improve the performance of an **innovative incinerator with compact electric energy production system integrated.**

Protect environment against pollution with special **filtering devices**, at significantly reduced energy requirements by means of a novel process for incineration of the Agro-waste.

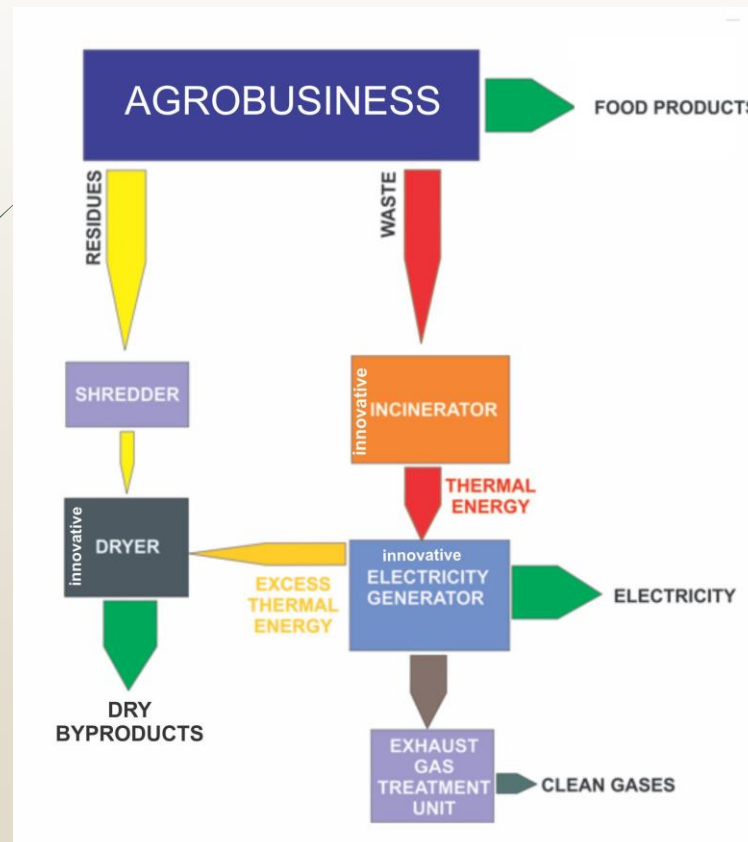
Agro-waste 2 Energy would be a project that aims to valorise the waste for electric energy production (directly by the devise), thus reducing further the net energy consumption of the incinerator, and consequently reducing the emission of greenhouse gases.

The innovation

The main innovation, is to pair an electricity production system, very compact, directly by the thermal energy of an incinerator system, which today represents in any case a problem. So, the engineering and projecting of an incinerator that **generates electricity by transforming the heat of the system, very compact**, solves the problem of thermal excess, **recovering energy** for its use but also to exploit. The last Stirling technology will be incorporated to maximize the thermal energy. The project provides for the use of various steps for energy recovery, with a series of generators, installed in sequence.

This project aims to manufacture a **pilot demonstrator** of an innovative design of incinerator that can be deployed in agro-SMEs. The main innovation is represented by the use of the **Stirling technology** for the **conversion of thermal energy into electricity**; it is expected that several engines will be used in the electricity conversion step. The proposed design would produce not only **electricity**, but also **hot water**; both of which can be used on site by agro-SMEs.

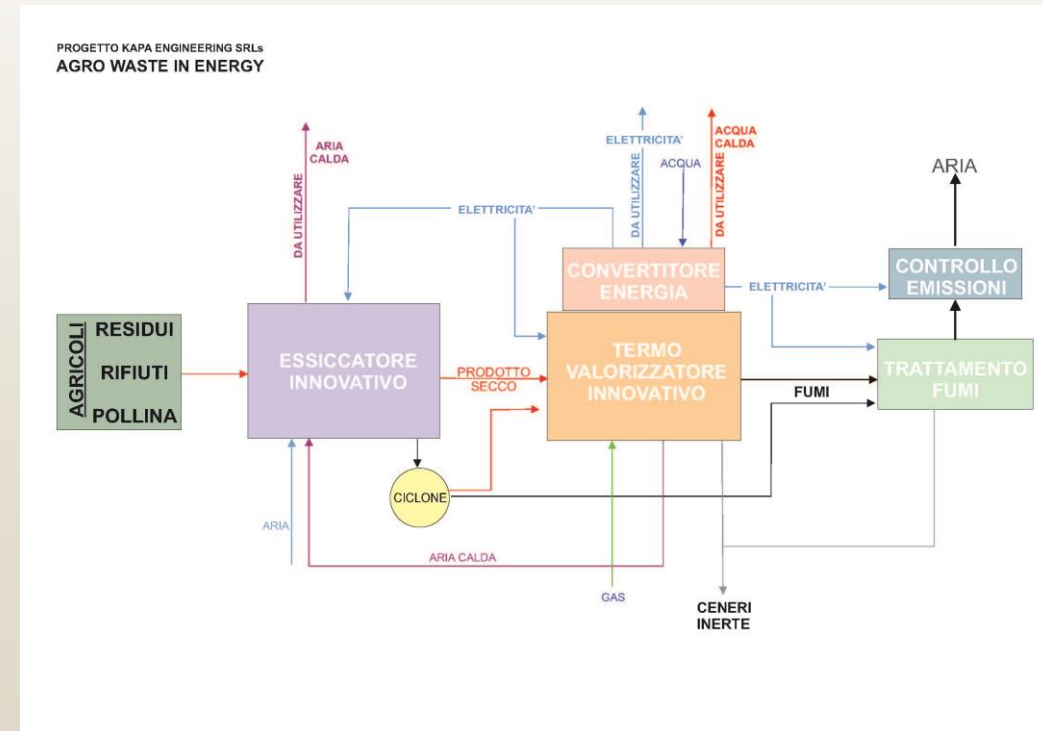
CIRCULAR ECONOMY WITHOUT ENVIRONMENTAL IMPACTS



- The deployment of this innovative design of incinerator would achieve the objective of valorizing agro-wastes – a key concept in the circular economy perspective – by producing electricity and thermal energy for drying with expected low environmental impacts. Also, with an appropriate capacity of incinerator and the availability of agro-waste, agro-SME could have the potential of becoming **energy independent**. The production of **electricity and hot water**, the low environmental impacts and the potential energy independence will ensure the acceptance of the proposed design by agro-SMEs.

Project Outcomes

- **Agro-waste 2 Energy** will deliver the complete project of an innovative incinerator that will be the main exploitable result of the project. At the end of the project, the incinerator will be fully ready for demonstration at any European location and agro-waste application.



Partners sought

The ideal partner, in order to develop the project, should have knowledge of the management and deposition of electricity so as to be able to research and apply the best solution for managing the energy produced by the system.



Potential Markets

Regarding the **market in Europe**, in the short term about 10-12 % of the Eastern Europe market for primary investments can be penetrated by the new process. In the medium term the process targets to achieve 3-5 % in other EU markets for upgraded capacity of existing installations. At the end, it is a total of 3000 Agro Business in Europe that is targeted, an easy to access market as only a very limited number of incinerators are currently running.

Agro-waste 2 Energy will also trigger new qualified **jobs** in EU. It is estimated that in the short term 2 jobs will be created in our company, 8 jobs can be created at the involved industries and indirectly more than 1,000 in Europe.

Thank you!

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