



CHICKENS Manure Exploitation and RevAluation

LIFE15 ENV/IT/000631

THE CHALLENGE

CHIMERA reinvents the chicken manure disposal process. Chicken manure is an organic waste, rarely perceived as a polluting agent; however, it is rich of toxic elements such as nitrogen oxide (N₂O), ammonia (NH₃) and methane (CH₄) which contaminate air, soil and groundwater. Nowadays, chicken manure disposal is twofold: the waste is either bestowed to waste-to-energy plants or directly broadcasted on the ground. Costs related to storage, transport, disposal and/or broadcasting are high for the farmer. CHIMERA solves all those issues related to waste management. A "ready and easy to use" solution, which works in small farms or farm districts for meat (broiler) and/or eggs production. The dimension of the plant is limited and can be installed within any sized farm. CHIMERA's ambition consists of transforming waste into a fertilizer, while producing energy. CHIMERA solution: from manure to flowers! This project becomes true thanks to the EU financing of the LIFE programme, GA n. LIFE15 ENV/IT/000631, and the collaboration between Tre P Engineering Srl, Italian engineering company and project coordinator, and Renders&Renders V.O.F., Dutch farmer.

CHIMERA IS THE SOLUTION... why?

Pollution: chicken manure is a polluting agent and represents an inconvenient element within farms, because it needs to be stored with connected hygienic and smell issues. Moreover, it has to be transported to waste-to-energy plants for incineration, which transforms it into hazardous wastes, producing polluting fumes. Just a small part of it can be disposed on the soil, since it alters the environmental balance. CHIMERA eliminates these storage and transport issues, through the installation of a **small plant working at continuous cycle within the farm.**

Recycling: CHIMERA is a **plant that transforms chicken manure into a fertilizer.** The technological focus is on the burner, which allows a more efficient fumes' treatment. The combustion by-product is ashes, which are indeed a fertilizer with competitive costs and performance, in comparison with the ones already on the market. The cycle is closed: from nature - manure - it goes back to nature - fertilizer - to be disposed on the fields, where crops for breeding are grown. The fertilizer could also be a new business opportunity for the farmer.

Energy: the heat generated during the process can be used to **produce thermal and electric energy**, which make the farm self-sufficient. For instance, the thermal energy is needed to warm/cool the farm itself and, through a co-generator, it can be transformed into electric energy for lighting and operations running. CHIMERA is indeed a sustainable plant and produces clean energy.

THE PROCESS

CHIMERA is a small size chicken manure disposal plant (7,5x2,5x3,5 m) working at continuous cycle. In eggs' production sites, where manure is continuously produced, its management is immediate: manure is transferred through a conveyor belt into the combustion unit and processed. In broiler houses, instead, a small storage for manure has to be set, since the production is not continuous. The technological innovation related to the burner allows a more efficient fumes treatment and a combination of the fumes' organic elements together with the ashes' inorganic ones. At the end of the combustion, the ashes and the fumes' by-product pass through two serial **scrubbers** and are transformed into sludge. Subsequently, the sludge passes through a **centrifugal decanter** that separates liquid - water - from solid -compost - ready for packaging. The compost is a fertilizer rich in nitrogen, phosphorus and potassium to be spread on land for corn and wheat production. **Made 10 the amount of manure generated in the plant, the amount of fertilizers will be equal to 1**, with relevant savings in terms of volumes too. The **heat** produced during the combustion process is conveyed through dedicated pipes into sheds used for breeding and, in part, transformed into electric energy to support the farm's daily operations. Finally yet importantly, the **water** obtained from manure, which is an extremely humid substance, is completely reused to hydrate ashes and break down the pollutants contained in the fumes. The first two prototypes have been installed in the Marche region, in Italy, while the real scale pilot plan will be established in the Noord-Brabant region, in Netherlands.



If you are interested in our project and want to be part of our External Users Advisory Board, write us at info@life-chimera.eu

Check our website!
www.life-chimera.eu

Project title: **CHIMERA - CHICKENS Manure Exploitation and RevAluation**
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Partners: **TRE P ENGINEERING SRL, Marche, Italy www.trepengineering.it**
Renders & Renders V.O.F., Noord-Brabant, Netherlands
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