AI GREEN WASTE

An innovative AI-based solution based for waste management and intelligent environmental systems

The AIGreenWaste project develops a software solution based on algoWatt AI Green Digesto, an innovative software solution based on artificial intelligence and predictive models applied to the management of waste management and intelligent environmental plants. AI Green Digesto includes decision support tools for biodigester plant operators based on simulations and scenarios developed by cognitive computing and ML solutions, and developed using data and production parameters from the biodigestion plant operating in Nera Montoro (TR) in Umbria.

THE PROJECT

AIGreenWaste is a project funded as part of the cascading grants call opened by the Kitt4SME project (https://kitt4sme.eu/) funded by the European Union through the Horizon 2020 - Industrial leadership sector.

Kitt4SME is part of the ICT Innovation for Manufacturing SMEs (I4MS) initiative to digitize the manufacturing industry, in particular, SMEs, DIH and Mid Caps that intend to improve their products, business processes and business models through digital technologies. KITT4SME provides SMEs with a modular and customizable digital platform, which allows companies to combine hardware and software modules to create digital kits tailored to their needs and processes, and allowing them to introduce artificial intelligence into their production systems, reducing the difficulties of adopting and using cutting-edge technologies.

The solution developed by the AI Green Waste project will be made available on the RAMP digital marketplace, a community of developers and end users for Industry 4.0, and through the I4MS initiative.

A biodigester plant is a system that uses organic waste to produce fertilizers and biogas through an anaerobic process and methanogenic bacteria. Processed biomass is the biodegradable fraction of products, waste and residues of biological origin from agriculture, including plant and animal substances, from forestry and related industries, including fisheries and aquaculture, as well as the biodegradable fraction of waste, including industrial and urban waste of biological origin.
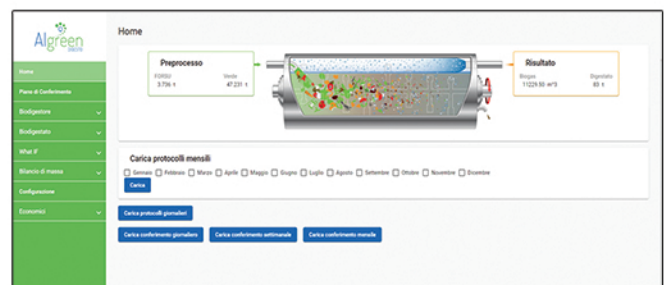
The produced biogases are a mixture of various types of gas, consisting mainly of methane (at least 50%) and carbon dioxide, which can be burned to produce electricity or heat, but can be purified to extract the methane component to be inserted into the municipal network.

Current biodigester systems must be manually optimized by plant operators to produce more biogas, reduce the amount of residue and remain in the correct range of operating parameters (e.g. viscosity) to reduce the risk of maintenance downtime.

This can be done by acting on the settings and inputs of the machinery, controlling parameters such as the speed control of the biomass injection into the biodigester, the type and quality of the biomass injected and the quantity of water introduced into the system or the working temperature. Based on the parameters measured by the sensors, the operator varies these inputs and settings to optimize biogas production, minimizing feed and aftertreatment costs.

Most of the current biodigester systems, though typically equipped with sensors, are not 'smart machines' in the sense of Industry 4.0. As said, these machines need to be manually optimized by plant operators. AI Green offers the possibility to provide to the operator a useful AI-based decision support in the operational management of the plant. By improving operating efficiency the operating costs can be drastically reduced, turning the purchase of a digester into a better investment and providing a competitive advantage to the plant manufacturer able to deliver an above-average machine in terms of efficiency.

CONSORTIUM

AlgoWatt is the sole partner in the AI Green Waste project. Kitt4SME is a Horizon 2020 project coordinated by SUPSI (Professional University School of Italian Switzerland) and developed by a consortium that includes Holonix, CRIT, VTT, ART-ER, European Dynamics, Warsaw University of Technology, Gate SpA, Ginkgo Analytics, R2M Solutions , Martel Innovate, CSIC and Rovimatica.

SYNOPSIS

PROJECT WEBSITE
N/A

PROGRAMME

Project funded as part of Cascading Grants in the context of the Horizon 2020 Kitt4SME project (https://kitt4sme.eu/)

START DATE
March 2022

DURATION
15 months