"Digitalisation of biomass energy recovery processes with high added value"

The DIGIBIO project, "Digitalisation of biomass energy revalorisation processes with high added value", aims to develop a **digital system capable of capturing information and analysing the efficiency of biomass revalorisation processes aimed at sustainable obtaining bioproducts and/or bioenergy.** This project is funded by the 2020 call for Innovative Business Clusters (AEI) of MINCOTUR of the Ministry of Industry, Trade and Tourism and the Energy Cluster of the Valencia Region (CECV, www.clusterenergiacv.com), the company New Industrial automatitaion Techniques (Nutai, www.nutai.com) and the Technological Institute of Energy (ITE, www.ite.es) participate in the consortium.

The initiative proposes a **complete digitalisation, from the field to the information level, aimed at deploying an analytical tool for energy efficiency in reference to the type and form of production**, including an innovative energy traceability system linked to the traceability of the input and output material; biomass and revalued products in the form of biomaterials and bioenergy respectively. It also adds a layer of information in the form of an **energetic-productive digital footprint** that enables the process to have a high capacity for digital representativeness and integration in its production value chain, whether in existing or newly created processes; an important aspect in the management and dynamisation of new sustainable and innovative production processes within the field of the circular economy.

The aim is to obtain **digital systems, both automatic and information systems, with which to achieve improvements in performance and increase productivity,** thus being able to carry out new levels of analysis and conclusions on optimal operation and energy efficiency, which typically depend on a multitude of variables, have a significant intensity of energy consumption and varying operating conditions depending on the revaluation application they are focused on. The project is currently in the development phase of the energy efficiency analysis system in relation to the automatic traceability of energy and biomass and products to be obtained. In a subsequent stage, development will focus on a specific-revalorisation application for obtaining bioenergy and biomaterials through slow pyrolysis and gasification in which carbon chains and activated carbon can be obtained from what was initially going to be waste, for example agri-food waste such as rice straw..

It should be noted that **energy and decarbonisation technologies** are currently entering a decisive point to reverse the environmental situation and numerous national and international policies are being put into action to try to alleviate the climate emergency in which we find ourselves. Similarly, the **technological evolution of Industry 4.0**, and specifically at national level the **Connected Industry 4.0 initiative**, is actively promoting the acquisition of new technologies, innovation initiatives and new digital business models at all levels of companies and industries.

The project is focusing on the confluence of both priority areas and has a high component of technological innovation in both fields. In this sense, the results to be obtained are sought **to be converted into market opportunities for the biomass and the technological enablers** sectors, both by implementing the technology obtained in industrial pilots in order to apply the innovation developed, and by seeking new R&D projects, by the companies in the consortium and by seeking other interested parties, to delve into the concept of creating new models and digital twins for intelligent analysis of the optimal use of sustainable and circular energy in revalorisation processes.