



CE-SPIRE-02-2018

DESTINY

Full Title: Development of an Efficient Microwave System for Material Transformation in energy INTensive processes for an improved Yield

Aim:

The DESTINY project aims to realize a functional, green and energy saving, scalable and replicable solution, employing microwave energy for continuous material processing in energy intensive industries. The target is to develop and demonstrate a new concept of firing granular feedstock for materials transformation using full microwave heating as alternative and complement to the existing conventional production. The DESTINY system is conceived as cellular kilns in mobile modular plant, with significant advantages in terms of resource and energy efficiency, flexibility, replicability and scalability with reduced environmental footprint.

Concept: The DESTINY concept will be proved in two demo sites located in Spain and Germany, covering high energy demanding sectors of strategic interest as Ceramic (Pigments), Cement (Calcined clay) and Steel (Sinter, Iron Pellets/DRI, ZnO), to validate the critical parameters of the developed technology in relevant environment (TRL 6). It will be implemented 2 feeding modules per demo site and 1 mobile microwave kiln module and product treatment. Influence of the DESTINY solutions in terms of stability, process efficiency and characteristics of raw materials, intermediate/sub/final products will be investigated to improve performance of the industrial processes addressed and guarantee the required quality of products. Numerical simulation tools will be used to drive the design and support the testing activities. The industrialization and sustainability of DESTINY high temperature microwave technology will be assessed through the evaluation of relevant KPIs, with Life Cycle Methodologies. With the final aim of ensuring a large exploitation and market penetration for DESTINY, technology-based solutions business model, economic viability and

replicability analysis will be conducted. For guaranteeing industrial transferability appropriate exploitation and dissemination activities have been defined during and even after the end of the project.

Start date: 01/10/2018

End date: 31/03/2022
