



LIFE BATTLE CO₂

Biomass incorporation in Asphalt manufacturing Towards Less Emissions of CO₂



LIFE14
CCM/ES/00404



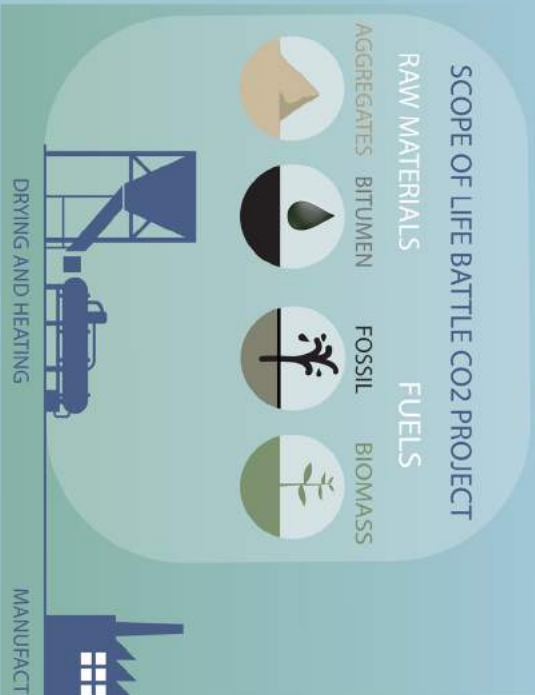
- *Total project budget: 1.484.051€
- *EU financial contribution: 851.069€
- *Start date: October 1st 2015
- *End date: September 30th 2018



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With the contribution of the
LIFE European financial instrument



MIXING AND LAYING OF
1000 T OF ASPHALT MIX
USING BIOMASS AS FUEL



OBJECTIVES

The paving of roads with asphalt mixtures requires the use of a heat source that allows to reduce the viscosity of bitumen so that the aggregate formed by aggregates and bituminous binder has an adequate handle ability.

Traditionally, manufacturing plants have been used in which the heat sources come from non-renewable energies (fuel and gas) which considerably increase the environmental impact of the paving process.

The LIFE Battle-CO₂ Project focuses on the demonstration of the technical, environmental and economic viability of the incorporation of biomass as an alternative fuel in the manufacture of asphalt mixtures, generally carried out through the use of fossil fuels.

MAIN OBJECTIVES:

- ▶ The establishment of a manufacturing process for asphalt mixtures that operate at 100% without the use of fossil fuels.
- ▶ Reduction of greenhouse gas emissions in the manufacturing stage of asphalt mixtures. The neutral emissions of the biomass will be incorporated in the processes, and will be stimulated by the improvement of the carbon footprint value of the manufacturing process, as well as the entire life cycle of the asphalt mixtures.
- ▶ Demonstration and validation of the mechanical properties of the products developed under this manufacturing scheme.
- ▶ Development of protocols for the generation of the "Product Category Rules" (PCR) for a new Environmental Product Declaration (EPD) in relation to asphalt mixtures. Currently, there are hardly any options for making EPD's in asphalt mixtures. This declaration, in accordance with ISO 14025, allows the communication of environmental results.

ACTIONS AND MEANS INVOLVED

The actions focused on the technical, economic and environmental viability of fossil fuels for the substitution of asphalt mix manufacturing plants, specifically in the three main points of emissions (drying of aggregates, heating of bitumen and generation of electricity).



1. Design and start-up of new equipment for the heating of bitumen, fed with biomass. The parameters of the equipment will be established, as well as the connections to the industrial plant of asphalt, biomass storage, feeding systems, etc.
2. The same process will be developed in the process of heating the aggregates, which implies the acquisition of a biomass burner designed specifically to dry aggregates, including storage silos, feeding system, conveyor belts for movement of aggregates, etc.
3. Design process and operating parameters of the ORC, electricity generating device in charge of obtaining the electrical energy necessary for the operation of the plant and coming from the biomass combustion gases in the drying processes of the aggregates and the heating of the bitumen.

EXPECTED RESULTS

- ▶ The elimination around of 100% of fossil fuels in the production of bituminous mixture avoiding the use of fuel and diesel, and incorporating the sustainable use of biomass as an alternative fuel.
- ▶ 80% reduction in greenhouse gas emissions in asphalt mix manufacturing plants.
- ▶ 35% reduction in CO emissions and 90% decrease in SO_x in the manufacture of asphalt.
- ▶ Economic savings in the manufacture of asphalt of 40% in fuels, which promotes added value and the motivation for companies to make a change in low-carbon fuels and the economy.
- ▶ Pilot plant connected to an industrial asphalt mix plant, capable of producing at least 40 t / h of asphalt mix 100% free of fossil fuels, but also capable of manufacturing 200 t / h of recycled asphalt mix with reduced of 25% the use of fossil fuels.
- ▶ Demonstration phase on a motorway: the incorporation of new materials made with biomass in several maintenance operations and conservators, with a total quantity of 1,000 tons of asphalt mix and 7,200 m² of pavement.
- ▶ Development of the Product Category Rules in order to obtain one of the first international Environmental Product Declarations "EPD" for the asphalt mix, which allows other companies to declare their environmental results according to a standardized protocol that, will be established in the framework of this project.
- ▶ Comprehensive management of the use of biomass, closing the life cycle of the biomass using the ashes of combustion as soil stabilizer, avoiding the use of cement and lime.