MASTRO – Intelligent bulk Materials for a Smart Transport sector

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Abstract

MASTRO is an EU project (NMBP-04-2017) leaded by Acciona Construcción and formed by a consortium of 16 partners, including universities, research centres and large and SMEs companies. The objective of the project is to develop intelligent bulk materials for smart applications in the transport sector incorporating several self-responsiveness properties to increase consumer safety, component life-span and performance, while reducing maintenance and manufacturing costs and greenhouse gas emissions.

Self-responsiveness functionalities will be achieved by incorporating electrical conductive nanomaterials like carbon nanotubes (MWCNTs) and graphite-based nanomaterials into smart lightweight polymer composites, thermosetting and thermoplastics materials, as well as with asphalts and concrete formulations. The self-responsiveness functionalities will include: self-sensing, self-deicing, self-curing, self-healing and self-protection, all based on three physical phenomena: piezoresistivity, Joule's first law effect and electrostatic dissipation.

The functionalized intelligent bulk materials will be incorporated into different critical transport sector components such as wing leading edge in aircrafts, car bumpers and pavements, and demonstrated under relevant conditions at prototype level for the aerospace, automotive and transport infrastructure sectors.

Figures

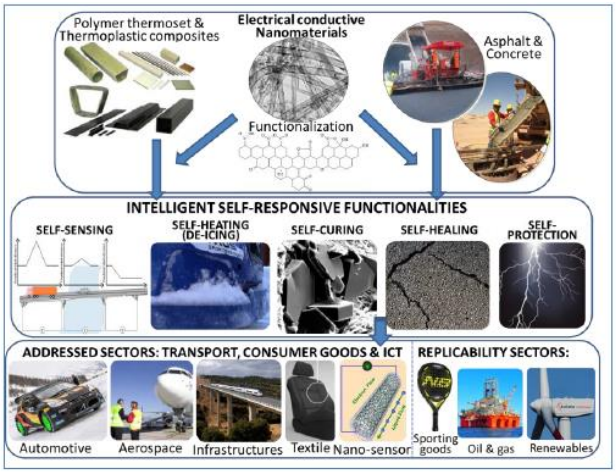

Figure 1: MASTRO project objectives. From materials through self-responsive technologies to the addressed sectors

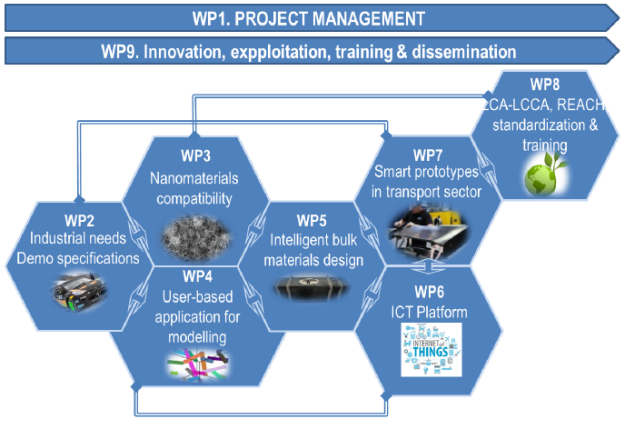

Figure 2: Project structure and interaction between Work Packages

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