



# LightMe

## Green sand and low-pressure die casting pilot line

The project LightMe (Open Innovation Ecosystem for upscaling production processes of lightweight metal alloys composites) was submitted as an European project within the EU research program "Horizon 2020".

The **LightMe project** is funded by the European Commission, with 13 partners across Europe. LightMe aims to set up a **self-sustainable open innovation ecosystem for the upscaling of industrial processes concerning lightweight metal alloys** (aluminium, magnesium and titanium) composites from TRL 4 or 5 to TRL 7.

The project was fully approved by the REA at the end of 2018, has a duration of four years and started in January 2019, coordinated by Politecnico di Milano (Italy).

The **LightMe Ecosystem** will provide the necessary infrastructure (6 Pilot Lines – PL) and know-how for upscaling the new material concepts related to lightweight metal matrix nanocomposites and advanced materials, in a cost effective and sustainable way.



The aim of the project is to achieve higher mechanical properties and/or an antibacterial effect by introducing nanoparticles into aluminium alloys by enriching nanoparticles on the casting surface, for example of door handles.

In addition, due to the dispersoids, traditional heat treatment can be partially eliminated and thus higher added value can be achieved for each individual aluminium casting. These castings are to be developed in the course of the project from laboratory scale through small industrial scale to series production readiness.

The main materials that will be processed are MMC of aluminium and magnesium alloys.

More specifically, the following two commercial alloys will be used in combination with various ceramic nanoparticles **SiC** or **Al<sub>2</sub>O<sub>3</sub>**.

**The materials that were processed in the two pilot lines are:**

1. The alloys **Al Si<sub>9</sub>Cu<sub>3</sub>**, **Al Mg<sub>3</sub>** and **AZ91**
2. **Al-MMC reinforced with SiC** presenting high fatigue and wear resistance properties
3. **Al-MMC reinforced with TiO<sub>2</sub>** presenting photocatalytic activity expressed as anti-bacterial and selfcleaning properties
4. **Mg-MMC reinforced by carbon nanoparticles**, presenting reduced weight compared to aluminium products and high fatigue strength

For more information:  
[www.lightme-ecosystem.eu](http://www.lightme-ecosystem.eu)



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