



**DREAM**

**Title:**

Driving up Reliability and Efficiency  
of Additive Manufacturing

**Topic:**

FOF-13-2016 - Photonics Laser-based production

**Grant Agreement n°:**


723699

**Total cost and EU contribution:**

EUR 3,242,435

**Project Website:**

[www.dream-euproject.eu](http://www.dream-euproject.eu)



*Industry 4.0* is now becoming real with the **DREAM** project that focuses on powder bed fusion technology that can produce innovative metal components faster, more flexibly and more precisely than ever before. **DREAM** stands for “*Driving up Reliability and Efficiency of Additive Manufacturing*” and it has been funded under **Horizon 2020** Factories of the Future Initiative with an EU contribution of more than 3,2 millions of euros. The Project starts in October 2016 and with a 36 months duration implements a disruptive photonics technology to enable the 4th Industrial revolution through the implementation of laser-based metal Additive Manufacturing.

The specific aim of **DREAM** is to significantly improve the performances of laser Powder Bed Fusion of titanium, aluminium and steel components in the following terms: *weight reduction* (15%), *production speed increase* (5%), *material cost reduction* (10%), *process productivity increase* (+15%) and *fatigue test increase* (from 20% up to 120%) with a sustainable Life Cycle Approach.

In order to upscale the results and to reach an industrial relevant level of productivity, the project focuses on four main challenges: part modeling and topology optimization, raw material optimization to avoid powder contamination, process and software innovation, validation and standardisation of the process on industrial components for the different materials.

The coordinating partner, Consortium of Italian Universities for the *Science and Technology of Materials* (INSTM), has a long time experience in Additive Manufacturing technique which allows to support optimally all the project tasks, from the topological optimization to the study of new set of laser parameters; the INSTM Local Research Units involved in the project are Modena and Reggio Emilia with both the *Department of Engineering “Enzo Ferrari”* (DIEF) and the *Department of Sciences and Methods for Engineering* (DISMI), Parma (*Dept. of Industrial Engineering*) and Ancona (*Polytechnic University of Marche, Dept. of Materials, Environmental Sciences and Urban Planning*); in addition the project involves one of Romania’s largest academic institutions, *Transilvania University of Brasov*, with extensive R&D experience in Additive Manufacturing.

The project management and dissemination is in charge of *BEWarrant*, a Belgian consultancy company, part of *Warrant Group S.r.l.*, that provides full-spectrum consulting services in European Projects.

**DREAM** involves all the major players of the industrial supply chain to bring laser-based additive manufacturing a significant step further towards larger scale industrial manufacturing. The project is strongly user driven and it implies the participation of one of world leaders among the system and powder suppliers, *EOS GmbH*; an emerging engineering design company as *Mind Four D S.R.L.* and the major European additive manufacturing service provider, *Poly-Shape S.A.S.* **DREAM** tests the application of Additive Manufacturing on three relevant end-users test cases: engine automotive aluminium components of *Ferrari S.p.a.*; medium size prosthetic titanium components of *Adler Ortho S.p.A* and steel mould insert of *R.B. S.r.l.*.

Finally, through innovations in part modelling, materials and additive processing, **DREAM** will add competitiveness at all steps of the manufacturing chain, so that each of the Consortium partners will benefit from a reinforced industrial leadership, consisting in the offer of: more efficient additive manufacturing systems; optimized on-demand services for the production of cost-effective component, novel engineering design services combining topology optimization and design; more lightweight and reliable products.