

BeLEADFREE Newsletter

High Strength Bearing for Large-Bore LEAD FREE Engines

Overview

BeLEADFREE aims to develop and promote the next generation of environmentally-friendly large-bore engine bearing products. This two-year project receives a total funding of approximate €3 million from the European Union's Horizon 2020 Research and Innovation Programme as part of the Fast Track to Innovation pilot.

It is expected that the successful completion of the project will help generate sales of high value added, low carbon footprint products to supply European and global engine markets while reduce hazardous waste disposal. This would allow the BeLEADFREE Consortium to develop a strong, long term relationship with current and new customers, secure existing jobs and create new, highly skilled employment opportunities in Europe.

Facts and figures

Total budget	3.91 M€
EU Funding	2.96 M€
Duration	24 months
Start date	1 st June 2016
Website:	beleadfree.eu

Main objective

Lead is a heavy metal widely used in bearing materials for large-bore engines but harmful to human beings and the environment. BeLEADFREE aims to deliver novel Lead-free bearing materials by adopting innovative design & manufacturing and applying a multidisciplinary approach involving experts with extensive industrial, research and innovation skills.

Partners



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691503

Project update

BeLEADFREE has been conducted by a multidisciplinary consortium with two industrial partners, Daido Industrial Bearings Europe Ltd (United Kingdom) and Elsyca NV (Belgium), who were supported by research partners Fundación Tekniker (Spain) and Coventry University (United Kingdom). The project spanned over 24 months and during this time, the BeLEADFREE consortium took a multidisciplinary approach involving research, engineering and project management staff with strong industrial, technology and innovation skills in the following areas:

- Engine bearing design, research and manufacturing
- Material and surface engineering
- Material and tribological characterisation

The technical work conducted during 24 months consists of 4 main stages:

- STAGE 1: Initial work was focused on the definition of a Reference System based on a representative Lead-based bearing material and the evaluation of its environmental and eco-toxicological impact. This was then followed by the characterisation of the novel Lead-free bearing material and its environmental and eco-toxicological impact. Fundamental characterisation and optimisation of the manufacturing process was also conducted as part of this stage.
- STAGE 2: Data generated during Stage 1 was used to develop novel designs to optimise the manufacturing process. These designs were implemented into the prototype pilot line constructed as part of this stage. Additional design refinement work was conducted based on results obtained from Stage 3 in order to further optimise the manufacturing process.
- STAGE 3: This stage was mainly focused on the preparation of full-size prototype large engine bearings equipped with the novel Lead-free material and their validation under real working conditions. Results confirmed the superior performance of the novel Lead-free material under real working conditions.
- STAGE 4: Dissemination of the project results to the industrial and academic sectors, environmental policy makers and general public is ongoing. This included the generation of a project website (www.beleadfree.eu), press releases, industry workshops, general dissemination articles, presentation at academic conferences and generation of peer-review scientific papers. A dissemination plan was developed and implemented to maximise the impact of the BeLEADFREE action.

Meetings & events

To ensure the overall supervision and management of the project and the efficient collaboration between the BeLEADFREE Consortium partners, a series of project meetings have been organised during the 24 months of the project to facilitate the joint intra-task activities:

- Kick-off meeting: London (United Kingdom), 7th of July 2016 (with the attendance of Representatives of all the Consortium partners as well as the European Commission' Executive Agency for SMEs - EASME).
- 1st Review Meeting: Coventry (United Kingdom), 9th of November 2016 (with the attendance of Representatives of all the Consortium partners).
- 2nd Review Meeting: Leuven (Belgium), 15th-16th of March 2017 (with the attendance of Representatives of all the Consortium partners).
- 3rd review meeting: Eibar (Spain), 23rd-24th of May 2017 (with the attendance of Representatives of all the Consortium partners as well as the European Commission' Executive Agency for SMEs - EASME).
- 4th review meeting: Ilmisnter (United Kingdom), 13th of September 2017 (with the attendance of Representatives of all the Consortium partners).
- 5th review meeting: Ilmisnter (United Kingdom), 17th of January 2018 (with the attendance of Representatives of all the Consortium partners).
- Final review meeting: London (United Kingdom), 16th of May 2018 (with the attendance of Representatives of all the Consortium partners).

Dissemination activities

A wide range of dissemination activities, including press releases, participation in events and conferences, workshops to industry etc. were organised during BeLEADFREE project. This included the participation in the **EU Industry Day 2018** in Brussels, where the real Lead-free products and outcomes of the BeLEADFREE action were showcased to legislators, policymakers and press, including the Commissioner for Internal Market, Industry, Entrepreneurship and SMEs, Ms Elżbieta Bieńkowska.



BeLEADFREE Consortium members introducing the BeLEADFREE Project to Commissioner Ms Elżbieta Bieńkowska during EU Industry Day 2018.