

H2020 Marie Skłodowska Curie - PhD Offer – Job position

LIVE-I

Lightening and Innovating transmission for improving Vehicle: Environmental Impacts

H2020 – MSC – ITN - EID

ESR 2: Geometry and mounting optimisation of lightweight gear transmission components

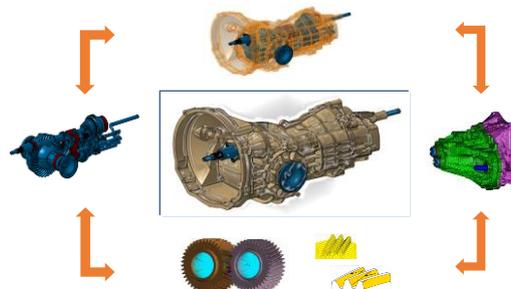
Joint PhD between Ecole Centrale de Lyon (France) and Powerflex (Italy)

About H2020 Marie Skłodowska Curie program:

The H2020 Marie Skłodowska Curie program is European Union funded programme for structuring researcher training, mobility and career development. The program targets are: Prestigious career opportunities, Excellent working conditions: employment contracts, full social security etc, Very competitive salaries.

About LIVE-I MSc Project:

Figure 1. Multi-scale treatments of noise and vibration induced effects for lightweight gearbox design;



For several decades, vehicles have seen their weight increase to meet more demanding requirements of safety and comfort. At the present time, manufacturers need drastically reduce the energy consumption and greenhouse gas emissions without sacrificing any safety or comfort. Each vehicle element must be considered for weight reduction. In this regard, gear transmissions are a first choice candidate. LIVE-I project main objective is to achieve breakthrough technological progress in the design of lightweight gear transmission and to build an innovative training network in order to educate early stage researchers in this hot topic. ([LIVE-I project website](#))

Keywords: Greenhouse reductions, Lightweight constructions, Gear transmissions, Noise and Vibration Harshness, Efficiency, Knowledge based design, Robust design, Digital twins, Metamaterials, Smart systems.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 860243

Description of the PhD workplan:

Objectives: The main objective of this ESR is to optimize the components geometry and assembly conditions of a standard gearbox with the additional constraint of maintaining the NVH properties and efficiency of the transmission. The effects of typical reducing the weight by modifying the geometric and assembly properties of the transmission will be assessed. The geometry and assembly optimization strategy takes into account control of the whining noise without reducing the efficiency of the gearbox. The promising question of decoupling the gear transmission parts and its influence on the overall performance will be also deeply considered. Some specific points to be considered further in this work are: Prediction of the sources of excitation at tooth contact induced by the meshing process; Setting-up a tool to calculate the deterministic global dynamics of the gearbox with very low computation time; Validation on an existing gearbox; Setting-up a cost function based on gearbox weight and the optimization constraints; Selection of a metaheuristic to provide adequate solutions to the optimization problem with a reasonable computation time for industrial applications.

General informations and position requirements:

36 months funding for early-stage researchers only. The MSCA is a researcher mobility programme. You are therefore required to undertake transnational mobility in order to be eligible for recruitment. As such, Applicants must not have resided or carried out your main activity (e.g. work, studies) in **France** for more than 12 months in the 3 years immediately before the recruitment date ([Link1](#)). Recruited researchers will be hired by the academic beneficiary and must spend at least 50% of their recruitment period with the industrial beneficiary.

Requirements for applicants are:

- Excellent track record,
- Fluent English (written, verbal),
- Analytical skills and outstanding problems solving abilities,
- Passion for science and technology, motivation to undertake transnational mobility,
- Solid background in Mechanical Engineering, Mathematics, Acoustics and Material Science.

Benefits for the researcher:

- Prestigious PhD programme (Marie-Curie) including a very competitive salary,
- Work with renowned research scientists and industrial experts,
- Be exposed to multiple sectors (research labs, industry, start-ups/SMEs),
- Receive intensive training on a broad set of career-enabling skills (i.e. scientific, personal, communication, entrepreneurship, ...),
- Benefit from a 3-years immersion in an industry-oriented research environment with excellent career opportunities in both public and private sectors.

Application deadline: May 31, 2020 ; Expected starting date: October 1st, 2020

Please visit the “Call for applicants” tab on the [LIVE-I project website](#) for the online application form and more information.

Person to be contacted: recruitment.livei@gmail.com