

H2020 Marie Skłodowska Curie - PhD Offer – Job position

LIVE-I

Lightening and Innovating transmission for improving Vehicle: Environmental Impacts

H2020 – MSC – ITN - EID

ESR 8: Development of system for active vibration reduction

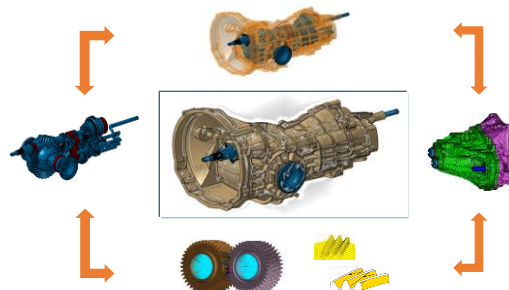
Joint PhD between Technical University of Darmstadt (Germany) and Powerflex (Italy)

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](#))

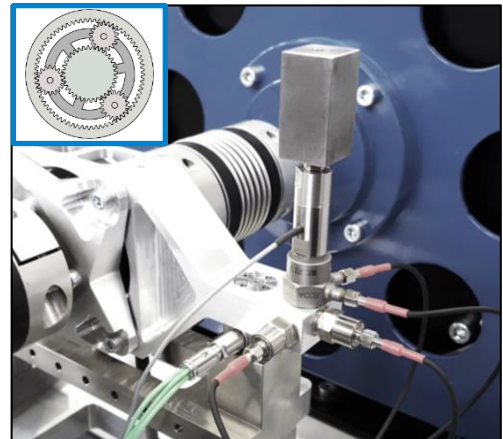
Keywords: Greenhouse reductions, Lightweight constructions, Gear transmissions, Noise and Vibration Harshness, Efficiency, Knowledge based design, Robust design, Digital twins, Metamaterials, Smart systems.



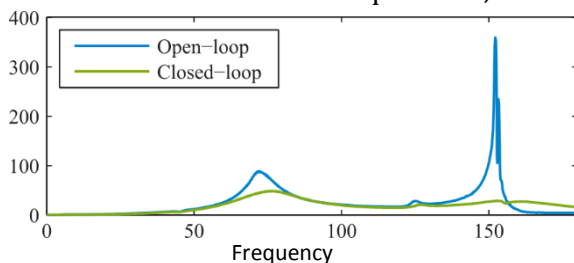
Description of the PhD workplan:

This project aims to reduce the vibrations of the transmission throughout the implementation of an **active vibration control (AVC)** system. The idea is to let the AVC system take care of all vibrations produced by the gearbox, allowing a cheap, light and efficient design of the transmission. The **investigation** of the overall **potential of weight-, cost- and energy consumption reduction** throughout the integration of an AVC system into the transmission is one part of the workplan. In order to enable this kind of investigation, one has to implement such a system first. The design of a suited AVC system is the main focus of this project. Many questions arise considering the implementation of such a system which have to be tackled within the project:

- **What is the vibration pattern of the gearbox?**
- **What kind of actuators are suited for this task?**
- **Where should the actuators and sensors be placed?**
- **How many actuators and sensor are required?**
- **What is a suitable control approach?**
- **How can the system be integrated smart into the transmission?**



In order to answer all these questions, simulations will be carried out first. These allow to investigate different control strategies and the effect of model uncertainties. Promising approaches will then be **implemented** on a single stage **proof of concept gearbox**.

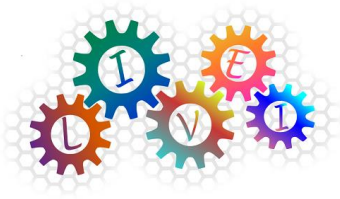


General informations and position requirements:

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 **Germany** 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.



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

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