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

H2020 Marie Skłodowska Curie - PhD Offer – Job position

LIVE-I

Lightening and Innovating transmission for improving Vehicle: Environmental Impacts

H2020 – MSC – ITN – EID

ESR 9: High frequency actuator, power electronics development and design of demonstrator gearbox for active solution

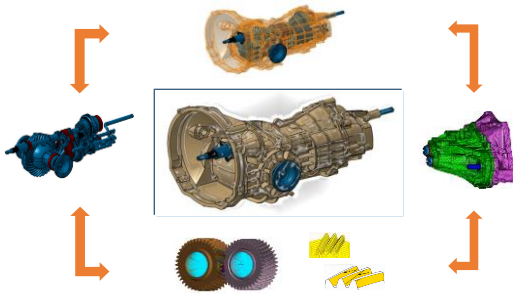
Joint PhD between Technical University of Darmstadt (Germany) and Powerflex (Italy)

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.

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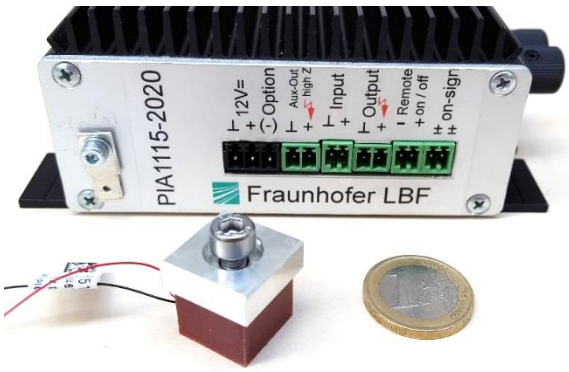
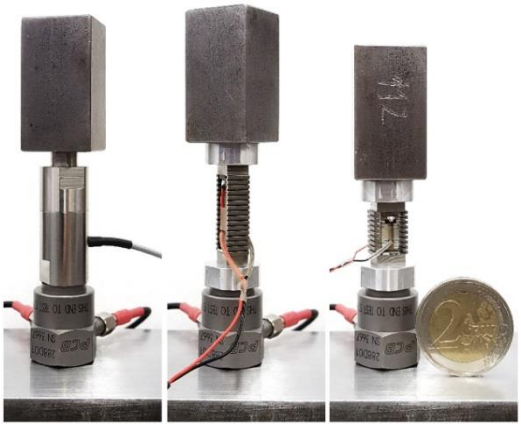
Description of the PhD workplan:

Besides passive approaches to reduce the weight, costs and energy consumption, active measures will be considered within LIVE-I. These require powerful and efficient **actuators** and **power electronics**. The development of these two components is the goal of this project. For an efficient design of the power electronics multiple question arise:



- **What is the required frequency operating range?**
- **Which actuator type is suited?**
- **Which kind of power electronic is suited?**
- **How can the system be optimized?**



The chosen actuators and power electronics will be optimized regarding efficiency, mass and a modular design. Simulations will be established to tackle this optimization. Promising concepts will then be manufactured and characterized. The final step of this project is to experimentally investigate the developed and manufactured components on a simple mock-up system with a real-time active vibration control system. One work package of this project is to build the **proof of concept test-rig**. The mock-up will be optimized regarding manufacturing costs and weight. This will lead to a poor NVH performance yielding a perfect example to demonstrate the efficiency of an active vibration control system comprising the new developed actuators and power electronics.

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,

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- 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**