



FRAUNHOFER-INSTITUTE FOR TECHNOLOGICAL TREND ANALYSIS INT

CAN I COMBINE SCIENCE AND BUSINESS IN A SINGLE JOB?

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CALLING ALL FUTURE EXPERTS IN ELECTRICAL (POWER) ENGINEERING, COMMUNICATIONS ENGINEERING OR (APPLIED) PHYSICS! AT FRAUNHOFER MAKE THE MOST OF YOUR TALENTS BY JOINING THE TEAM OF THE FRAUNHOFER-INSTITUTE FOR TECHNOLOGICAL TREND ANALYSIS INT IN EUSKIRCHEN. POSTS ARE IMMEDIATELY AVAILABLE FOR A:

PHD POSITION (EU HORIZON 2020 MARIE SKŁODOWSKA-CURIE PROJECT PETER) EMI RISK MANAGEMENT ON THE SCALE OF THE SMART GRID AS A NETWORK OF SYSTEMS

The future power grid is a key example of the paradigm shift towards complex sensor and communication networks. The successful candidate will apply a stochastic risk-assessment approach to a typical smart grid system. Cascading effects between the subsystems will play a major role, while potential sources to be taken into account range from radar installations to geomagnetic storms. The local laboratory infrastructure of Fraunhofer INT (Euskirchen, Germany) will lend itself to sample investigations of the EMI susceptibility of grid components. Guidelines for implementing both hardware (redundancy, diversity, etc.) and software (failsafe procedures, redundancy, quick recovery, etc.) measures will be defined and validated.

Sophisticated electronic technologies are increasingly used in mission- and safety-critical systems where electromagnetic interference (EMI) can result in substantial risks to people and the environment. Currently, EMI engineering follows a rule-based approach, which is unable to cope with complex modern situations. With this rule-based approach, during the design stage, guidelines are prescribed, which result in the application of a set of mitigation techniques, which are verified in the finished product against standards.

This rule-based approach is costly, but with no guarantee of the required performance. This is particularly so for sensitive medical applications or the full-autonomous systems that are becoming evermore common in our society. What we need is a risk-based approach, which is what the Marie Skłodowska-Curie Innovative Training Network “PETER – Pan-European Training, Research & Education Network on Electromagnetic Risk Management” within the Horizon 2020 Programme of the European Commission will provide.

PETER will train 15 young engineers in topics related to the development of high-tech systems that maintain reliability and safety over their full life-cycle, despite complex EMI, such as in hospitals or transport systems. This will be achieved using best practices and state-of-the-art EM engineering, reliability engineering, functional safety, risk management and system engineering to create the risk-based EMC approach. The multidisciplinary, multinational doctoral training program will provide the researchers with experience and allow them to develop and in time lead their own area of research. PETER is closely aligned with the high-priority areas of the EU, addressing many Horizon 2020 thematics, e.g., Industrial Leadership (advanced manufacturing and processing), Societal Challenges (smart, green and integrated transport; secure, clean and efficient energy) and Excellent Science. But the most important output of PETER will be 15 highly qualified people who have been trained to tackle many of the problems now being faced by European industry.

What we expect from you

Required profile: Electrical (Power) Engineering, Communications Engineering, (Applied) Physics

Desirable skills / interests: RF Measurement Equipment and Components, EMC, EMI, Power Engineering, Risk Management, Programming Candidates provide all requested information including a detailed CV (Europass format obligatory), a motivation letter and transcripts of bachelor and master degree. Master students who will graduate in the next coming months are welcome to apply. In that case, please provide an overview of the transcripts that are already available.

Applicants need to fully respect three eligibility criteria (to be demonstrated in the Europass CV):

- 1. Early-stage researchers (ESR)** are those who are, at the time of recruitment by the host, in the first four years (full-time equivalent) of their research careers. This is measured from the date when they obtained the degree which formally entitles them to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the research training is provided, irrespective of whether or not a doctorate was envisaged.
- 2. Conditions of international mobility of researchers:** Researchers are required to undertake transnational mobility (i.e. move from one country to another) when taking up the appointment. At the time of selection by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately prior to their recruitment. Short stays, such as holidays, are not taken into account.
- 3. English language:** Network fellows (ESRs) must demonstrate that their ability to understand and express themselves in both written and spoken English is sufficiently high for them to derive the full benefit from the network training.

What you can expect from us

Applications are invited for a PhD position (“Early Stage Researchers”) to be funded by the Marie Skłodowska-Curie Innovative Training Network PETER. The PETER beneficiaries are 6 high-technology companies, including Barco and Melexis (BE), Nedap and RHM (NL), MIRA (UK), and Valeo (FR), 2 non-university research institutes, WIS and FHG (GE), and 5 universities, KU Leuven (BE), LUH (GE), UTwente (NL), UoY (UK), and ESEO (FR). The consortium is completed by 6 partner organisations that include 4 companies, a hospital and a university. Overall, PETER has some of the best of European industry and the key academic players, guaranteeing an exciting interdisciplinary, intersectoral research-and-training programme. You will be working towards a PhD degree, supported by a carefully chosen supervisory team that maximizes both scientific excellence as well as interdisciplinary and intersectoral collaboration (Main Supervisor: Dr. M. Suhrke; Co-Supervisors/Mentors: Dr. F. Sabath (WIS – Germany), Prof. F. Lefeink (UTwente – The Netherlands)). You will not only receive state-of-the-art science/technology training, but will also benefit from a unique soft-skills training programme. This will kick-start your career as highly employable professionals tackling challenges across many industrial sectors comprising, but not limited to, automotive, robotics, nautical, aviation, and medical industry.

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No. 812.790.

The successful candidates will receive an attractive salary in accordance with the Marie Skłodowska-Curie Actions (MSCA) regulations for Early Stage Researchers. The exact (net) salary will be confirmed upon appointment and is dependent on local tax regulations and on the country correction factor (to allow for the difference in cost of living in different EU Member States). The salary includes a living allowance, a mobility allowance and a family allowance (if married). The guaranteed PhD funding is for 36 months (i.e. EC funding, additional funding is possible, depending on the local Supervisor, and in accordance with the regular PhD time in the country of origin). In addition to his/hers individual scientific project, the fellow will benefit from further continuing education, which includes internships and secondments, a variety of training modules as well as transferable skills courses and active participation in workshops and conferences.

In case of identical qualifications, preference will be given to severely disabled candidates. We would like to point out that the chosen job title also includes the third gender. The Fraunhofer-Gesellschaft emphasises gender-independent professional equality.

Fraunhofer INT conducts, among other focus areas, experimental and theoretical research regarding the impact of electromagnetic radiation on electronic components and systems. This pertains to the coupling of electromagnetic fields into devices and systems, interferences in electronic circuits caused by fields and interfering signals, and the analysis of electromagnetic threats. Being part of the extensive field of electromagnetic compatibility (EMC), this research particularly contributes to the national assessment capability on electromagnetic effects and related precautions.

Fraunhofer is Europe's largest application-oriented research organization. Our research efforts are geared entirely to people's needs: health, security, communication, energy and the environment. As a result, the work undertaken by our researchers and developers has a significant impact on people's lives. We are creative. We shape technology. We design products. We improve methods and techniques. We open up new vistas.

Please submit your online application until **October 9th, 2019** via:
<https://recruiting.fraunhofer.de/Vacancies/47546/Description/2>

Additional questions will be answered by:

Dr. Michael Suhrke

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Additional information is available at:

www.int.fraunhofer.de