MARIE Skłodowska-CURIE INNOVATIVE TRAINING NETWORK

OPEN CALL – PhD position

Host (recruiting) organisation

Instituto Superior Técnico, Universidade de Lisboa, Portugal

Project Title: Thermo-mechanical Structural Modelling of GFRP profiles subjected to fire

Supervisory team

Primary academic institution	Industrial institution
Prof. Carlos Tiago and Prof. João Correia Instituto Superior Técnico, Universidade de Lisboa	Eng. Tomé Santos, Alto, Perfis Pultrudidos, Lda
Secondary academic institution Dr. Prof. Laurent Stainier École Centrale de Nantes, Institut GeM, Nantes, France	

Project description

Pultruded glass fibre reinforced polymer (GFRP) profiles are used in numerous applications of various industries due their inherent advantages, namely lightness, high strength and noncorrodibility. Their mechanical and physical properties are fairly known at ambient temperature, but the response under a fire event is still a poorly examined research topic, which raises concerns for several applications.

The objective of this project is to develop a methodology to simulate the mechanical behaviour of pultruded GFRP profiles under fire exposure. The correct characterization of a temperature-dependent material model with degradation of properties and its incorporation into a structural model are the main objectives of the proposed work. The efficiency of incorporating passive fire protection systems in improving the fire response of GFRP profiles will also be addressed.

Numerical simulations will rely on a finite strains thermo-visco-elastic constitutive model. This physically and geometrically nonlinear model will be used in a finite element simulation framework.

Benefits
- Doctorate degree from both Universidade de Lisboa and École Centrale de Nantes
- 36 month full-time employment contract
- Additional mobility and family allowances
- Research supervision and training by recognised experts in computational mechanics from academia and producers of composite materials in industry
- Access to research and computing facilities
- Training in transversal skills (e.g. communication skills, entrepreneurship)

Prerequisites
- To have a strong undergraduate and MSc degree (or equivalent) in Engineering, Mathematics, Physics or a related field and a good level of English
- To have an enthusiastic attitude to conduct research, being hard-worker and critic
- To demonstrate knowledge of programming languages, e.g. Matlab and/or Fortran
- To have experience with nonlinear finite element analysis
- To have a strong background in nonlinear solid mechanics and constitutive models

Eligibility
Applicants shall, at the time of recruitment by Instituto Superior Técnico, Universidade de Lisboa, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree. Full-Time Equivalent Research Experience is measured from the date when a researcher obtained the degree, which would formally entitle him/her to embark on a doctorate, irrespective of whether or not a doctorate is or was ever envisaged.

At the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in PORTUGAL for more than 12 months in the 3 years immediately prior to the reference date.

Duration of the project
The total duration of the project is 36 months.

Obligations of ESRs
- Completion of the Erasmus Mundus Joint PhD programme Simulation Engineering and Entrepreneurship Development (SEED)
- Be highly committed with quality research, training and management. The successful candidate is expected to become a future leader on the development and application of advanced computational methods for industry
- Take part of the mobility programme both in academia and industry
- Participate on the dissemination and outreach activities associated to the project
- Attend international conferences and present the research undertaken
- Contribute to the writing of articles in high impact international journals

Closing date
Until position is filled

How to apply
www.lacan.upc.edu/ProTechTion

Questions
protechtion.itn@upc.edu