PhD SCHOLARSHIP APPLICATION FORM 2016

ORGANISATION	**TECNALIA RESEARCH & INNOVATION**
Business Division	SUSTAINABLE CONSTRUCTION
Business Area	Infrastructures
Scholarship location	BIZKAIA, Parque Tecnológico de Bizkaia,
Province/Building	Edificio 700-Derio
Tutor	Dr Juan Murcia Delso

SCHOLARSHIP DESCRIPTION

Title: *Numerical modelling of reinforced concrete structures under fatigue*

Brief Description of Scholarship:

The goal of the doctoral investigation will be developing new material constitutive models for nonlinear finite element analysis of reinforced concrete structures. The models will provide an accurate characterization of structural damage under cyclic loads, and will be applicable in vulnerability analyses of large structures and structural health monitoring.

Scholarship description

The Sustainable Construction Division of TECNALIA invites applications for a doctoral fellowship in in the research areas of advanced numerical modelling of structures and structural health monitoring.

The doctoral investigation will focus on the development of new material constitutive models for nonlinear finite element analysis of reinforced concrete structures. This investigation is aimed at establishing efficient numerical models that accurately simulate structural damage and can be used in (1) vulnerability studies of large structures subjected to extreme loading (earthquake, blast) and (2) structural health monitoring based on dynamic identification and damage detection techniques.

The fellowship will contribute to develop practical tools to predict and identify damage in reinforced concrete structures under fatigue conditions, and in particular under low-cycle fatigue caused by seismic loads. For this purpose, phenomenological models for concrete (damage-plasticity models), steel reinforcement and bond of reinforcement will be formulated, implemented, combined and validated.

The fellowship holder will conduct his/her research in the Sustainable Construction Division of TECNALIA and will have the possibility to collaborate with other researchers in projects at European level.

Requirements:

The PhD candidate shall meet the following requirements:

- Qualification and Specialty: Degree in civil, mechanical engineering or similar. Focus on structural engineering.
- Languages: Fluency in English (written and spoken).
- IT skills: Experience with finite element analysis packages (ANSYS, ABAQUS or similar).
- Programming experience with Matlab, Fortran or C++.
- The following will be a plus: Master degree in structural engineering, computational mechanics or numerical methods in engineering.