

*N/Ref* : FEM/2017-292

## ***Object***

Job description for a “Research engineer in structural calculation - Specialist in the field of anisotropic / non-linear behavior” 12-month temporary contract (M/F)

## ***Company Description***

FRANCE ENERGIES MARINES (FEM), the national reference institute dedicated to research in the field of Marine Renewable Energies (MRE), supports the nascent MRE industrial sector with the means and skills that increase competitiveness by mutualizing research and development costs, reducing risks and accelerating the acquisition of data and knowledge. The principle of this structure is based on a broad public-private partnership involving numerous members including industrials, SMEs, regional authorities, advanced research and training institutions and competitiveness clusters. The headquarters of FEM are located in Brest, France.

As part of its program "**Technology Design Tools for MRE Applications**", FEM is looking for an experienced structural design research engineer specializing in anisotropic media and non-linear approaches in order to ensure the development of this expertise through collaborative research projects in a mixed industrial/academic context. This research program covers a broad spectrum of skills including structural mechanics, but also includes hydrodynamics, hydro-mechanical coupling, thermal analysis, electricity and sensors. The recruited research engineer will be responsible for the smooth running of this program theme and its development, and will participate in and pilot the collaborative research projects thus generated.

## ***Position Description***

Working with the R&D team and under the responsibility of the program manager for “Technology Design Tools for MRE Applications”, the research engineer in structural calculation will contribute to the development of this expertise within this research program by intervening in three essential aspects:

- Provide expertise on non-linear approaches and in particular on the visco-elastic behavior laws allowing to characterize the response of composite materials (e.g. anchoring component). Knowledge of non-linear behavior will also contribute to FEM research on dynamic cables and in particular on local models. These skills could also enable the development of FEM research activities on the behavior of concrete (standard, HPC, UHPFC) - from its implementation to consideration of crack development and propagation during the predicted lifetime. In this context, a theoretical knowledge of the mechanics of anisotropic media would be desirable as well as specific numerical models such as, for example, multi-fiber beams;
- Lead collaborative research projects in a mixed industrial/academic context involving a significant number of partners. The successful candidate will ensure the overall coherence of the technical tasks with help from the scientific coordinator, the administrative supervision of the project (organization of meetings, reminders of milestones) and the drafting of technical and financial proposals for subcontracting;

- Ensure a technological watch in his or her field of competence in order to guarantee the relevance of FEM fields of investigation. S/he will participate in the communication of the Institute's know-how through publications and participation in conferences and symposiums, and will lead internal institute discussions on this topic.

### Activities

Particular tasks will be defined within the research projects themselves but will also include technology monitoring and advising the FEM team on questions of mechanics:

- Bibliographic and state-of-the-art research;
- Perform structural, analytical and numerical calculations;
- Participate in the drafting of proposals for research projects by orienting/proposing investigative directions and identifying appropriate technical and industrial partners;
- Identify appropriate software in order to meet the needs of FEM;
- Provide internal advice on cross-program project activities touching on the candidate's area of expertise;
- Identify and submit publications to reputable scientific conferences in mechanics to ensure visibility for the MRE sector;
- Manage projects;
- Write technical and commercial proposals;
- Identify avenues for the development of research activities at FEM and provide professional services contributing to the evolution of the institute's strategic plan.

### Candidate Profile

You have an advanced degree in mechanics such as an engineering, masters or doctoral degree in structural calculations. You also have a minimum of 5 years of experience in research, consulting or in an industrial context.

You are polyvalent and have a clear capacity to put into action multidisciplinary approaches. You have a clear interest in and the necessary skills for multidisciplinary studies in a mixed industrial/academic environment.

➤ Education:	➤ Specific skills:
<ul style="list-style-type: none"> <li>▪ Engineering degree in mechanics,</li> <li>▪ Doctoral degree in mechanics,</li> <li>▪ Advanced Masters degree in engineering sciences, specialized in mechanics.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Knowledge of mechanics applied to composites and concrete,</li> <li>▪ Knowledge of analytical approaches (Strength of Materials, axisymmetric and asymmetric multi-composite models), non-linear mechanics (visco-elastic behavior, hysteresis, etc.),</li> <li>▪ A mastering of inherent hypotheses in divers numerical models (finite elements, hull, membrane, beam, multi-fiber beams),</li> <li>▪ Knowledge of standards for dimensioning in the naval and oil and gas fields (DNV, BV, API, etc.),</li> <li>▪ A mastering of local model software (Code Aster, ABAQUS, NASTRAN, SOLIDWORKS, etc.),</li> </ul>

➤ <b>Professional experience:</b>	➤ <b>Personal qualities:</b>
<ul style="list-style-type: none"> <li>▪ A minimum of 5 years' experience in research, consulting or engineering in an industrial company specializing in composites, concrete or multi-material construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Strict scientific rigor,</li> <li>▪ Spirit of initiative and multidisciplinary interests,</li> <li>▪ Taste for applied (industrial) research,</li> <li>▪ At ease in expression, argumentation and communication in a collaborative context,</li> <li>▪ At ease in writing and speaking English.</li> </ul>

### ***Practical Information***

Starting date, location: as soon as possible in Brest, France, for a 12-month temporary contract (renewable).

Final date for applications: September 15<sup>th</sup>, 2017

Application process: CV and cover letter with your current and required salary, and in the case of a seconding contract with a member of FEM, the corresponding commitment letter, to the following electronic account: [contact@ite-fem.org](mailto:contact@ite-fem.org)