INTERNSHIP: EXPANSION AND LINKING OF ELECTRICAL GRID MODELS IN C++

Description
In the DNV-KEMA coordinated project Novel E-Mobility Grid Model (NEMO, see www.nemo-project.eu), five European partners cooperate to explore the effects of electric vehicles on the electricity grid. In order to do that, DNV KEMA and two other key partners will develop an integrated model suite based on their existing electrical grid models. One of these models, PLATOS, is developed by DNV KEMA in a previous project. It consists of a collection of scripts expanding the functionality of the grid simulation program PowerFactory.

When the integrated model suite is developed, it is to be used for investigation of three scenarios. These scenarios are (1) the interaction of EV with renewables / distributed generation, (2) fast charging, and (3) abnormal charging situations like events where large numbers of vehicles are charged simultaneously.

DNV KEMA’s task is to expand the PLATOS model and to port it to C++, acting directly on the PowerFactory API. This task is organised as a multidisciplinary project. Within DNV KEMA, two grid modelling experts and an information technologies engineer are assigned to this project. Two internship positions are available to support them in this work, in cooperation with our international partners. One intern has already been found, focusing more on model content and functionality. The other position (this internship) is vacant and focuses on design and implementation of the new PLATOS model.

Assignment
The assignment is to design and implement the new PLATOS model.
- Finalising the UML description of the current PLATOS model structure and functionality (currently in progress)
- Setting up functional requirements for the new PLATOS model, and documenting them using UML
  - Adding interface functionality to the other two NEMO models
  - Adding new functionality
- Designing the architecture of the new PLATOS model and documenting it using UML
- Implementing the UML description as C++ code
- Technical debugging the updated model to ensure flawless running

All the tasks above are carried out in close cooperation with the other intern. Implementation of code is performed by using the technique of pair-programming, working together on the same code. The reason for this is that DNV KEMA aims at high quality reusable code.

Requirements
- Knowledge of and experience with C++
- Structured and well-documented approach to programming
- Experience with UML
- Willingness and ability to work in a team, and specifically cooperate with the other intern
- Good level of English
- Preferably enrolled in electric engineering, information engineering or a related MSc study.

For continuity and effectiveness it is preferable that the internship period is at least 5 months. Affinity with the subject matter (electrical grid modelling) and experience with PowerFactory is a pro but not required.

Our offer
DNV KEMA offers a challenging internship in an international team and project, where you can contribute to improving a state-of-the-art model for hot future energy topics. Your working environment is the New Energy Technologies team, in fact the interdisciplinary innovation centre of DNV KEMA. You will receive a fitting financial compensation.

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