



2017-IPR-C-000-9366

**Distributed modelling of power grids**

**Position for:**

Trainee

As the science and knowledge service of the Commission, the mission of Joint Research Centre is to support EU policies with independent evidence throughout the whole policy cycle.

The JRC is located in 5 Member States (Belgium, Germany, Italy, the Netherlands and Spain). Further information is available at: <http://www.jrc.ec.europa.eu>

**Short description of activity:**

Unit C.3 "Energy Systems, Distribution and Markets" aims at serving EC policy DGs in assessing the options to build more resilient, secure and fair power system and markets. The Unit does so by analysing real power systems challenges across several Member States (Baltic States, Greece, Cyprus, ...) from a variety of perspectives (RES integration, Generation Adequacy, Load Flow, etc. ) and to do so uses each time the best available software and tools to do that specific analysis.

The activity foreseen for this trainee, under the help and supervision of the Traineeship adviser, will be directed towards providing a new distributed computing framework for the numerical simulation, optimization and control of power flows over regional and national borders in power grids, which are vulnerable to congestions. In fact, lack of information on interconnected neighbouring grids forces the transmission/distribution operators to cut transmission/distribution capacity to preserve system security. The research to be performed aims at alleviating such bottlenecks without the share of sensitive network information to all the operators in the interconnected grid.

For this internship, Unit C.3 aims at gathering a fully operational understanding of the use of PETSc library, developed by Argonne National Lab for different application and recently being used also in applications to power system models. The Unit would like to test the application of this tool to power system problems already known, comparing then the results of PETSc use with those of tools currently in use in the Unit.

	<p>The trainee will collaborate to:</p> <ul style="list-style-type: none"> <li>• Set up a simulation case using PETSc library for a transmission/distribution power system</li> <li>• Run the required simulations</li> <li>• Contribute to test, in team with the Unit's researchers, the solution of the same model with other software tools.</li> </ul> <p><b><u>Qualifications:</u></b></p> <p><b><u>Essential:</u></b></p> <ul style="list-style-type: none"> <li>• The ideal candidate has a university degree in power engineering or similar and is pursuing a MSc in a field relevant to the topic of the call (preparing a thesis for a Master's degree or Ph.D or its equivalent at graduate level, the subject of the thesis must be directly related to the purpose of the training).</li> <li>• Programming skills (e.g. Python, MATLAB or equivalent).</li> <li>• Good oral and written knowledge of English (level B2).</li> </ul> <p><b><u>Advantage</u></b></p> <p>Familiarity with power system modelling tools and programming, preferably use of PETSc already experienced.</p> <p>Basic experience in creation of power system models for transmission and/or distribution</p> <p><b><u>For general eligibility requirements, please read the rules governing the traineeship scheme of the JRC:</u></b></p> <p><a href="https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees">https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees</a></p>
<b>Institute/Directorate Unit</b>	<p>Directorate C: Energy, transport and climate. Unit for Energy security, distribution and markets.</p> <p>Further information:  <a href="https://ec.europa.eu/jrc/en/research-topic/energy-system-and-security-supply">https://ec.europa.eu/jrc/en/research-topic/energy-system-and-security-supply</a></p>
<b>Indicative duration</b>	5 months
<b>Preferred starting date</b>	As soon as possible
<b>JRC Site</b>	Ispra
<b>Country</b>	Italy
<b><u>JRC contact details</u></b>	<p><b>For any technical problems with your application, please contact:</b>  <a href="mailto:HR-AMC8-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu">HR-AMC8-RECRUITMENT-TOOLS-SUPPORT@ec.europa.eu</a></p>

