Opportunity Title: Computational Electromagnetics and Converter Design for Solid State Transformers
Opportunity Reference Code: NETL-2016-12-3-Ohodnicki

Organization National Energy Technology Laboratory (NETL)

Reference Code NETL-2016-12-3-Ohodnicki

Application Deadline 3/31/2017 12:00:00 AM Eastern Time Zone

Description

TITLE: Computational Electromagnetics and Converter Design for Solid State Transformers

LEVEL: Post-doctoral Research Associate or Graduate Student

DEPARTMENT: U.S. Department of Energy

AGENCY: National Energy Technology Laboratory (NETL)

POSITION INFORMATION: 1 year appointment, full time (40 hours per week) with the possibility of extension

LOCATION: NETL in Pittsburgh, PA

CLOSING DATE: March 31, 2017

WHO MAY BE CONSIDERED: United States Citizens, LPRs, & Foreign Nationals with appropriate approval which includes F-1 OPT with EAD (STEM extension not valid), J-1 Exchange Visitor, and LPR with EAD

SUMMARY:

A scientist is sought to develop and apply advanced computational approaches for simulations of solid state transformer technology. Finite element simulations of various magnetic component designs will be developed and explored and commercial converter simulation packages will be leveraged. First year objectives will include simulation of idealized transformer and converter topologies with a goal of developing and demonstrating efficient new computational approaches for overall converter designs. Future year efforts will target further development of computational methods and approaches as well as transfer of successful techniques to open source platforms and/or high performance computing facilities at the National Energy Technology Laboratory. The proposed work will be carried out in close collaboration with parallel research initiatives at other organizations supporting the DOE Office of Electricity Delivery and Energy Reliability initiative in More Flexible Large Power Transformers Designs. An ideal candidate would be capable of working collaboratively in a geographically distributed team environment to leverage analytical models, finite element modeling, Matlab-based converter simulations, and other simulation tools to develop and assess new computational methodologies for solid state transformer design.

KEY REQUIREMENTS:

1. Advanced degree in Electrical Engineering, Applied Physics, or related field (MS or PhD preferred).
2. Experience with Comsol or related finite element, multi-physics modeling packages as applied to electromagnetic components and

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devices.

3. An understanding of circuit design and analysis including standard converter design packages such as Matlab-Simulink and PLECS.
4. Experience in transferring computational methodologies to high performance computing facilities and/or open source simulation environments.

HOW TO APPLY:

Applicants should apply through the Oak Ridge Institute for Science and Education (ORISE) program. The ORISE Program provides opportunities for undergraduate students, recent graduates, graduate students, postdoctoral researchers, and faculty researchers. NETL utilizes the ORISE program to support research within NETL's Office of Research & Development.

- Interested applicants should complete the online application at http://www.orau.gov/netl/
- In the online application **list Paul Ohodnicki as your requested mentor.**This will associate your application with this position.Interested candidates should directly contact ***Dr. Paul Ohodnicki*** by email with an updated resume at the following address:paul.ohodnicki@netl.doe.gov
- If you have additional questions please contact Patricia Adkins-Coliane, Patricia.adkins-coliane@netl.doe.gov, the NETL ORISE program contact.

Eligibility Requirements

- **Degree:** Master's Degree or Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12)
  - **Communications and Graphics Design** (1)
  - **Computer, Information, and Data Sciences** (16)
  - **Earth and Geosciences** (21)
  - **Engineering** (27)
  - **Environmental and Marine Sciences** (14)
  - **Life Health and Medical Sciences** (45)
  - **Mathematics and Statistics** (10)
  - **Other Non-Science & Engineering** (13)
  - **Physics** (16)
  - **Science & Engineering-related** (1)
  - **Social and Behavioral Sciences** (28)