**Zittau/Goerlitz University of Applied Sciences**

**Exchange PhD student (m/w/d) - Keywords: Power system protection laboratory**

The consequences of short circuits in electrical energy systems can be minimized with a well-coordinated protection and monitoring concept. The protection and monitoring digital devices play an important role here. They are responsible for reliable, selective and possible fast fault detection as well as for initiating further, adequate measures.

The increasing complexity of the power system (e.g. due to integration of decentralized energy infeed) gives rise to scenarios which are not fully considered in conventional protection concepts and algorithms. The influences of these scenarios need to be examined on protection devices as well further algorithm improvements developed. Against this background, it is necessary to simulate such operating and disturbed states and to test protective relays much more carefully. The University of Applied Sciences Zittau/Görlitz would like to contribute to improving the power system security by building a modern laboratory including protection devices. The necessary digital protection, monitoring devices with the appropriate communication interfaces (61850 (GOOSE), 61850-9-2 (Process bus)) as well as test equipment are already available so that many applications can be tested as well required improvements developed. This research project should include the aspect of teaching as well. The created laboratory/testing places should be suitable both for complex protection tests and for teaching various protection principles.

The activities of the trainee include following tasks

* Research in protection area
* Setting up the laboratory for teaching and research
* Preparation of tools for automated simulation of faults and development of ideas for innovative protective measures
* Participation in the writing of laboratory instructions and scientific contributions in the field of protection technology as well as participation in the presentation and documentation of the project results

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**The following knowledge and skills are required**

* University degree (B.Sc., M.Sc.) in area of electrical engineering
* Knowledge in the simulations and calculations of power system, especially short circuits
* Knowledge in the field of protection technology

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**Additional skills and knowledge**

* Experience in field of protection and energy automatization
* Experience in programming languages like e.g. MatLab, Python

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**We expect from you**

* High interest in scientific tasks
* Willingness and interest in professional and personal development
* High degree of self-organization and responsibility
* Flexible and team-oriented work

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If you have technical questions, please contact the project manager, Prof. Dr.-Ing. Cezary Dzienis (Email: [cezary.Dzienis@hszg.de](mailto:cezary.Dzienis@hszg.de) ; Tel.: 03583/612-4568). Further information can be found at www.hszg.de.