Hochschule für Technik, Wirtschaft
und Kultur Leipzig
University of Applied Sciences

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faculty of civil engineering

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DAAD programme
„Dialogue with Institutions of Higher Education in Southern Europe"

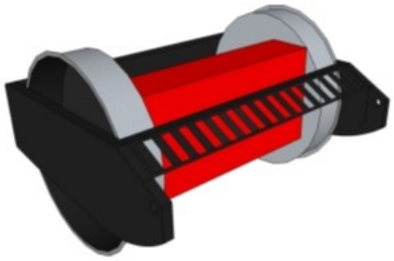
10-weeks scholarship with working in a group of young researchers at the HTWK Leipzig, Germany

Leipzig, 27.05.2014

Dear Master students,

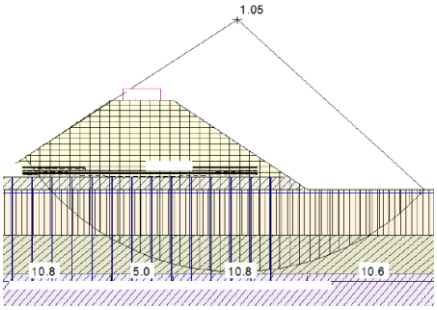
The DAAD (German Academic Exchange Service) invited German universities to apply for the financing of projects which have the aim of developing a scientific exchange together with universities of certain countries in Europe („Dialogue with Institutions of Higher Education in Southern Europe"). The project of the institute of our research group within the HTWK Leipzig provides a 10-week Summer School at the HTWK for up to 4 selected master students of several universities. For a closing event we are planning to invite your professors and representatives of the host universities:

On the central problem of „Improvement and modification of subsoil for conservation of resources and energy" our team of young scientists of civil engineers and mechanical engineers in the group "G² Gruppe Geotechnik" at the HTWK Leipzig is working since several years with national and international research partners and industrial partners. If this will succeed by and more intense and deeper compaction/densification, by adding stabilizing ingredients or my dehydration the existing subsoil could be retained. Energy could be saved, resources for example like clay for dam constructions could be conserved.



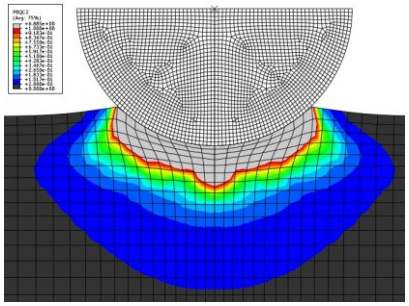
The generation of sufficient stability for construction works means, in many cases (e. g. domestic and industrial buildings or traffic and dam structures), increased requirements for the loadbearing capacity of the ground down to 5 m. A for this usually needed recompaction of the ground can be realized through several methods, working on the surface (spot or area) or in the depth. Area working and at the surface working compaction systems (e. g. rollers of all kind) reach compaction depths between 1 or 2 m (not more than 3 m). Many large systems are only economic for depths of 5 m or more. In practice, an alternative often chosen is a cost and time intensive entire excavation and filling in compacted layers. The overall aim of one of the research and developing project of the group (ECOmpact) is the successful design of a compaction tool including principles of execution for a fast, efficient and therefore best possible compaction of the ground in depths between 2 and 5 m. Right

now we are working in this project with several numerical models simulated in the FE software ABAQUS®. Furthermore we are planning laboratory tests with a scaled model of the prototype. These tests will be assessed due to a high speed camera and the application of the PIV-Method. The numerical model has to be verified and validated in extensive practical test series. By means of this interactive procedure with comprehensive parameter studies, it is expected to develop concrete specifications for a list of mechanical engineering requirements.

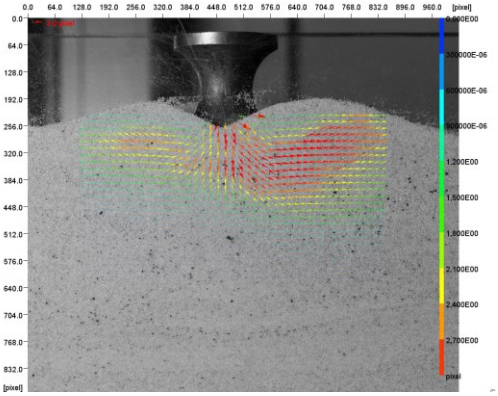


In other projects we worked and work on the behavior of not reinforced soil columns and suitable column materials. On essential task here is the mathematically consideration of the columns in slope stability investigations through analytical or numerical models.

Within the group of young researchers "G² Gruppe Geotechnik" (www.g2-gruppegeotechnik.de) the main tasks of the projects will be carried out by Mr. Holger Pankrath and Mr. Friedemann Sandig. Additionally Mr. Alexander Knut and Mr. Marco Barthel are supporting them. Leader of the projects is Mr. Prof. Dr.-Ing. Ralf Thiele.



For the period of **2014/2015** one main task within the group is optimizing and validating of the numerical basic models. Therefore results of field tests need to be evaluated and soil-mechanic tests in laboratory need to be carried out. One focus is on working with the FE software **ABAQUS®** (Simulia). More specifically, investigations and simulations of laboratory tests are planned (course and result). Also, typical impacts of compaction systems will be simulated in analysis of variants. Furthermore **scaled model tests** are planned. These tests are necessary for the validation of the existing numerical models. By using a high speed camera it is possible to measure the displacement of almost every grain of sand within a layer of the soil. Thus we are able to calculate the acceleration in the soil-layer and of other soil-mechanic parameters. For your time of stay, a realistic working task will be chosen from these working fields.



Leipzig has become one of the most popular cities in the eastern part of Germany due to its many positive urban and cultural developments and a moderate cost of living. Particularly, Leipzig's south with its big park, several small rivers and many restaurants, cafés and bars offers various opportunities for leisure activities. The HTWK Leipzig Campus with your future place of work in the Geutebrück building is located right in the middle of this popular part of the city.

Project information's:

Phase 1	Summer School (scholarship)
Period:	10 weeks, planned start on 06.10.2014 (+/- one week)
Participants:	4 Master students of guest universities, contacts of RISE 2013 or new
Support:	young scientist of the group "G² Gruppe Geotechnik" (HTWK), Prof. R. Thiele, representatives of the guest universities
Finance:	30 € / day + travel package (180 - 220 €)

Phase 2	Closing event
Event:	1 day in the first or second week of December 2014
Venue:	Leipzig, HTWK
Participants:	scholarship holders + representatives/professors of the guest universities
Topic:	presenting and discussing results of the student research projects and possibilities of common master thesis and research topics in the future
Extra:	evening event plus common city tour Leipzig
Language:	English/German (if necessary we organize translators)

Next steps:

We hope you are again interested in working in our group. For applying for this scholarship please contact us and send the following before the **13th of June** (all in English or German):

- short letter of application
- Curriculum vitae
- topic and short abstract of your bachelor thesis

It is absolutely important for our project application to have the expressions of interest of minimum one of the professors of your university (preferably of suitable working field). We already contacted the Professor/representatives who wrote the letter of recommendation for your application in the DAAD programme RISE 2013. Please support this attempt of establish contact by your personal engagement.

Please contact us for any questions or hints!

Many thanks and with Best Regards

Prof. Dr.-Ing. Mr. Ralf Thiele
(Leader of the project)

Mr. Holger Pankrath / M.Sc., Dipl.-Ing. (FH)
(Coordinator of the project)

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