

International Student Exchange 2016 – 2019

Student Feedback Questionnaire

The purpose of this questionnaire is to evaluate the lessons learnt of the AIR international student exchange.

By filling out this feedback report, you agree that your picture and experience will be published on the homepage of the AIR project. <http://www.air-project.org/>

Name of student:	Katharina Bär
Gender:	Female
Age:	28
Degree:	M.Sc.
Hosting university:	Stellenbosch University
Sending university:	Technische Hochschule Ingolstadt
Period of exchange:	Two weeks
Field of study/major:	Mechanical / Electrical Engineering
Field of interest during exchange:	Integration of renewable energies
Further graduation plans (e.g. PhD programme):	PhD program

Please tick the respective box	I strongly agree	I agree	I neither agree nor disagree	I disagree	I strongly disagree
Programme					
I gained insights into the practical implementation of RE in the host country (sight visits etc.)	X				
I gained knowhow in field of my study	X				
The courses were helpful for my further research	X				
The agenda was well structured		X			
Organisation					
The journey preparations were well organised	X				
The support during the exchange was good	X				
The post processing of the exchange was well organised	X				

The reimbursement process was satisfactory	X				
The accommodation was pleasant	X				
Local transportation was well organised	X				
I socialised with local students	X				
I recommend the exchange	X				
Other	<p>What would you suggest to be changed/improved for future exchanges?</p> <p>I am very happy about the organisation of my stay. If any other exchange is like mine, nothing has to be changed/improved.</p> <p>Did you experience any difficulties during your exchange?</p> <p>No, none.</p>				

Please write a brief report about your student exchange, including organisation, agenda, experience, lessons learnt, suggestions for improvement, and recommendations for other students (max. 590 words, Arial 12).

During the first week at Stellenbosch University, I took a full day class about “Supply Side Technologies” which had as main topics frequency control of the electricity grid, power station abilities to control frequency, energy storage systems as well as scheduling and dispatch of energy producers. Dr Graeme Chown, a power systems control and operations specialist with over 30 years’ experience in the electricity industry, former employed at Eskom, gave a lot of insides to the power systems in Abu Dhabi, Ethiopia, Ghana, Ireland, Kenya, Malawi, Mauritius, Southern Africa, Tanzania, Thailand, the UK and Vietnam. Participants of the class were master and PhD students as well as industry workers and government employees. Starting from network frequency topics like inertia & primary frequency control, technical fundamentals of network frequency control and the impact of renewables on the South African electricity grid were analyzed. The abilities of traditional power plants and renewable energy plants to control network frequency as well as energy storage and demand side participation in network frequency control stood in focus as well. Other interesting topics were the secondary frequency control principles in terms of real time balancing within the control areas of South Africa and interconnected operations with Southern African Countries. Economical aspects like business models for future utilities of different countries all over the world were treated as well. In addition to theoretical background Excel, MATLAB and Simulink 2019a and Homer were used to get an inside to modelling and simulation of supply side technologies.

The second week I was at the Centre for Renewable and Sustainable Energy Studies (CRSES) at Stellenbosch University which does research in the general field of renewable energy. I worked with a PhD student, Ndamulelo Mararakanye, on renewable energy integration impacts in the context of power plant generator type, penetration and grid level especially in the context of reducing reserve capacity through temporal decomposition of variable generation.

Another very interesting point during my stay was the visit of the Palmiet Pumped Storage power plant. The power plant consists of two 200 megawatts turbine units located 2 kilometres (1.2 mi) upstream of the Kogelberg Dam on the Palmiet River near Cape Town, South Africa. The pumped-storage hydroelectricity plant is capable of responding to a surge in peak power demand in minutes. At night, excess power on the grid generated by conventional coal and nuclear plants is used to pump water to the Upper Reservoir overlooking Gordon's Bay. As the whole Palmiet site is a conservation area and was declared a biosphere reserve by UNESCO - the first in South Africa - I learnt a lot about the regional characteristic of the nature of South Africa as well.

To conclude I recommend the AIR international student exchange and I think everybody should take the opportunity to work abroad and see how other countries/cultures/universities deal with implementation of renewable energies in an energy system. To see how topics in the field of sustainable use of renewable energies are handled in Stellenbosch University and the way of thinking in the socio economic background of South Africa was very interesting for me. To work there was a great pleasure and I could get insides to new methodological skills related to my research activities. To see how other research institutions are working is a great lesson learnt and will approve my future theoretical as well as personal skills. I really appreciate to have taken part in the AIR international student exchange program.

Please add at least one picture showing you during your stay at the partner university (e.g. yourself together with local partners at the university/excursion – please send it also as a separate file via email).