

Report on the DAMOC student exchange program

Simon Puteanus

General information

Name: Simon Puteanus
Home university: Technical university Dresden
Degree Programm: Renewable energy systems (bachelor + master)
Host university: Stellenbosch university
Period of exchange: 16th of October 2018 to 22nd of March 2019

Projects

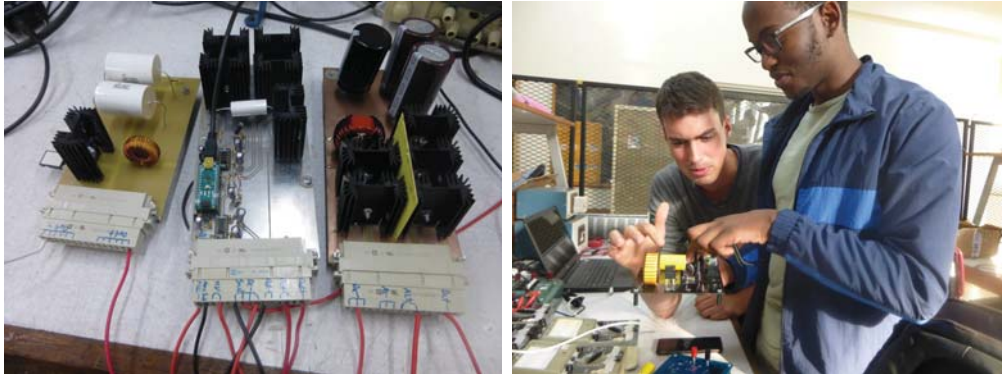
Since I came in end of one semester and left in the middle of the next, I did not take courses but worked on projects supervised by professor Vermeulen, who is doing research in the field of power systems, load modelling and renewable generation. My main project was to design, build and test a *pseudo random impuls sequence* (PRIS) signal generator on several *printed circuit boards* (PCBs). This PRIS signal generator will be used in a PhD thesis to measure the impedance of the grid across a broad frequency spectrum. The project took me about two months in total. During this time I learned to design a PCB by choosing components depending on my simulations and calculations and the specific data sheets, placing and wiring the components with PCB design software and finally soldering the components on the board and testing the circuit. In addition I also programmed the microcontroller of the circuit.

Smaller projects were connected to data analysis of renewable power plants in Matlab and Python. Especially programming in Python was something I wanted to learn for long time and will be useful in my further studies.

In total my supervised workload was too small to keep me busy the full five months of my stay, so I started to use the time for my own small projects. I learned basic load flow algorithms, did some reading and programming in fuzzy logic, simulated and built a buck converter etc.

Encounter with academic life in Stellenbosch

Even though I did not take a course in Stellenbosch University I got some insight in teaching and research. I shared my office with a PhD student and several students doing a research master, a concept which is not very present in Germany. I spent hours especially talking to the PhD student about



research conditions in Stellenbosch and live in South Africa. At Stellenbosch university a professor is supervising much less PhD students, so he can take more time for individual supervising. I really enjoyed to be able to just knock at my professors door to ask him a question. In Germany this would not have been possible. In general I felt, that it was much more common to speak to professors and lecturers on eye-level.

In February and March I also helped with the tutorials in engineering maths for first year students. Studying engineering in Stellenbosch has a much more "school-like" character than studying in Germany, with regular test and assignments. In addition the focus is more on practical exercises. I attended a bunch of bachelor thesis presentations in November and was impressed by the amount of practical work the students did.

Encounter with South Africa

In the first four months of my stay in South Africa, my mood was fluctuating strongly, which indicates that I definitely took some time to adapt to my new environment. The area around Cape Town is beautiful with a lot of activities to do like surfing, hiking and wine tasting while in the same time the strong economic inequality in the population is ever present. The resulting safety concerns restricted my movement in the first months. I was not used to the fact, that you can be robbed if you go to the wrong places in the wrong times, especially at night and I had to adopt my daily routine to this. As time passed by I started "reclaiming the street" by being less and less concerned about the safety issues in South Africa, using minibuses and trains and going to the townships on my own. Nowadays I believe that a lot of South Africans especially the Afrikaans people are too concerned about their safety and that they miss a lot of the public sphere by restricting their movements on certain areas and using their car as the main vehicle.

My favourite place in Stellenbosch was the yard of my residence. I spent



many mornings there having my breakfast and reading the weekly *Mail & Guardian* and the same amount of evenings chatting with other residents. We were 120 international students and 80 South Africans in the residence, which made up a good mix. I especially enjoyed discussions about South African politics and history, which has a lot to offer, especially in the last 40 years.

Trying the multiple churches in Stellenbosch was a quite an experience if you come from a European Lutheran background. I ended up at *Stellenbosch International Fellowship* a small church consisting mostly of students originating from other African countries and some older Afrikaans ladies. It is quite interesting to see, how many Christians you can find in Stellenbosch compared to Dresden. A lot of churches here are working with more "charismatic" worship, which is apparently also very appealing for young people and also impressed me. Through my church I started to attend the reconciliation lunch in our township Kayamandi, which aims at bringing together South Africans from different backgrounds by sharing stories and a meal, which is a quite important effort in country where friendships are still much more likely if two people have the same skin colour.

I did some travelling in South Africa, Botswana and Namibia. Due to not having a drivers licence I relied on trains and buses which worked, but it was not the most convenient way to travel, even though I had some good encounters with local people this way. The most impressive thing I saw was the night sky in the Cederbergs. It was my first time seeing the milky way.

Conclusion

I really appreciate that I learned some practical engineering skills during my exchange. This includes designing and building a PCB as well as programming in Python and C. Even though the amount of supervised projects did not fill my whole exchange program, I could keep myself busy by working on own projects and exploring the diversity of South Africa. I definitely would like to come back to Stellenbosch in a lecturing position.