

Julian Krüger (Dipl.-Ing.)

Curriculum Vitae

PROFILE

Specialist for sustainable energy solutions with a passion for rural electrification in developing country contexts. Experienced with research and development with focus on design and optimization of energy systems. Recent focus on trainings on local production of sustainable cooling technologies.

PERSONAL DETAILS

Date of Birth: 08.08.1981
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WORK EXPERIENCE

- 08/2018 – Date **Julian Krüger Engineering**
Freelancer, Technical Consultant
Solar cooling technology and industrial scale PV and energy storage projects
- 10/2018 – Date GIZ Project ‘Promotion of local manufacturing of solar cooling systems’,
with University of Hohenheim and Solar Cooling Engineering UG
- Construction and testing of solar powered cooling systems for use in remote areas in agricultural value chains
 - Rapid prototyping and software engineering
 - Import and shipment handling to sub-sahara Africa
 - Trainings in Nairobi, Kenya and in Bamako, Mali
- 4/2019 – Date Technical advisor for private sector company in a 1MW PV-Diesel hybrid
power plant project for agriculture in Bamako, Mali
- 03/2016 – 07/2018 **Leibniz University Hanover, Germany**
Research Assistant
Institute of Electric Power Systems,
Electric Energy Storage Systems Section
- Applied model-based assessment of sector coupling technologies in energy system scenarios
 - Developed control strategies for optimal energy storages dimensioning
 - Simulated PV plant energy yields using open forecast and historic weather data
 - Investigated potentials of smart energy management exploiting flexibility of PV, storage, heat pumps and EV in residential districts
 - Applied optimal flexibility use in a combined Power-to-Heat / Power-to-Cold plant at EUREF-Campus Berlin (partnership with GASAG Solutions Plus GmbH)

- 07/2015 – 02/2016 Career break
- Stays abroad in Panama, Mexico, Ireland and Columbia
 - Personal and professional reorientation and improving language skills
- 09/2007 – 06/2015 **SMA Solar Technology AG, Niestetal, Germany**
- 07/13 – 06/15 *Senior Development Engineer and Project Lead Software*
Department for Offgrid and Storage Systems
- Participated in the realization planning for the controller architecture of the SMA hybrid ecosystem
 - Developed a Hardware-in-the-Loop test bench with automated control for battery inverter and PV/Diesel hybrid controllers
 - Lead a team for firmware development for the battery inverter Sunny Central Storage in range of 500 – 1000 kVA
 - Planned and integrated software packages and releases
 - Supervised the commissioning and testing at the SMA Testing Centre for Hybrid Energy Supply successfully through to production stage
 - Successfully commissioned the 2.2 MW / 1MWh battery inverter system with the hybrid Fuel Safe Controller system on-site in Cobija, Bolivia
- 09/07 – 06/13 *Development Engineer and Project Lead*
Department for Software Development, Grid-tied PV-Inverters
- Successfully developed software projects for PV- and wind energy inverters (Sunny Boy, Sunny TriPower) in range of 2 – 25 kW through to production stage
 - Lead commissioning and lab testing, field and on-going quality assurance
 - Applied model-based development and C-code generation for new control strategies
 - Ensured MISRA conformity, applied static code analysis and developed a company wide modelling style-guide for Matlab and Simulink
 - Successfully lead certification and audits ensuring compliance with functional safety standards (UL 1998)

ACADEMIC EDUCATION

- 09/2001 – 04/2007 **Otto-von-Guericke University Magdeburg**
Systems Engineering and Technical Cybernetics course
- Study focus: automation, control, modelling and simulation of technical systems
 - Diploma thesis: Development of Control Strategies for turbocharged Diesel Engines, TU Berlin and IAV GmbH, Berlin
 - Degree: Dipl.-Ing. (overall grade 1.2)
- 09/2005 – 02/2006 **University of Strathclyde in Glasgow, Scotland**
Department of Mechanical and Aerospace Engineering
- Study focus: Discrete Event Systems, Renewable Energy Systems

ADDITIONAL SKILLS

Programming and Software

- Matlab, Simulink, Stateflow, C-code generation (expert)
- Programming: Embedded C (expert), Python (advanced) CoDeSys and other PLC (advanced)
- Revision control systems Integrity, SVN and GIT
- Project management and bug tracing with JIRA
- Microsoft Office (expert)
- Open data & energy modelling, energy yield and economic analysis of PV and wind energy plants (PVSyst, System Advisor Model, Pvlib, own software)
- Construction and Visualisation with Autodesk AutoCAD and Inventor

Technical

- Modelling and simulation of PV and batteries, heat pumps and other components (expert)
- Optimization of energy systems
- Risk analysis FMEA
- Hardware-in-the-Loop development
- Smart-meter projects on Raspberry Pi platforms

TRAININGS

- Embedded Software Engineering
- Leadership and communication focused in-house trainings
- Language courses in Spanish

INTERESTS

- Travel: nature and intercultural exchanges
- Outdoor activities: Kayaking and hiking
- Team sports: play in local basketball club

LANGUAGE PROFICIENCY

- Fluent in written and spoken: German, English
- Intermediate: Spanish, French
- Beginner: Swahili

References available upon request