	Time (CEST)	Time (GMT)							
K I	9:00	7:00	Key-Note	**Word of welcome**					
			Speaker	Komla SANDA, Ulrike Tippe, Jörg Reiff-Stephan and Kitimapron Kraft (DAAD)					
K II	9:40	7:40	Key-Note	**Decentralised Renewable Energy - The Key to Growth**					
			Speaker	Klaus Naderer					
	Break (5min)								
				Panel 1			**Panel 2**		**Panel 3**
Session - S I				**Renewable Energy - Hydrogen**			**Renewable Energy - Photovoltaic 1**		**Intelligent Automation & Robotic**
			Chair	Alexaner Stolpmann			Jörg Reiff-Stephan		Klaus Dreiner
	10:00	08:00	a	Title	Sustainably Produced Hydrogen - Possible Variants and its Main Supply Paths	Title	Advances in conversion efficiency and thermal stability of the perovskite-based solcar cell: Review	Title	Concept towards Segmenting Arm Areas for Robot-Based Dermatological In Vivo Measurements
				Speaker	Maria Gribova	Speaker	N'Detigma Kata	Speaker	Mateusz Szymanski
	10:25	08:25	b	Title	Hydrogen and Usability of Hydrogen Storage Technologies - Liquid Organic Hydrogen Carriers (LOHC) versus other Physical and Chemical Storage Methods	Title	Study of the decentralized electrification by a micro-wind power plant: Case of Ahouandji locality in southern Benin	Title	Development and Manufacturing of a controlled 3D printed bionic hand
				Speaker	Lutz B. Giese	Speaker	Gabin KOTO N'GOBI	Speaker	Toni Duspara
	Break (10min)								
Session - S II				**Machine Learning - Predictive Analytics**			**Renewable Energy - Biogas**		**Renewable Energy - Biomass**
			Chair	Thomas Knothe			SOUHO Tiatou		Roland Kirchberger
	11:00	09:00	a	Title	Positive-unlabelled learning based novelty detection for industrial chillers - A data-driven approach to avoid energy wastage	Title	Optimization of biogas production by co-digestion of organic waste (cow dung and water hyacinth)	Title	Factual Quantification Methods of Energy Consumption for Transmission Nodes in Cellular Communications Systems: A case study in Lome
				Speaker	Ron van de Sand	Speaker	Dohou Dèdonougbo Alfred	Speaker	Koffi A Dotche
	11:25	09:25	b	Title	A comparison study of data-driven anomaly detection approaches for industrial chillers	Title	Estimation of the amount of electrical energy available from the biogas produced at the faecal sludge treatment plant in the city of Sokodé	Title	The LabTogo-Project: Analysis of the biomass potential and set-up of research capacities for the development of a biogas sector in Togo
				Speaker	Constantin Falk	Speaker	Nitale M'Balikine Krou	Speaker	Nils Engler
	Break (25min)								
K III	12:15	10:15	Key-Note	**CenRES Opening**					
			Speaker	Komla SANDA, Matthias Veltin, Ulrike Tippe and Jörg Reiff-Stephan					
	Break (40min)								
Session - S III				**Energy Efficiency**			**Renewable Energy - Photovoltaic 2**		**Smart Grids**
			Chair	AMOU Komi Apélété			Kodjo Eloh		Hasan Smajic
	13:40	11:40	a	Title	Minimization of the electric energy in systems using ultra-high density magnetic storage	Title	Bi-facial Open-Space Photovoltaic Systems versus Conventional Systems using Mono-facial Modules - A Technical and Economic Comparison	Title	A Model-based Approach to Decarbonize an Island's Energy System
				Speaker	Tchilabalo Pakam	Speaker	Marcus Schmidt	Speaker	Clara Paetow
	14:05	12:05	b	Title	Numerical study of heat and water vapor exchanges inside a green roof building in a high irradiation area for passive cooling purpose	Title	Simulation Study of Perovskite Cell Performance in Real Conditions of Sub-Saharan Africa	Title	Demand Response Model for optimised use of Renewable Energies in Production
				Speaker	Hodo-Abalo Samah	Speaker	Essodossomondom Anate	Speaker	Clemens Faller
	Break (15min)								
Poster Session -PS				**Poster Renewable Energy**			**Poster Smart Gits and Intelligent Automation & Robotic**		
			Chair	Alexaner Stolpmann			DAM-BE L. DOUTI		
	14:45	12:45	a	Title	Technical Condition Management for a PV-based distributed energy system	Title	Education 4.0: An remote approach for training of intelligent automation and robotic during COVID19		
				Speaker	Sebastian Schulz	Speaker	Hasan Smajic		
	15:00	13:00	b	Title	Optimization of an MPPT by Hybrid Algorithm	Title	Planning and optimization of a multipurpose farm using renewable energies (solar) in Yaounde (Cameroon)		
				Speaker	Akiza Bidjagare	Speaker	Bertold Damesse		
	Break (15min)								
Session - S IV				**Machine Learning - Electricity**			**CPS & IOT (IIOT)**		**Renewable Energy - Photovoltaic 3**
			Chair	Alexaner Stolpmann			DAM-BE L. DOUTI		SOUHO Tiatou
	15:30	13:30	a	Title	Short-Term Electricity Generation Forecasting Using Machine Learning Algorithms: A Case Study of the Benin	Title	Implementation of a machine tool retrofit system	Title	Design and realization of a photovoltaic characterization platform at the FaST
				Speaker	Adekunlé Akim SALAMI	Speaker	Alexander Dietrich	Speaker	Moudjibatou Afoda
	15:55	13:55	b	Title	Static and dynamic evaluation of wind potential in the Kara region of Togo using artificial neural networks	Title	Cyber-physical Production Systems in Settings with limited Infrastructure - Consequences and deducible Requirements	Title	Optimization of the Efficiency of a Photovoltaic Conversion Chain by Paralleling Several DC-DC Converters
				Speaker	Arafat Fousseni	Speaker	Bastian Prell	Speaker	Komi Boniface Ehlan
	16:20	14:20	c			Title	Challenges of IoT Deployment in the Underdeveloped Countries		
						Speaker	Bernardo Yaser Leon Avila		
	Break (15min)								
K IV	17:00	15:00	Key-Note	**Best Paper Student Award**					
			Speaker	Jörg Reiff-Stephan					
K V	17:30	15:30	Key-Note	**Closing Session**					
			Speaker	Komla SANDA, Jörg Reiff-Stephan					
	End								

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Schedule SusRES Conference

Renewable Energy Systems are, in times of climate change, a fundamental technology to reduce the usage of climate-damaging fossil energy sources with limited availability and replaces them width sustainable energy sources. Furthermore, regenerative energy sources can bring solutions to power hamlets as "off-the-grid electricity solution" in regions without power supply. Together with the increasing role of digitization and the development of smart applications, new technologies arise, which will play an ever-increasing role in future energy issues. This paradigm shift places new demands on research and education and stretches well beyond national borders. The Conference forms a platform for addressing these topics and for exchanging scientific expertise and pedagogical approaches within university teaching.

This flyer contains information about the schedule and content of the conference. The entire conference will be hosted on the "Webex" platform and takes place in four different "Webex" rooms/panels. If you have successfully registered as a participant, the link below the presentation information will take you to the corresponding "Webex" room/panel.

All speakers and chairs will receive a separate e-mail including a different link. This link leads to the correct room/panel where you get the permission to speak.

Please note that the yellow marked timestamps are in Central European Summer Time (CEST)!

Begin: 09:00 (Togo 07:00) 06.04.2021 Plenary	**K I: Word of Welcome** *Speaker: Prof. Dr. Komla SANDA, Prof. Dr. Ulrike Tippe,* *Prof. Dr.-Ing. Jörg Reiff-Stephan, Kitimapron Kraft (DAAD)*
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e0e05868282dadb05852149a0259384f4

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Begin: 09:40 (Togo 07:40) 06.04.2021 Plenary	**K II: Decentralised Renewable Energy - The Key to Growth** *Speaker: Klaus Naderer*
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e0e05868282dadb05852149a0259384f4

Start of the presentations in “Panel 1”, “Panel 2” and “Panel 3”.

Begin: 10:00 (Togo 08:00) 06.04.2021 Panel 1	**S I-1a: Sustainably Produced Hydrogen - Possible Variants and its Main Supply Paths** *Speaker: Maria Gribova* Abstract: The fossil fuels used to provide energy, such as coal, crude oil and natural gas, are largely responsible for carbon dioxide emissions and other so-called greenhouse gases. Hydrogen gas (H2) can make a key contribution to decarbonization. It can be produced using various processes. Several processes are available to produce hydrogen, such as (i) steam reforming, (ii) cracking process or (iii) electrolysis. Depending on the source of origin, there is a distinction made between different “colours”. Gray, blue, turquoise, yellow and green hydrogen is available, the latter made using Renewable Energies. However, items such as (i) possible variants of hydrogen, (ii) leading export countries or (iii) provision paths to be preferred in the future will be discussed in this paper.
Chair:	Alexander Stolpmann
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

S I-1b: Hydrogen and Usability of Hydrogen Storage Technologies - Liquid Organic Hydrogen Carriers (LOHC) versus other Physical and Chemical Storage Methods

Speaker: Prof. Dr. rer. nat. Lutz Giese

Begin: 10:25
(Togo 08:25)

06.04.2021

Panel 1

Abstract:
Science, technology and politics agree: hydrogen will be the energy carrier of the future. It will replace fossil fuels based on a sufficient supply from sustainable energy. Since the possibilities of storing and transporting hydrogen play a decisive role here, the so-called LOHC (Liquid Organic Hydrogen Carriers) can be used as carrier materials. LOHC carrier materials can reversibly absorb hydrogen, store it without loss and release it again when needed. Since little or no pressure is required, normal containers or tanks can be used. The volume or mass-related energy densities can reach around a quarter of liquid fossil fuels. This paper is to give an introduction to the field of hydrogen storage and usage of those LOHC, in particular. The developments of the last ten years have been related to the storage and transport of hydrogen with LOHC. These are crucial to meet the future demand for energy carriers e.g. for mobile applications. For this purpose, all transport systems are under consideration as well as the decentralized supply of rural areas with low technological penetration, e.g. regions of Western Africa which are often characterized by a lack of energy supply. Hydrogen bound in LOHC can provide a hazard-free alternative for distribution. The paper provides an overview of the conversion forms as well as the chemical carrier materials. Dibenzyltoluene as well as N-ethylcarbazole - as examples for LOHC - are discussed as well as chemical hydrogen storage materials like ammonia boranes as alternatives to LOHC.

Chair:	Prof. Dr. Alexander Stolpmann
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

S I-2a: Advances in Conversion Efficiency and Thermal Stability of the Perovskite-Based Solar Cell: Review

Speaker: Dr. N'Detigma KATA

Begin: 10:00
(Togo 08:00)

06.04.2021

Panel 2

Abstract:
This paper presents a small review on the technological advances made on the perovskite-based solar cell. Through this summary of the results of the research on perovskite, the reader will have an overview of the perovskite material, the different structures of a perovskite solar cell, and the opto-electrical properties of such cell as well as the electrical models used in its simulation. Finally, the paper presents in a very brief way the challenges that this technology will have to overcome before finding its place in the photovoltaic market.

Chair:	Prof. Dr.-Ing. Jörg Reiff-Stephan
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

S I-2b: Study of the decentralized electrification by a micro-wind power plant: Case of Ahouandji locality in southern Benin

Speaker: Dr. Gabin Koto N'Gobi

Begin: 10:25
(Togo 08:25)

06.04.2021

Panel 2

Abstract:
Access to energy is a major challenge for the socio-economic well-being of populations. In Benin, the electric energy sector is characterized by a low rate of access to energy in rural area (6.6% in 2017) and dependence on the outside at 40%. In the village of Ahouandji (Ouidah commune) located on the coast of Benin and far from the conventional network, the surface winds are regular and permanent. However, this wind resource is untapped despite the unavailability of electrical energy. To cope with this difficulty, this study therefore addresses the design and sizing of a micro-wind power plant to supply the region. Wind data at 10 m above the ground recorded over the period January 1981 to December 2014 by the Agency for the Safety of Air Navigation in Africa (ASECNA) were used. Based on the socio-economic study of the locality and the statistical study of the winds by the Weibull distribution and the power law, the sizing of the wind power plant components was carried out. The economic study of the system then made it possible to assess the profitability of the project. It emerges from this study that at 25 m above the ground the Weibull shape parameter is estimated at 2.94 and the scale parameter at 6.07 m/s. The most frequent speed is estimated at 5 m/s and the one giving the maximum energy at 10.2 m/s. The micro-power plant is made up of two wind turbines with a nominal power of 29.7 kW for a daily production estimated at 355 kWh, a three-phase converter rated at 30 kW, 06 inverters/chargers with a power of 11.5 kW and 120 batteries (3000Ah/2V). The selling price of kilowatt-hour estimated at 0.17 euro/kWh is quite competitive. The establishment of this micro-wind power plant is therefore an asset for these rural populations.

Chair:	Prof. Dr.-Ing. Jörg Reiff-Stephan
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

S I-3a: Concept towards Segmenting Arm Areas for Robot-Based Dermatological In Vivo Measurements

Speaker: Mateusz Szymanski

Begin: 10:00
(Togo 08:00)

06.04.2021

Panel 3

Abstract:
Dermatological in vivo measurements are used for various purposes, e.g. health care, development and testing of skin care products or claim support in marketing. Especially for the last two purposes, in vivo measurements are extensive due to the quantity and repeatability of the measurement series. Furthermore, they are performed manually and therefore represent a nonnegligible time and cost factor. A solution to this is the implementation of collaborative robotics for the measurement execution. Due to various body shapes and surface conditions, common static control procedures are not applicable. To solve this problem, spatial information obtained from a stereoscopic camera can be integrated into the robot control process. However, the designated measurement area has to be detected and the spatial information processed. Therefore the authors propose a concept towards segmenting arm areas through a CNN-based object detector and their further processing to perform robot-based in vivo measurements. The paper gives an overview of the utilization of RGB-D images in 2D object detectors and describes the selection of a suitable model for the application. Furthermore the creation, annotation and augmentation of a custom dataset is presented.

Chair:	Prof. Dr. Klaus Dreiner
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

S I-3b: Development and Manufacturing of a controlled 3D printed bionic hand

Speaker: Toni Duspara

Begin: 10:25
(Togo 08:25)

06.04.2021

Panel 3

Abstract:
During a current project, a fully functioning prototype of a 3D printed bionic hand was developed. This paper explains principles such as: bionic hand movement, working rules of sensors and actuators etc. Design of all parts are performed, including the wiring of control system. The project includes two types of sensor control systems for bionic hand. One is with stretch sensors that replicates movement of human hand onto the bionic model. Other type is using machine learning (AI) and a camera. The average amputee cost is $30.000,00 for a new custom-built arm/hand. With the advancement of technology through time, manufacturing processes became cheaper and more accessible. Technical innovation of this project was the fact, that a functional prosthetic hand prototype was built for price lower than $50,00. The prototype does not have all the functions and capabilities as the full priced custom prosthetic hand, but it can replicate altogether the movements as the real device. All the fingers are capable of moving individually, sideways and with the work on the new version, gripping function could be perfected. Further work on materials, could help find the adequate material to increase friction and thusly enhance the grasp strength. The new challenge would involve testing with different kinds of materials to improve the working stability. As it was already unfavorable, this project was mostly based onto the actuation part, or rather the hand itself. Second part of research would involve exploring of different sensor systems. Two control solutions were designed and tested. Next steps would involve neurotransmission sensors, where arm would be controlled using brainwaves as signals that are transformed in movement.

Chair:	Prof. Dr. Klaus Dreiner
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Break (10min)

S II-1a: Positive-unlabelled learning based novelty detection for industrial chillers - A data-driven approach to avoid energy wastage

Speaker: Ron van de Sand

Begin: 11:00
(Togo 09:25)

06.04.2021

Panel 1

Abstract:
Chiller systems are used in many different applications in both the industrial and the commercial sector. They are considered major energy consumers and thus contribute a nonnegligible factor to environmental pollution as well as to the overall operating cost. In addition, chillers, especially in industrial applications, are often associated with high reliability requirements, as unplanned system downtimes are usually costly. As many studies over the past decades have shown, the presence of faults can lead to significant performance degradation and thus higher energy consumption of these systems. Thus, data-driven fault detection plays an ever-increasing role in terms of energy efficient control strategies. However, labelled data to train associated algorithms are often only available to a limited extent, which consequently inhibits the broad application of such technologies. Therefore, this paper presents an approach that exploits only a small amount of labelled and large amounts of unlabelled data in the training phase in order to detect fault related anomalies. For this, the model utilizes the residual space of the data transformed through principal component analyses in conjunction with a biased support vector machine, which can be ascribed to the concept of semi-supervised learning, or more specifically, positive-unlabelled learning.

Chair:	Prof. Dr.-Ing. Thomas Knothe
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

S II-1b: A comparison study of data-driven anomaly detection approaches for industrial chillers

Speaker: Constantin Falk

Begin: 11:25
(Togo 09:25)

06.04.2021

Panel 1

Abstract:
Anomalous operating conditions in industrial refrigeration systems can lead to higher energy consumption, increasing wear of system components and shorten equipment life. Faulty conditions often occur successively, while autonomous fault detection systems based on sensor data are able to detect anomalies already at low levels of severity. Many scientific contributions addressed this topic in the past and presented machine-learning approaches to detect faulty system states. Applying a selection of those algorithms, this paper aims for the identification of a suitable data-driven machine-learning approach to be used in different domains of vaporcompression refrigeration systems. Therefore a unified procedure is developed, to train all algorithms in an identical way with same data-basis. Since most of the reviewed papers used only one dataset for training and testing, the selected approaches are applied and assessed on two different datasets from real refrigeration systems. The machine-learning approaches are evaluated based on their accuracy and true negative rate, from which the most suitable approach is derived as a conclusion.

Chair:	Prof. Dr.-Ing. Thomas Knothe
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

S II-2a: Optimization of biogas production by co-digestion of organic waste (cow dung and water hyacinth)

Speaker: DOHOU Dèdonougbo Alfred

Begin: 11:00
(Togo 09:25)

06.04.2021

Panel 2

Abstract:
The objective of this work is to determine the co-digestion ratio of water hyacinth and cow dung for the optimization of biogas production at Sô Ava, a lake city of Southern Benin. To achieve these ratios, we suppose that the water hyacinth has a high gas yield and cow dung ensures stability in the biodigester because it brings fresh bacteria and has a strong buffering capacity (maintenance of a stable pH). For 45 days, we have introduced a mixture of water hyacinth and cow dung in 5 mini-biodigesters of 10 liters each: digester no 1 (100% of cow dung); digester no 2 (100% of the water hyacinth); digester n° 3 (50% of the water hyacinth and 50% of the cow dung); digester no 4 (75% of cow dung and 25% of water hyacinth); digester n o 5 (75% of the water hyacinth and 25% of the cow dung). The measurements of the pH, temperature and the proportion of gas (CH4, CO2, O2 and H2S) in the mini-biodigesters was done. The measurements show that the digester n° 5 produces the highest capacity of 15.24L of biogas with 70% of methane while the digester n °2 has the lowest capacity 5.47L of biogas with 58% methane. These results show that the yield of biogas produced is greater when using the mixture of the substrate with the ratio of 75% of water hyacinth and 25% of cow dung. This result encourages the energy recovery from water hyacinth, once considered as a seasonal plague which hinders navigation of local boat in the lake.

Chair:	Dr. SOUHO Tiatou
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

S II-2b: Estimation of the Amount of Electrical Energy Available from the Biogas Produced in the City of Sokodé

Speaker: Nitale M'Balikine KROU

Begin: 11:25
(Togo 09:25)

06.04.2021

Panel 2

Abstract:
The purpose of this study is to estimate the amount of energy produced from biogas at the faecal sludge treatment plant in the city of Sokodé. The methodological approach consisted in producing biogas by co-digestion of faecal sludge with the fermentable fractions of solid waste then in estimating the quantity of energy available from the produced biogas. Tests of co-digestion of faecal sludge and fermentable fractions of solid waste, showed that from 2258 tons/DM of biomass in one year, 44476 m3 of biogas, or 29177 m3 of methane could be produced. The methane content, which is 65.6 %, is a very interesting source of energy. Several techniques for producing energy from biogas exist, one of which is the production of electricity. In this study, it is a question of making the choice of an adequate electric motor which will allow to produce electric energy from the biogas on the faecal sludge treatment plant. Thus, it was necessary to estimate the quantity of energy available from the biogas produced. To do so, it was calculated the quantity of energy that can be produced by the biogas in one year, the quantity of recoverable energy produced in a year and the quantity of energy supplied by biogas in one hour. The results showed that by 2035, the co-digestion of fermentable solid waste and faecal sludge from the city of Sokodé, would produce 534,246 kWh. The recoverable part would be 507,534 kWh and the energy supplied is 58 kWh.

Chair:	Dr. SOUHO Tiatou
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

S II-3a: Factual Quantification Methods of Energy Consumption for Transmission Nodes in Cellular Communication Systems : Experimental case study in Lome

Speaker: Dr. Koffi A Dotche

Begin: 11:00
(Togo 09:25)

06.04.2021

Panel 3

Abstract:
The energy efficiency for wireless communication technology standard is very important for the current and the future generation ones. Noting that the energy consumption in communication systems is constantly increasing due to the exponential number of subscribers and high data services demand. In this regard, it becomes necessary to quantify this energy consumption with respect to the communication technology standard at the site. There are several techniques for quantifying the energy owing to transmission nodes. This article presents an evaluation of the factual quantifications methods for the energy consumption of transmission nodes in cellular communications systems. The data collection was obtained on three types of communication technology standards namely second generation (2G), 3G, 4G and their combination using the direct and indirect (the utility records) methods power measurement on the field installation of a mobile telephone operator in Togo. These data have undergone a preprocessing in the Microsoft Excel software, then sent in the Matlab software for further analysis. The results showed that the energy consumption observed at the site is around 124 kWh, 254, kWh and 362 kWh on monthly average respectively for 2G, 2G/3G, and 2G/3G/4G typology used. It further indicated that when more communication standards are used on a given site, its power consumption is much more increasing. The power profile distribution has been investigated, and the analysis revealed that the normal distribution closely fitted the data. However, more parameters related to the number of utilised channels and climatic conditions need to be considered in future research works.

Chair:	Prof. Dr.-Ing. Roland Kirchberger
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Begin: 11:25 (Togo 09:25) 06.04.2021 Panel 3	**S II-3b: The LabTogo-Project: Analysis of the biomass potential and set-up of research capacities for the development of a biogas sector in Togo** *Speaker: Dr. Nils Engler* Abstract: A joint project between West African Science Service Center on Climate Change and Adapted Land Use (WASCAL), the University of Lomé and the German Biomass Research Center (Deutsches Biomasseforschungszentrum; DBFZ) was initiated in 2020. The project aims at evaluating alternative and regenerative energy sources for rural areas and creating the basis for successful implementation. In three different work packages, therefore, biomass potentials should be quantified, technologies should be examined with regard to their suitability and - in the case of biogas application - a research structure, pilot biogas laboratory, should be created that is necessary to enable the sustainable implementation of technologies.
Chair:	Prof. Dr.-Ing. Roland Kirchberger
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Break (25min)

Begin: 12:15 (Togo 10:15) 06.04.2021 Plenary	**K III: CenRES Opening** *Speaker:* - Prof. Dr.-Ing. Jörg Reiff-Stephan (Vice President Study and Teaching TH Wildau) - Prof. Dr. Ulrike Tippe (President TH Wildau) - Botschafter Matthias Veltin (German Ambassador in Togo) - Prof. Dr. Komla SANDA (President University of Kara)
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e0e05868282dadb05852149a0259384f4

Break (40min)

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Begin: 13:40 (Togo 11:40) 06.04.2021 Panel 1	**S III-1a: Minimization of the electric energy in systems using ultrahigh density magnetic storage** *Speaker: Tchilabalo PAKAM* Abstract: we present an optimization of the thickness of the magnetic layers that serve to record the information of the daily need in order to minimize the useful electrical energy. The study provides details on the energy activation and distribution of the energy barrier in the samples of thickness $tCo = 0.7, 0.8\ and\ 1nm$. We find that distribution of the energy barrier Ea , its distribution width σw, the real activation field μ0Hr are smallest in the sample of thickness $tCo = 1nm$, hence this sample allows to use less electrical energy for information recording.
Chair:	Dr. AMOU Komi Apélété
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

Begin: 14:05 (Togo 12:05) 06.04.2021 Panel 1	**S III-1b: Numerical study of heat and water vapour exchanges inside a green roof building in a high irradiation area for passive cooling purpose** *Speaker: Dr. Hodo-Abalo Samah* Abstract: Vegetation cover provides shading and protects the soil beneath them from warming. Vegetation can be used as passive cooling technique that reduces the thermal load of a building. A numerical study has been carried out on laminar double-diffusive mixed convection in a green roof enclosure. The model is equipped with inlet and outlet openings for air removal while the left vertical wall is heated and partially saturated with water for indoor air humidification. The mathematical model is governed by the two-dimensional continuity, momentum, energy and concentration equations. Transfer equations are solved using a finite difference scheme and Thomas algorithm. The model was applied for the simulation of a building with green roof in Togolese climate conditions. Results showed that, the flow structure is a mixed convection type, but the isotherms et iso-concentration distributions reveal a vertical stratification of the temperatures and the relative humidity.To predict heat transfers inside the cavity, a correlation has been established for the estimation of the average Nusselt number as a function of the Leaf Area Index and Reynolds number under solar heat flux of 350 $W.m^{-2}$, the average in case of Togo. It was found that a larger Leaf Area Index reduces the solar flux penetration and therefore, reduces significantly heat transfer inside the enclosure and then stabilizes it temperature. For the LAI equal to 3, the indoor air fluctuates around 26°C and the relative humidity range is found to be 50% - 60% under solar heat flux of 350 $W.m^{-2}$.
Chair:	Dr. AMOU Komi Apélété
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

S III-2a: Bi-facial Open-Space Photovoltaic Systems versus Conventional Systems using Mono-facial Modules

Speaker: Marcus Schmidt

Begin: 13:40
(Togo 11:40)

06.04.2021

Panel 2

Abstract:
As part of a scientific work within the solar company Sunfarming GmbH, the aim was to find out whether bi-facial modules on open spaces deliver better results economically than conventional mono-facial solar modules. In this context, an already installed 750 kWp PV system with mono-facial solar modules was compared directly with a structurally identical PV system with bi-facial modules, which, however, does not exist in practice but was only simulated with PV software. The second part of the investigation includes the comparison of four different assembly systems or elevation variants in order to determine the system with the best relationship between system yield and costs. The final result of the first investigation showed that the use of bi-facial modules reduced the specific costs per kWh by approximately 5 %. In order to improve this effect, the use of compact assembly systems is recommended, e.g. five rows of modules per table with horizontal alignment.

Chair:	Dr. Kodjo Eloh
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

S III-2b: Simulation study of perovskite cell performance in real conditions of sub-Saharan Africa

Speaker: Essodossomondom Anate

Begin: 14:05
(Togo 12:05)

06.04.2021

Panel 2

Abstract:
Perovskite is certainly the material of the future of photovoltaics for terrestrial applications. With high efficiencies and advances in stability, perovskite solar cells, modules and mini-modules have already made their appearance in the laboratory and are being tested under real-world conditions to evaluate their real performance. In our study, we predict the performance of perovskite-based photovoltaic panel technology under the conditions of the Sub-Saharan African region by simulation. We started from the current-voltage characteristic of a real perovskite-based module to extract the cell parameters through MATLAB analysis software. These parameters were used to model a cell and then a module in the LTSpice XVII software for simulation. The impact of temperature is studied to evaluate the performance ratio (PR) of a clear day. This study allowed us to evaluate the PR of the perovskite solar module. Displaying PR reaching 90%, perovskite is a future candidate with high potential in the list of the most suitable technologies for our sub-region.

Chair:	Dr. Kodjo Eloh
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Begin: 13:40 (Togo 11:40) 06.04.2021 Panel 3	**S III-3a: A Model-based Approach to Decarbonize an Island's Energy System** *Speaker: Clara Paetow* Abstract: To achieve climate goals and contain further global warming, it is inevitable to reduce CO2 emissions especially in energy consumption. A way to do so is by integrating renewable energy sources (RES) into an energy system's power generation. However, there is no standard procedure to decarbonise a locally restricted system. Therefore, the various local conditions have to be analysed and taken into consideration. The authors propose a model-based approach to decarbonise the energy system of the island Föhr, Germany. This includes various collected data sets on local conditions such as climate data and heat and power demand. The data is used to represent the island's energy system and design a model-based solution in a simulation software. The authors identify potentials by comparing costs and revenues by addressing the deployment of different RES technologies. One finding is that heat generation causes 91 % of CO2 emissions making it the major producer. However, with the designed solution, emissions could be reduced to a third.
Chair:	Prof. Dr.-Ing. Hasan Smajic
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Begin: 14:05 (Togo 12:05) 06.04.2021 Panel 3	**S III-3b: Demand Response Model for optimized use of Renewable Energies in Production** *Speaker: Prof. Dr.-Ing. Clemens Faller* Abstract: A demand-response model was developed in the Automation Technology Laboratory at the Velbert/Heiligenhaus Campus (CVH) of Bochum University of Applied Sciences, in which energy users in the manufacturing sector are networked with a smart grid via a cloud platform in order to control production based on the supply of renewable energies.
Chair:	Prof. Dr.-Ing. Hasan Smajic
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Break (15min)

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

	PS 1a: Technical Condition Management for a PV-based distributed energy system *Speaker: Sebastian Schulz*
Begin: 14:45 (Togo 12:45) 06.04.2021 Panel 1	Abstract: A barrier to the readiness of a more widespread use of pv-system technologies is often due to the fact that, due to a lack of means of communication, it was not possible to guarantee support for the plants by maintenance and repair (MRO) teams. This is where new technological enablers come in, offering the possibilities of health monitoring and alarm event management [3, 4, 5]. Data-driven information processing and decision support, especially through a transcript of historical data about the operating conditions on site, are an advantage for an efficient and long-lasting operation that should not be underestimated [6, 9]. In the paper, a holistic approach and a prototypical realization for a Technical Condition Management (TCM) for pv-based distributed energy systems is presented. The core architecture consists of a single board computer (Raspberry PI 4 B) with various interoperable interfaces and additional PCBs for special sensors. The system is used to health monitor and log the states of the energy system and to provide event-based decisions on its adapted continued operation. Regularities for the demand of provided energy resources are collected in order to enable an optimized utilization of existing capacities at any time. Furthermore, an escalating alarm management is presented to operators and MRO service providers on the basis of collected data. The data processing is enabled by the opensource software NodeRED and the communication via GSM/Internet protocol.
Chair:	Prof. Dr. Alexander Stolpmann
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

	PS 1b: Design and simulation of an MPPT charge controller for a PV application *Speaker: Akiza BIDJAGARE*
Begin: 15:00 (Togo 13:00) 06.04.2021 Panel 1	Abstract: In this document, we propose an MPPT charge controller based on the two-phase charging method proposed by the datasheet of the battery under test. Also, for efficient and optimal charge the charge controller reacts with better exploitation of the available photovoltaic (PV) power by means of a maximum power point tracking (MPPT) technique employed in the control algorithm especially the Perturb and observe (P&O) techniques; when threshold voltage reach, the regulation phase start. The MPPT and converter efficiency are respectively 98.7% and 98.2% at the standard test condition (STC).
Chair:	Prof. Dr. Alexander Stolpmann
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Begin: 14:45 (Togo 12:45) 06.04.2021 Panel 2	**PS 2a: Education 4.0: An remote approach for training of intelligent automation and robotic during COVID19** *Speaker: Prof. Dr.-Ing. Hasan Smajic* Abstract: The COVID-19 pandemic confronts universities with great challenges to maintain research and teaching activities with as little contact as possible. Lecturers currently have to migrate to Internet teaching. In most cases, e-learning and digital tools are used to continue online courses to replace classroom teaching. But current online approaches are limited to just lectures and theoretical mathematical exercises. In this paper it will be shown how practical exercises can be carried out remotely via internet in a real technical environment. Experimental laboratory equipment for automation technology and mechatronics is always associated with high costs. The reason for the high investments are the costs for different intelligent devices within an automation solution and the costs for extensive engineering. Beyond the costs, the number of workstations usually does not correspond to the required number of students to be trained. In this case, the same exercises have to be repeated several times, which also leads to in-creased personnel costs. Remote laboratories are a very cost-effective solution for these problems. This paper describes how this goal can be achieved by implementing a WBT server (WBT - Web-Based Training Server) and a Java-based client-server architecture. The idea behind a remote controlled laboratory is to use web technologies and the Internet as communication infrastructure to perform an experimental part of the training with programmable automation devices. First of all, a detailed requirement profile for the laboratory was developed. Primarily technical, didactical and organizational requirements are concerned. In addition, the laboratory is to improve the education of the students by interactive, problem-oriented learning on real industrial automation components. The aim of the training is to learn suitable working methods for the design (engineering) of complete automation solutions starting from simple to medium complex machines and plants.
Chair:	Dr. DAM-BE L. DOUTI
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

Begin: 15:00 (Togo 13:00) 06.04.2021 Panel 2	**PS 2b: Planning and optimization of a multipurpose farm using renewable energies (solar) in Yaoundé (Cameroon)** *Speaker: Bertold Damesse* Abstract: The instability of Cameroon's electricity network leads to recurrent power outages, which constitute a significant obstacle to socio-economic activity in the region [3]. This is also the case for the agricultural activities carried out by the GIC PROSER in the MEYO area of Yaoundé. The main objective of this work is to demonstrate a solution approach for an ecologically sustainable and relatively self-sufficient solar energy supply by GIC-PROSER, thus creating a prototypical model for other farms. For this purpose, a detailed calculation of the annual energy demand was performed. A first investigation was done in order to find out the potential of wind energy, but the wind speeds are not sufficient to provide enough electrical energy due to the location of the farm. Subsequently, a thorough and optimized planning of a solar generator was made, taking into account the solar radiation data of the area. Finally, an approximate of the economic efficiency calculation of this ecological generator was shown. This results in an annual demand of 25,647 kWh/a with a peak load of 12.8 kW. On the roofs of two farm buildings, 49 solar modules with 600 W each are to be installed, resulting in an output of about 29.4 kW. The solar generator (AC grid) provides an annual energy of almost 38,794 kWh. About 32% of this energy is consumed directly by the electrical equipment on the farm. About 55% can be used for battery charging. The annual surplus of produced energy, about 4,131.90 kWh, is fed directly into the grid. This leads to a degree of autonomy of 90%. This solar system costs about 16,000,000 FCFA (24,425 EUR) and it is amortized 11 years after its installation.
Chair:	Dr. DAM-BE L. DOUTI
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

Break (15min)

	S IV-1a: Short-Term Electricity Generation Forecasting Using Machine Learning Algorithms: A Case Study of the Benin Electricity Community (C.E.B) *Speaker: Prof. SALAMI Adekunle Akim*
Begin: 15:30 (Togo 13:30) 06.04.2021 Panel 1	Abstract: Time series forecasting in the energy sector is important to power utilities for decision making to ensure the sustainability and quality of electricity supply, and the stability of the power grid. Unfortunately, the presence of certain exogenous factors such as weather conditions, electricity price, etc... complicates the task with using linear regression models that are becoming unsuitable. The search for a robust predictor would be an invaluable asset for electricity companies. To overcome this difficulty, Artificial Intelligence differs from these prediction methods through the Machine Learning algorithms which have been performing over the last decades in predicting time series on several levels. This work proposes the deployment of three univariate Machine Learning models: Support Vector Regression, Multi-Layer Perceptron, and the Long Short-Term Memory Recurrent Neural Network to predict the electricity production of Benin Electricity Community. In order to validate the performance of these different methods, against the Autoregressive Integrated Mobile Average and Multiple Regression model, performance metrics were used. Overall, the results show that the Machine Learning models outperform the linear regression methods. Consequently, Machine Learning methods offer a perspective for short-term electric power generation forecasting of Benin Electricity Community sources.
Chair:	Prof. Alexander Stolpmann
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

	S IV-1b: Static and dynamic evaluation of wind potential in the Kara region of Togo using artificial neural networks *Speaker: Arafat FOUSSENI*
Begin: 15:55 (Togo 13:55) 06.04.2021 Panel 1	Abstract: Togo's energy situation is characterized by a low rate of access to electricity (38.07 % in 2017). In the Kara region. there is certainly a wind potential whose study is necessary for the production of electricity. Thus, from the data recorded each day at intervals of one hour, we used Weibull distribution to evaluate the wind energy potential at 10m and then at 25m, 50m, 75m and 100m. However, the promotion of this source requires not only the knowledge of its potential but also the evolution of its quantity over time because in reality wind energy is confronted with the random nature of the wind. Thus, for the prediction of the wind potential in the region of Kara, we used artificial neural networks. The neural architecture used is a multilayer perceptron with a single neuron under the hidden layer whose activation function is a sigmoid function while the output layer uses a linear function. The prediction results obtained with an average squared error of 0.005 and a correlation of 0.96 show that the prediction results using this tool are acceptable and can be generalized under the same conditions on other sites. The evaluation of the wind potential in the region of Kara has enabled us to determine the amount of total energy available in the wind at different altitudes. Thanks to the average values of wind speeds determined, we could make an optimal choice of wind turbine to convert this kinetic energy of the wind into electrical energy.
Chair:	Prof. Dr. Alexander Stolpmann
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=ebfe6b99cbd1e7f6e84d68c0a420c5fee

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

sponsored by:
DAAD
Deutscher Akademischer Austauschdienst
German Academic Exchange Service

S IV-2a: Implementation of a machine tool retrofit system

Begin: 15:30 (Togo 13:30) 06.04.2021 Panel 2	*Speaker: Alexander Dietrich* Abstract: Small and medium-sized companies increasingly turning their attention towards the fourth industrial revolution. In order to increase their own long-term competitiveness, there is a growing desire to make production smarter, more efficient, safer and more sustainable through new technologies. Often, however, existing plants cannot be easily replaced by modern equipment. The reasons for this can be high investment costs, excessive downtimes or the unavailability of an equivalent machine. An alternative solution to the purchase of new equipment is the modernisation or expansion of existing systems, also called retrofitting. Thus, this paper deals with the retrofit process of a machine tool, whereby the software architecture of the control unit is the primary concern of this work.
Chair:	Dr. DAM-BE L. DOUTI
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

S IV-2b: Cyber-physical Production Systems in Settings with Limited Infrastructure

Begin: 15:55 (Togo 13:55) 06.04.2021 Panel 2	*Speaker: Bastian Prell* Abstract: During the last decade production innovation was mainly focused on connectivity aspects. The vision of smart factories, running on software, that uses collected machine data, has become true but foremost for leading industrial companies in highly developed countries. Apart from these, production can also be found in non-industrialized craftsman professions as well as in less developed countries. As digitalization does not necessarily require an industrial or developed setting the latter could possibly benefit from it as well. Socio-cyber-physical production systems have been used to describe the interdependencies of linked production systems but usually focus on highly developed regions as well as for industrial applications. This paper lines out similarities and differences for each case, introduces the concept of cyberphysical production systems (CPPS) and its extension to socio-CPPS (SCPPS), which emphasizes the role of human workers in the production environment. The findings of using those models for the two unconventional cases are presented and insights deduces. A critical analysis of what can be gained by conceptual modelling presents pahts for further investigation.
Chair:	Dr. DAM-BE L. DOUTI
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

Begin: 16:20 (Togo 14:20) 06.04.2021 Panel 2	**S IV-2c: Challenges of IoT deployment in the context of developing countries** *Speaker: Prof. Bernardo Yaser Leon Avila* Abstract: The concept of the Internet of Things (IoT) is not exactly a novelty, even if it has not burst out yet with all the force that the market expected. The 5th generation of mobile telephony (5G) is rushing to deploy in the midst of a real trade war, and intends to get one's own way on this and others fronts. This paper analyses how to overcome the challenges of an IoT deployment, which can be too complex to fulfil its promise of massification and ubiquity. This analysis is primarily intended to identify whether 5G will be the key to a current IoT deployment in all contexts, or whether it is wise to pursue other development paths first.
Chair:	Dr. DAM-BE L. DOUTI
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e8cad17f2b9f22864a1636afa6044cbb3

Begin: 15:30 (Togo 13:30) 06.04.2021 Panel 3	**S IV-3a: Design and implementation of a photovoltaic characterization platform at FaST** *Speaker: Moudjibatou AFODA* Abstract: The site that houses the FaST faces high dusty winds and considerable temperature variation. Weather conditions such as solar radiation, temperature, and wind speed greatly affect the performance of PV modules. But the data from PV equipment manufacturers do not allow for proper sizing. Therefore, a rigorous study is needed to find the most suitable PV module technology for the study area. For this purpose, platforms for the acquisition of meteorological parameters and module characterization are indispensable. This platform project at FaST will serve training and pedagogy because its configuration will allow master and bachelor students to carry out practical work, to carry out studies on new cell technologies under the influence of external factors specific to the sub-Saharan zone and will bring an added value by providing additional information on real conditions and especially the influence of local external factors. Our study consisted first of all in the realization of the platform on the roof of the FaST, then in the design and the programming of a module of acquisition of the measured parameters on the basis of the Arduino microcontroller card and finally in the test of characterization of the modules used for the platform thanks to an electronic load on the basis of MOSFET of power controlled by a microcontroller that we realized.
Chair:	Dr. SOUHO Tiatou
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org

Begin: 15:55 (Togo 13:55) 06.04.2021 Panel 3	**S IV-3b: Evaluation of power losses in a DC-DC Boost converter** *Speaker: Komi Boniface EHLAN* Abstract: DC-DC converters are dynamic systems consisting of the passive components. These components under the effect of thermal stress in a PV system generate power losses. The knowledge of these power losses is necessary to evaluate the conversion efficiency of the system. Using the polynomial approximation method, the equations for calculating losses in the different components were determined. The system is implemented under the MATLAB / Simulink software. The results show that for a PV application of 240 W supplied to the load, 18% are lost, only 82% are transferred
Chair:	Dr. SOUHO Tiatou
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e60d6a5e40447bc097d3bf25c98bb19af

Break (15min)

Begin: 17:00 (Togo 15:00) 06.04.2021 Plenary	**K IV: Best Paper Student Award** *Speaker: Prof. Dr.-Ing. Jörg Reiff-Stephan*
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e0e05868282dadb05852149a0259384f4

Begin: 17:30 (Togo 15:30) 06.04.2021 Plenary	**K V: Closing Session** *Speaker: Prof. Dr. Komla SANDA, Prof. Dr.-Ing. Jörg Reiff-Stephan*
Link to presentation:	https://th-wildau.webex.com/th-wildau-en/onstage/g.php?MTID=e0e05868282dadb05852149a0259384f4

Conference Committee: Prof. Dr.-Ing Jörg Reiff-Stephan, Prof. Kou´santa AMOUZOU, Prof Dr. Assiongbon ADANLETE
Conference Organizing Committee: Ron van de Sand, Alexander Dietrich, Johannes Thyssen Tishman
Email: info@susres2021.org