

International Conference on Agricultural Engineering

# AgEng-LAND. TECHNIK 2022

## The following topics will be discussed:

- NIR Sensors, Combine Harvester, Energy, Livestock
- Post Harvest Technology, Automation, Modeling
- Prediction, Electric Solutions, UAV
- Sustainable Farms, Plant Protection, Nutrient Management
- Sensors, Irrigation and Fertilisation, Application of SF
- Energy and Buildings, Farming, Seeding, Soil Cultivation
- Machine Design, Special Cultures, Tillage

+ Exhibition

+ Pre-Conference

+ AgEng-LAND. TECHNIK  
get-together

+ Post Excursions

Co-Organized with



## Chairmen

**Prof. Dr. Barbara Sturm**, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam

**Prof. Dr. Henning Meyer**, Chair Machinery System Design, Technische Universität Berlin



**1st Conference Day**  
Tuesday 22nd November 2022



**Plenary Session** (Room MOA 8-12)

**11:00 Welcoming Address and Opening Remarks: EurAgEng**

**Prof. Fátima Baptista**, President of EurAgEng, University of Évora, MED, Portugal

**11:15 Welcoming Address and Opening Remarks: VDI-MEG**

**Dr. Markus Demmel**, President of Max Eyth Society for Agricultural Engineering (VDI-MEG), Freising, Germany

**11:30 Current challenges and chances for agricultural equipment manufacturers**

**Jan Horstmann**, Managing Director R&D, KRONE Agriculture, Maschinenfabrik Bernard KRONE GmbH & Co. KG, Spelle, Germany

**12:00 Coffee Break**

**NIR Sensors** (Room MOA 8-12)

**Moderation: Prof. Dr.-Ing. Arno Ruckelshausen**, Hochschule Osnabrück, Germany

**Combine Harvester** (Room MOA 7)

**Moderation: Dr.-Ing. Thomas Göres**, Director SF Advanced Development, CLAAS Selbstfahrende Erntemaschinen GmbH, Harsewinkel, Germany

**Energy** (Room MOA 6)

**Moderation: Prof. Nikolaos Katsoulas**, Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece

**12:30 Non-destructive detection of Fusarium head blight in wheat kernels and wheat flour using Vis-NIR and mid-infrared spectroscopy**

**Mhd Baraa Almoujahed M. Sc.**, Dr. Aravind Krishnaswamy Rangarajan, Department of Environment, Ghent University, Ghent, Belgium

**Analysis of a Combine Harvester Threshing System Across Different Climate Regions**

**Mohamed Altaieb M. Sc.**, Advanced Engineering, Dr. Henning Deeken, CLAAS E-Systems GmbH, Dissen a.T.W., Germany

**Thermodynamic modeling of a Biomass Organic Rankine Cycle for sustainable heat and power cogeneration in greenhouses**

**Dr.-Ing. Apostolos Gkountas**, Research Engineer, Dr. Panteleimon Bakalis, G Ligeros & SIA OE (Psyctotherm), Piraeus, Greece

**13:00 Challenges and potentials of NIR sensors to simplify the generation of nitrogen flow balances**

**Jens Henningsen M. Sc.**, Christof Schroth, Data Science, Fraunhofer IESE, Kaiserslautern, Germany

**An interactive solution to calibrate loss sensors of a combine harvester**

**Sascha Dieckmeyer B. Sc.**, Maximilian Schröder M.BA, Electronic Development – Terminals and Displays, CLAAS Selbstfahrende Erntemaschinen GmbH, Harsewinkel, Germany

**Optimal design of a hybrid power generation system for greenhouses**

**Prof. Nikolaos Katsoulas**, Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece

**13:30 On farm validation of different NIR sensors for manure sensing**

**Dr. Eiko Thiessen**, Prof. Dr. Eberhard Hartung, Institute of Agricultural Engineering, University Kiel, Germany

**Development of a new structural undercarriage for combine harvesters**

**Dipl.-Ing. (FH) Benedikt Pölling**, Service Unit Engineering, CLAAS Selbstfahrende Erntemaschinen GmbH, Harsewinkel, Germany

**The Contribution of Innovative Semi-transparent Photovoltaics for Energy Autonomy in the Field of Greenhouse Systems**

**Associate Prof., PhD Angeliki Kavga**, PhD Candidate Theodoros Petrakis, Department of Agricultural Science, University Patras, Greece

**14:00 Potential of vis-NIRS spectroscopy for predicting soil nitrogen mineralization rate**

**Farida Yasmin Ruma**, Prof. Dr. Abdul Mounem Mouazen, Department of Environment, Ghent University, Ghent, Belgium

**Outlining the combine harvesters usage through CANBUS data analysis**

**Dr. Enrico Michielan**, Prof. Michele Mattetti, Department of Agricultural and Food Science, University of Bologna, Italy

**14:30 Coffee Break**

## 1st Conference Day Tuesday 22nd November 2022



### Plenary Session (Room MOA 8-12)

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- **11:30 Current challenges and chances for agricultural equipment manufacturers**  
**Jan Horstmann**, Managing Director R&D, KRONE Agriculture, Maschinenfabrik Bernard KRONE GmbH & Co. KG, Spelle, Germany
-  **12:00 Coffee Break**



#### **Livestock** (Room MOA 5)

**Moderation: Prof. Dr. habil. Reiner Brunsch**,  
Leibniz Institute for Agricultural Engineering and  
Bioeconomy (ATB), Potsdam, Germany

#### **Post Harvest Technologies** (Room MOA 4)

**Moderation: Dr. rer. agr. Dipl.-Ing. Thomas Hoffmann**,  
Head of Post Harvest Technology,  
Leibniz Institute for Agricultural Engineering and  
Bioeconomy (ATB), Potsdam, Germany

#### **Automation** (Room MOA 3)

**Moderation: Prof. Dr. Hans W. Griepentrog**,  
Institute of Agricultural Engineering, University of  
Hohenheim, Stuttgart, Germany

- **12:30 Influence of barn climate on the rumen temperature of lactating dairy cows**  
**Dr. Gundula Hoffmann**, Head of the working group Digital monitoring of animal welfare, Dr. Julia Heinicke, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany
- **12:30 Detection of ripening class of banana in post-harvest condition analysing intensity retrieved from reconstructed 3D LiDAR point cloud**  
**Dr. Manuela Zude-Sasse**, Kowshik Kumar Saha, Horticultural Engineering, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany
- **12:30 Teleoperation of an Agricultural Mobile Robot inside Berry Orchard using Digital Twin**  
**Dr. Redmond Shamshiri**, Dr.-Ing. Volker Dworak, Engineering for crop production, Leibniz Institute for Agricultural Engineering and Bioeconomy e. V. (ATB), Potsdam, Germany
- **13:00 Assessment of milk yield loss induced by heat stress in dairy cows**  
**Mattia Ceccarelli M. Sc.**, Department of Agricultural and Food Sciences, University of Bologna, Italy
- **13:00 Precimed: a simulation model for nutrient uptake prediction of a hydroponic cucumber crop grown in the Mediterranean region**  
**Prof. Nikolaos Katsoulas**, Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece
- **13:00 Simulation environment for the development of intelligent algorithms for agricultural applications**  
**Dipl.-Ing. Holger Burkhardt**, Commercial Vehicle SW & Control Systems, AVL List GmbH, Steyr, Austria
- **13:30 Alternative system for practical measurements of dairy cows' methane production**  
**IR Cécile Mélanie Levraut**, Dr. ir. Nico W.M. Oginck, Farm Technology Group, Wageningen University & Research, Wageningen, The Netherlands
- **13:30 Performance evaluation of newly developed ethylene scavengers for applications in packaging of fruit and vegetables**  
**Dr.-Ing. Pramod Mahajan**, Dr. Ing. Namrata Pathak, Department of Horticultural Engineering, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany
- **13:30 Methodology for the development of a plant detection system based on mechanical properties of crops using the example of corn**  
**Simon Kubinski M. Sc.**, Cologne Institute of Construction Machinery and Agricultural Engineering, University of Applied Sciences, Cologne, Germany
- **14:00 Near-infrared spectroscopic sensor system for milk composition analysis: an on-farm real-time application**  
**Jose A. Diaz-Olivares M. Sc.**, Prof. Ben Aernouts, Department of Biosystems — Livestock Technology Group, KU Leuven, Geel, Belgium
- **14:00 Extrusion of lignocellulosic residues from agriculture and agroforestry into fibre for peat replacement and pellets for animal bedding**  
**Christian Dittrich M. Sc.**, Dr. Ralf Pecenka, Department of Post Harvest Technology, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany
- **14:00 Disturbance Input Detection and Performance Monitoring for Smart Agricultural Implements**  
**Dr.-Ing. Sebastian Röttgermann**, Advanced Development, LEMKEN GmbH & Co.KG, Alpen, Germany, Dr.ir. Joris Ijsselmuiden, Track32 B.V., Ede, The Netherlands
-  **14:30 Coffee Break**



### Prediction (Room MOA 8-12)

**Moderation: Prof. Dr.-Ing. Henning Meyer**, Chair Machinery System Design, Technische Universität Berlin, Germany

### Harvest Technologies (Room MOA 7)

**Moderation: Prof. Dr.-Ing. Stefan Böttinger**, Institute of Agricultural Engineering, University Hohenheim, Stuttgart, Germany

### Electric Solutions (Room MOA 6)

**Moderation: Prof. Dr.-Ing. habil Thomas Herlitzius**, Technical University Dresden, Germany

15:00 **Grassland yield prediction and mapping in small-scaled regions**

**Christoph Stumpe M. Sc.**, Prof. Dr.-Ing. Stefan Böttinger, Institute of Agricultural Engineering, University of Hohenheim, Stuttgart, Germany

**Assessment of cutting quality on a combine harvester header using optical flow**

**Ir. Sam Dekkers**, Department of Biosystems – MeBioS, KU Leuven, Belgium

**Electric tractors – Sustainable and Profitable? Economic and environmental impact of autonomy and electric drivelines in agriculture**

**Oscar Lagnelöv M. Sc.**, Department of Energy and Technology, The Swedish University of Agricultural Science (SLU), Uppsala, Sweden

15:30 **The analysis of the combined impact of data based and parametric uncertainty on the prediction of greenhouse electricity demand**

**Henry Payne**, The Farm technology department, Wageningen University, Wageningen, The Netherlands

**Valuation Method for Corn head integrated Stubble Cracker System**

**Felix Herter B. Eng.** DHBW, Product Unit Header, Christian Schwaer M. Sc., CLAAS Selbstfahrende Erntemaschinen GmbH, Harsewinkel, Germany

**Electric Unmanned Ground Vehicle Coupled with a Rotary Tiller: Evaluation of On-Field Performance**

**Dr. Giuseppe Todde**, Agricultural Sciences, University of Sassari, Italy

16:00 **A digital shadow to study the convective drying of carrot slices**

**Jörg Schemminger M. Eng.**, Thijs Defraeye, Biomimetic Membranes and Textiles, Empa St. Gallen, Switzerland

**Investigation and testing of a novel concept for straw management with the Kombi-Mulcher**

**Christian Depenbrock M. Sc.**, Prof. Dr. Ludger Frerichs, Institute of Mobile Machines and Commercial Vehicles, Technical University Braunschweig, Germany

**Estimating the benefit of tractor electrification through real-world data**

**Prof. Michele Mattetti**, Department of Agricultural and Food Sciences, University of Bologna, Italy

16:30 **Break**

16:45 **Awarding of the EurAgEng Awards  
Awarding of the VDI-MEG Prizes**

18:30 **Get-together**

At the end of the first day of the event, we invite you to a get-together. Take advantage of the relaxed atmosphere to expand your network and to have in-depth discussions with other participants and speakers



## Livestock (Room MOA 5)

**Moderation: Prof. Dr. Ir. Peter Groot Koerkamp**, Plant Sciences Group/Farm Technology group, Wageningen University and Research, Wageningen, The Netherlands

**15:00** **Data-driven models to improve animal barn control systems**  
**Hannah Arwen Graef M. Sc.**, Section Agricultural and Biosystems Engineering, University of Kassel, Witzenhausen, Germany

**15:30** **A nested semi-mechanistic model to predict the temporal dynamics of ammonia emissions from a solid floor naturally ventilated dairy cattle building**  
**Dr. rer. nat. Sabrina Hempel**, Engineering for Livestock Management, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**16:00** **Development and validation of a low-cost online monitoring tool to manage barn climate and emissions from livestock housing systems**  
**Dr. David Janke**, Engineering for Livestock Management, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**16:30** **Break**

**16:45** **Awarding of the EurAgEng Awards**  
**Awarding of the VDI-MEG Prizes**

**18:30** **Get-together**

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## Post Harvest Technologies (Room MOA 4)

**Moderation: Dr.-Ing. Ralf Pecenka**, Department of Post Harvest Technology, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Effects of different Loader Base Materials on Slippage and Deviation in a Belt Conveyor System**  
**Associate Professor Musliu Olushola Sunmonu**, Dr. Mayowa Saheed Sanusi, Department of Food Engineering, University of Ilorin, Nigeria

**Effect of different Organic Binders and Other Machine Parameters on Nutritional Qualities of Cubed Sugar**  
**Associate Professor Musliu Olushola Sunmonu**, Dr. Mayowa Saheed Sanusi, Department of Food Engineering, University of Ilorin, Nigeria

**Homogenization of belt drying of hops by controlling the supply air humidity using partial air recirculation**  
**Dr.-Ing. Jochen Mellmann**, Head of Drying Research Group, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

## UAV (Room MOA 3)

**Moderation: Prof. Dr.-Ing. Cornelia Weltzien**, Head of Department and Chair at University, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**An evaluation of Deep Learning Methods for Weed Classification of High Resolution UAV Images**  
**Pendar Alirezazadeh**, Data Science in Agriculture, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**From Machine Vision Weed Classification to a targeted Application Workflow with Spray Drones**  
**Julius Petri M. Sc.**, Leonhard Krause B. Sc., Dipl.-Inf. Henrik Battke, Agricultural Solutions, Pix4D GmbH, Berlin Germany

**2nd Conference Day**  
Wednesday, 23rd November 2022



**Sustainable Farms** (Room MOA 8-12)  
**Moderation: Prof. Dr.-Ing. Henning Meyer**, Chair Machinery System Design, Technische Universität Berlin, Germany

**Applications of plant condition monitoring methods** (Room MOA 7)  
**Moderation: Dr. Thomas Anken**, Head Digital Production, Agroscope, Ettenhausen, Switzerland

**Nutrient Management** (Room MOA 6)  
**Moderation: DI Franz Handler**, Head of Agricultural Process Engineering, HBLFA Francisco Josephinum, Wieselburg, Austria

**08:30 A comparative life cycle analysis of living walls**  
**PhD Enrica Santolini**, Department of Agricultural Sciences and Food Technologies, University of Bologna, Italy

**Intra row weeding in sugar beets with the use of Artificial Intelligence**  
**Arjen van Dueren den Hollander M. Sc.**, Software and Systems Engineer, Machinefabriek Steketee BV, Stad aan 't Haringvliet, The Netherlands

**„MilKey“ and „MELS“: the role of information and communication technologies in mitigating emissions and increasing sustainability of livestock systems**  
**Prof. UZ, Dr. Barbara Amon**, Federico Dragoni, Technology Assessment and Substance Cycles, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**09:00 Cost-effective implementation of renewable energy sources in livestock barns**  
**Prof. Steven Lecompte**, Willem Faes, Department of Electromechanical, Metals and System Engineering, Ghent University, Ghent, Belgium

**The Role of Business Model Innovation in the Context of Site-specific Weed Management**  
**Nicolas Schmid M. Sc.**, Small Grains Production System, John Deere GmbH & Co. KG, Kaiserslautern, Germany

**Grass-Based Circular Business Models for Rural Agri-Food Value Chains: Lessons learnt from GO-GRASS project**  
**Dr. Sonja Germer**, Dr. Muluken E. Adamseged, Technology Assessment and Substance Cycles, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**09:30 Conversion of a diesel farm tractor to run on CNG**  
**Olivier Marchand**, Technical Director, CRMT Powertrain R&D, Dardilly, France

**Unspoken Misapplication: Micro-Agronomics and visual fallacy of agricultural spraying**  
**Garrett Maurer B. Eng.**, Director of Product, Appareo Systems LLC, Fargo ND, USA

**LIFE Carbon Farming and Climate Farm Demo: Development and implementation of a result-based funding mechanism for carbon farming in European mixed crop livestock systems**  
**Dr. Federico Dragoni**, Barbara Amon, Technology assessment and substance cycles, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**10:00 Design of an on-farm biomethane upgrading plant with hybrid compression and filling station**  
**Dr. Lukas Wannasek**, Sepehr Foroushani, Ph.D., Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**The best of two worlds: Spray boom control with hydropneumatic suspension technology**  
**Dr.-Ing. Lars Brinkschulte**, Applications Engineering International, ARGO-HYTOS GmbH, Kraichtal – Menzingen, Germany

**Influence of the temperature of storage on biogas production from dairy cows and fattening pigs' liquid manure**  
**Julio Elias Hilgert**, Dr. Federico Dragoni, Technology Assessment and Substance Cycles, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

 **10:30 Coffee Break**

## 2nd Conference Day

### Wednesday, 23rd November 2022



**Assessment of Conditions in Agricultural Buildings** (Room MOA 5)  
**Moderation: Prof. Fátima Baptista**, University of Évora, MED, Portugal

**Sensors** (Room MOA 4)  
**Moderation: Prof. Dr.-Ing. Arno Ruckelshausen**, Hochschule Osnabrück, Germany

**Irrigation and Fertilisation** (Room MOA 3)  
**Moderation: Dr. rer. agr. Dipl.-Ing. Thomas Hoffmann**, Head of Post Harvest Technology, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Modeling** (Room MOA 1-2)  
**Moderation: Dr.-Ing. Hermann Buitkamp**, Expert for Digitization and Standardization, VDMA, Frankfurt, Germany

**08:30 Process-based modelling approaches for integral assessment of the impact of feeding management on greenhouse gas and nitrogen emissions in dairy production systems**  
**Latifa Ouatahar**, Technology Assessment and Substance Cycles, Barbara Amon, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Smart Constituent Sensing using HarvestLab TM 3000**  
**Ambarish Panambilly M. Sc.**, External Relations, Intelligent Solutions Group, Dr. Peter Schade, John Deere GmbH & Co. KG, European Technology Innovation Center, Kaiserslautern, Germany

**A comparative study of hydrothermal carbonization and humification of digested cow manure**  
**Nader Marzban**, Post Harvest Technology, Dr. habil. Judy A Libra, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Uncertainty estimation in deep-learning based plumage condition assessment for laying hens**  
**Christian Lamping**, Farm Technology Group, Dr. Marjolein Derks, Prof. Dr. Peter Groot Koerkamp, Dr. Gert Kootstra Wageningen University, Wageningen, The Netherlands

**09:00 Walking activity of fattening pigs estimated with data originating from an RFID system**  
**Anita Kapun**, apl. Prof. Dr. Eva Gallmann, Institute of Agricultural Engineering, University of Hohenheim, Stuttgart, Germany

**Sensors for agriculture robots**  
**Dipl.-Ing. Maik Gränitz**, Jürgen Lieb, Mobile Outdoor Automation, SICK AG, Waldkirch, Dr.-Ing. Bernd Helge Leroch, Robot Makers GmbH, Kaiserslautern, Germany

**Phosphorus-based variable rate manure application in wheat and barley**  
**Jian Zhang M. Sc.**, Prof. Abdul M. Mouazen, Department of Environment, Ghent University, Ghent, Belgium

**High Nature Value grassland identification using deep learning**  
**Hanike Basavegowda Deepak M. Sc.**, Prof. Dr.-Ing. Cornelia Weltzien, Engineering for Crop Production, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**09:30 Comparison of Augmented and Mixed Reality Technologies in Livestock Farming Operations**  
**Dr. Gabriele Sara**, Post Doc fellow, Agricultural Sciences, University of Sassari, Italy

**RapidMapper – a mobile multi-sensor platform for the assessment of soil fertility in precision agriculture**  
**Dr. Hamed Tavakoli**, Dr. Sebastian Vogel, Engineering for Crop Production, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Impact of Magnetized Water on Germination, Growth Rate and Yield of Popcorn under deficit irrigation**  
**Associate Professor Kamarudeen Olaniyi Yusuf**, Rukayat Omotolani Tokosi B. Sc., Department of Agricultural and Biosystems Engineering, University of Ilorin, Nigeria

**Pressure drop of an animal occupied zone depending on the animal positioning**  
**Dr. E. Moustapha Doumbia**, Department of Engineering for Livestock-management, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**10:00 Monitoring of workers particulate matter exposure concentration in broiler houses**  
**Hyo-Jae Seo**, Prof. Il-Hwan Seo, Rural Construction Engineering, Jeonbuk National University, Jeonju-si, Republik of Korea

**Classification of manure type and their influence on the accuracy of nutrient determination in organic manures using NIR spectroscopy**  
**Leonard Friedrich M. Sc.**, Institute for Therotic Electrical Engineering and Microelectronics (ITEM), University Bremen, Germany

**Natural light interpretation for sustainable sports turf management and smart illumination development**  
**Andreas Schweiger M. Sc.**, Prof. Dr. Heinz Bernhardt, Chair of Agricultural Systems Engineering, Technical University of Munich, Freising, Germany

**Using specified sensor technic to develop a novel and gap-closed system for data acquisition in calf and heifer husbandry**  
**Fredrik Regler M. Sc.**, Prof. Dr. Heinz Bernhardt, Chair of Agricultural Systems Engineering, Technical University of Munich, Freising, Germany

**10:30 Coffee Break**



### Applications of SF (Room MOA 8-12)

**Moderation: Prof. Claus Grøn Sørensen**, Head of Operations Management Unit, Aarhus University, Denmark

### Plant Protection (Room MOA 7)

**Moderation: Prof. Dr. ir. AH Sander Kersten**, Department of Agrotechnology and Food Sciences, Wageningen University & Research, Wageningen, The Netherlands

### Livestock (Room MOA 6)

**Moderation: Prof. Dr. Ir. Peter Groot Koerkamp**, Plant Sciences Group/Farm Technology group, Wageningen University and Research, Wageningen, The Netherlands

**11:00** **How smartphone apps simplify the operation and monitoring of agricultural machinery**  
**Dipl.-Ing.(FH) Henning Hechteljen**, Product IT Manager, Charlotte Peters, LEMKEN GmbH & Co. KG, Alpen, Germany

**Experimental method to analyse the black spot bruises of potato tuber flesh due to mechanical deformation**  
**Dipl.-Ing. Lukas Poppa**, Prof. Dr. Ludger Frerichs-Institute for Mobile Machinery and Commercial Vehicles, Technical University Braunschweig, Germany

**Analysis of mixing efficiency by structural factors of livestock manure composting machine using DEM**  
**Byung-Wook Oh**, PhD Student, Prof. Il-Hwan Seo, Rural Construction Engineering, Jeonbuk National University, Jeonju-si, Rep. of Korea

**11:30** **Automatic onboard worktype identification of agricultural machinery with edge devices**  
**Lukas Wenzel M. Sc.**, Prof. Dr.-Ing. Henning J. Meyer, Chair Machinery and System Design, Technische Universität Berlin, Germany

**Numerical and Experimental Analysis of the Stomatal Resistance of a Tomato Crop in Almería (Spain)**  
**Dr. María de los Ángeles Moreno Teruel**, Engineering department, University of Almería, Cañada de San Urbano-Almería, Spain

**Simulation of Ca and K concentrations in the nutrient solution of an aquaponic system**  
**Prof. Nikolaos Katsoulas**, Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece

**12:00** **Operation of Agricultural Campus Networks**  
**Dr.-Ing. Andreas Hecker**, Vodafone Chair Mobile Communications Systems, Technical University Dresden, Germany

**The Effect of Diffuse Film Covers on the Development of Cucumber Fungal Diseases in a Mediterranean Greenhouse**  
**Dr. María de los Ángeles Moreno Teruel**, Engineering department, University of Almería, Cañada de San Urbano-Almería, Spain

**Effect of UV-B illumination on the production of edible crickets for their introduction in an urban co-cultivation system**  
**Marios Psarianos M. Sc.**, Department of horticultural engineering, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**12:30** **Potential and improvement of maintenance efficiency of agricultural machines by a new digital maintenance assistant**  
**Fredrik Regler M. Sc.**, Prof. Dr. Heinz Bernhardt, Chair of Agricultural Systems Engineering, Technical University of Munich, Freising, Germany

**The Effect of Diffuse Films Covers on Yield, Fruit Quality and Photosynthesis Activity of Cucumber (Cucumis sativus L.) Crop**  
**Dr. María de los Ángeles Moreno Teruel**, Engineering department, University of Almería, Cañada de San Urbano-Almería, Spain

**Insect-assisted bioconversion of aquaculture sludge in plant fertilizer**  
**Giacomo Rossi M. Sc.**, Horticultural Engineering, Leibniz Institute for Agricultural Engineering and Bio-economy (ATB), Potsdam, Germany

**13:00** **Lunch break**





## Energy and Buildings (Room MOA 5)

**Moderation: Prof. Fátima Baptista**, University of Évora, MED, Portugal

## Post Harvest Technologies (Room MOA 4)

**Moderation: Dr.-Ing. Pramod Mahajan**, Department of Horticultural Engineering, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

## Farming (Room MOA 3)

**Moderation: Prof. Dr.-Ing. Peter Pickel**, John Deere European Technology Innovation Center, Kaiserslautern, Germany

## Modeling (Room MOA 1-2)

**Moderation: Prof. Dr.-Ing. Timo Oksanen**, Chair of Agrimechatronics, Technical University of Munich (TUM), Freising, Germany

### 11:00 Machine Learning Models for Predictions of Thermal Energy Need in Farm Buildings

**PhD Alberto Barbaresi**, Assistant Professor, Dr. Mattia Ceccarelli, Department of Agricultural and Food Sciences, University of Bologna, Italy

### Impact of packaging film thickness and perforation size on ethylene accumulation inside the fruit package

**Akshay Dagadu Sonawane M.Tech.**, Department of Horticultural Engineering, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

### IoT platform challenges, planning, and implementation for the Leibniz Innovation Farm (InnoHof)

**PhD James M Anderson**, Science Management Unit, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

### Prospective Thermal Processing of Soybeans Using a Bean Characteristic Model

**Dipl.-Ing. Dr. techn. Matthias Trimmel**, Josephinum Research, Wieselburg, Priv.-Doz. Dipl.-Ing. Dr. Karl Schedle, Institut für Tierernährung, BOKU, Vienna, Austria

### 11:30 A dynamic heat pump model for precise environment control of a broiler house in Northern Greece

**Dimitrios Tyris M. Sc.**, Department of Natural Resources Development and Agricultural Engineering, Agricultural University of Athens, Greece, Dr.-Ing. Apostolos Gkountas, THERMODRAFT IKE, Piraeus, Greece

### A procedure to recycle plastic film in asparagus cultivation without polluting the environment

**Dr. Martin Geyer**, Horticultural Engineering, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

### Evaluation of particulate matter concentrations by crop cultivation in reclaimed land

**Seong-Won Lee**, Prof. Il-Hwan Seo, Rural Construction Engineering, Jeonbuk National University, Jeonju-si, Republik of Korea

### Interaction properties of wheat straw and grain for Discrete Element Method

**Peter Maimilian Roth M. Sc.**, Felix Max Appich M. Sc., Department Fundamentals of Agricultural Engineering, University of Hohenheim, Stuttgart, Germany

### 12:00 RES4LIVE – Energy Smart Livestock Farming towards Zero Fossil Fuel Consumption

**Dimitrios Tyris M. Sc.**, Prof. Dimitris Manolakos, Department of Natural Resources Development and Agricultural Engineering, Agricultural University of Athens, Greece

### Investigation of the cumulative influence of postharvest factors on product quality of dried apple slices

**Dr. Gardis J.E. von Gersdorff**, Research Institute, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

### Smart farming technology adoption for improved decision-making: Perspectives from Australian broadacre agriculture

**Dr. Leisa Armstrong**, Edith Cowan University, Joondalup, Australia

### Effects of different autoclaving parameters on the microbial qualities of raw milk samples

**Dr. PhD Timothy Denen Akpenpuun**, Agricultural and Biosystems Engineering, University of Ilorin, Nigeria

### 12:30 A pilot system to replace fossil energy with renewable sources in pig barns

**Prof. Stefano Benni**, Department of Agricultural and Food Sciences, University of Bologna, Italy

### Non-destructive internal disorder detection in pear fruit using X-ray radiographs and deep learning

**Astrid Tempelaere M. Sc.**, Mechatronica, Biostatistics sensors, KU Leuven, Belgium

### In-field Spatial Variability and Potential for Profitability of Variable Rate Applications

**Mingyi Zhao M. Sc.**, Prof. Dr. Abdul Mouazen, Faculty of Bioscience Engineering, Department of Environment, Ghent University, Ghent, Belgium

### 13:00 Lunch break



### Seeding (Room MOA 8-12)

**Moderation: Yvan Saeys**, VIB-UGent Center for Inflammation Research, University Gent, Belgium

### Soil Cultivation (Room MOA 7)

**Moderation: Prof. Dr.-Ing. habil Thomas Herlitzius**, Technical University Dresden, Germany

### Machine Design (Room MOA 6)

**Moderation: Dipl.-Ing. Herbert Coenen**, Uniparts India Ltd., Noida, India

**14:00 Effects of site-specific corn sowing on yield and quality in different climatic regions in Austria**

**Fabian Butzenlechner**, Innovation Farm, Dr. DDI, Markus Gansberger, Josephinum Research, Wieselburg, Austria

**AI-based Tillage Job Quality Assessment for Advanced Machine Automation in Agriculture**

**Dr. Martin Schmidt**, ISG Tractor Electronics, John Deere GmbH & Co. KG, Mannheim, Germany

**Integrated methodology for vibroacoustic and psychoacoustic evaluation of machinery and equipment**

**Dr.-Ing. Filip Baranski**, KFB Acoustics GmbH, Bochum, Germany

**14:30 An Automated System of Soil Sensor-based Site-specific Seeding for Silage Maize**

**Muhammad Abdul Munnaf**, Prof. Dr. Abdul Mou-nem Mouazen, Department of Environment, Ghent University, Ghent, Belgium

**Road to Autonomy: Soil Compactor Application**

**Shelley Nation**, Systems R&D Lead, Autonomy, Danfoss, Plymouth, USA

**Investigations on the rolling resistance of tractor tires using coast down tests**

**Valentin Ernst M. Sc.**, Julian Schwehn M. Sc., Institute of Agricultural Engineering, University of Hohenheim, Stuttgart, Germany

**15:00 Concept and performance of an autonomous precision seeder for grain crops**

**Alexander Stana M. Sc.**, Prof. Dr. Hans W. Griepen-trog, Process engineering in plant production, University Hohenheim, Stuttgart, Germany

**Development of an innovative soil-cultivation-system for energy-saving straw conditioning and ultra-shallow tillage**

**Dipl.-Ing (FH) Michael Pokriefke**, CEO, seed2soil GmbH & Co. KG, Wiefelstede, Germany

**15:30 Break**

### Plenary Session (Room MOA 8-12)

**15:45 Food versus Nature**

**Prof. José Rafael Marques da Silva**, Department of Rural Engineering, University of Évora, Portugal

**16:15 Closing Remarks**

**Preview AgEng 2024 Athen**

**Prof. Nikolaos Katsoulas**, Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece

**Preview Landtechnik 2023/2024**

**Prof. Dr. Henning Meyer**, Chair Machinery System Design, Technische Universität Berlin, Germany

**EurAgEng presidency – hand-over**

**Prof. Dr. Fátima Baptista**, President of EurAgEng, University of Évora, MED, Portugal

**Prof. Dr. Barbara Sturm**, President elected of EurAgEng, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**AgEng LAND.TECHNIK 2022 Closing Words**

**Prof. Dr. Barbara Sturm**, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany



**Buildings** (Room MOA 5)  
**Moderation: Prof. Dr. habil. Reiner Brunsch**, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Special Cultures** (Room MOA 4)  
**Moderation: Prof. Dr. Thijs Defraeye**, Empa, St. Gallen, Switzerland

**Tillage** (Room MOA 3)  
**Moderation: Dr. Markus Demmel**, Bavarian State Research Center for Agriculture, Freising, Germany

**Greenhouse** (Room MOA 1-2)  
**Moderation: Prof. Nikolaos Katsoulas**, Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece

**14:00** **Effects of Roof Design on Near Ground Gaseous Emissions from a Naturally-ventilated Pig Barn**  
**Dr. PhD Qianying Yi**, Department of Engineering for Livestock Management, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Analysis of three different methods for reducing water ragwort (*Jacobaea aquatica*) on grassland**  
**Stefan Thurner**, Institute for Agricultural Engineering and Animal Husbandry, Bavarian State Research Centre for Agriculture, Freising, Germany

**Smart Traction – Design and experimental set up of a track and traction-regulated crawler chassis for agricultural tractor-trailer combinations**  
**Sascha Groß-Hardt M. Sc.**, Prof. Dr.-Ing. Hubert Korte, Department of Applied Sciences Osnabrück, Germany

**Estimation of tomato hydroponic cultivation transpiration and adjustment of irrigation under Mediterranean conditions**  
**Prof. Ioannis Lycoskoufis**, University of Peloponnesem, Kalamata, Associate Professor Angeliki Kavga, Department of Agriculture, University of Patras, Greece

**14:30** **Investigation of the vertical distribution of ammonia, methane, and carbon dioxide in a naturally ventilated dairy barn**  
**Harsh Sahu M. Sc.**, Technology in animal husbandry, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Impact of Microbial Load Reduction with Magnetic Field and Blanching on Selected Vitamins of Sweet Pepper**  
**Dr. Michael Mayokun Odewole**, Department of Food Engineering, Faculty of Engineering and Technology, University of Ilorin, Nigeria

**Underground Sensing Probes for Precision Agriculture**  
**João Oliveira M. Eng.**, Project Manager, Fraunhofer Portugal AICOS, Porto, Portugal

**Definition of a Porous Media Model Simulating the Presence of a Small Canopy Crops in a Greenhouse**  
**PhD Marco Bovo**, Department of Agricultural and Food Sciences, University of Bologna, Italy

**15:00** **A CFD study on ventilation and micro-environment distribution in Tomato greenhouse-complex located on Saemangeum reclaimed land**  
**Anthony Kintu Kibwika**, Prof. Il-Hwan Seo, Rural Construction Engineering, Jeonbuk National University, Jeonju-si, Rep. of Korea

**Correlation between colour and carotenoid content for carrot drying: A closer look**  
**Dr. agr. Sharvari Raut**, Department of Post-Harvest Technology, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

**Evaluation of site-specific tillage strategies from economic, environmental, and technical perspective**  
**Yongjing Wang M. Sc.**, Prof. Dr. Abdul Mouazen, Faculty of Bioscience Engineering, Department of Environment, Ghent University, Ghent, Belgium

**15:30** **Break**

**Plenary Session** (Room MOA 8-12)

**15:45** **Food versus Nature**  
**Prof. José Rafael Marques da Silva**, Department of Rural Engineering, University of Évora, Portugal

**16:15** **Closing Remarks**  
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**AgEng LAND.TECHNIK 2022 Closing Words**  
**Prof. Dr. Barbara Sturm**, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Potsdam, Germany

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## Technical Chair



The Leibniz Institute for Agricultural Engineering and Bioeconomy (LeibnizATB) is a pioneer and driver of bioeconomic research. Its overarching aim: One Health for humans, animals and the environment! Therefore, it researches in the field of agricultural science, engineering and biotechnology from basic research to concrete application to provide the scientific basis for a transformation of agricultural, food, industrial and energy systems into a comprehensive bio-based circular economy.



The European Society of Agricultural Engineering (EurAgEng) exists to promote the professions of Agricultural and Biosystems Engineering and the people who serve it. The Society is particularly active in conferences, Special Interest Groups, publications, networking, and international lobbying.

[www.eurageng.net](http://www.eurageng.net)



The Association of German Engineers (VDI) is one of the leading engineer's associations worldwide. The Max Eyth Society for Agricultural Engineering represents a technical division of the VDI. It bears the name of the founder of agricultural engineering as a distinct discipline in Germany, Max Eyth (1836-1906).

[www.vdi.de/meg](http://www.vdi.de/meg)



The VDI Wissensforum organizes and provides seminars and conferences dedicated not only to engineers but also to academics and practitioners from widely diverse branches of the economy. Our activities are backed by the Verein Deutscher Ingenieure e. V. (VDI), a virtually inexhaustible fund of know-how constantly attracting new ideas and suggestions.

## Official Conference Language

The official language of the conference will be English.  
Simultaneous translation will not be available.

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## AgEng-LAND.TECHNIK get-together Monday, 21st November 2022

The Leibniz Institute for Agricultural Engineering and Bioeconomy (LeibnizATB) is a research institute located in Potsdam, Germany and a pioneer of bioeconomy research. It is a member of the renowned Leibniz Association and researches in the field of agricultural science, engineering and biotechnology from basic research to concrete application. Its goal is to provide the scientific basis to transform agricultural, food, industrial and energy systems into a comprehensive bio-based circular economy with the overarching aim of One Health for humans, animals and the environment!

**Date: 21st November 2022, 18:00-22:00**

**Adresse:** Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB)  
 Max-Eyth-Allee 100  
 14469 Potsdam

A shuttle bus from the MOA hotel to ATB and back, as well as shuttles from ATB to Potsdam main station will be provided. The details will be shared with registered participants in due time.

The AgEng-LAND.TECHNIK get-together takes place with generous support by the agricultural engineering industry.

Register for the free AgEng-LAND.TECHNIK get-together with the Registration form or with your online registration for the conference at [www.vdi-international.com/ageng](http://www.vdi-international.com/ageng)



Quelle: FG HM

## Pre-Conference Monday, 21st November 2022, 09:00 - approx. 17:30 h

### Pre Conference Certificate Course

From theory to practice – You are a doctoral researcher or just started your career in science? The pre-conference training courses provide you the unique opportunity to learn and gain additional skill sets around data management, acquisition, sensor systems and modelling by highlighting challenges and solutions (new/old) currently in practice. The courses will take place at the Leibniz Institute for Agricultural Engineering and Bioeconomy to strategically allow the maximum engagement and ensure fruitful interactions between you and the experts.

**All participants will receive a certificate for the participated training courses.**

**Target:** Doctoral and early career researchers

**Place:** Leibniz Institute for Agricultural Engineering and Bioeconomy

**Pre-Conference Fee:** 50 € per registration

**General Pre-requisites:**

1. Pre-registration is necessary. Participants are requested to register for one of the three optional courses that run in parallel sessions during registration
2. All participants are requested to carry a laptop

### Training Courses

#### Research data management – Weighing practices

Large amounts of data both quantitative and qualitative in nature is collected during the course of research. This data needs to be structured or organised in a proper manner so that it is possible to recover and access relevant information at any given point of time. Therefore, it is vital to ensure good data management practices. This training course aims to put forward the current challenges and provide information on good data management practices for research while conducting practical exercises within the framework of this course. This training course is a compulsory event for all the registered participants attending the pre-conference program.

**No. of participants: all registered participants**

**Optional Training courses:** (Please choose one)

#### 1. Smart processing systems – Product orientated processes

Food plays an essential role in maintaining the overall nutrition security. However, the alarming numbers on food loss/waste and nutrition insecurity calls for approaches and methodologies that are process, resource and energy efficient. Traditional food processing techniques are currently inefficient as they are not only labour intensive but also resource and energy intensive. New technologies, sensors and integration of measurement and control systems has led to the shift to smart food processing techniques. This training course will provide a multidisciplinary view on smart food processing techniques that can reliably replace traditional food processing techniques. Specifically, participants will gain an in depth insight within food processing to produce high quality end products.

**No. of participants: min 5 and max 20**

#### 2. Infield-ag-robotics – Vision to action

To ensure safe, sustainable and resilient food production processes, agriculture robotics plays a significant role in agricultural engineering. In addition to automating mechanical operations, collecting and analyzing data to make informed decisions is an important aspect of this field. For this purpose, novel methods such as optical sensors are increasingly being used to monitor and evaluate the on farm needs for optimum production processes. Therefore, data from stationary sensors and sensors mounted on mobile platforms are merged to provide an in depth understanding of the plant's needs. In this interactive course, participants will have the opportunity to learn about different sensor integrated solutions while also demonstrating their pros and cons. The course will also present the advancement in the field, by showing how robotics can be used to automatically read the data and take action based on the previously obtained information. For this course, it is suggested that participants have at least entry level programming skills, however it is not compulsory.

**No. of participants: min 5 and max 20**



Source: © Käthner/LeibnizATB

#### 3. Efficient welfare: Reconciling energy efficiency and animal welfare through model-predictive environmental control

Environmental control of livestock barns is a growing challenge with serious implications for food security and animal welfare. Despite decades of research, versatile predictors that can be used to prevent and alleviate environmental stress effectively and for a reasonably wide range of animal breeds, facilities and climates remain elusive. Mechanistic models of the thermal interaction between livestock and the environment can be powerful tools for identifying conditions of potential stress and optimizing the barn climate for maximum energy efficiency and minimum stress. Nevertheless, the application of such models remains limited. This workshop presents an overview of thermodynamic models for characterizing the highly coupled, multiphysics interaction between livestock and the environment, with a focus on the systematic implementation and application of such models for deriving stress indicators and thresholds and predictive control of the barn climate. A detailed case study of dairy cattle housed in naturally ventilated barns equipped with a smart climate monitoring and control system will be presented as an example. Participants will have an opportunity for hands-on exercises in developing and using sample models.

**No. of participants: min 5 and max 20**

#### Special session: Elevator pitches

The elevator pitch session gives the participants the opportunity to explain their research focus in a simple yet concise manner. An elevator pitch that engages the audience and calls for further discussion in the networking session of is the overall aim of this session. As a competitive incentive the best elevator pitch will be awarded chosen by the jury panel. Doctoral researchers are encouraged to participate in this special session.

**Participants: max 15 participants.**

## Post Conference Excursions Thursday 24th November 2022

### AgEng-LandTechnik 2022 – Post Conference Excursions

To round off this unique conference, we cordially invite you to take part in one of three excursions in the Berlin region. Depending on your wishes, we take you to renowned research institutions, exciting practical companies and world heritage sites where research and application go hand in hand.

The full-day tours start directly at the hotel. By bus, you will travel through Berlin's city centre, which is definitely worth seeing, and the picturesque landscapes of the surrounding countryside. Sufficient breaks along with refreshments will be provided. Lunch is on a self-pay basis.

**Date:** Nov 24, 2022, 9 a.m. - about 5 p.m.  
**Departure and arrival:** **Mercure Hotel MOA, Berlin**  
**Pre-Conference Fee:** 25 € per registration, lunch on self-pay basis

### Choose one from three offers:

#### Tour A – Bridging the gap from research to application – Visiting Potsdam

Potsdam is a city of UNESCO World Heritage, a city of parks and palaces, of culture and science. We take you on a trip to Potsdam for visiting the **Leibniz-Institute for Agricultural Engineering and Bioeconomy (Leibniz ATB)**, one of about 40 scientific institutions in Potsdam and a pioneer and driver of bioeconomy research. ATB scientists will guide you through the unique set of pilot plants, laboratories and a boundary layer wind tunnel. Learn about how woodchips of short rotation coppices provide sustainable heat supply for ATB's campus. Get in contact with alternatives for peatland management and new business ideas for paludi cultures.

After a lunchbreak, you will visit the historical **Park Sanssouci** where culture and research is closely connected. Enjoy a guided tour through this world heritage site and learn about the efforts of the **Stiftung Preußische Schlösser und Gärten (SPSG)** to protect the trees from the impacts of climate change in the historic parks using humic substances. (<https://www.spsg.de/en/palaces-and-gardens/unesco-world-heritage/>) Afterwards you will get the chance to explore Park Sanssouci on your own.

**No. of participants: min 5 and max 25**

#### Tour B – Next-generation horticulture

Innovative and sustainable greenhouse technologies as well as biosensor optimisation will await for you at the first stop of this tour, the **Albrecht Daniel Thaer Institute for Agricultural and Horticultural Sciences**. This Institute of Humboldt University dates back with a history of around 200 years but conducts research into the major challenges of our time. Among other things, you will gain insights into experiments on technology for solar energy production from greenhouses and technology for closed cycles in coupled agricultural systems (for example systems with insects, fish and vegetable).

After a lunchbreak, we will visit the **Leibniz Institute of Vegetable and Ornamental Crops (IGZ)** in Großbeeren with its extensive grounds, the only greenhouse in Europe for above-ground and underground gas exchange measurements and a special focus on next-generation horticultural systems. With its research, the IGZ develops management strategies for indoor and outdoor horticulture, which are resource-efficient, adapted to climate change and use model-based decision support systems.

**No. of participants: min 5 and max 25**



Source: ©Manuel Gutjahr/LeibnizATB

#### Tour C – Matching the contraverse – Laser technologies and regenerative agriculture

Laser technologies open up a wide field for measurements in agriculture. The **Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik** in Berlin develops diode lasers that are especially tailored to applications in sensor technology and analytics. Just for you, the institute will open its doors to the Laser sensor laboratory and provide insight in current projects on high-frequency electronics, photonics and quantum physics.

(<https://www.fbh-berlin.de/en/>)

After a lunchbreak, we will leave Berlin and drive to the **Gut&Bösel**, an ecological agriculture and forestry business with a vision they call "Beyond farming". Their overall aim is to improve the cultivated land instead of just maintaining the status quo. Therefore, Gut&Bösel works together with start-ups, scientific institutions, pioneers and associations and provide trial plots, conduct long-term studies and integrate new applications into agricultural practice. You will get the chance to explore new farming concepts, syntropic agriculture and agroforestry systems combined with animal husbandry.

(<https://www.gutundboesel.org/>)

**No. of participants: min 5 and max 16**



You need help?  
Please contact us!

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<b>AgEng-LAND.TECHNIK 2022</b>	
<input type="checkbox"/> Berlin/Germany, November 22 – 23, 2022 (12TA001022)	
EUR 1090,-	

www

**Additional events**

<input type="checkbox"/> AgEng-LAND.TECHNIK get-together 21.11.2022		<b>free</b>
<b>Please choose 1, 2 or 3 (21.11.2022)</b>		
<input type="checkbox"/> Course 1: Smart processing systems	<input type="checkbox"/> Course 2: Infield-ag-robotics	<input type="checkbox"/> Course 3: Efficient welfare
<b>Please choose A, B or C (24.11.2022)</b>		
<input type="checkbox"/> Tour A: ATB, Park Sanssouci	<input type="checkbox"/> Tour B : HU, IGZ	<input type="checkbox"/> Tour C : FBI, Gut Bösel
		<b>50,- €</b>
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**Room reservation:**

Berlin: Mercure Hotel MOA, Stephanstr. 41, 10559 Berlin, Tel.: 030 3940430, E-Mail: [hello@moa.de](mailto:hello@moa.de)

More Hotels close to the conference venue may be found via our HRS service [www.vdi-wissensforum.de/hrs](http://www.vdi-wissensforum.de/hrs).

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