

2nd International VDI Conference

# Automation and Robotics in Agriculture

July 01 and 02, 2020, Dusseldorf

- Agricultural Automation: Responding to Legal Requirements while maximizing Profits
- Developing Autonomous Robots using AI
- What is necessary for more Automation in the Field?
- How can we ensure Robots provide real Value to Farmers?
- System Design for Animal Automation and Livestock Management
- How to implement Secure Standards for Automation Interface

+ Interactive Round Table Discussions

Meet international Experts from:





## About us



The Association of German Engineers (VDI) is one of the largest technical-scientific associations in Europe. Throughout the years, the VDI has successfully expanded its activities nationally and internationally to foster and impart knowledge about technology-related issues. As a financially independent, politically unaffiliated and non-profit organization the VDI is recognized as the key representative of engineers both within the profession and in public.

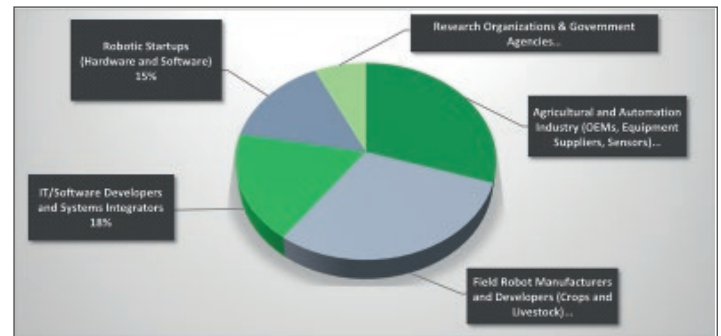
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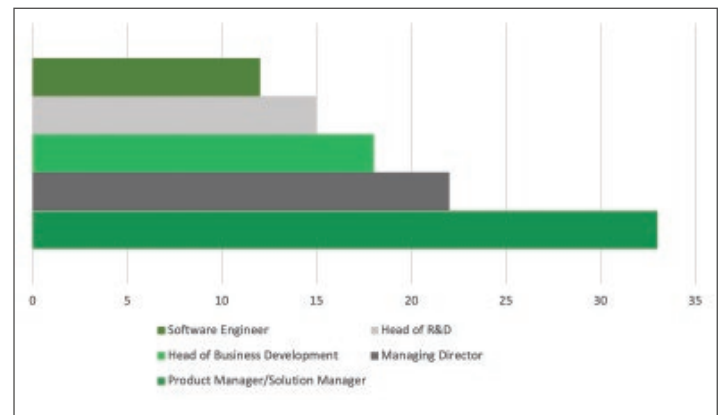
## Reasons to attend

- Meet international Agriculture Industry Experts
- Gain insights into OEMs' Perspectives on Future Farming by Robotics
- Prepare for Industry-wide Robotics Usage
- Benefit from Case Studies of Animal Automation
- Network with innovative Startups
- Discuss how Robotics can provide real Value to Farmers

## Expected Participants according to Functions



## Expected Participants according to Industries



08:45 Registration & welcome coffee

### 10:15 Chair's welcome and opening address

Prof. Ole Green, CEO, AGROINTELLI, Denmark

10:30 **Speed Networking** | Make the most of this networking opportunity by participating in these quick and effective 1-to-1 interactions. Get to know the other attendees and exchange your business cards.

## I. Automation Trends in Agriculture

### 10:45 Legal Risks and Chances of Automation in Agriculture

- Regulatory framework of automation and robotics in agriculture
- Compliance challenges
- First steps: Legal due diligence to identify risks
- Legal solutions for effective risk minimization

Claudia Otto, Counsel and Florian Mörth, Associate, both: Dentons, Germany

### 11:15 ROS2 for Autonomous Agriculture Applications

- Last release of Robotic Operating System (ROS) in 2020 signals start of ROS2 era
- Challenges and opportunities for autonomous agriculture applications
- Strategies for a successful adoption of ROS2

Jorge Viramontes, Engineering Manager - Autonomous Systems, JCA Electronics, Canada

### 11:45 Future Autonomous Farming

- 200 million workers in industry but 2 billion workers in agriculture. Worldwide availability is declining fast. How to innovate our way out?
- What transition paths could work from fully manual to fully autonomous
- Required key technologies that should boost AG-Tech
- How to become part of the agri-food robotics ecosystem, what are the needs

Erik Pekkeriet, Program Manager, Agri Food Robotics Group, Wageningen University & Research, The Netherlands

12:15  Lunch

## II. Robotics on the Fields

### 13:45 Experience gained in developing Autonomous Robots using AI to kill Weeds

- Challenges in the development of an AI classifier to detect plants in real conditions
- Design trade-offs of a high accuracy spot spraying system
- Robot design choices for simplifying the farmer's life
- Case study: ecoRobotix AVO weeding machine

Dr. Steve Tanner, CTO, ecoRobotix SA, Switzerland

### 14:15 Fast Prototyping of Autonomous Vehicles – Case Study: Transformation of a Manual Harvester to fully Autonomous Operation in only 2 Months

- Prerequisites for vehicle upgrade
- Remote control of vehicles & autonomous mission
- Challenges of calibration and next steps

Alexey Bogatyryov, CTO, eFarmer, Ukraine

### 14:45 Automatization of Charging Process for Modular Field Robots

- Is the rural area ready for the automated charged field robots?
- Which technology approach can be transferred into the agriculture sector?
- The research project "Cognitive agriculture" explores different field robots
- Feldschwarm as an example of a modular field robot

Dr. Julia Osten, Research Associate, Fraunhofer Institute for Transportation and Infrastructure Systems IVI, co-authors: Thomas Emter, Fraunhofer IOSB and Kevin Bregler, Fraunhofer IPA, all: Germany

15:15  Networking & coffee break

## III. Advancements in Robotics – Towards more Automation in Agriculture

### 15:45 Precision Harvesting Robot for Lettuce using 3D & Multispectral Imaging

- 3D camera specifically designed to assess plants
- Each lettuce is analyzed with real time generated data
- Each lettuce is cut at the perfect spot and is ready for (automated) packing
- Overcome labor shortage for lettuce harvesting

Stefan Schwartz, M.Sc., COO, co-authors: Dr. Grégoire Hummel and Dr. Uladzimir Zhokhavets, all: Phenospex B.V., The Netherlands

### 16:15 Future Farming by Robotics – Fendt Xaver

- Robots & Swarms can provide solutions for efficient and sustainable farming
- Big and heavy machines will be replaced by many small and autonomous units
- Disruptive business models: Controlled Environment Ag, AI, Robots & Swarms
- Looking at opportunities and challenges for this new approach

Dr. Heribert Reiter, Vice President Engineering Tractors Global, AGCO Corporation, Germany

### 16:45 Testing as a Way to implement Robots in Agriculture

- Precision test of robots in agriculture farming
- User performance and teaching
- Stress test of performance in different use case

Birgitte Feld Mikkelsen, Director, co-author: Riccardo Bresano, both: Field trials, -technology and analysis, Danish Technological Institute, Denmark

17:15 End of conference day one



### Get-together

At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.

#### IV. Advancements in Robotics – Towards more Automation in Agriculture

##### 09:00 Next-level Automation to replace Chemicals in Weed Control

- AI based crop and weed detection
- Autonomous robotic weed control
- Intra-row weeding in sown cultivation
- Electrification of agricultural machinery
- Chem-free weed management

**Tobias Mugele**, Business Development, Product Area Agriculture Robotics, Bosch Rexroth AG, Germany

##### 09:30 Grapes from the past in the Vineyard of tomorrow

- Interoperability: A fundamental aspect for cooperative technologies
- Artificial Intelligence for agronomic decision support
- Perception and vehicle control for semi-autonomous applications

**Paolo Cesana**, R&D Electronic Engineer, co-author: Edoardo Sala, both: SDF S.p.A., Italy

##### 10:00 Panel Discussion

**How much Automation can be implemented within this Decade? Challenges, Risks, Opportunities... Let's discuss!**

10:30 ☕ Networking & coffee break

##### 11:00 Interactive Round Table Session

A number of interactive Round Table discussions will take place during this session. We invite you to engage directly with other experts! The discussions are interactively moderated by experts in an array of fields revolving around robotics and automation in agriculture. Discuss and identify challenges within your sector as well as problems, needs and solutions. The focus is on the participants – Choose which topic is of most interest to you and introduce your own experiences and questions. The main topics of the Round Table discussions will be announced on our website prior to the event.

12:00 🍴 Lunch

#### V. Automation and System Architecture for Livestock Management

##### 13:00 Healthier Dairy Cows with Automated Milking Systems

- 24/7 Health monitoring of the cow
- Increased longevity of the dairy cows by machine learning on milk flow
- Reduction of setting errors by self-calibrating systems
- Eliminating bimodality in the milking process with automated milking systems
- Improved milk production leading higher feedconversion ratio

**Geert Kuijpers, B.Sc.**, Global Product Manager Milking & Cooling, Lely International, The Netherlands

##### 13:30 Artificial Intelligence and Robotics for Chicken Welfare

- Precision livestock farming: A new paradigm for the livestock industry
- The poultry business and its challenges
- Key elements in animal welfare
- ChickenBoy: An attempt to increase broiler welfare and farm productivity
- What can AI deliver on in animal welfare?

**Dr. Heiner Lehr**, CEO, Faromatics, Spain

14:00 ☕ Networking & coffee break

#### VI. Employing Robots Safely

##### 14:30 Ag Industry develops secure Standards for Automation Interface

- Status quo and challenges to manage complexity
- Principles of Tractor-Implement-Management
- Technical solution based on secure communication interface
- Opportunities future-oriented developments

**Norbert Schlingmann**, General Manager, AEF – Agricultural Industry Electronics Foundation, Germany

##### 15:00 Safely Accelerating Unmanned Projects

- How positioning and sensing technology influence AV development and performance
- Understanding AV Functional Safe design challenges for integrating positioning and sensing technologies
- Identify the required steps for integrating Functional Safe AV solutions

**Tanner Whitmire**, Business Development Manager, Agriculture Autonomy, NovAtel Inc., USA

##### 15:30 Closing Remarks

15:45 End of conference

## Exhibition / Sponsoring

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If you want to meet with and reach out to the first-rate experts attending this VDI conference and to powerfully present your products and services to the well-informed community of conference participants, please contact:

**Vanessa Ulbrich**

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Phone: +49 211 6214-918

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## Become a speaker

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Become a speaker at our international VDI Automotive Conferences. Make yourself known in the industry and discuss best practice examples with other international experts. We are looking for speakers on: Smart Farming, Sensor Technologies and Connectivity for the Off-Highway Industry.

Please submit your topic to:

**Dr. Maria Georgiou-Smith**

Product Manager International Business  
Agricultural Engineering

Phone: +49 211 6214-467

Email: [georgiou-smith@vdi.de](mailto:georgiou-smith@vdi.de)

# Registration

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## Terms and Conditions

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**Registrations:** Registrations for conference attendance must be made in writing. Confirmation of your registration and the associated invoice will be mailed to you. Please do not pay your conference attendance fee until you have received our invoice and its invoice number to be stated for transfer. German VAT directives apply. Please state your VAT-ID with your registration.

### Conference venue

Maritim Hotel Dusseldorf  
Maritim Platz 1  
40474 Dusseldorf, Germany  
Phone: +49 211 5209 0  
Email: [info.dus@maritim.de](mailto:info.dus@maritim.de)



You will find more hotels  
close to the venue at  
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**Hotel room reservation:** A limited number of rooms has been reserved for the benefit of the conference participants at the Maritim Hotel Dusseldorf. Please refer to "VDI Conference". For more hotels: [www.vdi-wissensforum.de/hrs](http://www.vdi-wissensforum.de/hrs)

**VDI Wissensforum service package:** The conference package includes the conference documents (online), beverages during breaks, lunch and the get-together on July 1st, 2020.

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**Register online!**

[www.vdi-international.com/12K0901020](http://www.vdi-international.com/12K0901020)



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