

Drones in Agriculture



The following topics will be discussed:

- **Drone and Sensor Types for use in Agriculture**
- **State of the Art and future Developments**
- **Potentials and Limits in the various Fields of Application**
- **Integration of the collected Data into Farm Management**
- **Cost-benefit ratio: Drones vs. Standard Techniques**

Dates and Venues

July 22 and 23, 2019
Eindhoven

November 26 and 27, 2019
Dusseldorf

March 25 and 26, 2020
Frankfurt am Main

Workshop Chair

Dr. Hans-Peter Thamm, Geo-Technic,
Linz am Rhein, Germany



General Information

Aims and Objectives

Drones have been proven to be important tools for many applications in agriculture. They can help in optimising farm management, increasing yield, fighting pests and disease and reducing the use of fertilisers, pesticides and insecticides. Additionally, they can control irrigation and steer farming machinery.

However, in order to employ them in an efficient manner, they must be integrated into a consistent workflow where all aspects, from the UAV itself, their sensors, the flight planning, to the image processing and information extraction as well as the triggering of actions, must be considered.

The workshop will assist attendees in finding a fast approach to the complex field of UAV. It gives unbiased, profound insights into the various topics which are necessary for a successful, economic, and reasonable use of UAVs in agriculture. Thus, the participants will gain a better understanding to make a qualified decision to use drones in their field of application. Meaningful, real-world examples and various business cases will be presented. Another very important aspect will be the objective discussion of possibilities and limitations of UAVs.

The workshop is aimed at decision makers which want to apply drones in agriculture. As well as interested persons that want to get deep insights in and enrich their knowledge about the complex field UAVs in agriculture.

Target Group

This workshop is directed at specialists and decision makers interested in employing or marketing UAVs for agriculture, in particular:

- Active farmers and cooperative farm holders (Big Farms)
- Developers and Product Managers in manufacturing of agricultural machines
- Suppliers of agricultural equipment and components
- Key players in the agri-chemical industry

If you are journalist, politician, federation member, civil servant and interested in deepening your insight into this topic and looking for new business opportunities in the field of UAVs for agriculture, this workshop is relevant for you!

Workshop Documentation

Participants receive a manual on-site as well as a VDI confirmation of participation.



Workshop Chair

Dr. Hans-Peter Thamm, Geo-Technic, Linz am Rhein, Germany



Dr. Hans-Peter Thamm is a well known expert for UAVs. A Physical Geographer/Hydrologist by education, he has more than 30 years of experience with remote sensing, GIS and modelling. Since 2004 he has worked with UAVs and in 2005 he founded a company for building and applying drones. His academic career lead

him to a professorship for remote sensing, GIS and geo-informatics at the FU Berlin. In 2015 he left the university to found two companies, one applying UAV in various fields, the other one to manufacture VTOL fixed-wing drones. As of 2017 he is active as a consultant for UAVs. He has very broad experience in using UAVs for agriculture, from small-scale farmers in Germany to very big plantations with 220 km² in Africa, South East Asia and Australia.

Workshop methods

- Concise trainer input
- Open discussion of various cases
- Demonstration of the different software products from open source to commercial solutions



Other interesting Events

3rd International VDI Conference

Smart Farming 2019

May 14-15, 2019, Dusseldorf, Germany

4th International VDI Conference

Connected Off-Highway Machines 2019

May 14-15, 2019, Dusseldorf, Germany

International VDI Conference

Automation and Robotics in Agriculture

June 26-27, 2019, Berlin, Germany

77th International Conference on Agricultural Engineering

LAND.TECHNIK 2019

November 8-9, 2019, Hannover, Germany

Workshop Content

1. Day 09:00 - 17:00

2. Day 09:00 - 17:00

Background

Why Drones in the Agriculture?

- Growing population
- Climate change
- Increasing yield and efficiency
- Reducing environmental impact

Field of Application of Drones in Agriculture

- Assessing the damage (disease, pest, weed, climate wildlife)
- Evaluating plant health
- Detection of malnutrition
- Observing/optimising of manure
- Yield prediction
- Steering irrigation

Introduction

UAV Introduction

- Different types and properties
- Technical components
- Quality assessment
- Costs

Legal Aspects

- Different UAV classes
- Qualification of pilots
- Flight permits
- Flights in/or beyond of line of visual sight
- SORA (safe operation risk assessment)

Sensors

- Engineering fundamentals
- Optical, multi-/hyperspectral, thermal, lidar
- Potential and limits of various sensors

Plant Physiology

- What can be seen from the air?
- Spectral properties of vegetation
- Vitality/damages
- Plant Indices (NDVI, SAVI, etc.)
- Transfer and storage of the images

Image Processing

- Creating orthophotos
- Creating digital surface models
- Creating reflectance maps

Information Extraction

- Computing vegetation indices
- Detection of malnutrition
- Assessing the height of vegetation
- Object detection

Which Programs are available?

- Commercial programs
- Open source solutions
- Standalone vs. web solutions

From information to action

Data Management

- Agriculture information systems
- Connection with other data sources (climate, soil, topography)
- Integration of the information in workflows
- Setting up models assessing the benefit of using UAV

Triggering Actions

- Steering of agricultural machines
- Steering irrigation
- UAV for the different applications (spraying, cutting, laying traps)
- Business models

Business models

Costs for:

- UAV and conducting flights
- Sensors
- Data processing
- Information extraction
- Storing data

Who should deliver the Service?

- Own UAV operation vs. subcontractors
- Which web services are available?
- Advantages and disadvantages

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You need help?
Please contact us!

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✓ Please register for (Price per Person plus VAT):

International VDI Workshop		
<input type="checkbox"/> July 22 and 23, 2019 Eindhoven (12SE900003)	<input type="checkbox"/> November 26 and 27, 2019 Dusseldorf (12SE900004)	<input type="checkbox"/> March 25 and 26, 2020 Frankfurt am Main (12SE900005)
EUR 1.390,-	EUR 1.390,-	EUR 1.390,-

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Participation Fee VDI-Members **Save 50 € for each Workshop Day.** VDI membership no.*: _____

* For the price category 2, please state your VDI membership number

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www.vdi-wissensforum.de/de/agb/

Workshop Venues:

Eindhoven: Novotel Eindhoven, Anthony Fokkerweg 101, 5657 EJ Eindhoven, Phone: +31 40/2109-000, Mail: h1018@accor.com

Dusseldorf: NH Dusseldorf City Nord, Münsterstr. 232-238, 40470 Dusseldorf, Phone: +49 211/239486-0, Mail: nhduesseldorfcitynord@nh-hotels.com

Frankfurt am Main: Lindner Congress Hotel, Bolongarstr. 100, 65929 Frankfurt, Phone: +49 69/33002-00, Mail: tagungen.frankfurt@lindner.de

More Hotels close to the workshop venue may be found via our HRS service

www.vdi-wissensforum.de/hr

Services: The price includes beverages during breaks and lunch. The workshop documents will be handed out on-site.

Exclusive offer: All participants at this event are entitled to a free three-month trial VDI membership. (Offer applies exclusively to new members.)



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