

Remote sensing

Aerial data for cross-industry solutions



geo-konzept
inventarisieren. kartieren. optimieren.



01/2024

miniGIS
copter
service
photogrammetry
damage detection
transition aircraft
weed control
wildlife management
sensor technology
photovoltaic systems
consulting
flight systems
flight rules
remote sensing
training
coGIS
application maps
GNSS surveying
archaeology
pest control
survey
drone based phenotyping
LiDAR
hyperspectral
site-specific management
volume measurement

Remote sensing with geo-konzept

The world looks completely different from above. Information can be captured more easily, quickly and accurately – and be analysed afterwards. The areas of application are wide-ranging and the results can often be used in a variety of ways.

The UAV specialists (UAV = unmanned aerial vehicle) at geo-konzept use their expertise to compile and offer industry-specific solutions.

As a pioneer in the commercialization of UAV services and technology, we can now draw on over 10 years of experience. This wealth of experience enables us to offer professional services across the entire spectrum of remote sensing as well as a wide range of flight systems and sensor technology. Supplementary technology such as special sensors, cameras and specific software for evaluating the recorded data complete the product portfolio. The combination of the best components results in a tailor-made solution for your application. To round everything off, intensive training with the flight system, sensor and software is an integral part of our offering.

The field of remote sensing is incredibly exciting and varied – with geo-konzept, you have exactly the right partner if you are interested in UAVs.

All information can
be found on our
webpage



Aerial solutions are limitless:

Thanks to a wide range of payloads, there are few limits to aerial solutions. Extensive sensor technology and high-resolution cameras combined with customized software provide us with information for fast and comprehensive decision-making.

The use of UAV solutions is in many industries sensible and economical.

agriculture



flight systems



**agricultural
field trial
management**

**wildlife
monitoring**



support



surveying





Drones come in different shapes and sizes. There are flexible all-rounders and highly specialized drones for specific tasks. In order to keep an overview of the market, we assist you in finding the right solution for your needs.

COPTER:

We offer different systems specifically adapted for your tasks. You can choose between larger systems with flexible payloads and therefore a wide range of possible applications or smaller systems for specific working areas.

performance features

- selectable payloads
- high flexibility
- fast installation of sensors

TRANSITION UAS:

With the help of our Trinity Pro™ transition aircraft from Quantum-Systems, you can combine the advantages of a copter with those of a fixed-wing aircraft. Take-off and landing are vertical, after a transition phase, the drone switches to an efficient gliding flight. This means that even large fields and quarries can be covered efficiently in one single overflight.

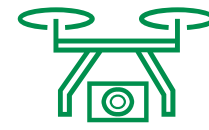
performance features

- vertical take-off & landing
- high area performance due to fixed-wing flight
- selectable payloads
- can be dismantled in a clever way for easy transportation

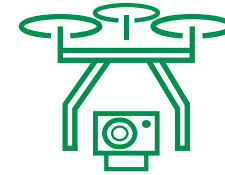
Our flight systems



small drone



professional drone



special solution



transition flight system



C class

C1 / C2

C3 / C4

C3 / C4

C3



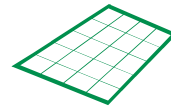
sensor changeability

X

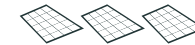
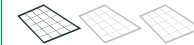
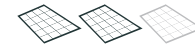
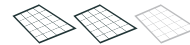
✓

X

✓



area performance



costs

€€€

€€€

€€€

€€€



Solutions for agriculture

Site-specific management

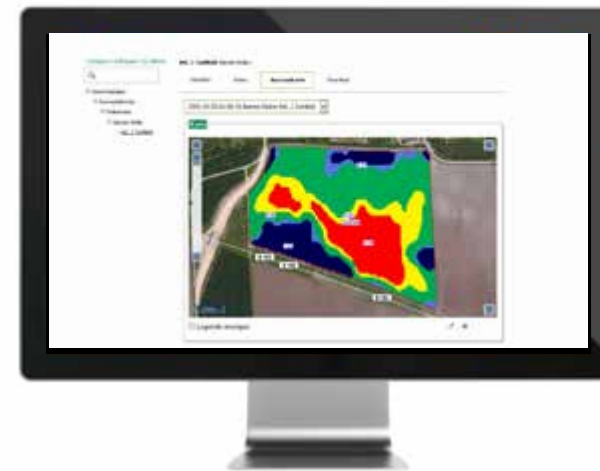
geo-konzept offers a practical and efficient system solution consisting of hardware and software for fast and independent site-specific analysis of agricultural fields.

In combination with our software coGIS, the multispectral package is an ideal tool for a wide range of precision farming applications. With a suitable drone, you can also cover and precisely measure larger fields. The generated data can be automatically processed and evaluated with coGIS.

In this way, vegetation indices can be calculated independently and converted quickly and easily into zone and application maps. The latter can be transferred directly to the tractor's automatic steering system on site, enabling site-specific applications of seed and fertilizer.



coGIS





PLANNING

- intuitive flight planning
- retrievable and repeatable at any time
- in the office or in the field



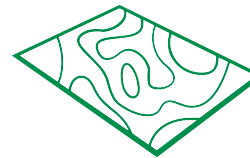
FLIGHT

- efficient, fast and reliable
- safe and easy handling



EVALUATE

- repeatable
- objective
- flexible



APPLICATION MAP

- create an application map and send it directly to the machine in the correct format (ISOXML)

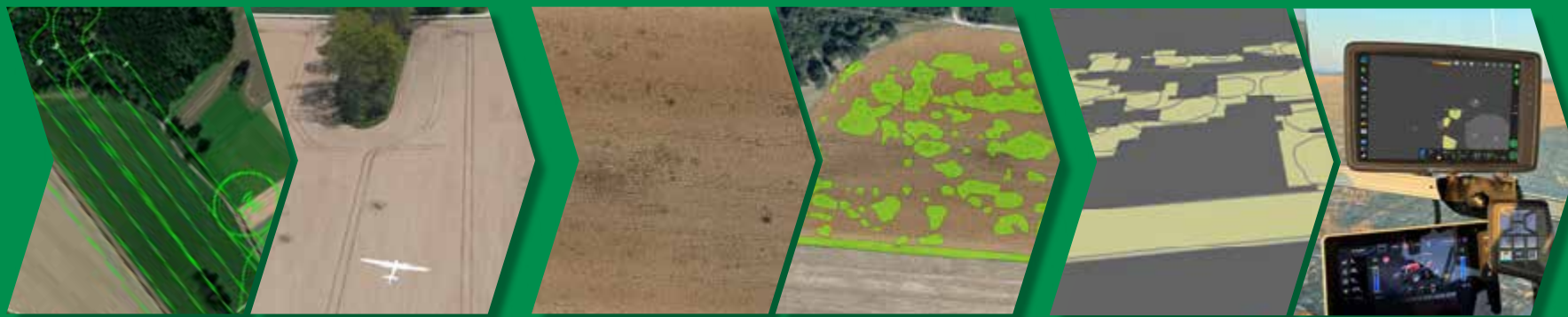


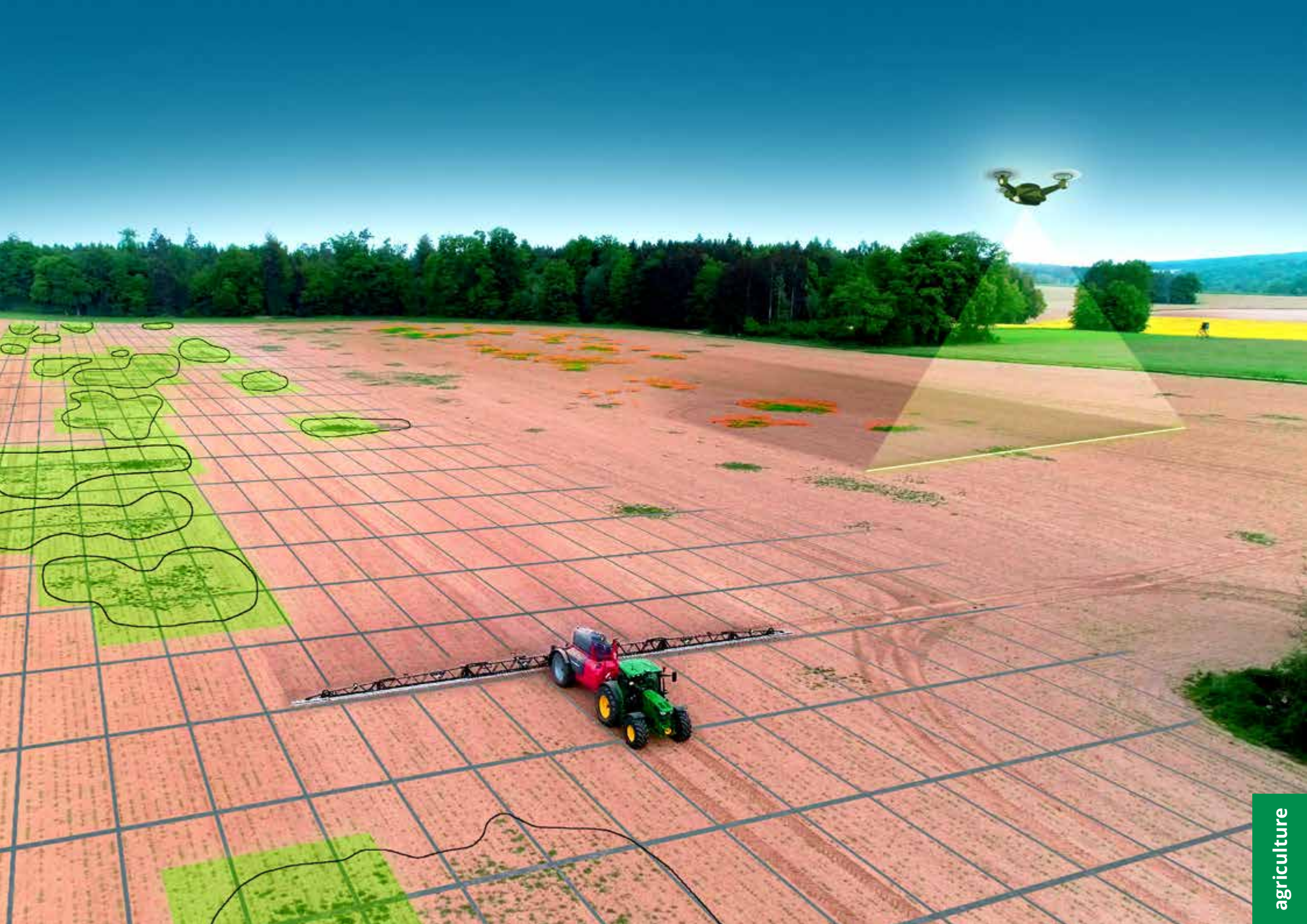


Weed control with SpotiSpray

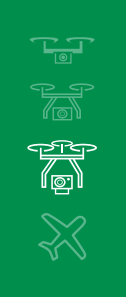
The coGIS module SpotiSpray, developed in-house, offers the possibility of targeted weed control in combination with an aerial system. Farmers, service providers and machinery rings can use aerial images to reliably identify root weeds in row crops such as maize, beet or potatoes and create an application map with just a few clicks that can be used over several years.

Plant protection products are then only applied exactly where they are needed. This reduces the absolute application rate. SpotiSpray not only displays areas to be treated, but also calculates the theoretically required total quantity of plant protection products for a particular field. This solution opens up possibilities for efficient, site-specific tillage or application of plant protection products.



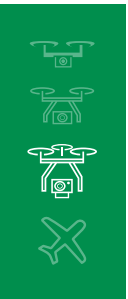






Pest control

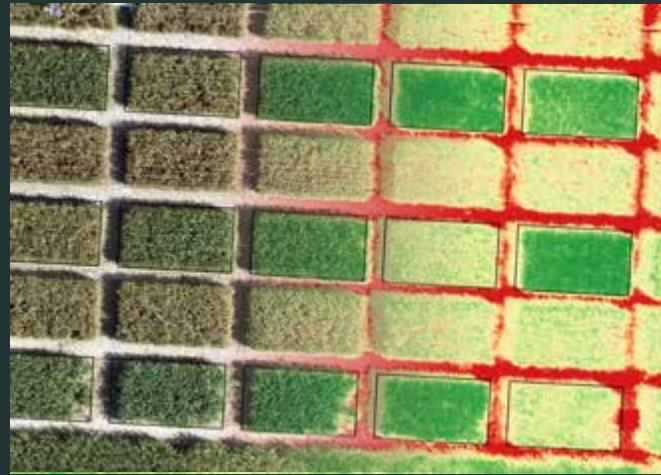
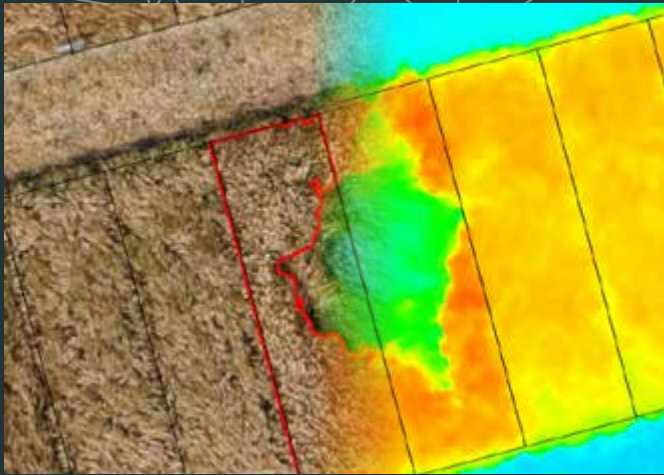
A copter in combination with the specially designed Trichogramma dropping unit offers farmers and service providers the ideal tool to carry out biological pest control in maize quickly, efficiently and in a targeted manner. Each individual unit is dropped according to the flight plan, so that the application is controlled and efficient.



Intercropping and undersowing

With a specialized drone, it is now also possible to spread seed from the air. If external circumstances make vehicle-based application difficult or impossible (e.g. limited accessibility of the soil or an advanced crop), there are options to drop seed from a low altitude. The UAV flies trajectories independently and the application rate is controlled according to the speed and flow rate, as with a seed drill.





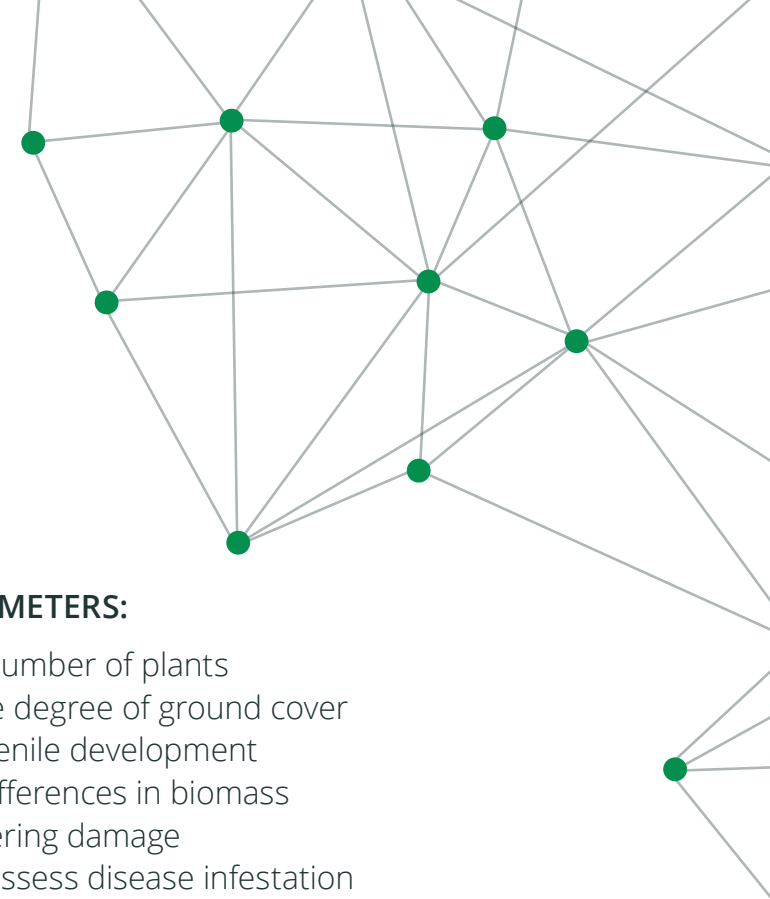
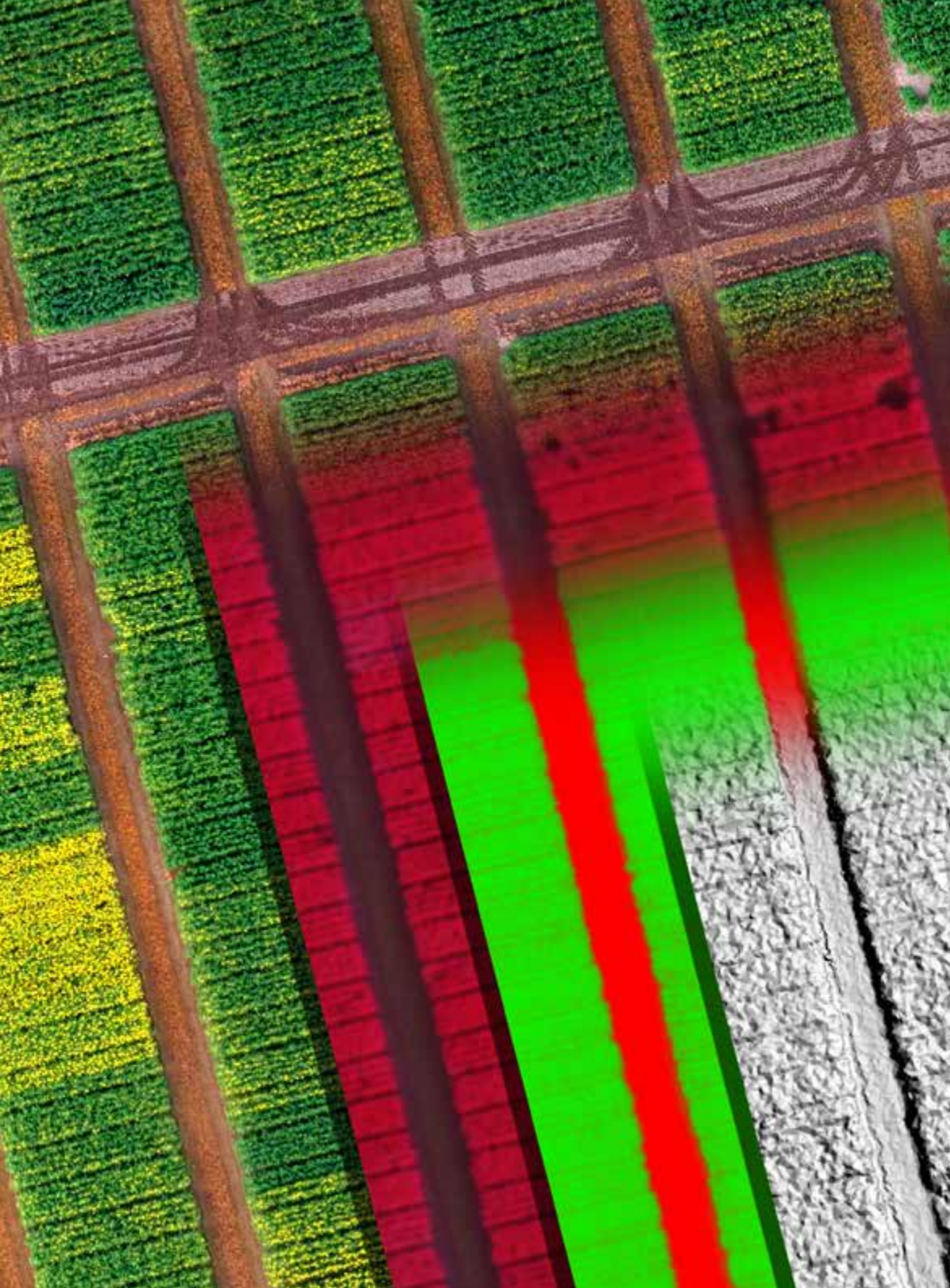
UAV-based scoring

Agricultural field trials place the highest demands on employees, machines and sensors. Our UAV solutions meet these requirements and guarantee the highest data quality and availability. Whether hyperspectral, multispectral, thermal or RGB – with our drone-based scoring system, you no longer lose any time in the field. Numerous plots can be assessed easily, quickly and accurately with one fly-over. The plots are assigned automatically. The time-con-

suming and error-prone manual transfer and digitization of lists is no longer necessary. Various sensors enable the recording of a large number of scoring characteristics. Our scoring system is the perfect combination of the latest scientific knowledge and a practicable, independently executable procedure.

Agricultural field trial management





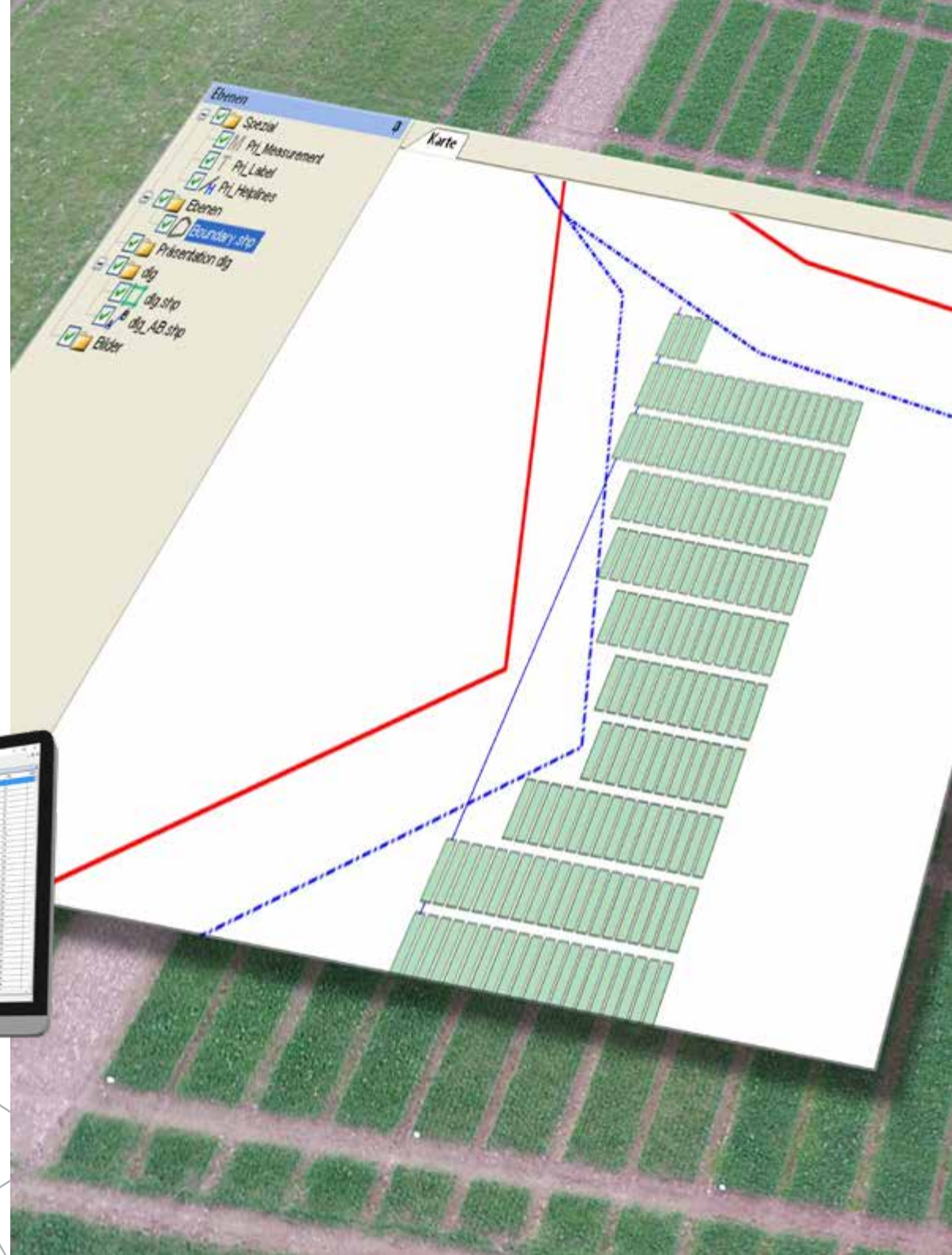
SCORING PARAMETERS:

- record the number of plants
- measure the degree of ground cover
- evaluate juvenile development
- recognize differences in biomass
- record wintering damage
- objectively assess disease infestation
- easily detect flowering behaviour
- measure crop height & evaluate lodging tendency
- recognize differences in ripening
- analyse and evaluate drought and heat stress

miniGIS

With our plot planning software miniGIS you can plan field trials and sow automatically. After the flight, the data can be evaluated and exported graphically and in tabular form. With miniGIS, it is possible to reproduce the complete workflow of automated scoring.

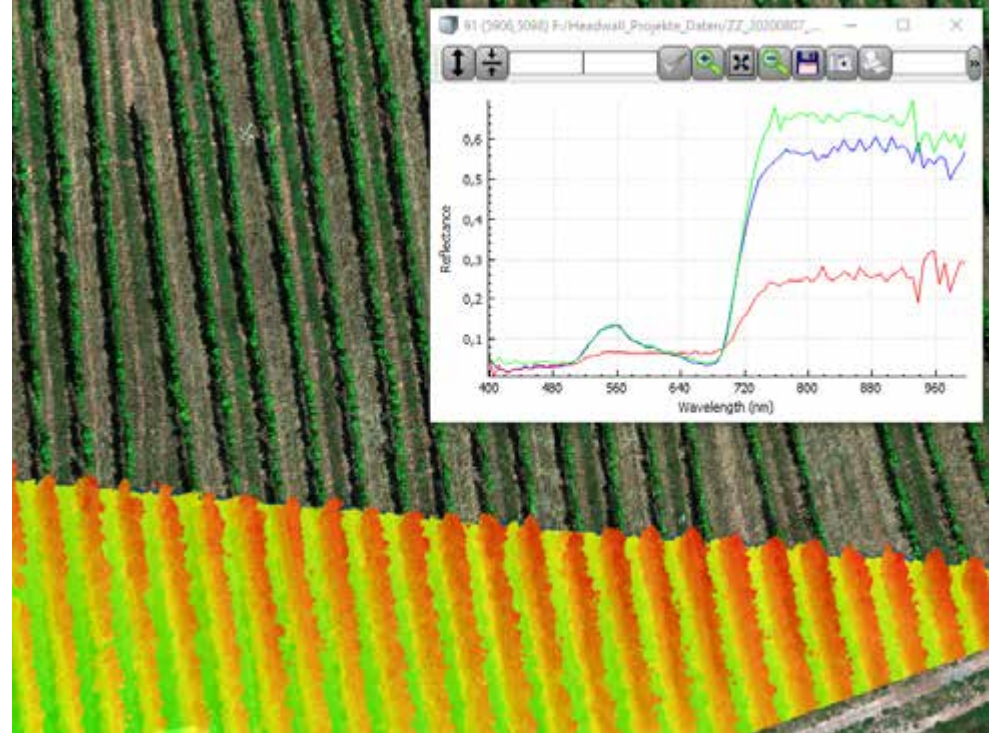
miniGIS has become a standard tool in field trial management thanks to the extensive and specially tailored application options.





Hyperspectral imaging

The technology of hyperspectral image analysis enables a deeper insight into plant populations. The spectral signature can be captured with high precision over the entire wavelength range. This is an important tool for research institutions, universities and professional service providers. geo-konzept offers complete solutions with sensor, drone, software and training as well as the option of integrating a sensor into an existing drone on your premises.



CHRSE

Together with Headwall Photonics, geo-konzept has founded the CHRSE („Center for Hyperspectral Remote Sensing in Europe“). The aim is to provide access to hyperspectral sensor technology and to familiarise people with the workflow of data generation and evaluation through on-site training, demo flights, regular workshops and services.



agricultural field trial management

Wildlife monitoring

Wildlife populations and their habitats are continuously recorded, observed and monitored. In addition to the previous methods of wildlife monitoring, the use of drones has become established in recent years. The use of thermal imaging cameras in particular has revolutionized the search for wildlife from the air. The technical development of these „flying helpers“ now enables efficient and comprehensive monitoring, so that in addition to fawns wild boars can also be found quickly and easily.

ADVANTAGES

- quick overview of large areas
- high efficiency due to low expenditure of time
- complete area coverage
- animals are not disturbed
- independent of the road network
- even areas that are difficult to access can be searched
- wild animals can be targeted
- decoupling of search and mowing process (no interruption of the mowing process)





FAWN RESCUE

Drones with thermal imaging cameras can save fawns from being mowed to death. This is done in close cooperation between hunters, farmers and volunteers.



GROUND-NESTING BIRDS

Many ground-nesting species are threatened with extinction. Clutches endangered by mowing and harvesting machines can be detected from the air using a thermal imaging camera.



WILD BOAR MANAGEMENT

Animal movements and populations can be efficiently monitored on large areas. This requires only little personnel and time expenditure.



Quelle: Peter Schröppel



wildlife monitoring

Surveying

Volume calculation

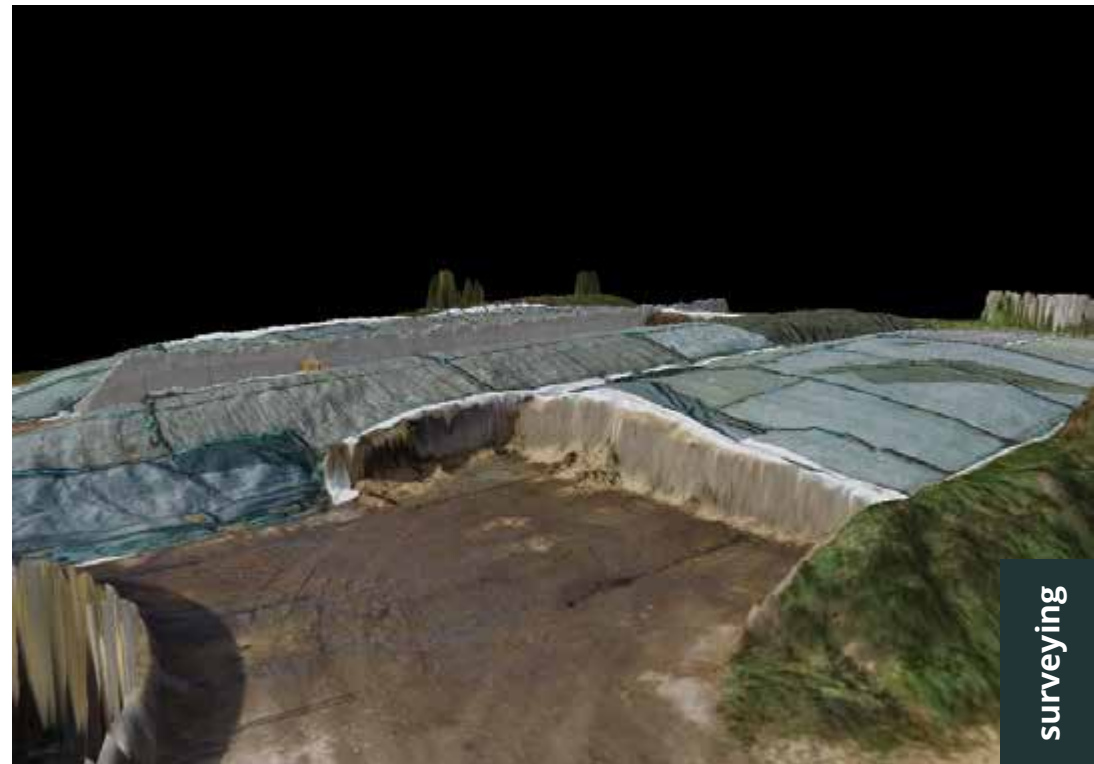
Together with our VolumeX software, our UAV systems offer an ideal platform for calculating volumes and tonnages in many areas. The point cloud created using photogrammetry can be converted into a stockpile in VolumeX with just a few mouse clicks and the corresponding volume and tonnage can be determined from this output. The overall package therefore offers the possibility of rapid inventory documentation for service providers and plant operators.



The nature of the materials is irrelevant in this process. Our approach to volume determination is ideal for quickly calculating storage volumes. Regular inventories can thus be significantly simplified and objectified.

Further application examples:

- silos in agriculture
- wood piles in the forestry industry/sawmills
- stockpiles in quarries
- material stockpiles in building material factories



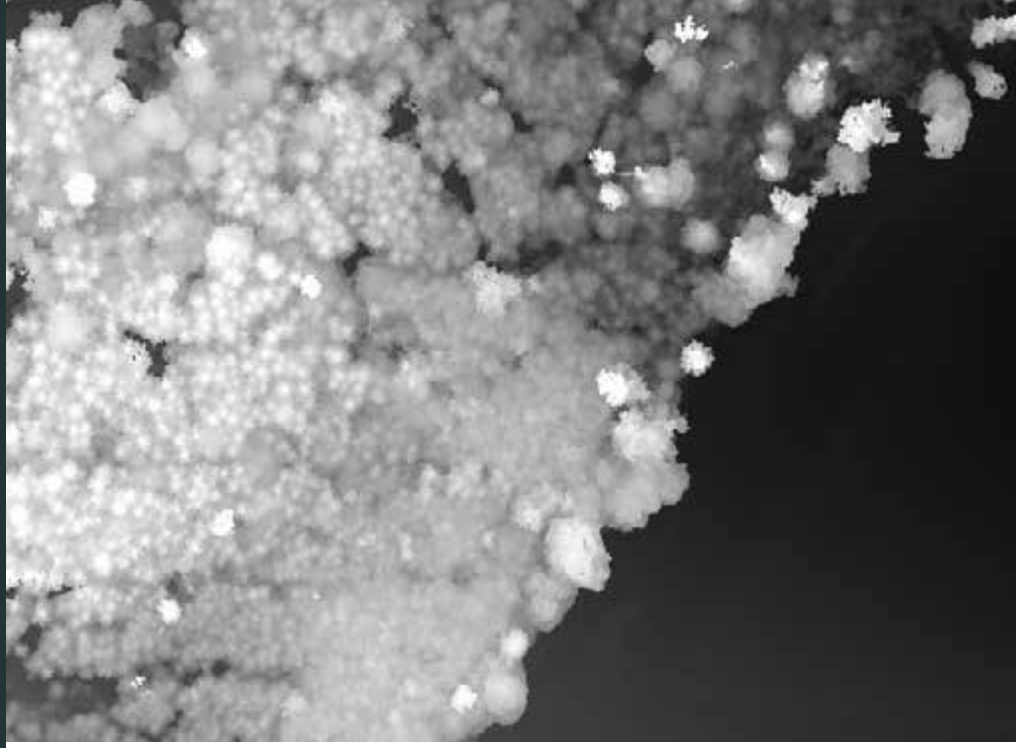


Damage detection

It is often difficult to assess the extent of damage from the ground. With the help of our UAVs, georeferenced aerial images can be created very quickly, making damage not only visible from above, but also objectively quantifiable. The damaged areas (e.g. caused by wild animals or storms) can be digitized and precisely measured in the generated orthophoto. To check these areas, the aerial image can be transferred to a GPS-enabled tablet and the damage can be quickly and easily located on the terrain using our coGIS software.

APPLICATIONS:

- wildlife damage in farmland
- storm damage in forests
- flood damage
- disease and pest infestation





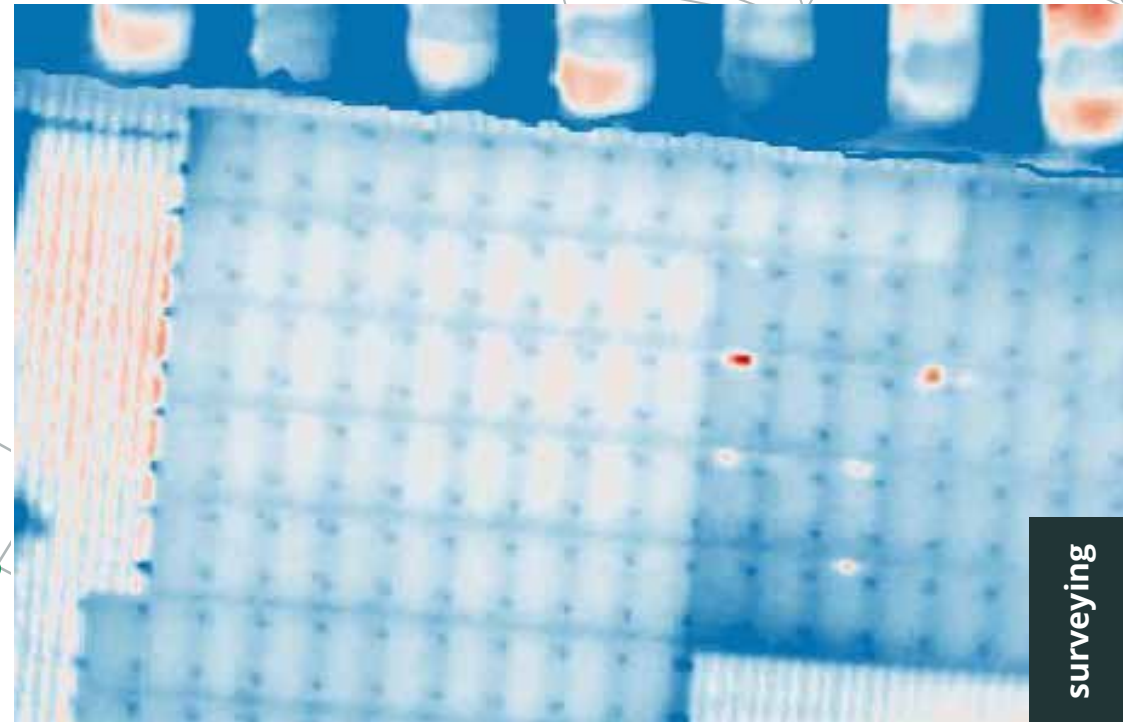
Infrastructure surveying and construction progress documentation

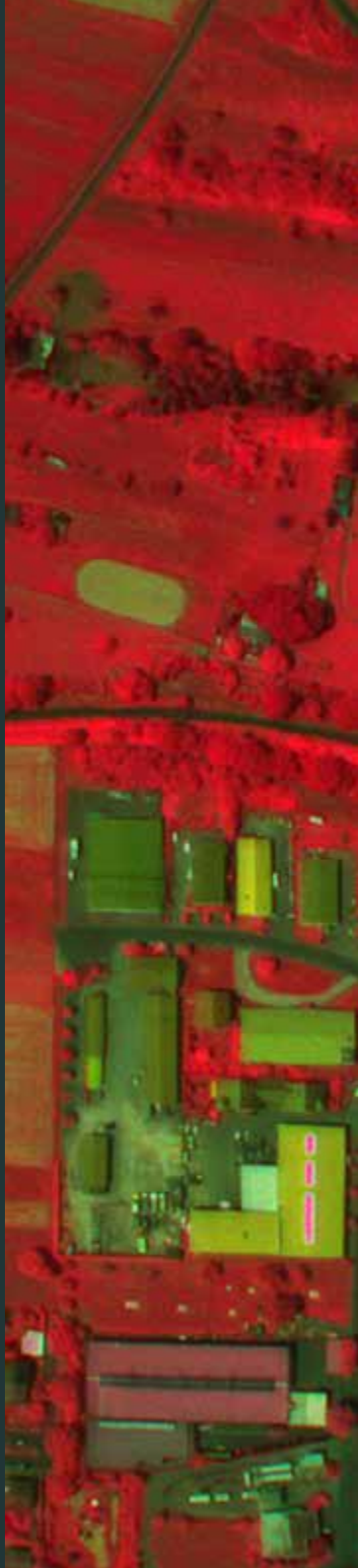
In the construction industry, drones have become a useful tool for surveying construction sites. True-to-scale, high-resolution aerial images with a positional accuracy in the centimeter range capture the current status and provide a quick and uncomplicated way of surveying from the air without having a major impact on the construction sites operations. Even areas that are difficult to access can be easily captured and mapped using UAVs.



Photovoltaic systems

In combination with a high-resolution thermal camera, our copters make it possible to inspect photovoltaic systems both on buildings and in free-standing solar parks. Defective solar cells are shown in the thermal image by hotspots with a significantly higher temperature compared to normally functioning neighbouring cells. As an entire solar park can be surveyed in minutes by flying over it, this is an efficient and therefore cost-effective method of inspecting such systems.

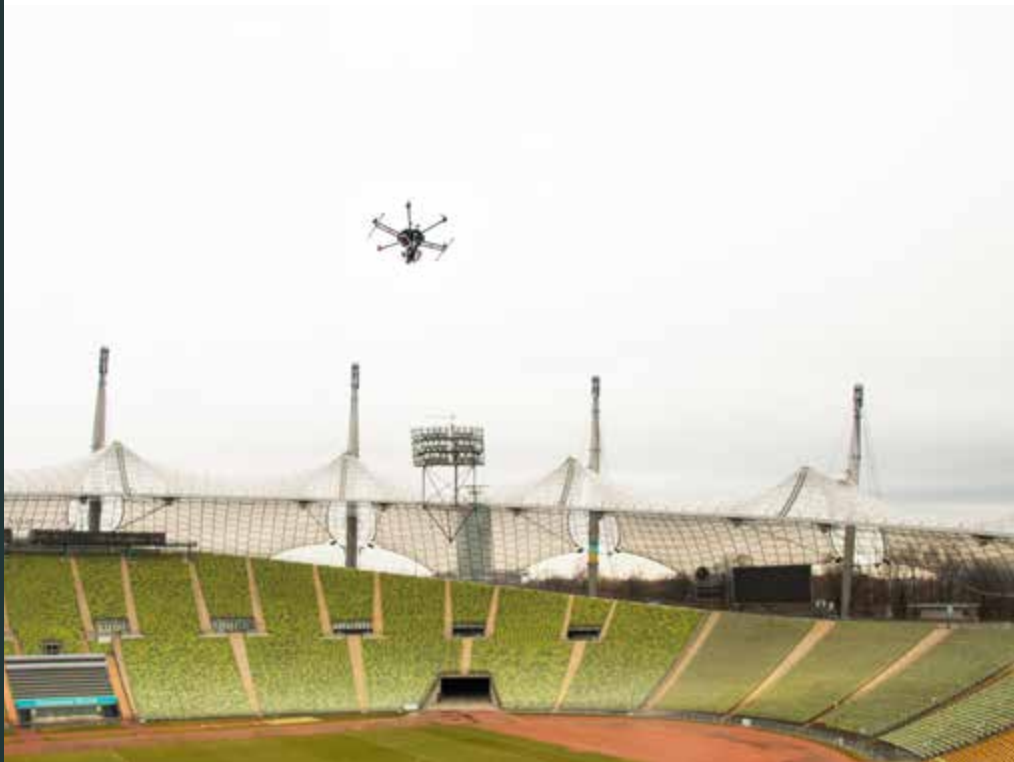




Archaeology and monument protection

With the help of our flexible drone packages, archaeological excavations, which are often carried out under enormous time pressure, can be documented quickly and easily. An excavation site can be surveyed in a single overflight, then analysed in the office and redrawn into a site plan. In addition, an exact terrain model of the former running horizon or still preserved rising masonry is obtained.

In addition to the excavation documentation, it is possible to detect archaeological finds in the ground by means of a multispectral camera through differences in the vegetation (e.g. in the grain). Thus, targeted aerial archaeology can be carried out with higher resolution than with an airplane.



Service & Know-how





Services

For certain issues, a single flight is sometimes sufficient or special knowledge is required to carry it out. In such cases you are welcome to contact us. We will plan the project with you and carry it out according to your specifications. You can evaluate the data yourself or leave the

analysis to us and receive the final results including all the raw data. Our services are customized and tailored precisely to your requirements. We select the appropriate drone from our fleet for each application.





Consulting

In order not to lose track of current developments in drones and drone-based solutions, it can be helpful to seek advice. We will be happy to help you find the perfect solution for your business. Perhaps you already own a drone and want to know what else is possible, or you are looking for someone to help you with the implementation of a complex flight project.

We can support you in a number of flexible ways. This ranges from a short half-hour online briefing to a 3-day intensive training course on-site or at our office.

Workshops & training courses

In addition to our telephone support, we also offer individual training courses both on-site and online. Our workshops offer the perfect platform for exchanging experiences, knowledge transfer, training and refresher courses.

In terms of content, our training courses deal with both the handling of the flight systems (flight rules, maintenance, mission planning, execution) as well as the relevant evaluation software (miniGIS, coGIS, Pix4D, Agisoft Metashape, VolumeX and many more). There are completely customizable, personal training courses as well as generally accessible training courses on specific topics.

Optimise your workflows and get the best out of your systems! Benefit from the experience and know-how of our experts.





All information can
be found on our
webpage

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