

The background of the slide is a wide-angle photograph of a majestic, snow-covered mountain range under a clear blue sky. In the foreground, there are two small, shallow, icy ponds reflecting the surrounding landscape.

GEOTECHNOLOGY GEOINFORMATICS SERVICES



**ALL-IN-ONE
IS OUR BUSINESS.**

GGS GMBH

Geotechnology – Geoinformatics – Services

Back in 1988, Dr. Gerhard Kemper started his own business by selling instruments for measuring meteorological parameters as well as soil erosion. Over the years, GPS/DGPS technology and GIS became the predominant part of his expertise.

The development of a GNSS-INS based gyro stabilizer started in 2003 and the first turnkey solution was sold in 2006. GGS has ever since become one of the leading suppliers in the field of aerial surveying technology. GGS has more than 20 resellers worldwide and has sold more than 100 installations around the globe.

Today GGS develops, integrates and supports systems for aerial data capture. Single or multi-sensors are the heart of our hi-tech solutions for smooth airborne operations. Our business is All-in-One: Mission planning, sensor fusion, navigation and post-processing. We are your flexible partner for a large variety of applications. And it's all made in Germany.

OUR BUSINESS

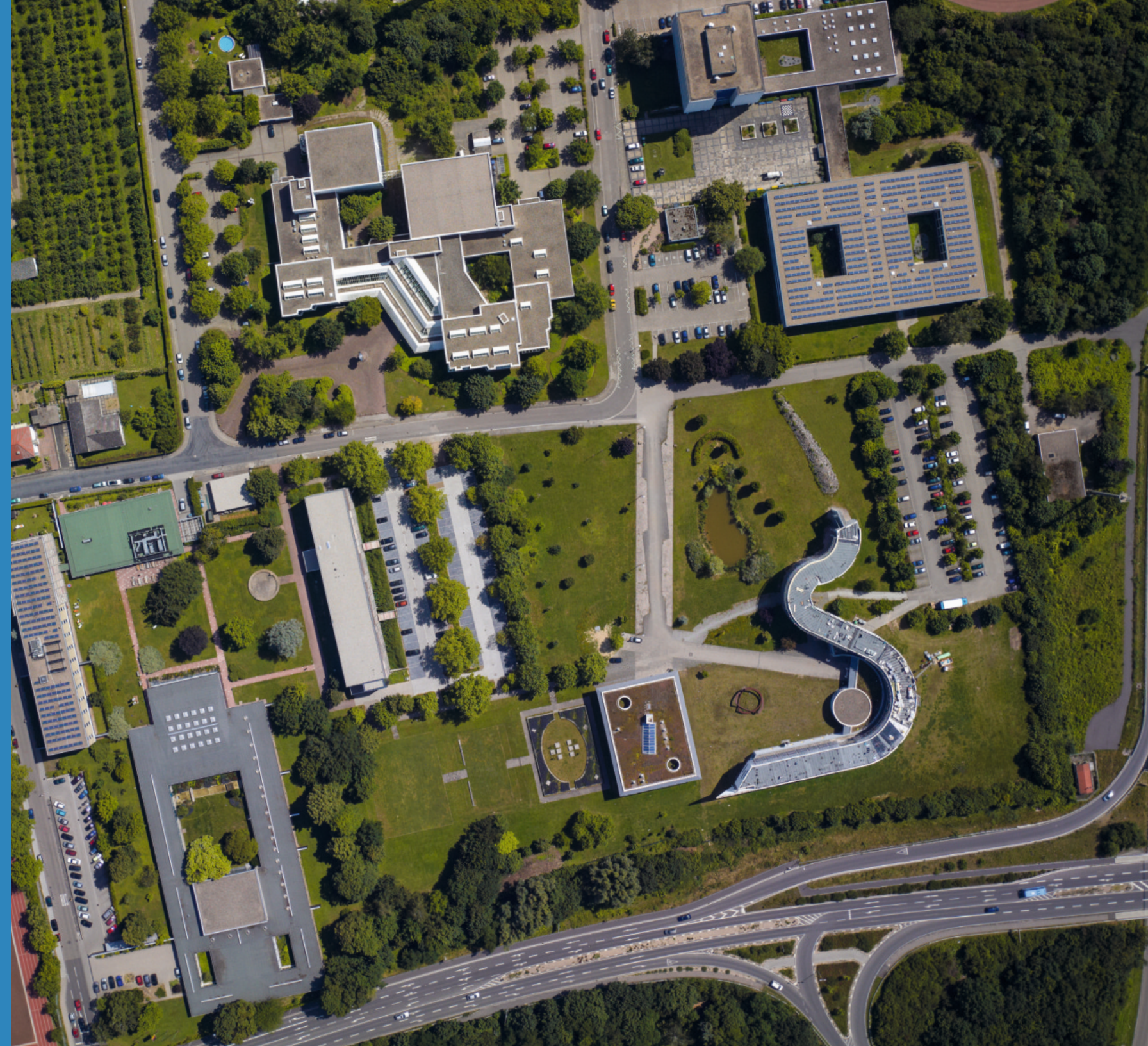
Our products combine many years of know-how with precise craftsmanship and compliance with existing standards. As reliable integration partner, GGS uses high-resolution and special sensors for multi-scale applications. We do business with engineering professionals, municipalities, universities, environmental authorities, cultural heritage and city planners. The GGS gyro stabilizers are equipped with sensors for a wide range of purposes to survey industrial sites, river banks, mines, city infrastructure, wildlife reserves, eco balance and to monitor power lines, disaster regions, pest infestation and many more.

All-in-one solutions for the industry

Our unparalleled variety of sensors enable our customers to realize even challenging flight missions. GGS offers a field-approved mission planning software together with a flight management to support pilots during their missions. And since aerial vehicles differ in size and dimensions, we provide specific adjustment techniques to fit the surveying devices to be airborne. From basic start-up level up to complex high-end solutions – our customers keep control of their budget due to our network of selected suppliers. GGS sensor solutions can be upgraded at any time after their delivery in sturdy transport boxes.

Customized solutions

Aerial survey technology must be in line with end users' demands. Therefore, GGS has developed excellence in customized solutions required for non-standard specifications. Our team at GGS GmbH can rely on an R&D background, a creative mindset and a close communication routine with our customers.



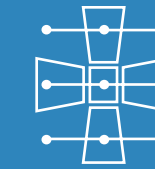
OUR PRODUCTS



Aerial Cameras



Stabilizers | Platforms



Oblique Imaging Systems (OIS)



GNSS Devices | Camera Interfaces



Software



Specific Sensors



OUR PRODUCTS

Aerial Cameras

Mid-format technology, specifically designed for the photogrammetric airborne market, resolutions starting from 50 up to 150 megapixels, 23 – 240 mm focal length, daisy chain compatible, leaf shutter with up to 1/2500 sec. (guaranteed: 500,000 shots), metric calibration, capture rates of up to 2 fps, CMOS technology, multi-spectral options, light-sensitive sensors, interfaces are industrial standard, highly compact and lightweight design, UAV approved, interface to GNSS/INS, computer-aided camera control, standalone or integrated applications.

Oblique Imaging Systems (OIS)

The GGS Oblique Imaging systems provide the ability to see multiple aerial views of any location (e. g. cities, coasts, cultural landmarks and train tracks). Employing up to seven separate digital cameras to capture nadir (straight-down) and oblique imagery views, the GGS oblique imaging system delivers comprehensive data for applications which require the ability to view, measure and analyze all sides of a structure or ground feature. The geo-referenced, oblique aerial photography enables the end-user to accurately view, analyze and utilize the captured data effectively.

OUR PRODUCTS

Specific Sensors

- We integrate airborne laser scanners to make use of cutting-edge laser and signal processing technology for capturing 3D data of large areas. They are exceptionally compact, lightweight and cost effective and are designed to meet the most challenging requirements in airborne surveying.
- 5-band System (for red edge analysis) – we offer a turnkey solution composed of AeroStab-M hosting three georeferenced cameras generating RGBI, NDVI and CIR images for your data analysis.
- Hyperspectral sensors are requested for exploration of minerals for mining purposes, monitoring agriculture and forest, homeland security, disaster mapping , performing environmental tasks and many more. Beside the stand-alone operation, they can be ideally combined with our RGB AeroCam high resolution sensors, the AeroTherm ThIR camera to measure surface temperatures and – of course – Lidar.
- We provide UV/RGB detector systems to capture data of both corona radiation and the corresponding visualized RGB image up to 30 fps and 1.4 MPIX resolution. The sunlight is blocked in order to generate pure UV radiation by using amplifier technology.
- Aero OTS is our new innovative multi sensor Oblique Thermal System (OTS). Up to 9 thermal cameras based on Flir industrial OEM sensors are joint to a complex and ultra-high resolution system. Five sensors enable a continuous cross-track resolution of 3,200 pixels. Two front and two back sensors deliver oblique data e.g. to monitor facades of urban structures.
- AeroTherm is a thermal infrared single camera, available as cooled or uncooled sensor. It enables monitoring of objects that emit thermal radiation.



LOOK DEEP INTO NATURE,
AND THEN YOU'LL UNDERSTAND
EVERYTHING BETTER. (A. EINSTEIN)



OUR PRODUCTS

Stabilizers | Platforms

Our gyro stabilized mounts are available in four different types: AeroStab-S, AeroStab-M, AeroStab-XL and Multi-sensor to guarantee a perfect orientation of the sensors and a precise coverage of the objective.

Software

AeroTopoL is our user-friendly, field-tested mission planning and flight management software.

TopoL GIS is our multi-operational topological software that can process vector and raster data equally well. It offers you a complete geodata management.

We also have a variety of specific software tools (PhoTopol, Atlas DMT, AgiSoft Photogrammetry, Bingo) in our portfolio to enable you to realize even complex missions in the post-processing stage.

GNSS Devices | Camera Interfaces

AeroNav GPS is an entrance level device for mission navigation and camera control based on c/a coded L1 smoothed GPS receivers that support refresh rates of 10 Hz. This enables precise navigation for accurate aerial imaging. A bi-directional RS232 communication with AeroTopoL FMS supports camera release and camera event management.

In addition to the GPS, AeroNav Vector includes a high quality GPS Vector board that enables true-heading determination of the aircraft at a 10 Hz refresh rate. Our AeroNav INS combines GNSS positioning and attitude measurements.

AeroMCC is a patented multi-camera interface that can trigger up to 5 cameras simultaneously by galvanic separation or sequentially by 200 or 400 msec delay. Thus, a single port GNSS event can be used to detect the projection centers of each camera.

OUR 'BEST PRACTICE'

Contact us if you seek:

- research assistance or technical and scientific steering of a research project
 - project-related system development, e. g. step-by-step system design resulting in validation or modification
 - a turnkey solution of a specific sensor concept
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- customized mechanical designs, e. g. specific mounts for use in aircrafts
 - purpose-built setups of camera mountings for customized applications and fitting requirements
 - CAD designs for your customers
 - CAM / machining (milling and 3D printing)
-
- software development of sensor control and data management
 - tailor-made software tools for mission planning and flight management
 - development and further sensor adaption, e. g. GPS/INS and geo data management
-
- electric adjustments and enhancements, e. g. smart power supplies
 - electronic components for data and sensor control, signal processing and conversion
 - customized sensor development



**IT'S NOT ABOUT FAITH
IN TECHNOLOGY –
BUT IN PEOPLE. (S. JOBS)**



YOU NAME IT –
WE DELIVER!

OUR SERVICES

You name it – we deliver. GGS provides first-hand support and will be your competent partner from brainstorming until delivery and afterwards. You can count on our ample expertise and reliable provision of advice, information, software and system design.

Consultation

You are planning a new business or an airborne mission? We are here to share our long-standing technical and strategical experience with you. We work closely with you on the implementation of your business targets, always focusing on your specific technical input and economic situation. No matter the size of your business – we are your competent partner for takeoff and growth.

Planning

Your flight mission or business start-up requires meticulous planning to be profitable in the end. We are here to assist you with our experience, industry knowledge and – last but not least – planning tools. Our strength is our qualified in-house team as well as a world-wide network of hi-tech partners and software engineers.

Training

It goes without saying that we provide profound training on our software and hardware, handling and mounting procedures to ensure a smooth operation of your equipment right from the start. This can be done either on your premises or on-site with us. In order to add to your convenience, we offer to assist the initial steps of your project with our know-how.

Post-processing

Our portfolio offers high-performance software from leading manufacturers to process the captured data and generate the results you need. Here, you can seek our assistance for data processing by way of AT (aero-triangulation), sensor and boresight calibration and validation of the target data.

Maintenance

Wear and tear is a natural aspect of frequent operation; our quality policy guarantees availability of spare parts and on-site checking by our experts. You benefit from our maintenance options that provide updates and upgrades of your components. Always up-to-date with the equipment you ordered from us!

AND HOW MAY
WE SUPPORT YOU?
www.ggs-speyer.com





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