



Hansa Luftbild – a reliable partner for the energy sector

**OUR SERVICES FOR ENERGY PROVIDERS AND POWER GRID
OPERATORS**

ENERGY MANAGEMENT



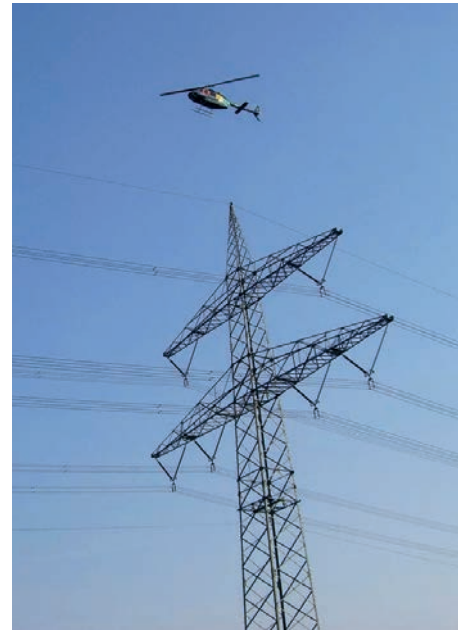
HANSA LUFTBILD – YOUR RELIABLE PARTNER FOR THE ENERGY SECTOR

Companies in the energy sector face many challenges owing to the growing demand for renewable energy sources and planned extensions of power grid systems - especially in the high-industrialised countries. We offer a wide range of branch specific services: base data for establishing suitable sites, support in route and network planning and the construction of smart geodata infrastructures for the efficient management of energy supplies.

Industrial pipeline



Laser scanning of pylon and power line



AIRBORNE LASER SCANNING FOR NETWORK PLANNING, REROUTING AND MONITORING

Airborne laser scanning (ALS) is a key technology for the documentation of resources and the planning of short and long distance networks for delivering power, oil and district heating services. We deliver precise and accurate data for planning, rerouting and corridor management. These services are fast, cost efficient and don't require time intensive terrestrial survey. You can profit from the flexibility of ALS surveys both offshore and onshore.

QUALITY AND PRECISION

Our extensive experience in data capture and processing along with the utilisation of high performance remote sensing devices guarantees your receiving precisely surveyed objects. Object position and detail will be established precisely and accurately, even in the most inaccessible of terrains, or in areas of dense

vegetation. Finally your database will be populated with high resolution orthophotos and oblique imagery, acquired with medium format cameras and vector data produced with photogrammetric methods.

EFFICIENT AND RELIABLE MONITORING

We can deliver all route relevant information and details required for rerouting e.g. through the capture of overhead transmission objects. Such detail includes capture of pylons and portal pylons as well as accurate data on the course of lines, on cross arms and line sag. Our surveys for changes in topography, caused for example by subsidence, can help you to ensure the long-term functionality of your power grid. We can also support you in the management of corridors, by analysing obstructive and potentially dangerous objects and by calculating the proximity of vegetation and buildings to a corridor.

ENVIRONMENTALLY FRIENDLY CORRIDOR MANAGEMENT AND ANALYSIS OF ENVIRONMENTAL THREATS

We offer a wide range of services tailored to the requirements of energy providers and power grid operators. In addition to traditional services required for planning approval and licensing, we also offer services which focus on planning for the care and maintenance of the natural environment in corridors and on properties. Thus your facilities will accord with the growing demands of the legislators and be met with approval amongst the general public.

LANDSCAPE PLANNING SERVICES

We can support you in your planning and approval processes with a wide range of services in landscape planning. These services include:

- > environmental impact studies and assessments and accompanying landscape conservation plans
- > technical papers on legal aspects of species protection and related detailed mapping
- > implementation plans and supervision in environmental aspects of construction

In this day and age planning and approval are no longer the only concern in the construction of power grids and of corridors. Legislators and the general public now require that the development and operation of existing grids be environmentally friendly, that the determining of new locations for wind farms take into account environmental protection factors and land-scape appearance issues, and that all these matters are dealt with in a completely transparent manner.

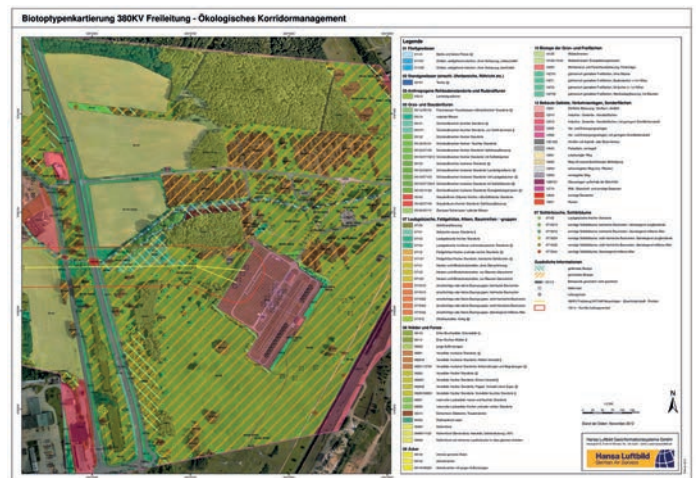
ENVIRONMENTALLY FRIENDLY CORRIDOR MANAGEMENT

Our concept for the environmentally friendly management of corridors offers you a range of services with double benefits. You can implement an environmentally friendly plan for the care and management of corridors and at the same time ensure the safety of your power grid operations and facilities. Our specifically targeted restitution of airborne captured data and the application of geoinformation systems delivers high quality products and services:

- > feasibility studies, location selection, corridor and location analysis



Trees in vicinity of a power line route



Biotope type mapping on the basis of digital orthophotos

- > aerial photo supported, comprehensive biotope mapping with data capture of protected habitats and visualisation of potential dangers and developments along your chosen routes
- > methodological concepts for an environmentally sustainable management of your properties
- > capture of trees and tree stands as a basis for assessing potential dangers and for assuring ongoing safety in your operations
- > monitoring of adjustment and replacement measures, planning and conceptualisation of your compensatory mitigation and the implementing of processes for the measurement of results.
- > visualisation of and access to all data (digital cartography, GIS, WebGIS, server based geo-data portal)

GEODATA MANAGEMENT, GEOINFORMATION SYSTEMS AND INDIVIDUAL SOFTWARE DEVELOPMENT

The revolution that has taken place in the energy sector in recent years has completely transformed the business and its demands. An extensive variety of large databases and datasets needed to be made available in clear and structured form for the business processes of planning, future projections and decision making. Our software developers are specialists in the smart and efficient integration of geoinformation with business processes.

GEODATA MANAGEMENT DEVELOPMENT (BIG GEODATA)

The sources and amounts of data available have increased exponentially in recent times. In addition to the classical geodata of CAD and geoinformation systems less structured forms such as text, images and videos also have to be dealt with. Businesses are faced with the challenge of analysing, processing and administering such data and making it accessible to an ever growing number of internal and external users. We have expertise in the conceptualisation, implementation and management of medium-sized, large and very large (>10 million geodata entities) geodatabases. We are a Gold Level partner with Oracle and according to need and size can implement either an Oracle spatial database or the open source PostGIS.

INDIVIDUAL SOFTWARE DEVELOPMENT

The energy sector is a dynamic business which requires software service providers who can deliver results in accordance with this fast-paced market. Our software developers and database specialists are highly flexible. We can develop individual solutions tailored to your needs on the basis of well-known products such as Intergraph's GeoMedia or free open source software such as GeoServer, PostGIS, and GeoEXT. So you can be assured of a system which exactly meets your requirements and which can be seamlessly integrated into your IT environmental and business processes.



WebGIS representation of a distribution station

WEBGIS AS AN INFORMATION PORTAL

Browser based WebGIS portals are currently the instrument of choice for administering spatial information and making it available to a wide variety of users. Thanks to intuitive user interfaces less experienced users of geodata can straightforwardly access specialist information and apply it to their business processes. Geodata portals have the advantage of bringing together an extensive array of data allowing users to access, analyse and view in one environment information from widely dispersed sources.

We have developed WebGIS portals for a wide variety of customers, world-wide. Take advantage of our experience and expertise in this field. Thanks to our know-how in geodata management and our expertise in tailoring individual solutions we are the right partner for customers seeking scalable, low-maintenance solutions.

Wind turbine in northern Germany

TECHNOLOGY FOR GEODATA CAPTURE

Hansa Luftbild has access to aircraft, helicopters, unmanned airborne vehicles, large format digital cameras, laser scanners and other varied modern means of data capture systems. The number of data capture technologies available to the company has increased significantly in recent years, to the advantage of our clients. Data capture results and analyses can now be made available more swiftly and cost effectively than ever before.

HIGH-TECH - THE KEY TO QUALITY

Data can be captured off-shore, on-shore, in inaccessible areas, and independent of vegetation density with the deployment of aircraft and helicopters at cost-effective rates and with a swift turn-around. Energy providers and power grid operators will find the large range of services offered by Hansa Luftbild of particular interest.

- > acquisition of aerial photos and production of digital orthophotos
- > photogrammetric restitution
- > airborne laser scanning of routes and large topographic areas
- > detection of leaks in long-distance heating and gas pipelines
- > detailed data capture using high resolution video imagery, e.g. cables on power masts or industrial sites

- > analysis of roof surfaces to assess solar potential
- > infrared camera for thermographic analyses
- > evaluation of vegetation to assess the impact of overhead cables on plant growth
- > hyperspectral camera for monitoring vegetation, investigating / identifying geological characteristics
- > bathymetric survey with laser scanning or echo sounding
- > night data capture to assess light pollution
- > oblique aerial photography with a multi camera system

Hansa Luftbild offers both consultancy and project management services. The company has extensive experience in project management, having operated in many countries, over many years. Our aircraft and / or data capture systems are also available for hire.



Aircraft from the Hansa Luftbild fleet



Survey of obstacles and potentially dangerous objects

Energy providers and power grid operators will find great benefit in making use of the multi-faceted, professional services offered by Hansa Luftbild in the energy sector. Thanks to our extensive experience we can offer a wide range of branch specific services from data capture to the establishing of complex geo-data infrastructures, accompanied by efficient planning, business and monitoring processes. Our experts will work in close consultation with you to develop the best possible solutions for your needs.

THE ADVANTAGES OF HANSA LUFTBILD PROVIDED SERVICES:

- > All professional services from one source: flight survey, environmental services, software development and visualisation. As separate services or as a service package.
- > The interrelationship between our precise data capture, environmental protection know-how and intelligent software solutions enables you to run transparent planning and business processes.
- > Our extensive experience in international project management ensures successful outcomes even for the most demanding projects.
- > Our airborne supported data capture and remote sensing technology facilitate flexible, precise and up-to-date geoinformation services. Such services provide you with cost efficient and high quality end-data.

UNSERE DIENSTLEISTUNGEN:

- › Remote sensing & photogrammetry
- › Geoinformation & planning
- › Software consultancy services & software development
- › International consultancy services & project management

Hansa Luftbild Group

Nevinghoff 20
48147 Muenster
GERMANY

Phone +49 251 2330-0
Fax +49 251 2330-112
E-Mail info@hansaluftbild.de
www.hansaluftbild.com
