



Planning of photovoltaic systems

complete services

Urban land-use planning
Approval planning
Draft planning
Implementation planning
Construction supervision

FROM A SINGLE SOURCE

GICON® - Grossmann Ingenieur Consult GmbH was founded in 1994 and is today one of the largest owner-managed engineering firms in Germany. We offer services in the areas of plant construction, construction planning, environmental and approval planning, as well as technical computer science, and we operate our own research and technology development division.

Our goal is to always find the best possible solution for our customers. To do this, we analyze the conditions on site and provide individual advice. Our customers benefit from our interdisciplinary team. The basis of our success is the knowledge, innovative strength and commitment of our engineers: more than 20 specialist departments work hand in hand to offer state-of-the-art planning. In addition to engineering services, this also includes special expert opinions and comprehensive expert activities.

As an owner-managed company, we are independent and have an excellent and officially certified credit rating. This is ensured by our sustainable business model, our forward-looking positioning and our own technology patents.

Photovoltaics, energy efficiency, wind and bioenergy as pioneers for a future worth living

At GICON®, each of these topics is given the importance it deserves and is handled by a team of experts in their own specialized field.

Our engineers have planned solar and wind farm projects with a total capacity of over 30,000 MW. Under the motto "sustainable and innovative", we are looking to the future. This includes sustainability in the use of resources as well as in the use of energy and the extraction of raw materials. We consider the interests of our customers as well as the creation of a clean environment and a future worth living – these are the guidelines that shape our daily work. We have national and international references in the complete planning of building and roof-top photovoltaic systems, battery factories, biogas plants and wind farms in the on- and offshore sector.

The following pages contain all the important information you need to plan a photovoltaic system. Find out about our services and get in touch with our experts. We will be happy to advise you!

Our strengths – your advantages:

- Comprehensive and interdisciplinary know-how from a single source
- Thousands of successful projects and satisfied customers from medium-sized businesses, industry and local government
- Our own experts and authorized experts

GICON® AS GENERAL CONTRACTOR

The GICON® range of services is as diverse as the possible applications of photovoltaic technology. We implement the system solution that best suits the needs of our customers.

Once you have decided to use GICON®, the first step is to clarify the requirements of municipal land-use planning and state building law. This is done on the basis of the client's basic concept regarding the location, financing and marketing of the renewable electricity to be generated. We support you with our consulting services and in the preparation of concepts and feasibility studies. On the basis of these fundamental investiga-

tions, the interdisciplinary GICON® team carries out the corresponding planning, obtains the necessary permits and prepares the execution. We personally monitor the realization to ensure the quality required for long-term, reliable and profitable operation of the facilities.

We plan photovoltaic systems for a wide range of locations and applications:

building-integrated PV

Both in the industrial and commercial sectors, rooftop systems are a sustainable solution. They combine the issues of sustainability, energy and cost efficiency into a worthwhile investment. In addition to the technical issues of statics, fire protection and much more, energy-related issues at the site also play a role. By optimizing the customer's own energy consumption, GICON® can often identify very attractive final energy and cost savings potentials in combination with investigations to increase energy efficiency.



ground-mounted PV

Open-field plants of various sizes, ranging from a few kWp to the high MWp range, are an indispensable pillar of the energy transition. However, these plants often mean a significant encroachment on nature. In addition to the technical and approval-related planning services, GICON® therefore supports the projects with environmental impact assessments, plans compensatory mitigation measures and ensures compliance with the legal protection of endangered species through intelligent solutions.



Agri-PV and Floating-PV

Both variants will be increasingly used in the future. The advantage: the combined use of space efficiency is significantly increased. Agri-PV intelligently combines power generation with agricultural use. Floating-PV, in turn, opens up water for environmentally friendly power generation. In both cases, GICON® is your competent consultant and planner.



OUR TECHNICAL KNOW-HOW

Our complete solutions:
From the design concept to the
implementation plan

The basis for the economic operation of a photovoltaic system is laid in the planning phase. The interaction of the various technical components must be optimally coordinated. GICON® engineers approach this task in a solution-oriented manner and ensure a careful selection of PV modules and inverters, as well as optimal configuration and cabling within the PV system.

As part of the conceptualization, preliminary and design planning, GICON® offers the following services, among others, in accordance with market standards:

- Occupancy schedule taking into account topographical conditions
- Simulation and yield forecasts including shading analysis
- Energy assessment, e.g. determining the share of self-consumption and the degree of self-sufficiency
- Site exploration and foundation concept
- static test
- glare protection report
- fire safety report
- Investment and operating cost estimate
- Consultancy on the appropriate operator model (EEG, PPA in different categories,...)
- Development of variant comparisons
- energy-economic optimization
- dynamic profitability analysis

The following services, among others, are offered during the implementation planning:

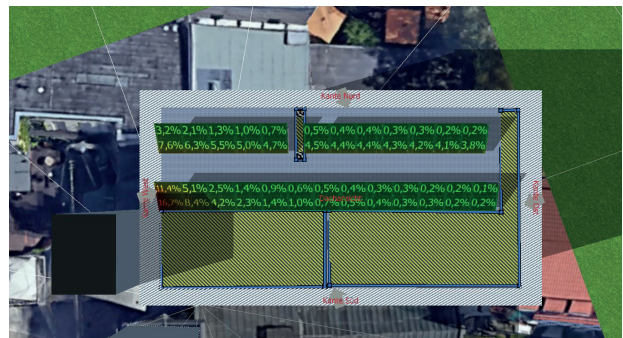
- quantity survey
- ELT string plan
- Determining the cable routing, cross-sections and lengths
- Coordinating with grid operators
- Specification of network transfer and switching devices



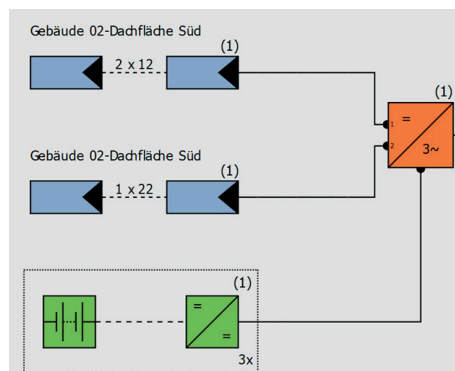
Picture: STÖHR+SAUER CAD- und Computersystem GmbH / Screenshot Helios 3D



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PHOTOVOLTAIC GROUND-MOUNTED

Technical features: open-site systems

Open-field systems offer great potential for realizing environmentally friendly power generation and generating added value, especially in rural areas.

In particular, post-mining landscapes, conversion areas and 200m strips along railways and highways, but also, for example, areas with disadvantaged soil quality, play a major role.

We also offer our customers complete solutions from a single source when it comes to planning open-site systems:

- Evaluation of the available space
- Site analysis using Helios 3D planning software to identify how the terrain affects the PVA layout (taken into account during planning)
- Estimation of yield using standard software such as PVSyst

Suitable areas can also be developed independently of EEG funding and realized as power purchase agreements (PPA).

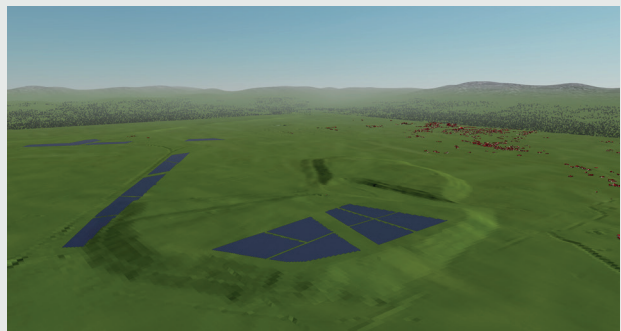
Once you have decided on a greenfield site, GICON® will support you with the following services, among others:

- Site exploration and foundation concept
- Occupancy plan taking into account topographical conditions
- glare protection report
- Presentation in the form of 3D visualizations and drone flight videos
- Evaluation of suitable operator models
- Support with business management and analysis of the business
- dynamic profitability analysis

*Urban land-use and development planning
(see following pages)*



Picture: Albert Schlaak, Fraunhofer ISE, Next2Sun



Picture: STÖHR+SAUER CAD- und Computersystem GmbH / Screenshot Helios 3D



Picture: Albert Schlaak, Fraunhofer ISE, Next2Sun



PHOTOVOLTAIC ROOF SYSTEMS

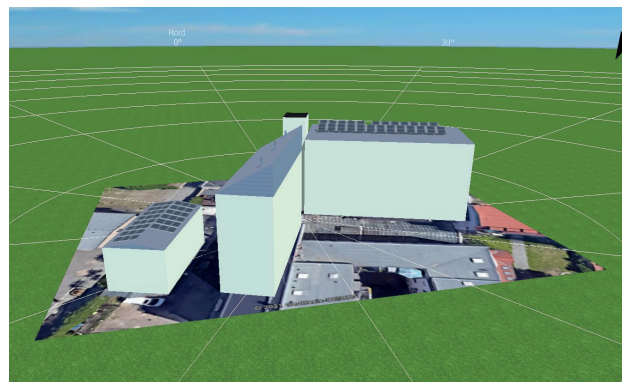
Special technical features: roof systems/building-integrated

Photovoltaic roof systems can be implemented on existing roofs and in new buildings by providing appropriate loads. They are becoming increasingly important because the Building Energy Act (GEG) has prescribed the proportional use of renewable energies since 2020. The plants are particularly attractive at locations or on roofs with high electricity consumption close to the plants. If the distances to the grid connection are short at the same time, important conditions for a successful project are met.

As with open-site installations, GICON® offers complete services from a single source. These include approval planning as well as communication with authorities and yield estimation.

In addition, we offer the following services for roof-mounted installations:

- electricity load profile analysis
- Determining the available/usable roof area
- Estimation of yield reductions due to shading from surrounding objects using PV*Sol
- roof statics inspection
- Derivation of a suitable plant size/layout taking into account the resulting EEG feed-in tariff
- Determining the share of self-consumption and the degree of self-sufficiency
- dynamic profitability calculations



Picture: STÖHR+SAUER CAD- und Computersystem GmbH /
Screenshot Helios 3D

ENERGY EFFICIENCY IN INDUSTRY

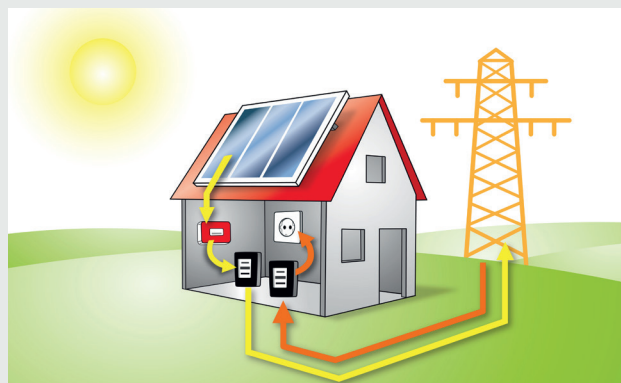
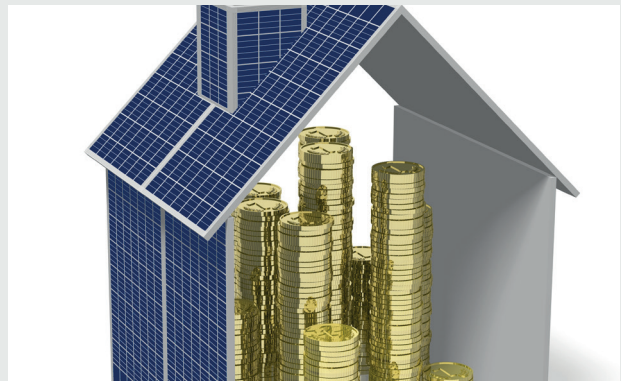
Increase energy efficiency and self-consumption – reduce energy costs

GICON® derives the optimal PV system design from the existing power load profile of a company. The orientation and inclination of the modules or module tables are varied and possible influences such as shading from surrounding objects or other site-specific factors are taken into account. In this way, the share of self-consumption of the electricity generated can be maximized and energy costs at the site can be reduced. The modeling and profitability calculation of the PVA and the selection of components are carried out using suitable design software (Helios 3D, PVSyst, PV*Sol). In this way, GICON® provides a comprehensive picture on the basis of which an investment decision can be made.

GICON® offers energy audits, consulting and concepts as services for a detailed examination of the energy baseline and to identify potential and measures to increase energy efficiency, e.g. in the area of sector coupling. Questions regarding the integration of necessary energy infrastructure also play a role and are taken into account in the evaluation. GICON® develops implementation proposals and supports their realization.

From carbon footprint to climate neutrality

Climate management for companies is an extremely important topic, for which GICON® offers its customers a comprehensive range of services. We will guide you on your way to greenhouse gas neutrality and support you in the individual steps involved in setting up and operating a climate management system. To this end, we offer comprehensive and technically advanced consulting and planning services that are individually tailored to your needs.



APPROVAL MANAGEMENT

GICON® provides expert advice on all types of approval procedures in the construction and environmental sectors and supports you throughout the entire approval process, from planning to commissioning:

GICON® prepares complete notification and application documents, specifically tailored to your project and location. We know the requirements of the authorities and coordinate with them in a timely manner to ensure that the process runs as smoothly as possible for both sides.

Your documents will be submitted by GICON®. We will maintain close contact with the authorities until approval is granted. This includes the processing of additional regulatory requirements and the coordination of regulatory issues and objections.

GICON® reviews the notice of approval and coordinates all necessary steps and measures up to the construction and commissioning of your plant.

During the entire course of the approval phase, GICON® will be happy to take on all public appointments, coordination, information events, etc. for you and with you, and will advise you on public relations for your project.

All application documents from a single source:

GICON® is happy to assist you in preparing the application documents and in accompanying the notification and approval procedures in accordance with:

- Federal Emission Control Act (BImSchG)
 - Federal Building Code (BauG)
 - Federal Water Act (WHG)
 - Circular Economy Act (KrWG)
 - Federal Mining Act (BBergG)
 - Federal Nature Conservation Act (BNatSchG)
 - Industrial Safety Regulation (BetrSichV)
 - Greenhouse Gas Emissions Trading Act (TEHG)
- for all types of construction and technical systems.

Our know-how in this area is based on many years of experience. Overall, GICON® has supported more than 1000 notification and approval procedures throughout Germany.

Thanks to our interdisciplinary teams, we are able to provide specialized services and expert opinions from a single source and without any loss of information in-house.



OUR SERVICES:

- Development plan incl. drawing, statement of reasons, environmental report, coordination
- Fire protection concept for structural facilities in industrial, commercial and residential areas by specialist planners and experts in preventive fire protection
- Noise impact assessment according to TA Lärm
- Preliminary examination of the individual case and environmental impact assessment in accordance with the law on environmental impact assessment (UVPG)
- Landscape management support plan or landscape management implementation plan
- green space plan
- Species protection report, NATURA 2000 – pre- and impact assessments (FFH + SPA)
- Explosion protection document in accordance with the German Hazardous Substances Ordinance (GefStoffV)
- Concept for the prevention of major accidents and safety report in accordance with the Major Accidents Ordinance (12th BImSchV)
- fire department plan
- Alarm and hazard prevention plan in accordance with the Major Accidents

URBAN LAND-USE PLANNING: LAND-USE AND DEVELOPMENT PLAN; MINING LAW

To ensure that the planning process under building law is carried out efficiently and in a manner conducive to realization, the admissibility of the project is examined in advance with regard to the objectives, principles and requirements of spatial planning. This is followed by the preparation of the urban development plans, which form the basis for the subsequent approval.

In this area as well, GICON® can offer all services from a single source.

In the run-up to the planned project, this includes the following services:

- Land-use planning permissibility check
- Regional planning query of the regional planning authorities

The following services are included in the preparation of the urban land-use plans:

- Creating development plans
- amendments to land-use plans



The following services can be offered as part of the preparation of development plans:

- Involving authorities and citizens and public relations
- balancing of interests
- environmental report
- green space plan
- species protection planning
- Research and processing of possible external areas for compensatory and replacement measures

license management
under mining law

- Analysis of the site situation under mining law
- Feasibility studies, investment plans
- integration into mining project
- project planning, project coordination
- stability considerations
- Presentation in the operating plan for the frame/plant
- Consultations Mining authority, specialized authorities
- Procedural support, public relations



ENVIRONMENTAL AND LANDSCAPE PLANNING

Environmental and landscape planning

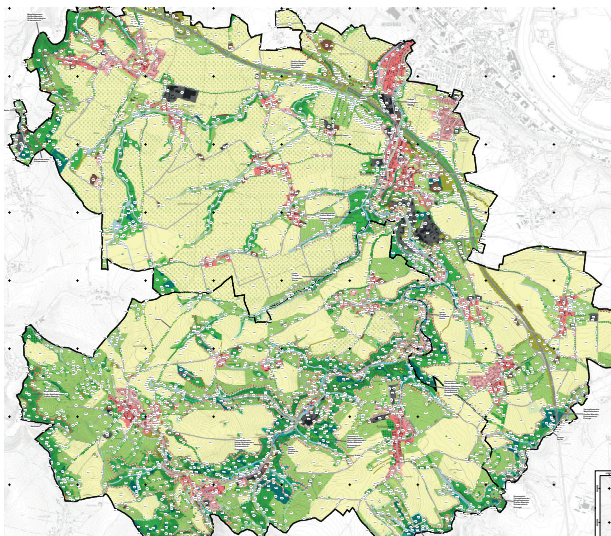
GICON® designs projects to be environmentally friendly:

Human influences are constantly changing the character of our environment. In order to minimize the adverse effects of these changes on the living space of humans, animals and plants, legislators require comprehensive surveys of the current situation, as well as forecasts and assessments of the consequences of interventions in nature, as part of approval procedures – for example, for construction projects or the use of natural resources.

GICON® is one of Germany's leading companies in the research and assessment of terrestrial and aquatic ecosystems. For the analysis and evaluation of complex environmental influences, our experienced specialists draw on interdisciplinary internal resources and, if necessary, work closely with scientific partners. The advantage for the client lies in the synergetic optimization of their project while meeting all environmental requirements.

Specialized services in environmental and landscape planning:

- biotope protection law assessments
- impact-compensation balances
- scenery simulations
- exception/exemption requests
- Planning and implementation of compensatory measures
- biodiversity assessments
- Planning and implementing species protection measures and relocations
- Risk management and monitoring
- Species protection studies, such as space-use analyses and GIS-based habitat-use analyses
- Development of species conservation programs and implementation of species conservation measures



ECOLOGICAL CONSTRUCTION SUPERVISION

Expert ecological construction supervision (ECS) for the management and control of avoidance, protection and mitigation measures is increasingly being required by the relevant authorities when implementing construction projects. GICON® employs certified construction supervisors who accompany corresponding construction projects through all stages of planning and implementation.

An ÖBB construction supervisor is on hand to ensure that the project runs smoothly, to help avoid conflicts with nature conservation during the construction planning, the implementation of the project and the instruction of construction companies with regard to nature and species protection issues, as well as to ensure that nature conservation measures are implemented properly.

Mapping achievements:

Field surveys of species and habitats are the basis for a well-founded and legally compliant planning. For this purpose, we can rely on a team of experienced mappers for the inventory of the following species groups and habitats:

- birdlife
- amphibians
- reptiles
- bats
- insects
- mammals
- plants (macrophytes)
- biotopes
- zoo-benthos
- Fish (Ichthyofauna)
- biotopes and FFH habitat types



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