



One-stop-shop solution for wiring PV plants

PV projects are divided into specific phases before the plant is finally connected to the grid. The installation phase in particular is key for success. HIS is there from the start and optimizes the project along the value chain, as well as after the COP. Whether high quality single components, pre-assembled solar cables or individually developed string boxes: the cabling and switch system HIS CONNECT® has everything that plant operators, installers and service specialists need.



What makes a PV plant economically successful?

In addition to the costs of installation and operation, the economic success of a PV plant is determined by the yields. Suitable components as well as professional planning and installation determine the long-term quality of a plant and thus ultimately ensure smooth operation and expected yields. In the event of a fault, large plants incur high downtime costs up to and including the loss of insurance, yield losses in the case of poorly processed or low-quality components, and in some cases extremely high repair costs that far exceed the acquisition costs of the components themselves.

In general, it can be said that the largest part of the total costs of a PV plant is accounted for by the solar modules, inverters, substructure and installation. The costs for the electrical connection, electricity meters and individual components account for a smaller share. The savings potential, purely

at the component level, is manageable for these products, as the share of the total costs is around 5%. However, it is precisely these 'C-components' which matter and which, incidentally, are often accorded much less importance than the others. The faults or failure risks in these components is one of the factors that can significantly jeopardise the profitability of the system.

How often do you encounter the problem?

With the steadily growing size of solar parks, the complexity and the stress on the power components are also growing. The enormous time pressure under which such systems are often installed brings with it the increased risk of faulty wiring due to a lack of care in the selection of the cabling components and the execution of the installation.

Should any troubleshooting be required later, the calculated return on investment will be jeopardised at an early stage. It is therefore a logical consequence that so-called 'pre-assembled solutions' are playing an

increasingly important role in the realisation of large PV parks.

In large plants, high downtime costs arise in the event of a fault. High-quality and safe components not only reduce the economic risks, but also ensure safe plant operation far beyond the financing phase.

This is one aspect which gains in importance when one takes into account that the profitability of a plant is calculated over a term of at least 20 years. Of course, this also includes the possibility that a PV plant or PV park may change hands after a certain time. In this case, a quality guarantee is also a decisive criterion, as it increases the resale value.

Not only do inferior components jeopardise the investment, but when the systems are resold, the entire installation is critically assessed from a technical point of view. As part of a proactive inspection, components which do not perform adequately are replaced, reducing the expected resale value.



Pre-assembled cabling solutions

How do you help your customers to avoid these risks in advance?

Due to the early involvement of our employees in project planning, our customers benefit from our excellent know-how and understanding of photovoltaics. A knowledge that has proven itself in many varied applications and projects. The good price-performance ratio of the components combined with the use of a holistic connection system ensures the best conditions for a long-lasting and yield-optimised system for our project partners. Significant savings can be achieved during the coordination discussions in project planning. In the start-up phase not only are the total costs decisive, but future maintenance issues are also taken into account in the consultation.

What does a typical project meeting look like?

In each project meeting, there are four main areas that we analyse and evaluate. Our focus is on which modules have been selected, which inverter configuration will be used, which substructure is needed and what the topographical features are on site.

Once all the basics have been clarified, the next step is to show the various cabling options based on the selected substructure system and circuit diagram. We then discuss in detail the savings potential of pre-assembled cabling and the benefits for the customer, e.g. faster, safer installation and minimisation of errors. The aim is to evaluate the project over its entire lifetime, not just as an investment at the time of purchase.

At the heart of a project, the following issues

should be given principal importance:

- Bespoke/project-specific cabling and connection concept
- Simple site management
- Smooth commissioning
- Time saving

The added value of our customers is the focus of our support.

By optimising the value chain and outsourcing all activities that are not part of the core business, we create competitive advantages for our customers. By focusing on core competencies and consistent customer orientation, we ensure the success of the project. This includes, among other things:

- Coordinating with the customer early during the development and planning phase
- High-quality designs/components at the development level
- proactive error prevention
- Automated production processes
- higher system profitability, reduced LCOE

Our experience and feedback from customers and projects are continuously incorporated into our products. We use this wealth of experience for both new and further developments and are thus constantly at the cutting edge of functionality, safety and material properties. This technology transfer enables our customers to always receive the most up-to-date, durable and valuable product. Thus, the risk of having to reinvest in the obligatory system inspections (assessor) for resale or O&M maintenance is low. These have a direct influence on the CapEx, OpEx, LCOE and thus ultimately increase the return on investment of such a PV system.

This is repeatedly shown by studies of independent institutes, assessors and reinsurers worldwide, which not only deal with the main components, but also focus on balance of system. Balance of system includes all components of a photovoltaic system with the exception of photovoltaic modules and has the greatest influence on the losses in PV systems in the event of a fault/failure. By choosing our products, our customers secure higher returns on their investment.

Where is the market heading?

In a constantly changing energy and photovoltaic market, our products and services are used in the most diverse sectors.

The coupling of sectors in the energy industry makes it necessary for us to offer even more specific and customised solutions



Plug'n'play cable harnesses

for our customers. By using our flexibility and know-how, we can respond optimally to rapidly evolving infrastructures and circumstances. In the following areas, we use our manufacturing expertise to support our industrial customers in their projects:

- Floating PV
- Battery-coupled PV systems
- Repowering PV Systems
- Sector coupling electricity-heating-mobility, as a prosumer model
- E-mobility

What advantages do your products offer for floating PV systems?

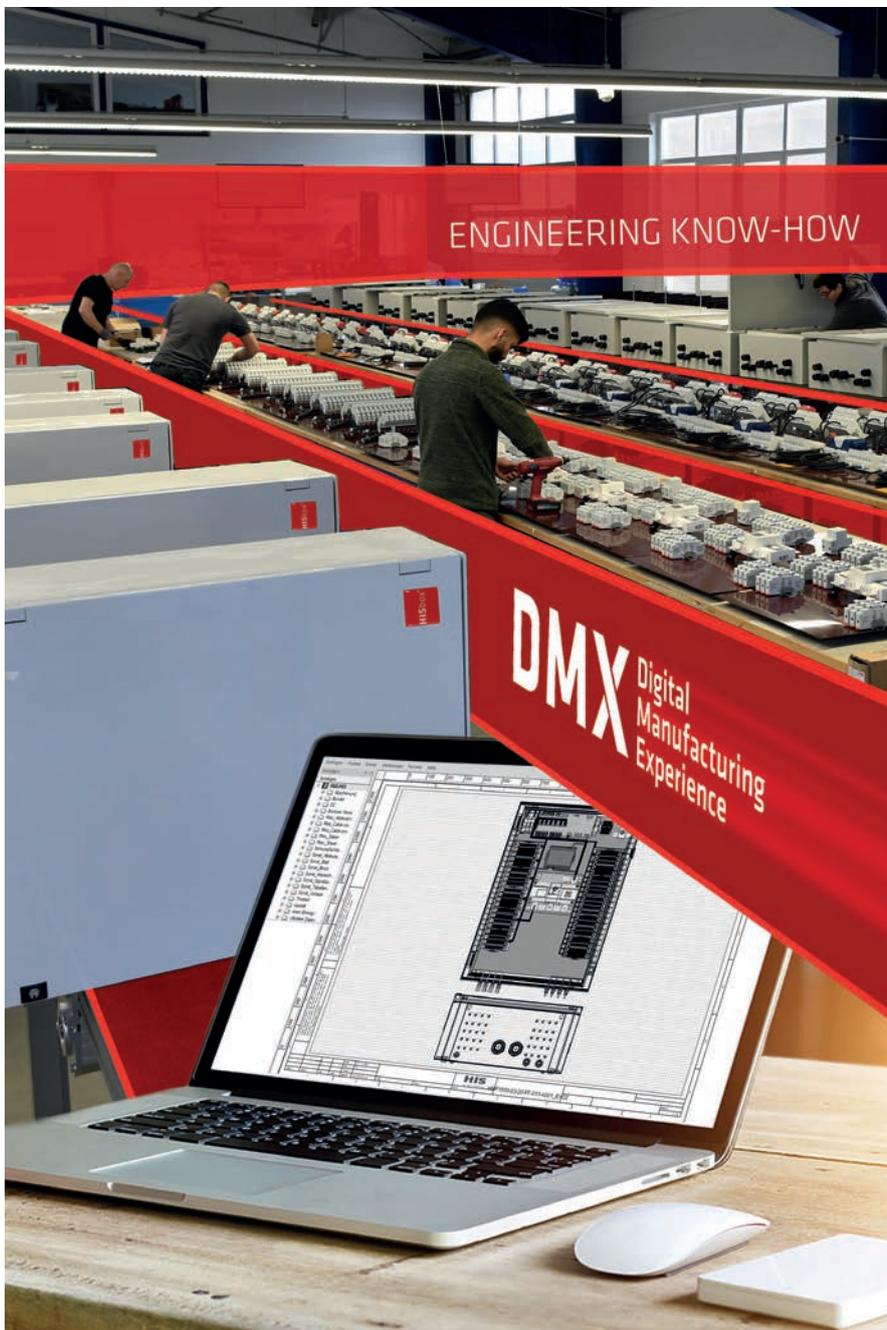
Floating photovoltaics is a development which is steadily becoming established in Europe. The pioneers of this type of PV system were the Asians, who have been using this technology for several years. Floating PV systems also offer great potential in Europe and, according to Fraunhofer ISE, a potential of 44 GWP for Germany. We personally estimate this figure to be much higher and the future possibilities to be even more far-reaching.

These floating PV systems are installed on a

body of water using floating substructures that are anchored to the ground or shore. The PV system and inverter are connected to the compact/transformer station on the shore via floating power lines. Floating PV power plants offer the advantage of being able to use additional areas for energy generation. In addition, the efficiency of the plants is greater, depending on the flotation system used, than with conventional systems due to water cooling.

HIS takes a holistic approach to its customers: everything from a single source. From suitable cables with water-repellent properties and additional qualifications to IP testing of 'cable-connector' combinations and combiner boxes which, in other installations, are not adequately considered as a major fault source, we offer all the components that matter when setting up a PV and floating PV system. Even specially designed DC combiner boxes that are adapted to the environmental conditions of floating PV platforms, keyword splash water protection, are included in the product portfolio.

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Engineering know-how

About HIS

Solar energy is one of the most sustainable energy sources known to mankind, which we try to harness for ourselves with the help of photovoltaics. At HIS, we have made it our mission to provide manufacturers and operators of photovoltaic systems and PV products with holistic cabling and interconnection solutions which enable them to achieve their goals and maintain their position in the market in the long term.

Our motto 'WE CONNECT SOLAR ENERGY' means that we continuously develop installation-friendly, plug'n'play systems and sustainable solutions that also set standards in terms of economic efficiency. Better for the installer, better for the operator and better for the environment.

We owe our best ideas to the intensive dialogues with our suppliers, our partners and above all our customers. By understanding their requirements as personal challenges against which we continually measure ourselves, we maintain the dynamism required to develop sustainable ideas in the PV environment.

Dynamic is also the right keyword when it comes to the diverse products we have produced over the past twenty years. In addition to sustainability, our products are characterised in particular by quality, flexibility, variety and an unbeatable price/performance ratio.