

Power Systems Consulting: Solar solutions

Identify and optimize solar power solutions through technical and economic consulting capabilities

As a key player in the solar industry, ABB is constantly striving and innovating to develop solutions that can efficiently transform the sun's energy into reliable power.

Our offering to the solar market stems from our expertise in power electronics. Products and solutions include solar inverters, low-voltage and grid connection products as well as PV power plants.

Teaming with a reputable technical and economic consultancy will ensure project compliance, optimization and bankability. ABB's consulting team has the ability to support solar customers who need to know what to expect and can mitigate major issues and investments before they occur. Here are just some of our capabilities:

Technical consulting capabilities

- **Expertise in grid integration analysis** – Ensure that system reliability and performance are not compromised while obtaining an understanding of system costs from experts that have performed hundreds of system integrations.
 - **Grid interconnection planning** – Maximize power into the transmission grid at various sites without the need for additional system upgrades. Understand possible issues during the design phase for better equipment integration.
 - **Grid code compliance** – Be assured that your solar projects will not negatively impact the reliability and performance of the power system. Don't miss your project milestones and get penalized for passing off compliance requirements.
 - **System impact studies** – Consider a range of system operating scenarios, as well as dynamic simulations on the network. Identification and prioritization of issues can be leveraged when investing in upgrades or unexpected system impacts. Identify any transient overvoltages that can cause system failures, which are traditionally not covered by most developers or OEMs.
 - **Balance of system** – Receive detailed design of substations and collector systems for solar plants provided from the leading OEM. Let the experts share with you what the optimal configurations are for you based on your priorities.
- **Compliant product selection** – Comply with necessary solar project requirements while funding is still available, ensuring to investors that the project will operate as planned. As a result developers must select suppliers that can deliver as promised. Our team can validate stated capabilities through its decades of project experience
 - **Battery application solutions** – Optimize application selection and system impact analysis. Take advantage of excess output by knowing how much more power you can leverage.
 - **Performance optimization (technical loss reduction)** – Know what options are available to optimize production, which can then be used to generate revenue or increase cost savings. It is a better option technically and financially to maximize the energy you have rather than purchase more generation.
 - **Sizing studies (commercial and industrial)** – Optimize your system configuration to your facility's constraints. Take advantage of governmental incentives by sizing solar PV solutions effectively.
 - **Transmission and distribution root cause analysis (utility scale)** – Identify accurately any system issues you may have and solve the root causes properly. Know what to do about harmonic issues that may occur due to currents flowing through step-up transformers from the converters to the collection system. Also better understand the interactions between FACTS, (STATCOM, SVC, Series Cap.) devices and capacitors.



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Supporting solar power

Making solar electric power affordable begins by developing solar electric power plants that have a competitive Levelized Cost of Energy (LCOE). In order to obtain a low LCOE, a developer must not only control capital costs, but focus on minimizing total operating costs. Developers must also reduce the risk of solar power projects in order to attract more investors and lower the cost of capital for those who are interested in funding renewable energy projects. In other words, compliance, optimization and bankability are the keys to successful solar power generation.

ABB offering

The Power Systems Consulting team at ABB provides unique approaches and solutions to developers, EPCs, electric utilities, system operators, independent power producers and industrial electric users worldwide.

Economic consulting capabilities

- **Production cost models, (investment analysis)** – Estimate energy production through simulations that calculate additional revenue and services to support the development or purchase of a solar plant. Feel confident that sub-hourly calculations are qualified by the industry's leading production simulation software experts.
- **Asset portfolio analysis** – Know how to best centralize, monitor and control all of your asset data while prioritizing maintenance and investment decisions. Portfolio cost savings can be recognized and qualified through detailed analysis.
- **Asset risk management** – Reduce the risk of equipment failure, extend the life of your equipment and minimize the risk of unplanned outages. Monitor and control your risks effectively for the lifetime of your projects through sensors and software created by the leading OEM.
- **Emission displacement calculations** – Qualify and quantify your environmental impact. As solar PV and wind generation displaces fossil-fuel based generation, know exactly how much CO₂ was eliminated, then leverage the remaining allowances.
- **Congestion identification** – Locate when and where congestion exists (i.e. dispatches, outages), and have alternative solutions proposed. Both plant and system operators can benefit from data analysis performed by experts that have a wide range of experience from similar networks and systems.
- **Understand requirement and reserve margins** – Know your margin limitations and safely take advantage of them to derive additional benefits, including additional revenue generation.

We offer a wide range of consulting services in the areas of transmission systems, system controls, energy efficiency, power market analysis, asset evaluation, industrial systems and equipment selection. Combined with years of experience and state-of-the art technology, ABB's internationally recognized team of consultants will help you to develop and optimize your electric system to reach your desired level of performance.

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