



Solar Automation and Electrification

Safe, smart, and
sustainable solutions

A complete solution provider

In a field driven by innovation, choosing the right technology partner is the key to reaching profitability and sustainability goals in the green sector. With a comprehensive solar solutions portfolio, supported by a global sales, service, and manufacturing footprint, ABB has the resources and expertise to ensure that solar power installations of all sizes are as efficient, reliable, and well-managed as possible—all while maximizing the return on investment.

Our solar offering includes low-voltage products, monitoring and control systems, grid connection, monitoring, stabilization and integration products, as well as the complete electrical balancing of plant solutions. Our heritage and commitment within the power generation industry has helped us develop a wide range of support and maintenance services, including remote operations and diagnostics, that will help ensure your solar installations deliver optimal performance.



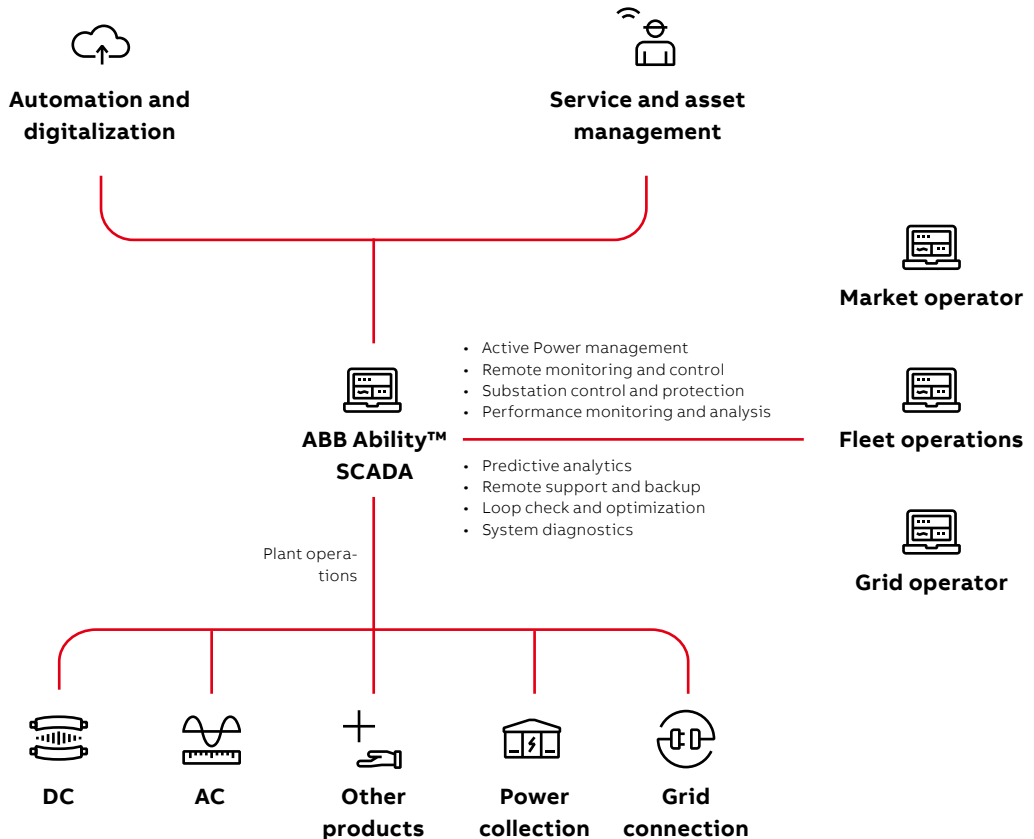
The benefits of solar development with ABB

ABB has a successful track record of deploying solar plants all over the world. With over a century in the power generation industry, we understand the challenges and are here to assist.

We can help with the accurate dimensioning of equipment so that you can lower your initial investment cost while ensuring an optimal asset utilization, the safety and security of your assets and people, and compliance with all grid code regulations.

ABB provides a full range of products and solutions that meet the 1500VDC and 800VAC requirements. These innovations allow monitoring and communications functions at any level of the plant, offer advanced energy storage solutions to ensure continuous operations in any kind of power generation and also delivers a complete set of solutions to connect the plant to the grid.

Our solutions enhance operational efficiency and increase transparency and interoperability



Availability through a system designed for power generation

ABB can help you maximize the energy harvested through advanced optimization control and a stable grid connection built on world-class systems and products.

Our technology allows you to optimize the harvest of incoming sunrays through advanced efficiency algorithms across the production chain. An increase in power generation by a unit or area can quickly be remedied and the improved visibility allows for easier energy audits and benchmarking.

With ABB automation, you can reduce hardwired cabling by connecting to intelligent devices, no matter which standard protocol you have. The high reliability of digital communication improves the information flow from the devices and additional electrical measurement equipment can be removed.

ABB technology allows for simpler installations and provides reduced automation systems that are easier to maintain, and ready-made object libraries for electrical equipment that reduce the engineering burden. In addition, ABB provides automation systems that facilitate effective asset management strategies that include the electrical equipment. The result is reduced plant downtime and an optimal level of production.

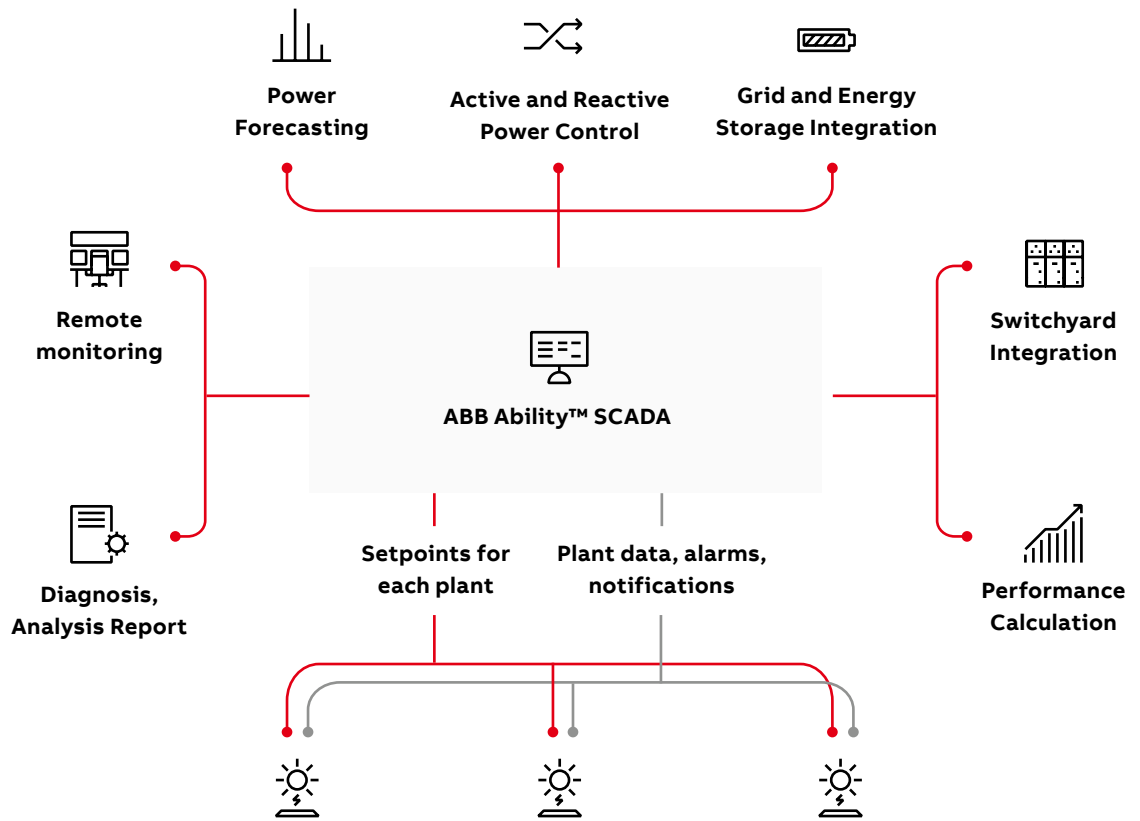
The remote maintenance features offered by our automation systems allow for faster troubleshooting and create a much safer environment, removing people from electrical danger. Fail tracking and prevention processes are also enhanced through the use of historians for diagnostics and reports on all levels.

Running your plant with automation from ABB will increase visibility and enhance your monitor and control capabilities, with both local and remote options. ABB Ability SCADA systems are state-of-the-art SCADA systems that is fully flexible & scalable with high-performance HMI for supervisory monitoring & control.

The system was designed and built on field-proven features and functions:

- Advanced alarm management system and information management
- Embedded security and data connectivity.

A single operator interface for all aspect in local or remote operation



Remote portfolio management

- Effective operations
- Plant diagnostics
- Power management and optimization
- Production forecasting
- Condition monitoring

Plant automation

- Data collection, storage and analysis
- Integrates plant, substation and all other equipment into one system
- One point of control for the entire plant
- Ensures compliance to grid code requirements

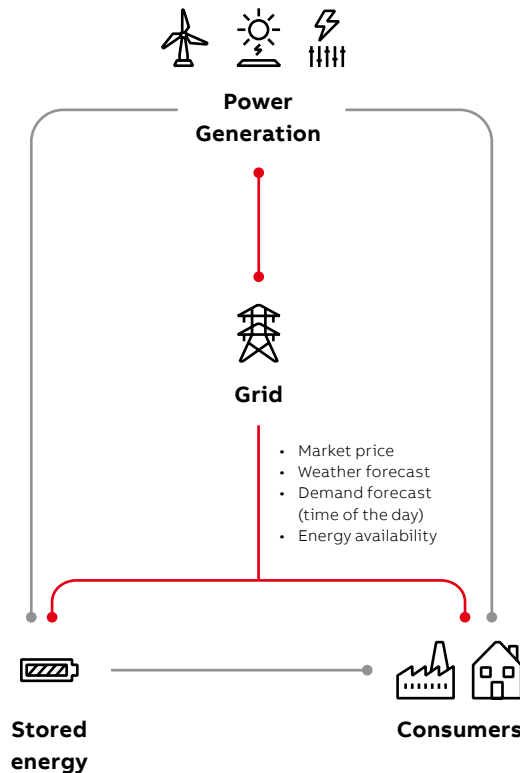
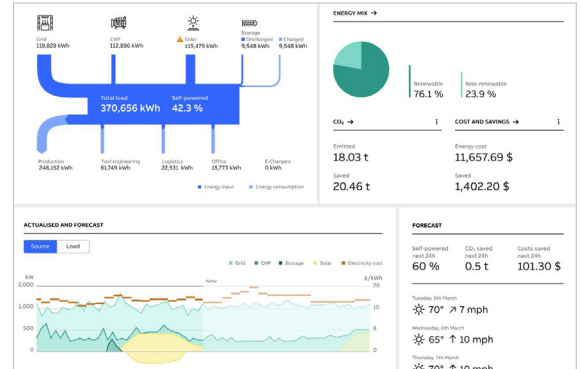
Data Warehouse

- Financial calculations and investment analysis
- Long-term strategy definition

Energy management and storage solutions

The challenge of using renewables in the energy mix is to balance supply and demand. Balancing renewables power supply and end-user demand has always been a challenge, but as the renewables share of total generation in many countries is growing, this challenge is increasing.

As renewables and digitalization enable fundamental changes in how we generate, distribute, and consume energy, the only certainty is that new technologies are going to challenge our conceptions of what's possible. ABB is a pioneering leader in technological innovation and we actively innovate energy solutions that deliver value to customers in this dynamic environment.



Aggregate any number of decentralized energy resources

ABB Ability™ OPTIMAX® helps power players thrive given new opportunities presented by the bi-directional flow of energy and information.

ABB Ability™ OPTIMAX® for Virtual Power Plants aggregates and optimizes decentralized energy resources into a virtual power plant. You can then advantageously buy or sell in wholesale energy markets or provide energy as a subscription service.



Reliability

Numerous proven installations in all sizes, with long-term support from the world's leading control system company



Scalability

Easy to operate and easy to scale without disruptions to the grid; reduce labor costs while improving energy savings and adding new revenues



Flexibility

You're in control: together, we'll adapt the systems to your business model and objectives



Energy storage to support power quality, grid inertia, and short circuit power



Spinning Reserve

Stabilize network frequency



Peak Shaving

Reducing voltage dips



Dynamic Demand

Maintain network voltage through reactive power.

ABB provides the most extensive turnkey solutions on the market, including simulation support for grid code compliance. By supporting the grid with short-circuit power, inertia and reactive power, ABB offers the right sustainable solutions for the new era of renewable energy.

The Energy Storage System is connected and running, but not charging or discharging energy into the system. On loss of generating capacity, it steps in to take the load for a predefined period and balance the forecasted demand.

Electrification

ABB's portfolio for solar applications focuses on delivering continuous operation, higher reliability, and higher return on investments, enabling customers to take full advantage of the savings offered by adopting 1500V DC and 800V AC technologies. Seamless integration into the grid or system, fast installation and commissioning, together with flexibility for different usage, makes it ready for tomorrow's challenges.

Electrical balancing

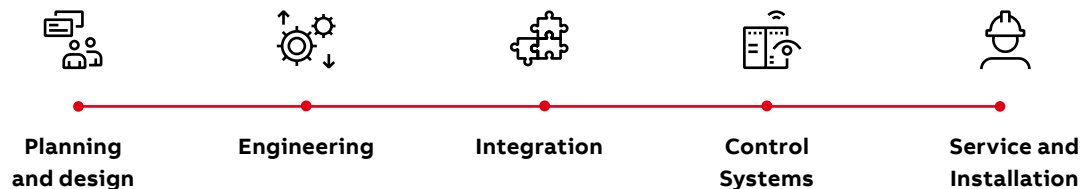
Through our electrical balance of plant solutions designed specifically for solar generation, you gain access to ABB's full range of capabilities, this may even include grid compliance simulations and synchronous condenser solutions to fulfill the grid strength contribution (inertia, fault current, reactive power) complying with local grid code or power system regulator. Built on years of knowledge, and best in class expertise, this covers the entire lifecycle, including the planning and design phase, engineering, system integration, control systems and power electronics installation and service, together with one of the industry's broadest product portfolios.

Our complete range of the electrification products specifically designed for the solar various installations including mega-watt scale, containerized solutions, which house all the electrical equipment needed to rapidly connect a PV plant to the medium-voltage (MV) grid. These comprise inverters, MV switchgear, and transformers, and DC connections, and are designed to deliver high-efficiency performance with proven technology that meets country-specific grid codes.

The low-voltage products has been specifically designed for solar applications to meet the requirements for the strings connected to the PV Panels on the DC side to the alternating current (AC) grid connection point, and include factory finished, wired, and certified combiner boxes with remote string monitoring.

Additionally, our portfolio of products for solar tracking systems includes all key components – from drives and motors to PLCs and low-voltage products – that are needed for accurate and reliable tracker performance.

From wire management, grounding and installation solutions, string protection & monitoring products to fully assembled & tested combiner boxes, ABB provides the solutions you need. This also includes inverter components to protect against short circuits, surges and direct & indirect contact risk both in AC or DC to power collection solutions at 600VAC or 800VAC with short circuit and surges protection. Available in various certification, UL and IEC included.



To check ABB capabilities and competences about PV applications, scan this QR code and download the Technical Application Paper "Photovoltaic Plants".

Enabling long-term success through access to information

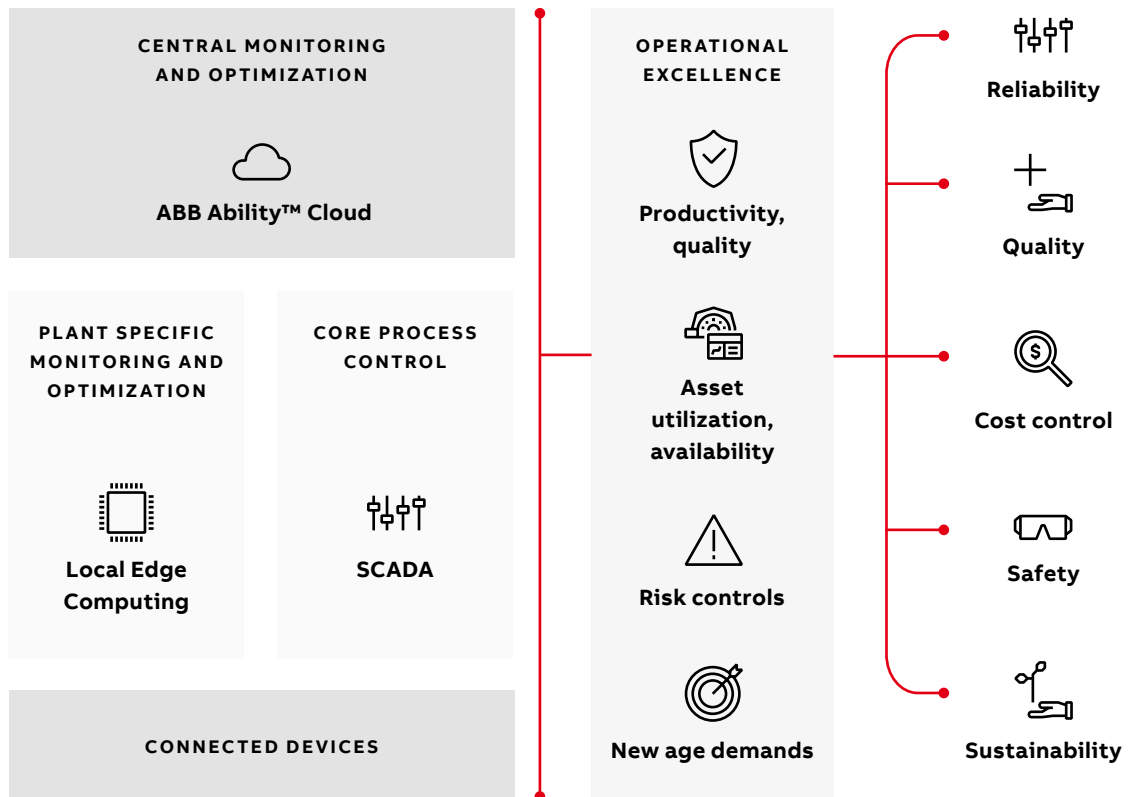
Digitalization allows for improved transparency and interconnectivity between your operating assets but also between independent operators around the grid. The exchange of information can optimize energy flows, increase the forecasted accuracy of power generation from renewables, and secure grid stability.

To enable digitalization, ABB offers a secure way to open data connectivity on system level or from individual equipment. This feature will further enhance your operations through external algorithms but also let you import data from sources that can improve your forecasting, trading, and demand response for managing multiple solar farms.

The ABB Ability solution provides extensive computing power for cloud-based analytics or local

collection and model execution in the edge device. It's a secure platform for extended applications to run directly connected to the ABB Ability cloud, third-party clouds, or your own platform. The functionality around data collection, consolidation, and storage is directly connected to the SCADA evolution. The stability of the operational lifecycle of the system is, however, separated from the higher-paced evolving digital revolution.

Start and evolve in process and eco system efficiency



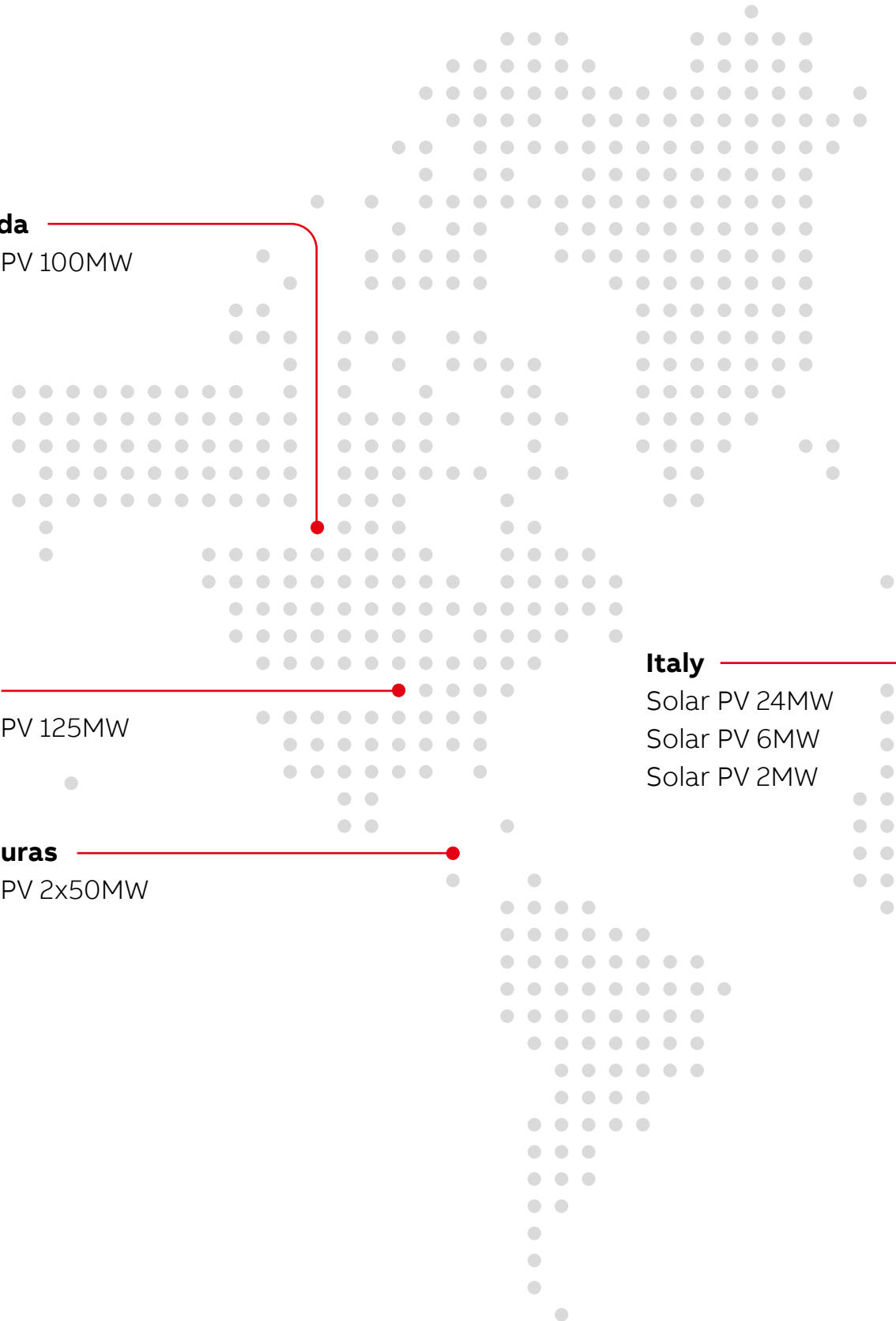
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ABB solutions exist all around the world and are different in size and equipment. Here is a selection of our references

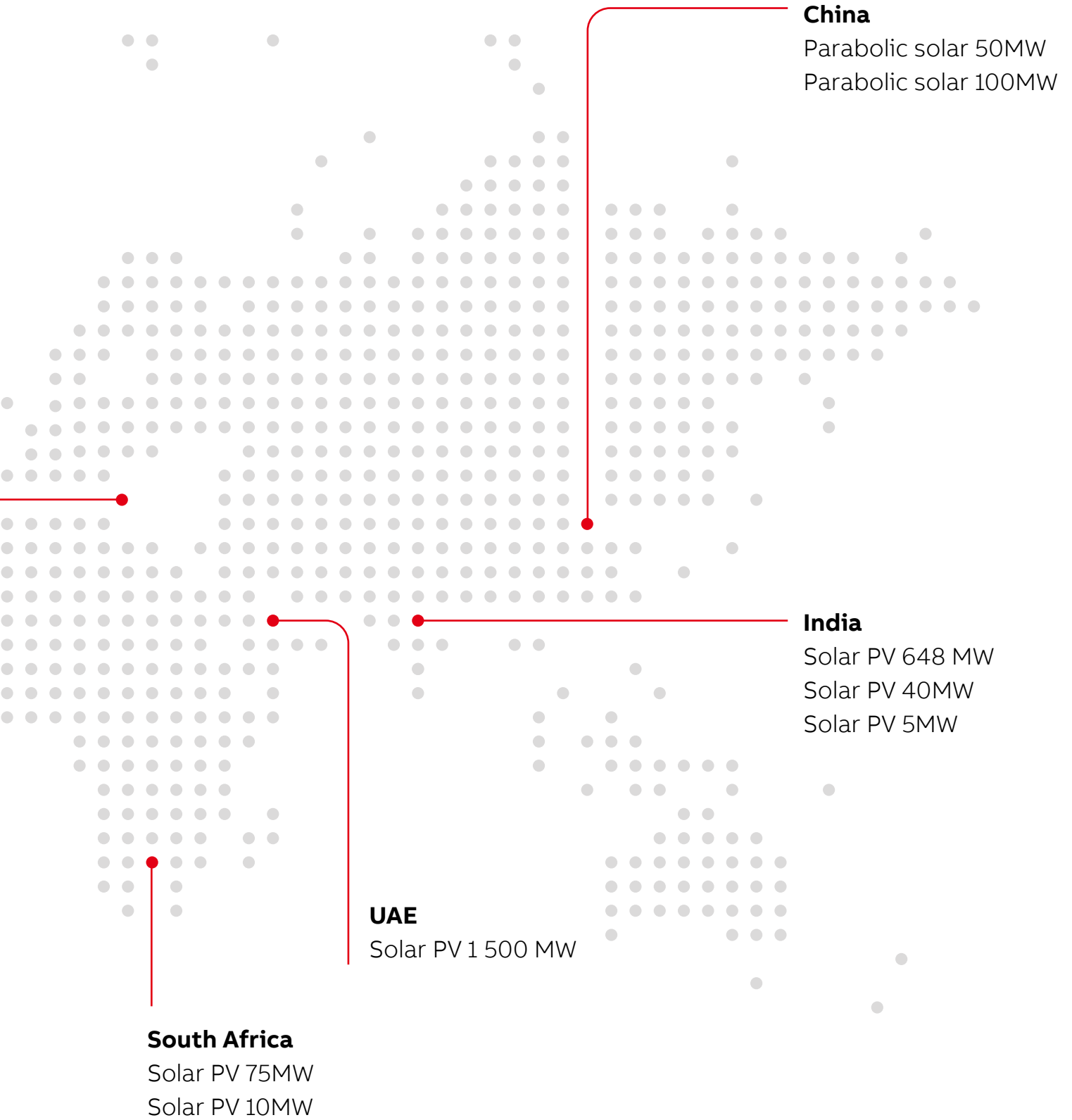
Canada
Solar PV 100MW

USA
Solar PV 125MW

Honduras
Solar PV 2x50MW

Italy
Solar PV 24MW
Solar PV 6MW
Solar PV 2MW







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ABB Ltd.

powergeneration@it.abb.com

new.abb.com/power-generation

