



SMA

SMA OPERATIONS & MAINTENANCE

# Maximum power. Minimum risk.

Optimal operational management and maintenance  
for PV and storage power plants

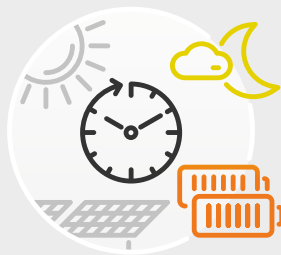
# Tailored Solutions for Greater Energy Production

Regularly maintained PV and storage power plants generate up to 30 percent more power. To ensure a maximum return, it is worth taking a proactive stance when it comes to the performance of your power plant. Our Operations & Maintenance services helps you achieve maximum energy generation and system availability. As a result, an investment in a PV or storage power plant will pay off particularly quickly. We are a reliable partner that can help you make sure your power plant operates efficiently.

## Benefits



Customized  
O&M solutions



Stable energy generation  
and storage 24 hours a day



Maximum return on investment  
thanks to high system availability

## World-leading

/ 40 years of experience

/ 100+ GW of installed  
inverter power

/ 4.5 GW O&M portfolio under  
contract



# Regional Support 24/7

At our monitoring centers in the U.S. (California) and Germany, we analyze the system performance of power plants around the clock in real time. We use modern remote monitoring solutions and either resolve service cases directly or deploy local service technicians.

## You benefit from our strength

Our top priority is to minimize the downtime of your power plant and thus provide the greatest possible protection for your investment. To that end, we work with cutting-edge technologies and tools and invest in continuing education for our experts.

## Operation of technical systems

- Fast on-site service
- Optimized system performance
- Professional partner management

## Technical system management

- Performance optimization through performance engineering
- Real-time system status information
- Safeguards against yield losses



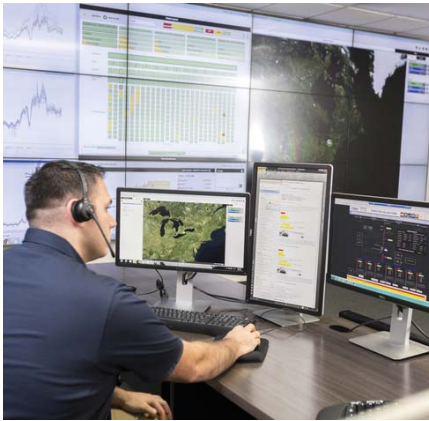


# More Flexible use of Energy with Storage

Storage power plants provide energy security and grid stability worldwide. SMA is a world-leading specialist in the storage of energy in grid-tied, off-grid and hybrid systems. Our predictive maintenance strategy ensures that storage capacity is reliably available when it is needed, thus safeguarding your investment in a particularly sustainable way.

- Active remote monitoring of system performance 24/7
- Trouble-free system communication in accordance with the latest safety regulations
- Maintenance of all system components
- Availability and performance guarantees

# Superior Network Security, Monitoring and Control



Our monitoring centers meet the strictest international security requirements. All monitoring solutions comply with the German BSI Act as well as U.S. requirements for NERC/CIP compliance. We work with independent security experts on the development of future-proof products and solutions.

- Cyber security tests (penetration tests) on products
- Safeguarding communication between systems and external communication nodes using methods, including encryption and authentication
- Encryption of communication within systems – a technical innovation from SMA



## Building and monitoring the defined security level

- Provision of binding internal technical directives
- Consideration of international standards, such as IEC 62443, as well as other relevant frameworks for the security of industrial control systems and of the Industrial Internet of Things (IIoT)
- Secure data storage on EU servers



**Maximum  
cyber security**

# Individual Services for Your Investment

We tailor what we offer to provide the optimum services for your system.

## / On-site maintenance services

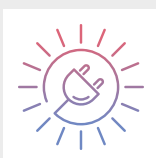
- Local service operations and systems management
- Capacity tests
- Corrective maintenance
- Preventative maintenance
- Thermal scans
- String performance testing
- Calibration services
- Oil sampling and analysis for the medium-voltage transformer

## / Remote service operations and system management

- System monitoring and reporting
- System administration services
- System performance services and guarantees
- Firmware updates

## / Additional services

- Module cleaning
- Landscaping
- Pest control
- Site surveillance and security

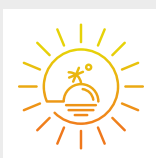


## SMA Energy System Large Scale

### One system. Everything from a single source.

The world of energy is changing. With your investment in PV and storage power plants, you are helping to drive the energy transition forward and opening up attractive new business opportunities.

- Linking energy sectors and managing them intelligently
- Providing grid management services
- Profiting from virtual power plants



With the SMA Energy System Large Scale, your power plant is always a match for future requirements, too, thanks to the modular concept. Our service solutions safeguard your investment during operation around the clock – for optimized energy generation and maximum returns.



# Global Experience



## Brookfield Renewable, U.S.

SMA has been leading operational management and maintenance services for Brookfield Renewable's PV systems in North America since the beginning of 2020. The ten-year contracts cover 1 gigawatt of the existing decentralized and centralized solar portfolio. The systems are operated in accordance with the requirements of the North American Electric Reliability Corporation (NERC).



## Upside Consulting, Germany

SMA has been providing O&M services for the Upside Consulting group's 48 MW battery-storage system portfolio since 2018. The storage power plants provide operating reserve for frequency stabilization and thereby prevent large-scale power outages.



**SMA-Solar.com**

