SMA Power Plant Solutions

Making Your Ideas Possible

THE CLEAR CHOICE

UTILITY GRADE

SMA is the worldwide leader in solar inverter technology and offers an extensive portfolio of utility-grade solutions for large-scale PV power plants. With innovative offerings for both distributed and centralized plant designs, SMA has the experience and technological leadership to make our partners' projects a success. Our customer-centric sales, support and service concept provides EPCs and integrators with unparalleled technical consultancy and design expertise. From individual components to turnkey power conversion solutions, SMA has the know-how and infrastructure to guide and support our customers from concept to completion.

With more than 800 projects fulfilled in 30 countries in 2010 alone, SMA provides customers with a unique value proposition: leading technology, unmatched reliability, financial security and superior service.

"Worldwide, our customers' projects are increasing in size and are now entering into the three-figure megawatt range. SMA not only provides the 'Sunny Central' central inverter for these projects but more often total solutions as well. To this end we are pulling out all the stops to refine our pre-engineered and turn-key solutions by making advances in important areas such as lowering system costs and grid management. We are also supporting our customers during project execution. We have created a separate system development and project planning department to better support our partners. Another key element of this customer-centric concept is the close collaboration between development and sales."

Jürgen Reinert
Executive Vice President (Technology)
SMA Power Plant Solutions

WHY BANKABILITY MATTERS

The key role of the inverter
Many of the well-known components of project risk are directly linked to the inverter: delivery schedule, energy production (off-take), operations, management, and grid integrity, among others.

SMA provides developers with the most secure partner possible. By excelling in the criteria that determine bankability—financial strength, technology leadership, experience, PV industry focus and global reach—we provide assurance that a plant will be reliably operating through the end of its service life.

Financial strength
Fiscal stability is critical when selecting utility-scale suppliers. Developers and finance partners with output guarantees and liquidated damages at risk look to inverter providers to back up these guarantees over the long term. SMA's financial performance stands alone when common metrics, such as debt-to-capital ratio and cash flow per share are compared to others in the industry.

Technology leadership
SMA provides leading technology that increases lifetime energy harvest. Developers, investors, other stakeholders who rely on levelized cost of energy, third-party analysis and other long-term metrics come to the same conclusion: SMA technology is superior.

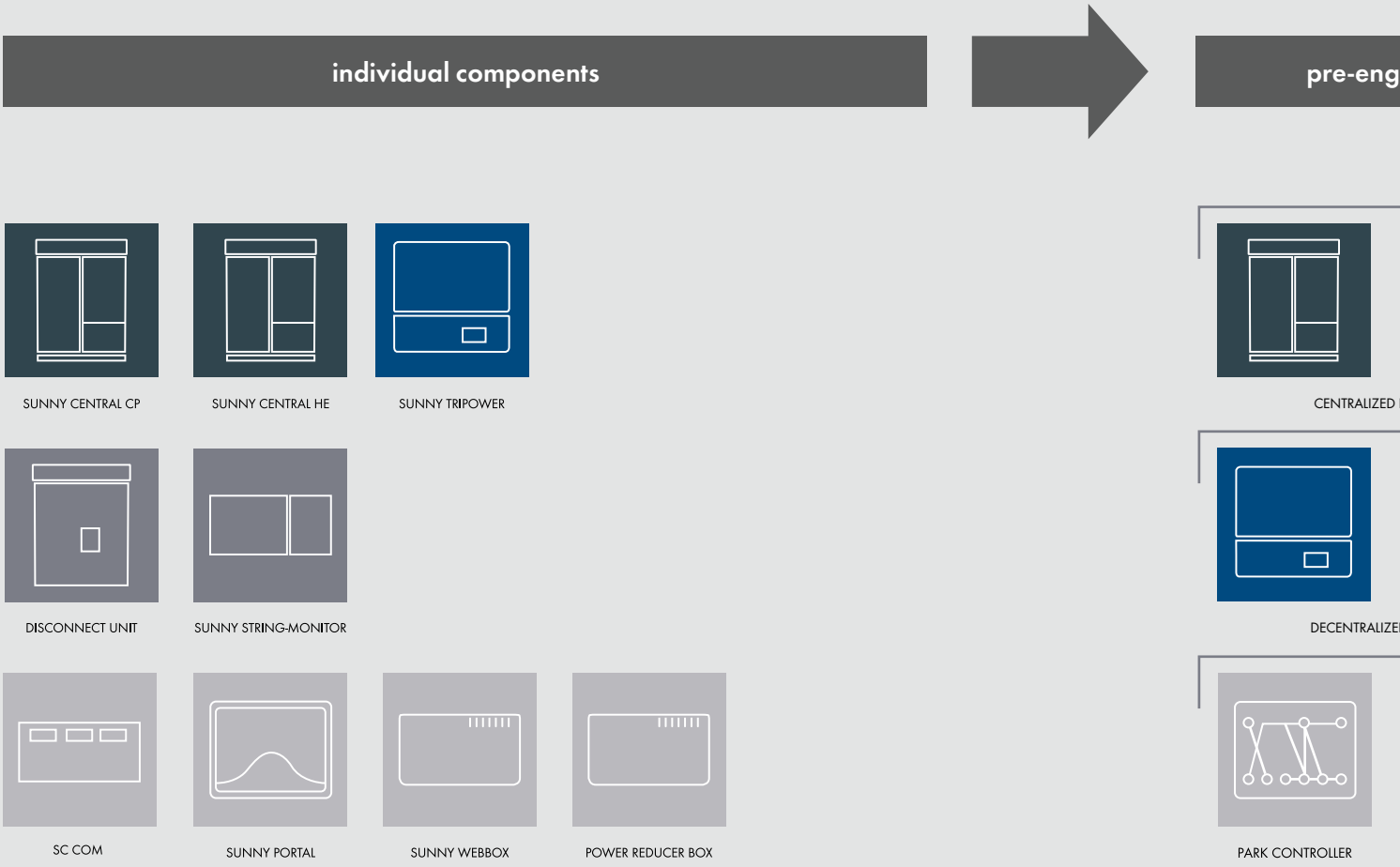
Experience
Every PV project is unique and small variations in module technology, site conditions or utility interconnect requirements, can affect the performance of the inverter and ultimately, project returns. With 30 years of experience, SMA has the expertise and the know-how to help our partners realize their PV plants.

PV industry focus
Would you rather work with a conglomerate or start-up that must compete for

resources or with a company featuring an absolute focus n PV power conversion? SMA remains supremely focused on our core competencies, allowing us to invest our resources in a manner that constantly improves our customers' experiences.

Global reach

With subsidiaries on four continents, SMA has a presence in every major PV market around the world. This global reach means we have local expertise where you need it.



OPTIMIZED SOLUTIONS

No two PV projects are exactly the same. That's why SMA offers a wide range of centralized and decentralized solutions for utility-scale PV, allowing integrators and EPCs the flexibility to maximize each project to its fullest potential.

Distributed

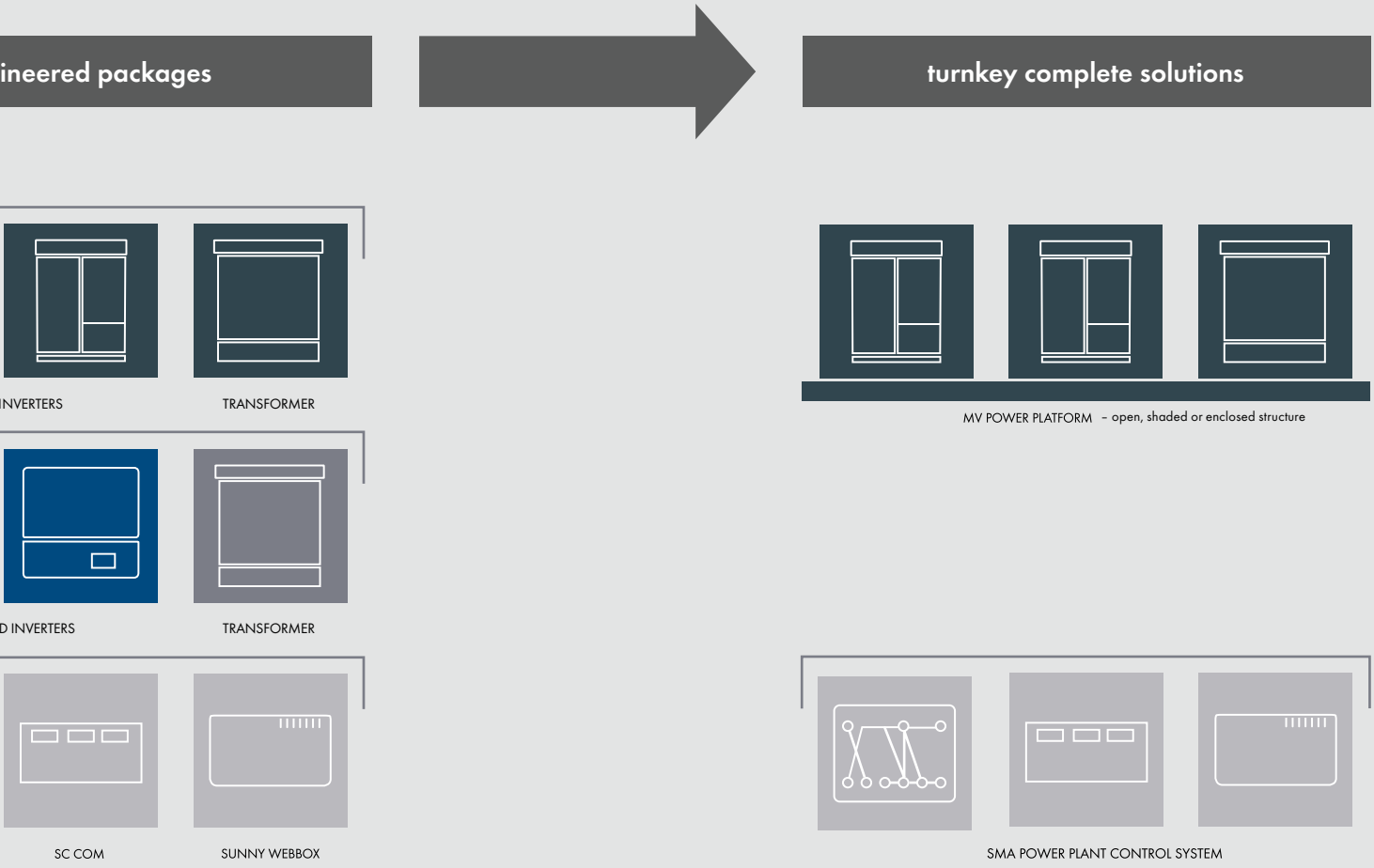
In many cases, a decentralized approach to PV plant construction is ideal. It's adaptable to varying site conditions and module types. Components are easily sourced and shipped from stock. Simple land preparation and installation, minimal operation and maintenance requirements, and a long factory warranty results in reduced site costs and a lower cost per kilowatt hour. Greater MPPT diversity increases energy harvest and reduced DC costs increases long-term profitability. Uptime is also maximized. SMA offers innovative inverters, such as the Sunny Tripower, that can scale from less than a hundred kilowatts to multi-megawatt systems, all while assisting in grid stabilization.

Centralized

Centralized system design is well-known and accepted in North America. It often represents the lowest cost per watt solution available. Field proven units like the award-winning Sunny Central CP series, offer developers and grid operators key features like efficiencies greater than 98 percent, advanced grid management capabilities, easy SCADA integration, and customizable service and warranty plans.

Turnkey

Beyond individual components, SMA offers turnkey power conversion solutions for utility-scale PV. Pre-designed, wired and shipped to site, the MV Power Platform—available as an open, shaded or enclosed structure—provides the most cost-effective way to modularly install large-scale PV. By integrating inverters, a medium-voltage transformer, optional disconnect cabinets, and a control and supply panel onto a steel platform solution, SMA customers benefit from reduced installation costs and improved energy harvest.



SCADA

SMA utility-scale solutions feature communication functions that easily integrate into installer SCADA equipment, resulting in superior control. SCADA connectivity via Modbus and the SMA OPC Server ensure utility operators have the necessary tools to effectively manage large PV plants.

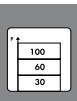
GRID MANAGEMENT

The performance of an inverter is not just measured by conversion efficiency. With the explosive growth of the renewable energy industry over the last several years, grid operators have been faced with the challenge of integrating ever-increasing amounts of variable generation into the grid while maintaining a high level of system stability.

SMA leads the industry in addressing these challenges by developing technologies that meet or exceed regional requirements around the world. By providing integrated tools that support grid stability, SMA inverters allow system operators the control flexibility needed to integrate large amounts of PV without disruption.

While there have been various changes related to variable generation that correlate to interconnection and operational requirements identified by reliability entities, few are as particularly significant to the development of current and future PV inverter technology as power factor adjustment and low voltage ride-through. PV plants utilizing SMA solutions are capable of providing operators with control over these critical elements, thereby assisting in the stabilization of the public utility grid.

Grid management included



Remote-controlled power reduction in case of grid overload

Frequency-dependent active power control

Grid support through reactive power

a) Fixed power factor adjustment ranging from .09 lag to .09 lead

b) Dynamic control based on remote grid operator setting

c) Control of the reactive power via a characteristic curve

Complete dynamic grid support (Low Voltage Ride Through)

UNMATCHED SUPPORT

SMA leads the industry with a unique sales and support structure that provides our customers with comprehensive aid pre-, during and post-sale. A Global Account Manager assists customers with the selection of an SMA solution. Our expert Technical Sales Support Engineers provide unmatched design and integration advice. A Project Manager serves to oversee the process, providing our customer with one point of contact and someone who can provide onsite assistance when necessary. Finally, our service team administers commissioning and post-installation preventative maintenance, parts replacement and, ultimately, long-term security.

Diagnostics and repair
Beginning with remote service, which often eliminates on-site assistance, to First Level, (diagnostics and small repairs), or Second Level Support, (comprehensive repairs), SMA offers the proper service plan for our customers' needs. Customers can optionally administer First Level Support themselves. With local staff to assist, SMA Service quickly provides the appropriate response to any situation.

Spare Parts Warranty
Whether electronic or mechanical, we guarantee the availability of all components over the duration of the complete system life cycle. Our customers can be confident that even as technologies evolve, SMA's support will be constant. This guarantee also provides additional cost security for the operational life of the inverter solution.

Inverter availability
SMA inverters lead the industry. Our customers know our world-class manufacturing and high-quality components result in a superior solution. To fully protect investment security, SMA offers two inverter uptime guarantees: 98 or 99 percent. With these guarantees, we will reimburse the customer for the difference between the actual and agreed-

upon inverter uptime. With warranty periods up to 25 years in length, SMA can also guarantee our solution's performance for the life of the PV plant.

Maintenance

To optimize system performance, SMA performs diagnostics, cleaning and parts replacement at regular intervals. This preventative maintenance is important for long-term operation.

Customizable service

With a PV plant's expected service life exceeding 20 years, careful consideration must be given to not just the technologies used but also the reliability and durability of a system's components. Likewise, a comprehensive plan must be in place for the maintenance and operation of the plant. SMA's modular service approach allows our customers to define individual packages that best meet their needs and ensures optimum inverter availability—providing integrators, investors and utilities with the greatest security possible.

Interested in learning more?
Email our sales department.
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Contact us.
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www.SMA-America.com

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