SMA Solar Technology AG Macquarie – 5th Alternative Energy Conference





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SMA

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SMA

1. Executive Summary: SMA is the #1 in the solar inverter industry





SMA confirms global outlook and guidance for 2012.

- > SMA expects a global demand of up to 33 GW in 2012. Outlook for the coming years is difficult due to the massive feed-in-tariff cuts in key European solar markets¹.
- > SMA forecasts sales of €330 million €360 million and an EBIT-margin of 6% 10% in Q3 2012 and confirms full year guidance².
- > SMA presented high-tech innovations for energy management systems and solar-diesel-hybrid applications during most recent trade shows.
- > SMA gained market share in key growth regions such as America, Japan and South Africa.

>> SMA is the trendsetter in the solar inverter industry with an unmatched global presence

^{1.} Germany and Italy will account for approximately more than 40 % of global demand in 2012. Both countries decided massive FIT-cuts.

^{2.} Sales 2012: €1.3 billion - €1.5 billion; EBIT: €100 million - €150 million

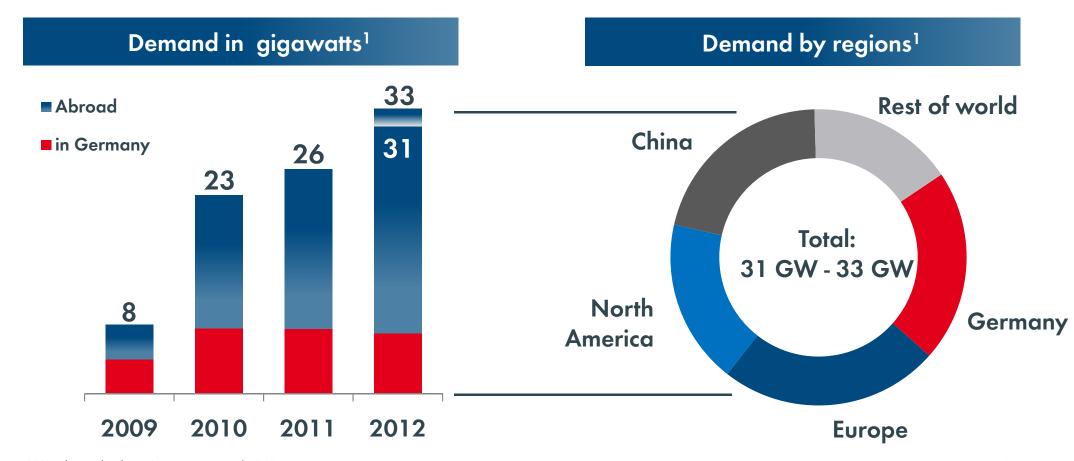


2. Market & Competition: Shift in demand will be a game changer



Germany and Italy are likely to combine more than 40% of the global demand in 2012





SMA Solar Technology AG

1) SMA estimates

The demand drivers for the solar inverter industry will change quickly



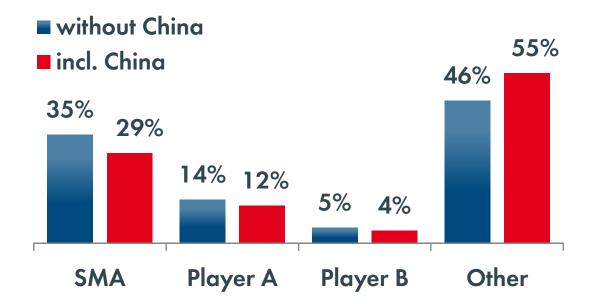
- > Transition from government-aided environment towards self-dependent markets (Energy Management)
- > Manage various energy sources to fulfill energy demand in the most economic way (Hybrid Solutions)
- > New information and storage technologies are future mega-trends (New Business Models)

>> Levelized cost of electricity will drive future demand

Global reach, innovative products and financial strengths are paramount to cope with the rapid changes in the industry







Barriers to entry

- > Barriers from Scale (\$\$\$)
 - > International sales network
 - > Comprehensive service network
 - > Broad product portfolio
 - > Excellent brand reputation
- > Barriers of Time (Know-how)
 - > Innovative technologies (Costs)
 - > System technology know-how
 - > Early move into new markets

SMA Solar Technology AG 1. SMA estimates 8



3. SMA: Best positioned in the solar inverter industry

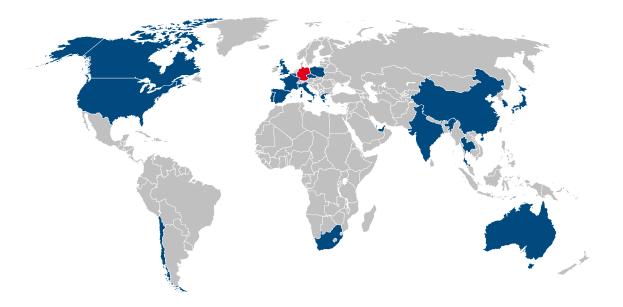




SMA's global presence is unmatched in the entire solar inverter industry



Present in 21 markets on 6 continents



SMA's global success

- > Market leader in North America with total shipments of > 3,5 GW¹
- > Market leader in India with total shipments of > 3.50 MW¹

>> SMA targets an export ratio of more than 60% in 2012

SMA Solar Technology AG 1. Since establishment 10

SMA is more innovative than ever and sets the pace for the entire solar inverter industry



Sunny Boy 5000TL US



- Only inverter with integrated AFC
- > Emergency power supply function
- > Dual MPP-tracking

Sunny Tripower 20000 EE



- > Maximum efficiency of 98.5%
- Reduced functionality
 and specific price
- > Easy installation

Sunny Central 900CP



- > Outdoor version
- Maximum yields with low system costs
- > Full nominal power in extreme climatic

Sunny Design

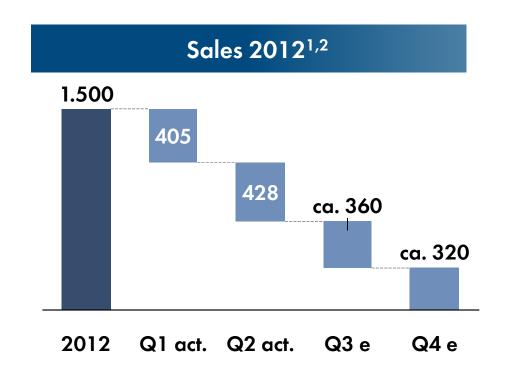


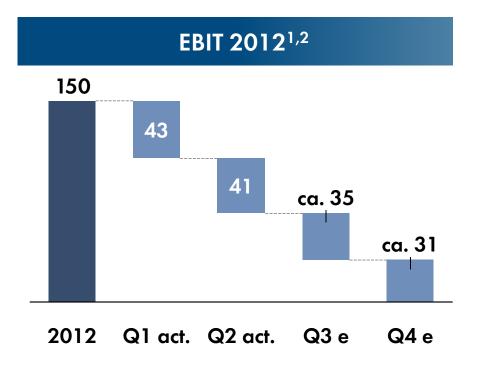
- > Easy PV plant design
- > Individual selfconsumption analysis
- Brilliant ratings by independent benchmark tests

SMA's innovations are the gateway for cost reduction



SMA is rock solid and trusted solar inverter supplier





With nearly 400 million net cash SMA has an excellent liquidity reserve³

- In € millions; Q1 and Q2 are actual figures. Q3 and Q4 are estimated figures.
- 2. Only upper end of guidance low end equals €1.3 billion sales and €100 million EBIT
- 3. As of June 30, 2012 (Net Cash: €387.7 million)



4. Game Plan: Sound Strategy in Place



With our comprehensive know how in system technology SMA will drive the transition towards solar



Cost Reduction Strategy

(New product platforms with significant lower specific cost; increase in efficiency)

Innovation Leadership Strategy

(New markets, customers and offerings)



One thing is sure: Nothing is sure. Therefore, SMA is prepared for various market scenarios



Let's talk about innovative inverter technology



PV-Diesel-Hybrid



Micro-Inverter



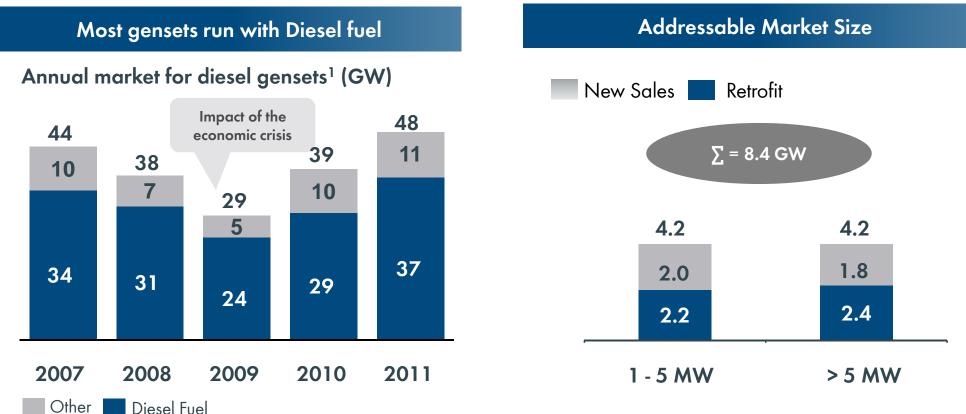
Transformerless Inverter for US



Sunny Central Inverter for US

SMA forecasts a huge market potential for diesel-solar-hybrid systems



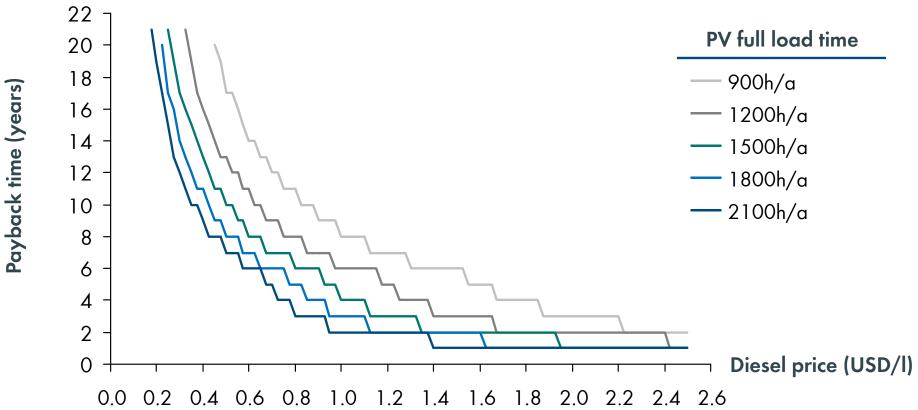


Not every diesel genset system is suitable for a solar hybrid solution. Therefore, market development will take some time.

SMA Solar Technology AG 1) SMA estimates 16

PV-hybrid is becoming a business case for the genset OPEX owner in high irradiation region with Diesel price > 1 USD





The benefits of a hybrid-system can only be realized with innovative system technology

With >20 years of experience in the hybrid business, SMA is well-positioned for the emerging case of Industrial Hybrid Applications



Already market leader: **Rural Hybrid Applications**



- > Rural electrification
- > "PV Off-Grid world"
- > Installations <300kW

A PV business case emerging: Industrial Hybrid Applications



- > Reducing OPEX (fuel saver)
- > "Diesel genset world"
- > Installations 300kW multi MW

Hybridizing the future grid: Prosumer Hybrid Applications



- > Maximize efficiency
- > "Municipal utility world"
- > Installations 3-20kW

SMA reference example:

- > Mining site in South Africa
- > 2 MW installed genset capacity²
- > Upgraded with 1 MWp PV (FSC¹ + 63 STP 17000)
- > Annual savings: approx. 450,000 litre Diesel fuel

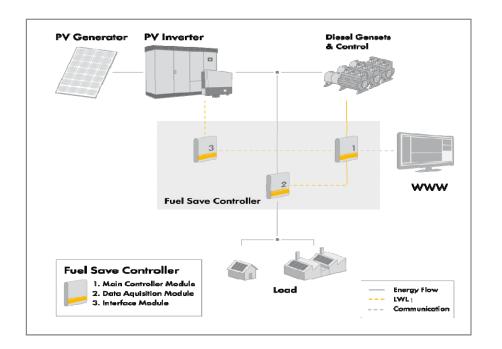




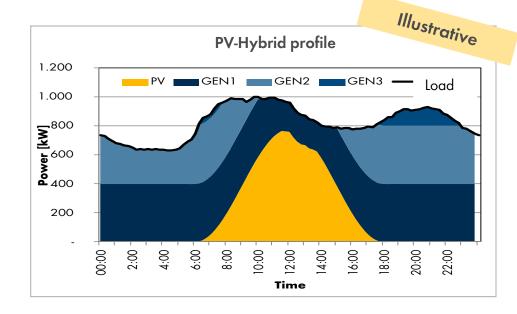
SMA provides a solution for obtaining high PV penetration levels and, therefore, maximising the saving potential for the customer



Intelligent interaction between PV and gensets...



... ensures optimized system solution



LWL = Transmission technology



5. The Sunny Boy 240: A New Era in Micro Inverter Systems







- > Reliability
- > Simplicity
- > A Trusted Partner





Reliability

- > Why does reliability matter?
- > Location
 - > Roofs routinely see high temperatures
 - > Challenging environment to remove/service
- > Greater number
 - > 10 30 more inverters per installation compared to string inverters
 - > Truck rolls cost money much more than is covered by "truck roll compensation"



Sunny Boy 240 - The Reliable Solution

- > Engineered by SMA, the world's most reliable inverter brand
- > Reliability was key to the simplified design
 - Significantly reduced part count
 - Intelligent heat dissipation
 - Compact enclosure
 - Careful component selection







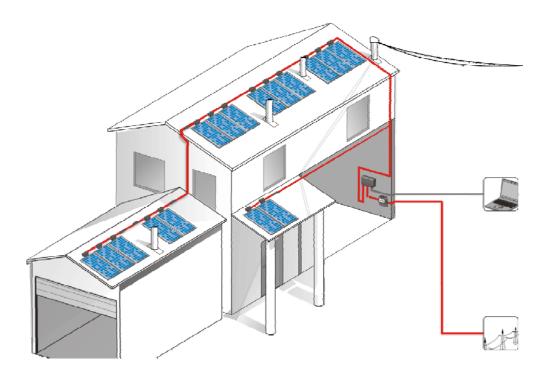




- 1 12 inverters connected in parallel to one AC line
- > Attached to a panel mounting system or wall
- > Designed for maximum AC ratings 1 A / 240 W

Sunny Multigate and Multigate XT

- > Electrical interface to main service panel
- > Powerline communications to micro inverters
- Ethernet communications to Sunny Portal
- Country settings and over-voltage protection
- Designed for maximum AC ratings 12 A / 2.88 kW







Sunny Portal - Complete Monitoring

Highlights:

- > Largest PV monitoring portal monitoring more than 4.3 GW of installed power (50,000+ installations)
- Remote access to your plant over the Internet and with iPhone and Android Apps

Features:

- > Site Layout Tool
- > Live data on module level
- > Dashboard quick summary

Benefits:

- > Seamless integration of micro inverters in existing Sunny Portal
- > 24/7 monitoring and analysis
- Installation support for installers with the guided Sunny Portal Start-Up Assistant





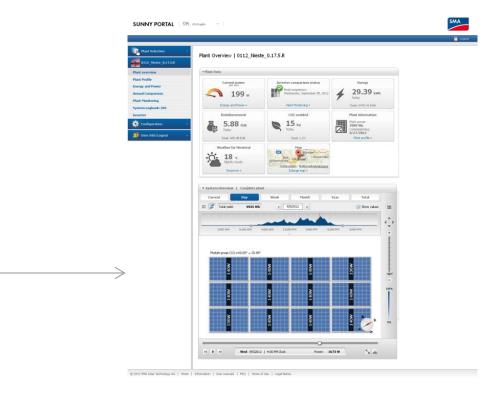
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Energy Dashboard for Monitoring at a Glance

- > Quick plant summary
- > Current power, daily yield, etc.
- Intuitive presentation of inverter and communication status
- Customizable with optional weather and maps integration

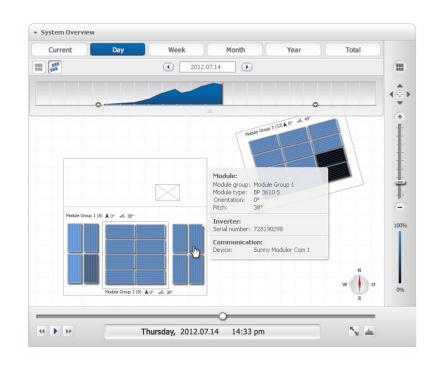


Prevent truck-rolls with simplified dashboard





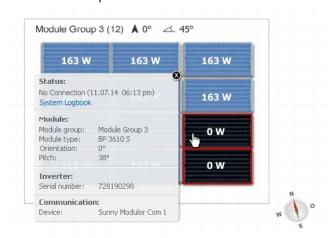




> Easy error detection through module shading

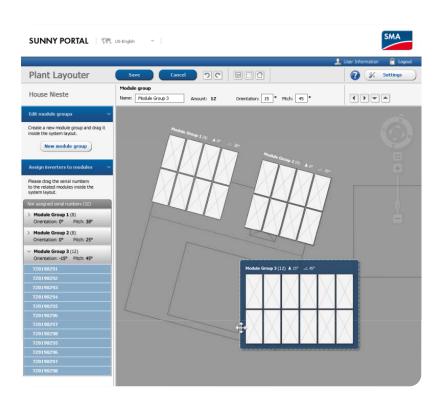
Site Overview:

- Automatic physical presentation of your plant (module size, azimuth, site layout)
- > Animated display of energy and power
- > Choose between different time periods
- > Fullscreen display
- > Live data view



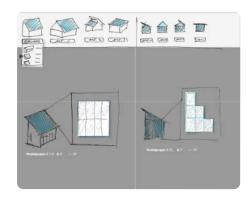






Site Layout Tool:

- Intuitive drag and drop functionality
- > Automatic grouping of modules with the same parameters
- > Use pre-defined templates for default roof types
- > Upload outlines or images of your plant for real life presentation











Compact

- > Small and robust form factor
- > Light-weight
- > ASIC scale integration

Intelligent

- > Advanced over-voltage protection
- > Distortion-free communication
- > Health status analysis
- > 24/7 panel level monitoring and analysis

Reliable

- > High MTBF design
- > Superior thermal design concept
- > Supported by industry's most responsive service organization

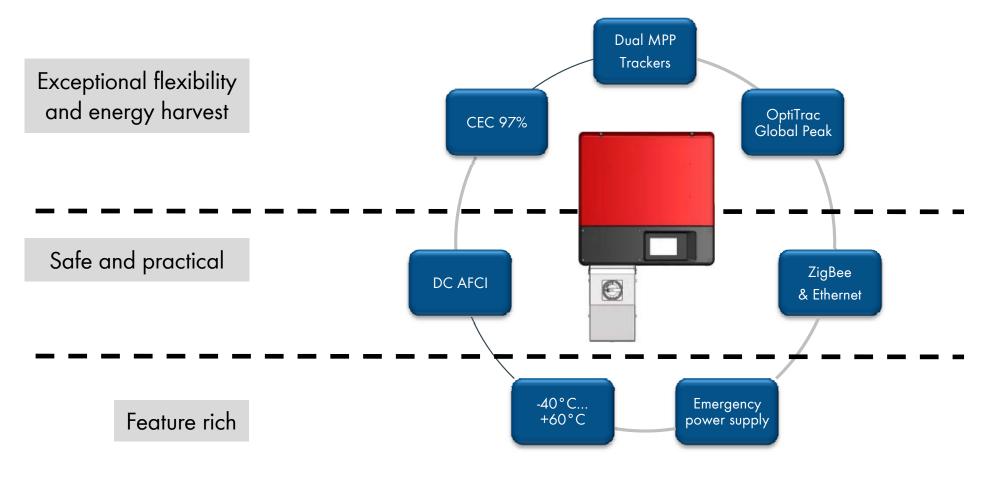
Sunny Boy TL Inverters: A New Era of transformerless technology for the US





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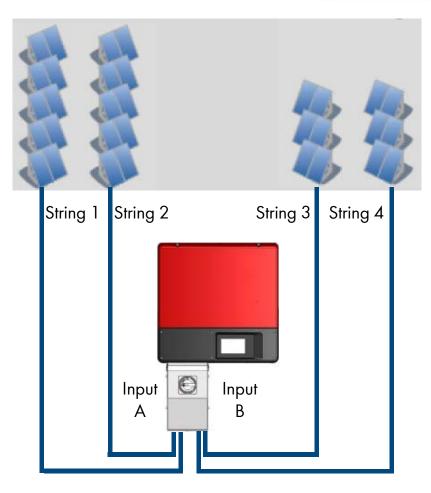
Features and Highlights



DC Input

SMA

- > Wide MPP range: 175 480V
- > Two independent MPPT
- > 4 strings / 2 per MPPT
- > No string fuses required
- > Max input current per MPPT: 15A
- > Design flexibility for complex PV arrays

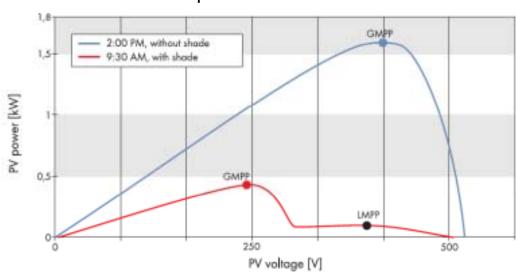




High Energy Harvest

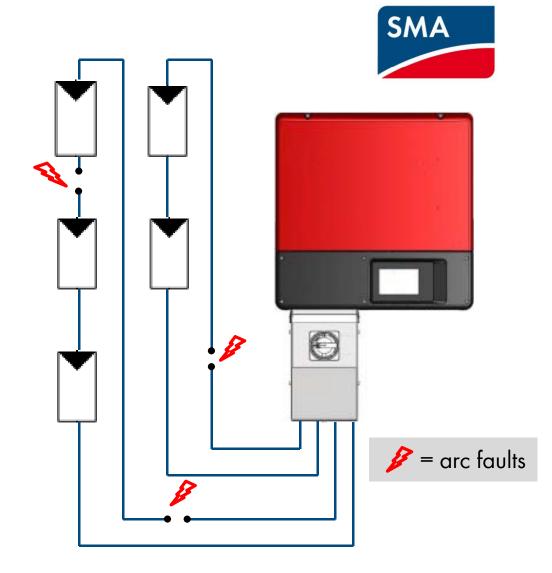
- > Efficiency: 97.5% max, 97% CEC
- > Shadow management with OptiTraac Global Peak
- > Operational from -40°C to +60°C
- > High energy harvest even under extreme conditions

OptiTrac Global Peak



Safe: Arc Fault Detection

- > Complies with AFCI requirements of National Electric Code
 - ✓ Identify
 - ✓ Interrupt
 - ✓ Inform
 - ✓ Manual restart
- > Internal AFCI unit certified by UL1699B





Communication Module

- > ZigBee with external antennae
 - Third party financing
- > One socket for piggyback card
 - RS-485, Webconnect
- > Emergency Power Switch
- > Multi-function relay



^{*} future option

Accessories - Webconnect

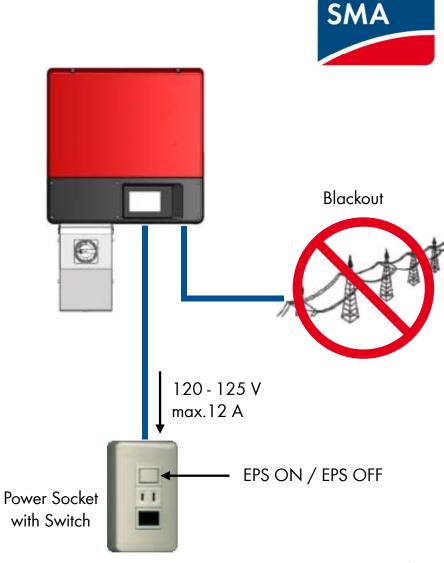
- > Direct Ethernet connection to router
- No WebBox required
- > Daisy chain up to 4 inverters
- > Automatic upload to Sunny Portal
 - Basic data: E-today, E-Total, etc.
 - Fixed PV plant pages



Webconnect piggyback card

Accessories - Emergency Power Supply

- > After disconnection from grid, inverter will create a small stand alone system
- > Available PV power redirected to external power socket (not included)
- Supply power to battery chargers, phone chargers, TV, AC/DC power supplies, etc.



Sunny Central Inverters: A New Way to Reduce Costs in Commercial and Industrial Projects in the US





Commercial Systems

History

- > U.S. started with residential 600 VDC
- Migration to include commercial 600
 VDC became de facto standard
- > Utility "behind-the-fence" 1,000 VDC









1,000 VDC Benefits

- > Lower Installed Cost
 - ~ 40% of the DC BOS Wiring
- > Higher System Performance
 - ~ 1-2% Efficiency gain
- > Economic Value
 - ~ \$100,000 per MWdc or ~\$0.10/Watt



1,000 VDC - Lower Installed Cost

> 750kWac rooftop example

- > JA Solar (JAP6-72-270)
- > UL listed for 1,000 VDC
- > 4,140 Modules
- > 1,117,800 Watts DC

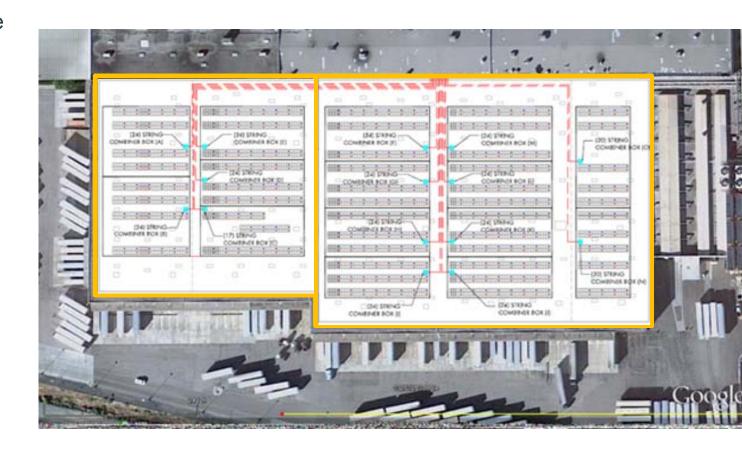




1,000 VDC - Lower Installed Cost

- > 750kWac rooftop example
 - 600 VDC

- > 4,140 modules
- > 12 modules per string
- > 345 strings
- > 15 combiners / home runs

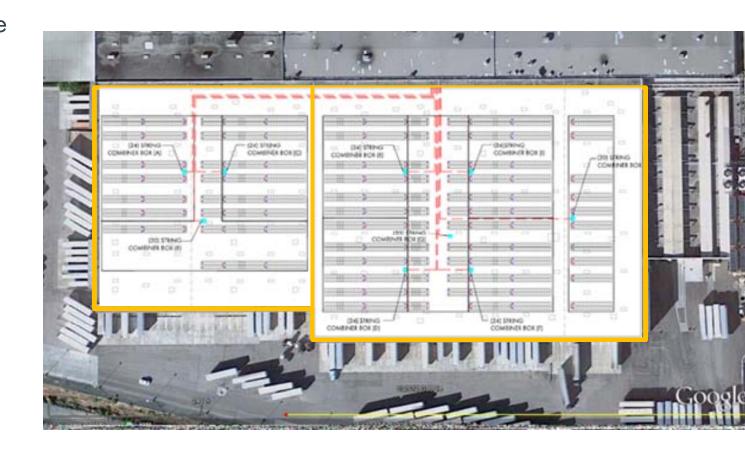




1,000 VDC - Lower Installed Cost

- > 750kWac rooftop example
 - 1,000 VDC

- > 4,140 modules
- > 20 Modules per string
- > 207 Strings
- > 9 Combiners / Home Runs



1,000 VDC - Lower Installed Cost

> 750kWac example

BOS Wiring – Qty's	600 VDC	1,000 VDC	Difference
Modules - (#/String) * (# of Strings)	12 * 345	20 * 207	Same Qty (4,140) Modules
String Combiner Boxes, Home Runs (qty)	15	9	(6)
#10 AWG (ft) Module to Combiner	46,618	27,340	(19,278)
350MCM (ft) Combiner to Inverter	4,703	2,500	(2,203)
300MCM (ft) "	943	1,466	523
4/O AWG (ft) " ~ 40% of the De	C BO && iring	costs	(665)

Approximately \$20K - \$30K of savings at installation



Higher system performance ~ 1-2% efficiency

- Lower line losses
 - ~ 0.5% efficiency, BOS wiring
- Higher inverter performance
 - ~ 0.5% 2% efficiency, inverter





1,000 VDC - Higher Performance

Higher inverter performance

- > 1,000 VDC inverters are more efficient
- > 1,000 VDC class of inverters: 97.0% 98.5% CEC
- > 600 VDC class of inverters typically: 96.0% 97.0% CEC
- > ~0.5% 1.0% greater efficiency

Sunny Central 800CP-US - 98.5% CEC (record!) 97.5% with MV transformer



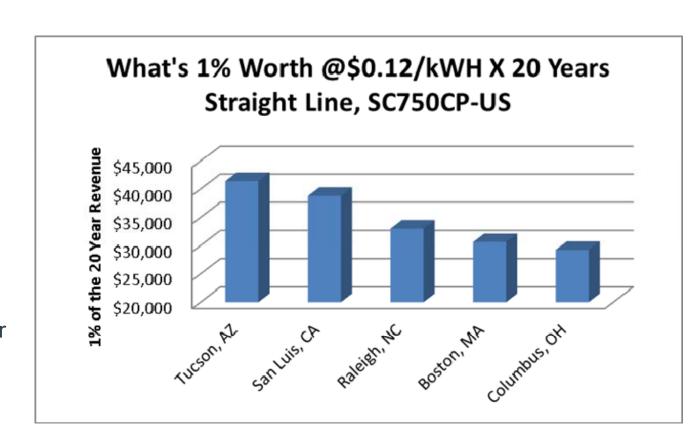


1,000 VDC - Higher Performance

Value of 1% Efficiency

> 1,000 VDC inverters are more efficient

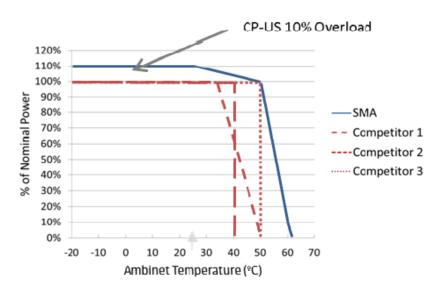
1% could be worth \$40,000 or more... per inverter over 20 years



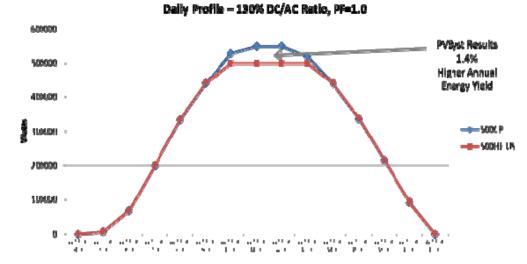
1,000 VDC - Higher Performance

Higher Inverter Performance - 10% Overload

Utility-Grade Technology for Commercial Applications







500kW Vs 550kW results in 1.4% greater energy production, Tucson AZ

~ 1% - 1.5% Due to Inverter 10% Overload Capability

(*) - 110% Power up to 25°C (77°F) tapering to 100% Power at 50°C (122°F)

1,000 VDC Benefits

- > Lower installed cost ~ 40% DC BOS wiring

 Qty (1) 750kW Inverter and pad
- > Higher system performance ~1-2%

Lower line losses

Higher inverter efficiency

SMA 10% overload capacity

- > Economic value
- ~ \$100,000 per MWdc or ~ \$0.10/Watt





SMA realigned the Investor Relations department

Investor Events

- November 8, 2012: Publication of Quarterly Financial Report: January to September 2012
- > March 27, 2013: Publication of Annual Report SMA Group 2012 and Individual Financial Statement SMA Solar Technology AG 2012
- May 15, 2013: Publication of Quarterly Financial Report: January to March 2013

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