

SMA SOLAR TECHNOLOGY AG

Analyst / Investor Presentation

SMA's virtual Market and Product Update for Analysts and institutional Investors

Presented by Ulrich Hadding, CFO

June 17, 2020



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SMA's virtual Market and Product Update



1

Market & Competition

Pamela Fiume, Market Intelligence

2

Impact of Covid-19 on SMA and FY2020 Outlook

Ulrich Hadding, CFO

3

Product Innovations

Ulrich Hadding, CFO & Lisa Spangenberg, Product Manager

1. Market & Competition

Presented by Pamela Fiume, Market Intelligence

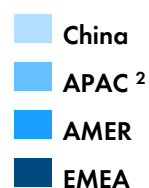


Global PV installations are expected to grow by 18% p.a. in the medium term after slow-down in 2020



Core business: PV installations¹

REGIONS in GWdc



SEGMENTS in GWdc



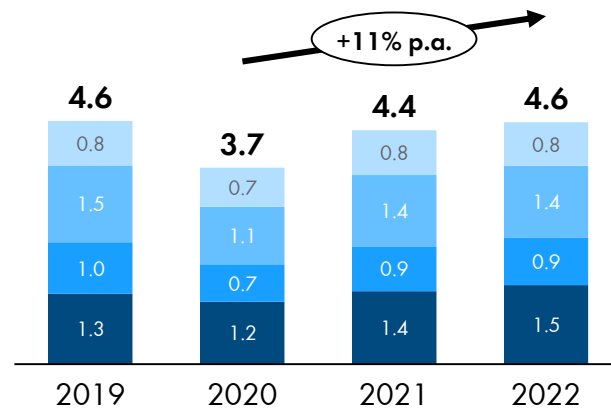
- The global PV installations grew by 9% from 2018 to 2019 and are expected to grow by 18% p.a. until 2022, after a slow-down in 2020 due to lockdown measures and investment restraints resulting from the Corona crisis.
- The single regions and segments are expected to be impacted at different levels. Emerging markets are assumed to be stronger affected by the current situation than mature ones, and residential/commercial segments more than the utility segment due to investment restraints from private households and smaller businesses.
- Taking renewable energy goals into consideration and already permitted and financed projects, PV development is expected to recover soon.

Recovery of global investment level in PV inverter technology after Corona-affected installation decline

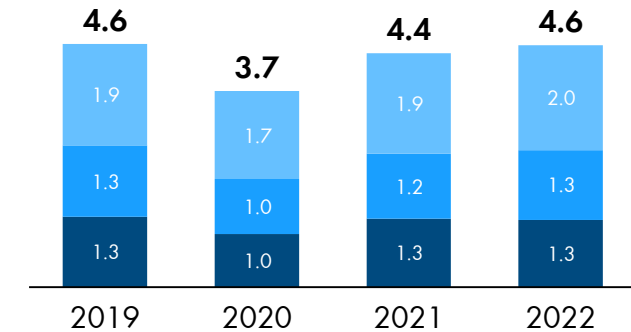


PV inverter revenue¹

REGIONS in bn€

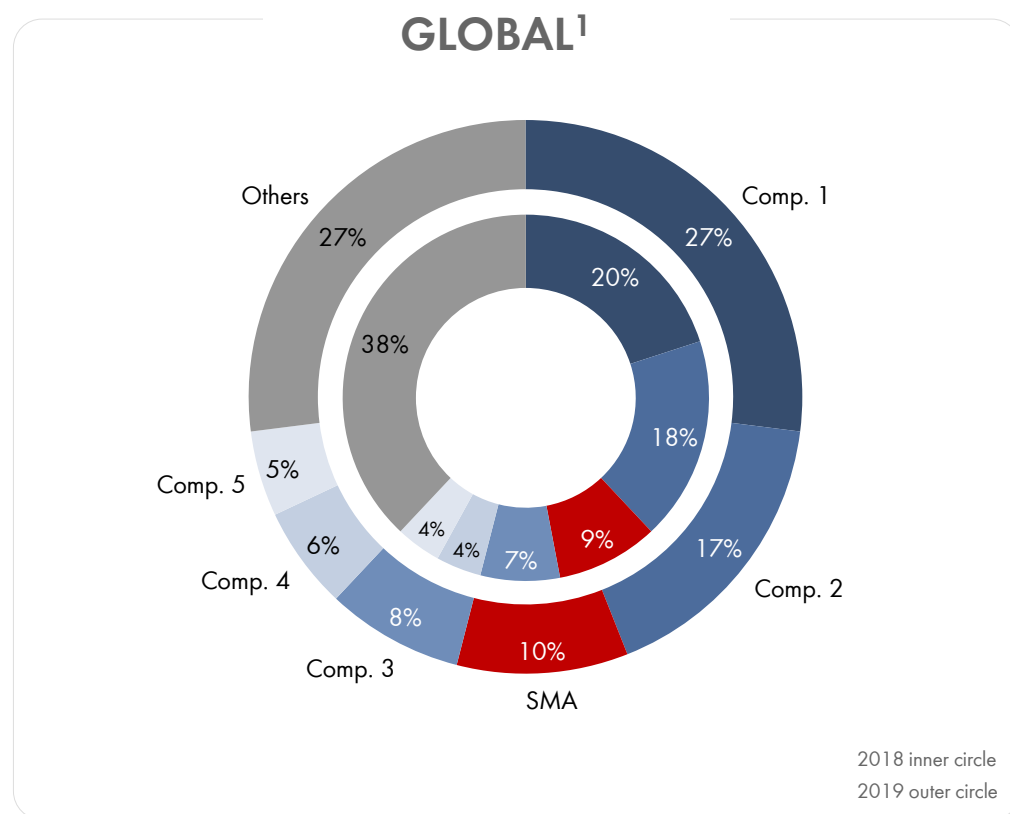


SEGMENTS in bn€



- Investment in PV system technology will develop according to new PV installations. After a decline in 2020 in all segments and regions the revenue potential for PV inverters will recover and show a growth rate of 11% p.a. in the medium term.
- In 2022, the investment in PV inverters is expected to reach pre-Corona level.
- There will be several emerging PV markets contributing to the growth. Promising countries can be found e.g. in South East Asia, Eastern Europe and South America.

SMA slightly increased market share in 2019 compared to 2018 ranking #3 on a global level

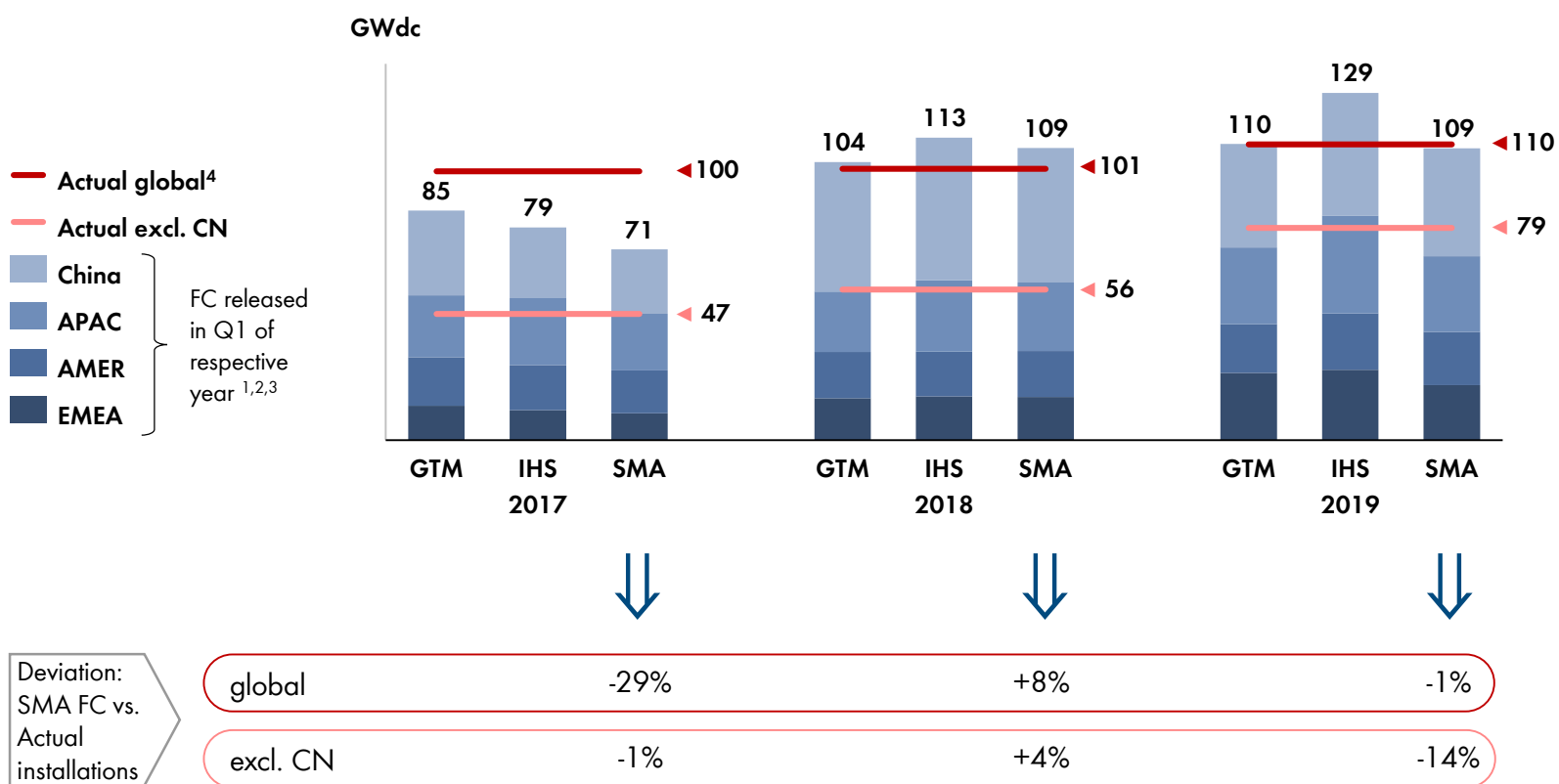


- In 2019, the PV inverter industry continued to experience a consolidation. Nearly all top PV inverter suppliers were able to gain market shares and strengthen their position.
- The top 6 players delivered around 70% of the globally installed PV inverters in 2019.
- SMA was able to defend its market position ranking #3 globally.
- In the Americas region, SMA increased market share by strengthening its position in the large-scale PV business.
- In EMEA, SMA's market position remained strong by increasing its market shares esp. in the Western European countries.
- In APAC, SMA was able to maintain its position as the only non-Chinese company among the top 5 PV inverter suppliers.

SMA's market intelligence is as good as that of professional market observers



Forecast accuracy: Market outlook vs. actual installations for the past three years



- Internal and external information are continuously gathered and poured into an inhouse market model.
- The goal is to work with data that display the individual PV market in any given country as realistic as possible.
- The accuracy of its market intelligence mirrors the thoroughness that SMA puts into its technology and financial performance modelling.

2. Impact of Covid-19 on SMA and FY2020 Outlook

Presented by Ulrich Hadding, CFO



Corona virus: SMA implemented measures early on to maintain business operations



Processes adapted to protect employees and keep up capacity

- Strict separation of shifts, and lines in production and logistics
- Social distancing and disinfection of workplaces

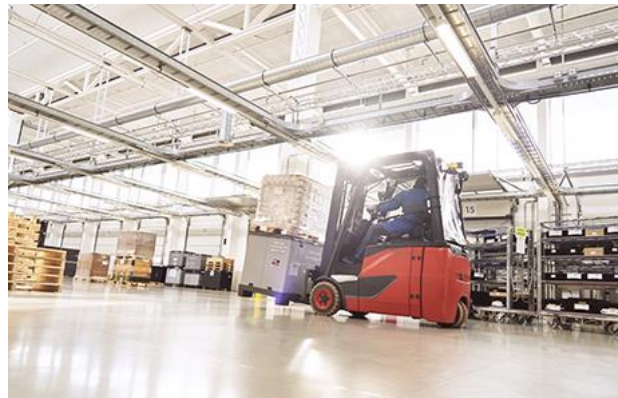
We have been able to keep up our production capacity and protect the health of our employees.



High flexibility in all areas

- Close cooperation with suppliers and service providers to maintain delivery capability
- Mobile work from home, no travel

Thanks to a very good IT infrastructure and the high commitment of our staff, we are able to maintain business operations seamlessly.



Good order backlog and close collaboration with customers

- Positive order intake in the first quarter.
- Virtual customer events, webinars and meetings
- Field service is maintained

Despite the Corona virus-related restrictions we continue to work closely with our customers.



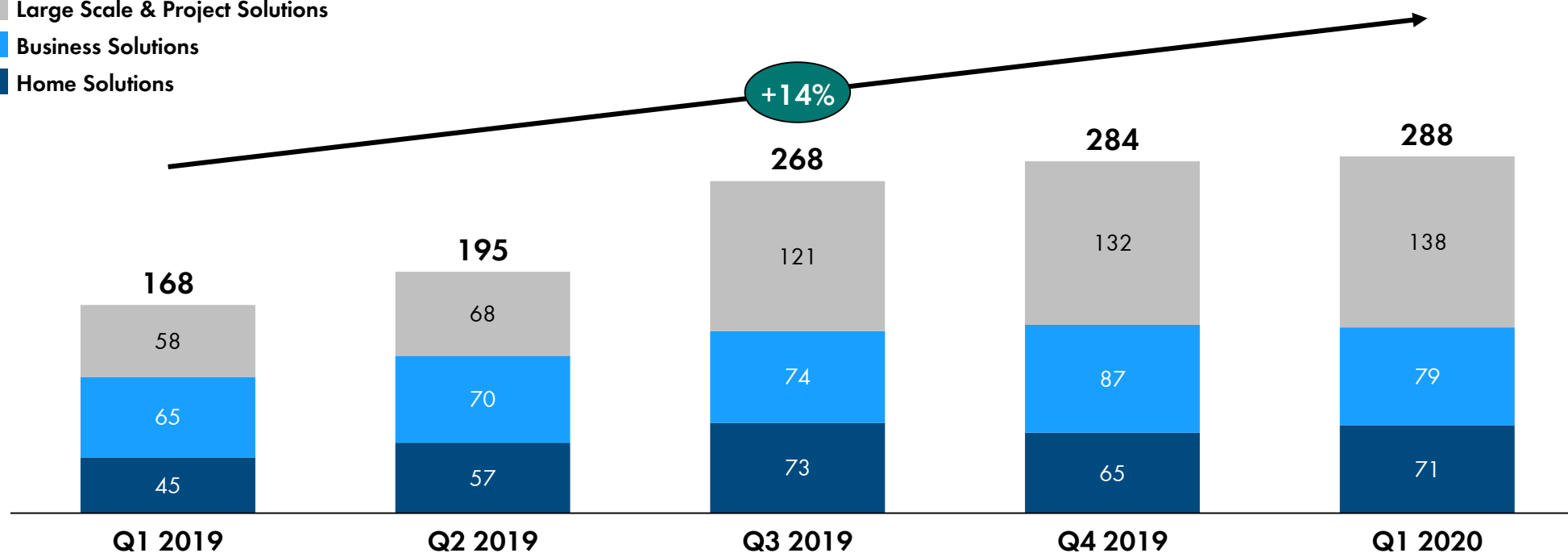
SMA recovered from disappointing figures in 2018 and 2019 successfully



SMA Group Net Sales by Segment

in Mio. Euro

- Large Scale & Project Solutions
- Business Solutions
- Home Solutions

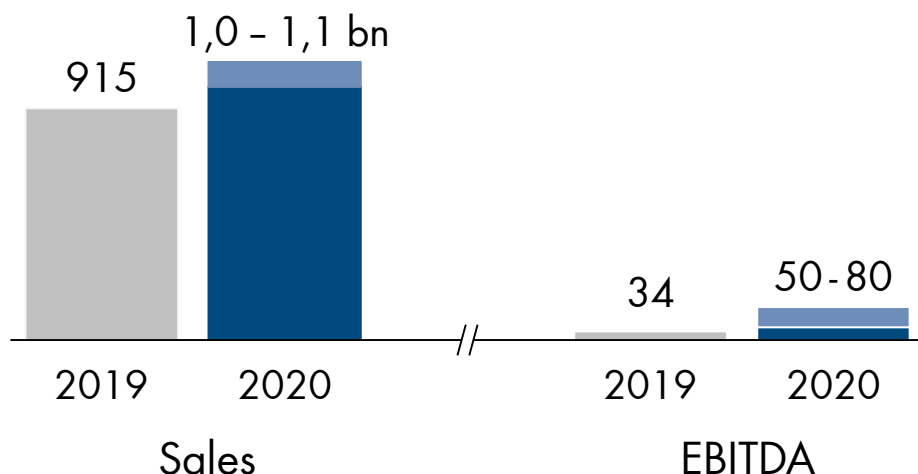


> SMA expects weaker sales in Q2 2020 due to Covid-19, but expect to return to the H2 2019 and Q1 2020 level of sales already in Q3 2020.

Management continues to expect strong sales and profitability growth for 2020. Covid-19 impact on our supply chain could be mitigated.



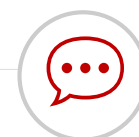
Guidance 2020 (in €m)



2020

CapEx (incl. R&D & leasing)¹ c. €50m

Depreciation / amortization c. €45m



Management comments

- Management remains confident to grow sales to more than 1 billion Euros in 2020, building on our strong Q1 result. Our Large Scale and Business segments do not expect to be significantly affected by the Covid-19 situation.
- SMA continues to strive to increase market share in all key markets, building on order intake of over 1 billion Euros in 2019 and more than 330 million Euros in Q1 2020.
- All segments are expected to experience less price pressure in comparison to prior years.
- Restructuring savings continue to contribute to profitability in 2020.

3. Product Innovations





SMA ShadeFix – The benefits of highly integrated inverter technology

Presented by Ulrich Hadding, CFO



SMA inverters are highly integrated devices that already have all functions that our customers need



As an innovative and sustainable company, it is a matter of course for SMA to integrate all necessary functions into our inverters – for the benefit of our customers and the environment.



SMA ShadeFix is a **patented, integrated software solution** that optimizes energy yield in PV plants.



SMA ShadeFix **outperforms MLPE solutions** for shade management in PV systems.

→ In 2019, SMA has introduced ShadeFix in all its string inverters.

SMA ShadeFix – no compromises



We deliver and make no compromises on

- **Performance & Yield**

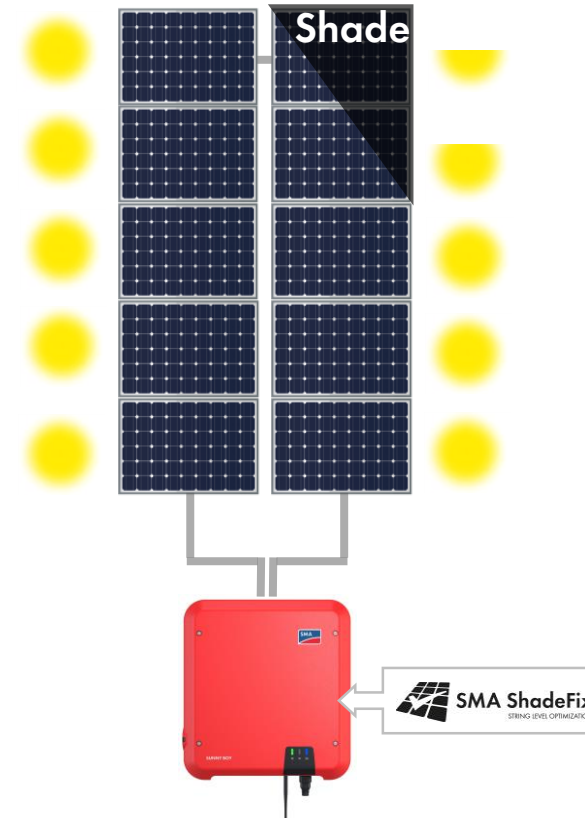
SMA ShadeFix offers highest performance and yield for PV plants – under most shading conditions.

- **Safety & Risk**

Slim plant design with no extra components on the roof reduces the risk of fires or serious injuries.

- **Quality & Lifetime**

Only ONE central piece of technology in the system. Proven SMA quality and automatic inverter monitoring SMA Smart Connected ensure minimum downtime, investment & service costs.

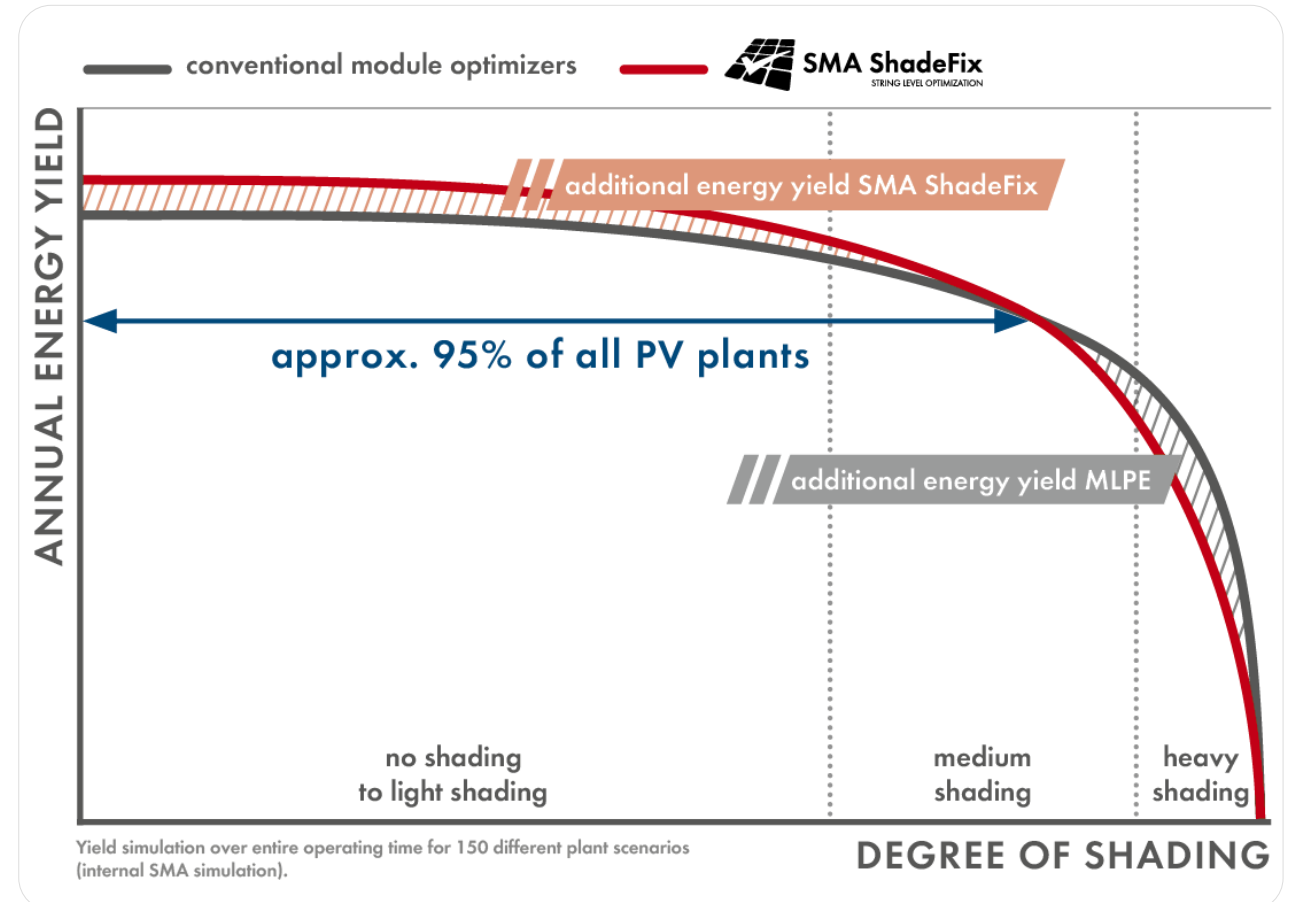


> **The intelligent software optimizes PV systems on string level – with the same or even better results than MLPE at less costs.**

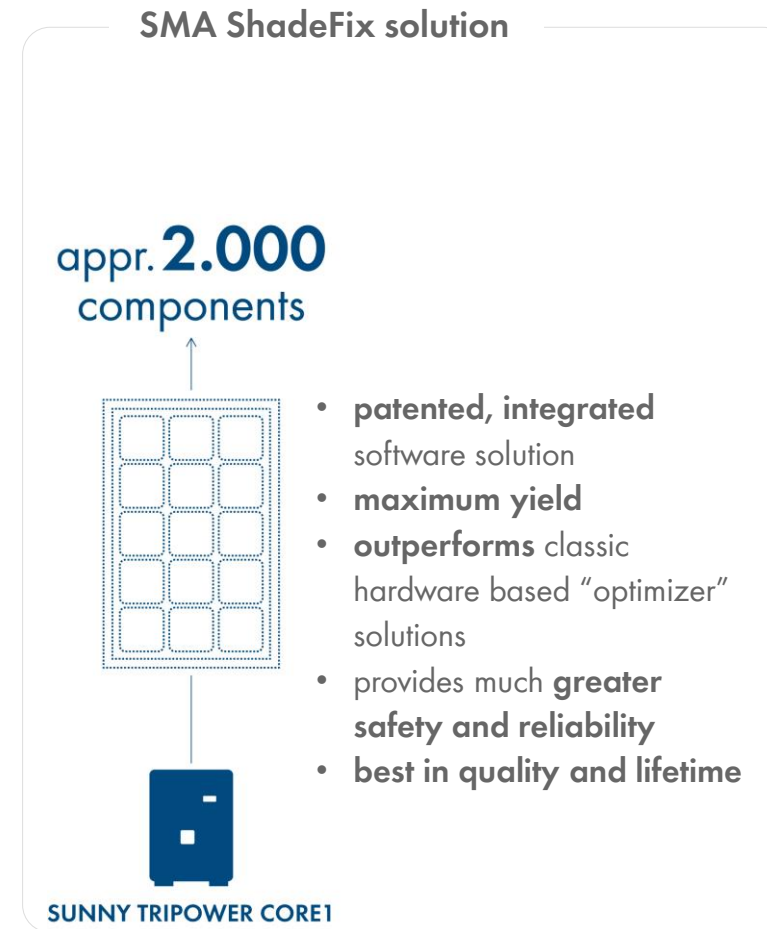
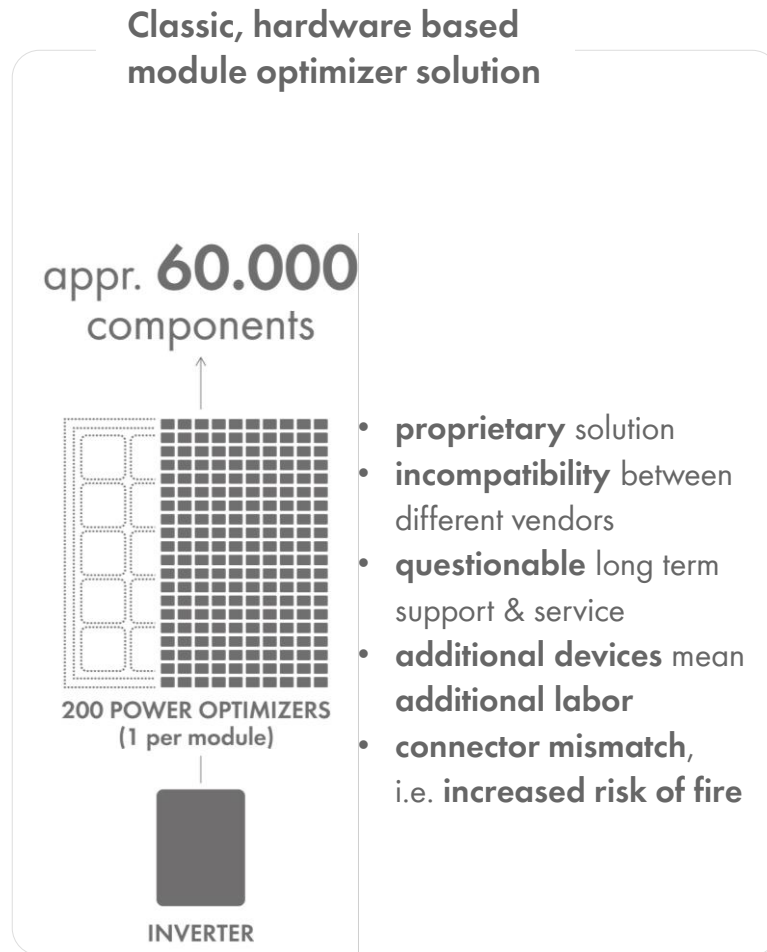
With no additional costs or unnecessary equipment, SMA ShadeFix ensures greater yields over the entire plant lifetime



Only in case of heavy shading do MLPE generate more energy yields – but it doesn't make economic sense anyway to install PV modules in areas of heavy shading.



Safety and environmental concerns do also make MLPE questionable



SMA ShadeFix – proven and confirmed by external studies



Performance & Yield

SMA ShadeFix **outperforms** optimizers in **the majority of** PV systems – without compromises on safety and lifetime.

*Assoc. Prof. Dr. W.-Toke Franke, SDU, Denmark, 2019
The Impact of Optimizers for PV Modules, a comparative study¹*

“The common marketing claims of additional energy production by applying optimizers could **not be confirmed** by this experiment. In fact, there are only **very few scenarios where the use of optimizers improves the system performance.**”

“In addition, the risk of a failing component in one of the many MLPEs should not be underestimated. Finally, the **additional connectors** for the optimizers come with **risk** of bad connections that could lead to a **failing system** or even worse be the root cause for a fire.”

¹ https://www.sdu.dk/en/om_sdu/institutter_centre/centre+for+industrial+elektronics/research+publication

Safety & Risk

SMA ShadeFix - no compromises on **safety**.

*TÜV Rheinland, Fraunhofer ISE, 2015
Evaluation of fire risk in photovoltaic systems and development of safety concepts for risk minimization*

“Often safety components like fuses and switches are integrated in the DC part of PV systems. In the individual case it must then always be checked whether this measure is really necessary. **Each additional component poses the risk of additional contact points and other sources of faults.** A “sleek” system with as few components as possible has the advantage of having fewer points where damage could occur to the system.”²

*IEC TR 63225, Technical Report, 2019
Incompatibility of connectors for DC-application in photovoltaic systems*

“Several countries report that **problems with DC connectors are a major cause for failure such as fire hazards** in PV systems”³

² [Evaluation of fire risk in photovoltaic systems and development of safety concepts for risk minimization, TÜV Rheinland, Fraunhofer ISE, 2015 \[p. 204\]](#)

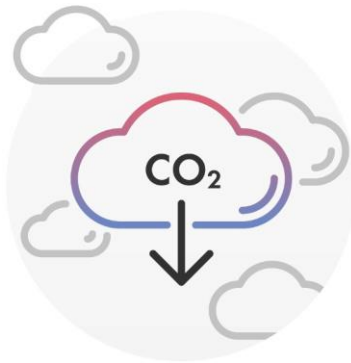
³ [IEC TR 63225, Incompatibility of connectors for DC-application in photovoltaic systems, Technical Report, 2019](#)

SMA EV Charger

Presented by Lisa Spangenberg, Product Manager



E-Mobility – Trends and market drivers



Sustainability is on the agenda of companies

Customers and societies expect that companies take care of the environment



Governments push e-mobility

Tax benefits, technology push and subsidies for companies and users



E-vehicles costs decrease

Technologies became mature and costs keep on decreasing



Charging infrastructure develops

The charging infrastructure improves day by day

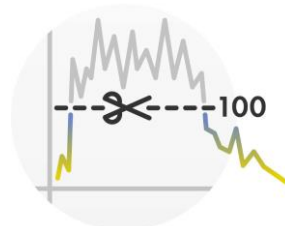
Private car owner are seeking for a holistic charging solution



Success Factors



**Climate- and resource
friendly
mobility – with no
fossil fuels**



**Charging process
optimization to keep energy
and investment costs under
control**



**Interaction
with home-PV
systems**



**Make costs for
charging
transparent**

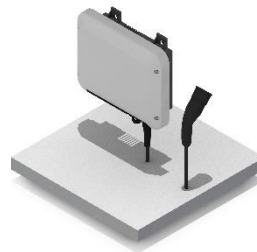
SMA Energy System Home



Basis: Your SMA Energy System Home

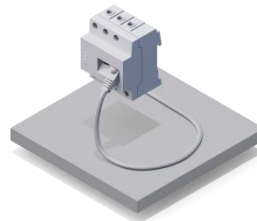
With PV system and SMA inverter incl. SMA Smart Connected und SMA ShadeFix.

Components: intelligent energy management with e-mobility



SMA EV Charger

Charge your e-vehicle preferred with self-generated solar power or fast when it matters!



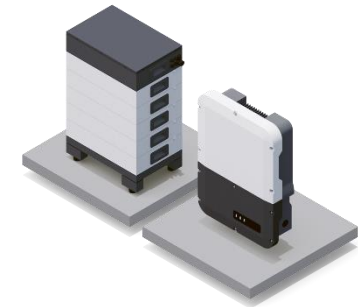
Sunny Home Manager 2.0

As a holistic energy manager, he also masters e-mobility, of course.



SMA Energy App

Monitor energy flows, visualize the performance of your SMA Energy System Home, the SMA EV Charger - comfortably via App.



Optional expansion

With SMA battery inverter and battery.

Fast, green, cost-effective Intelligent charging modes

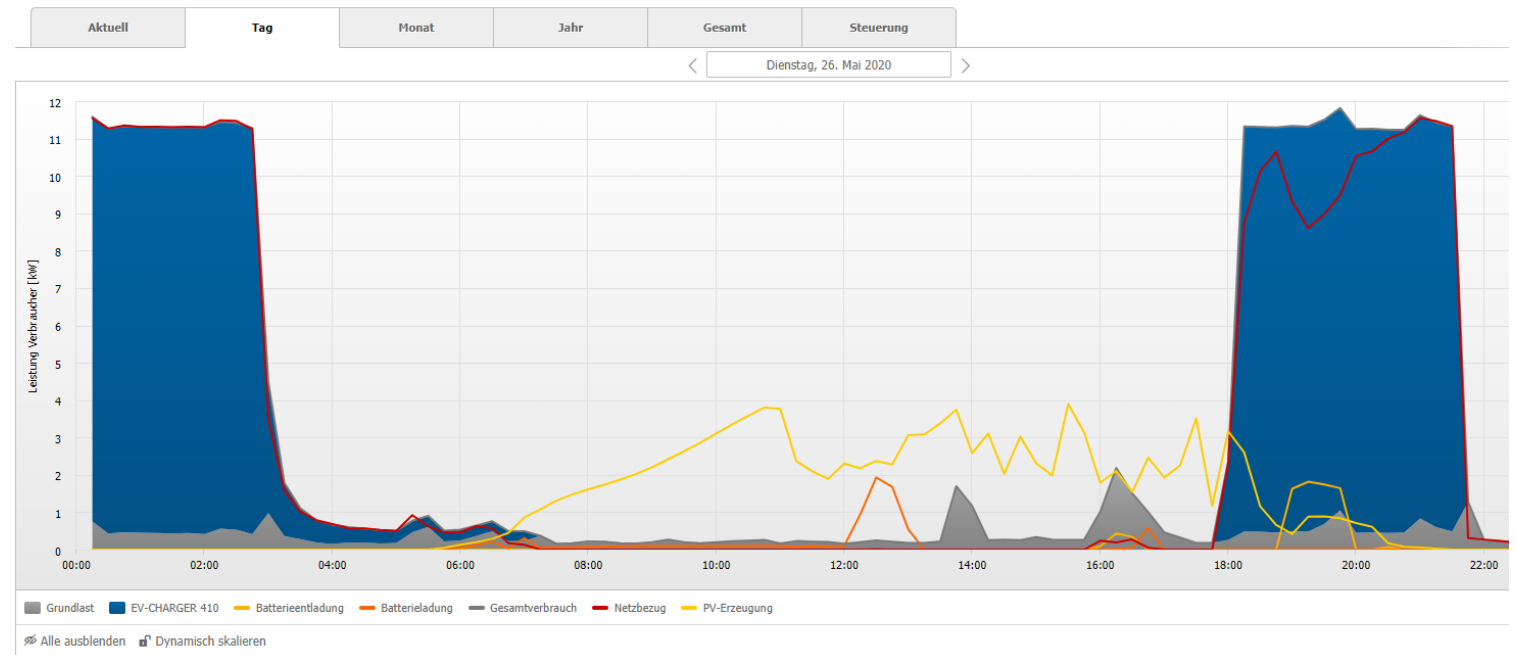


Fast charging



When you are in a hurry, EV Charger enables charging with the maximum available charging power up to ten times faster than on a conventional household socket * - whether from the utility grid or PV electricity.

* EVC22-3AC-10



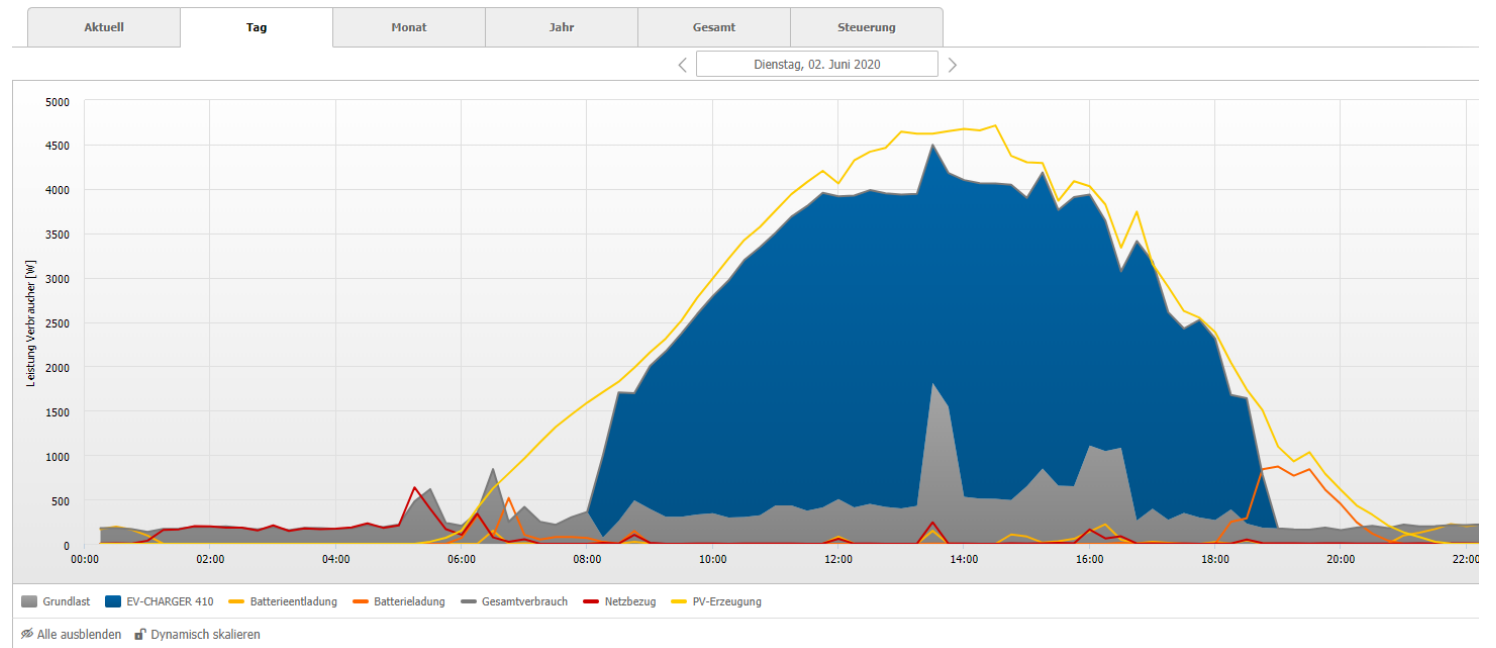
Fast, green, cost-effective Intelligent charging modes



PV-optimized charging



If you have time to spare, EV Charger enables cost-effective, CO2-neutral charging with PV current for zero-emissions driving at minimum cost.



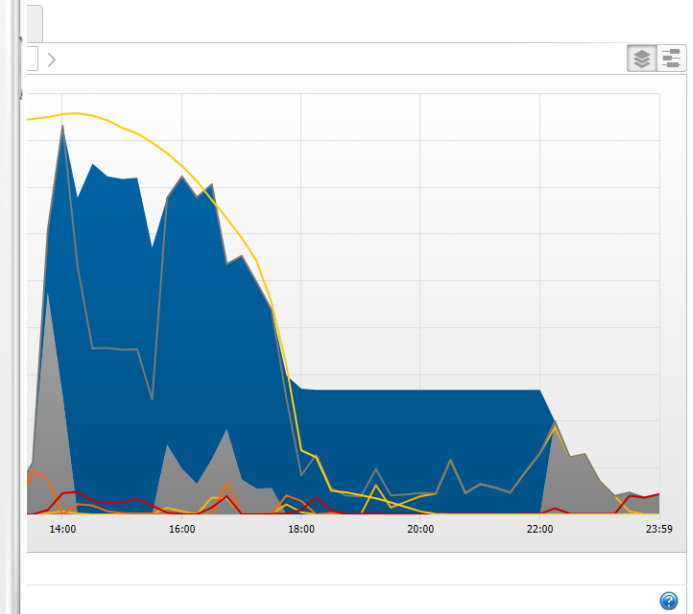
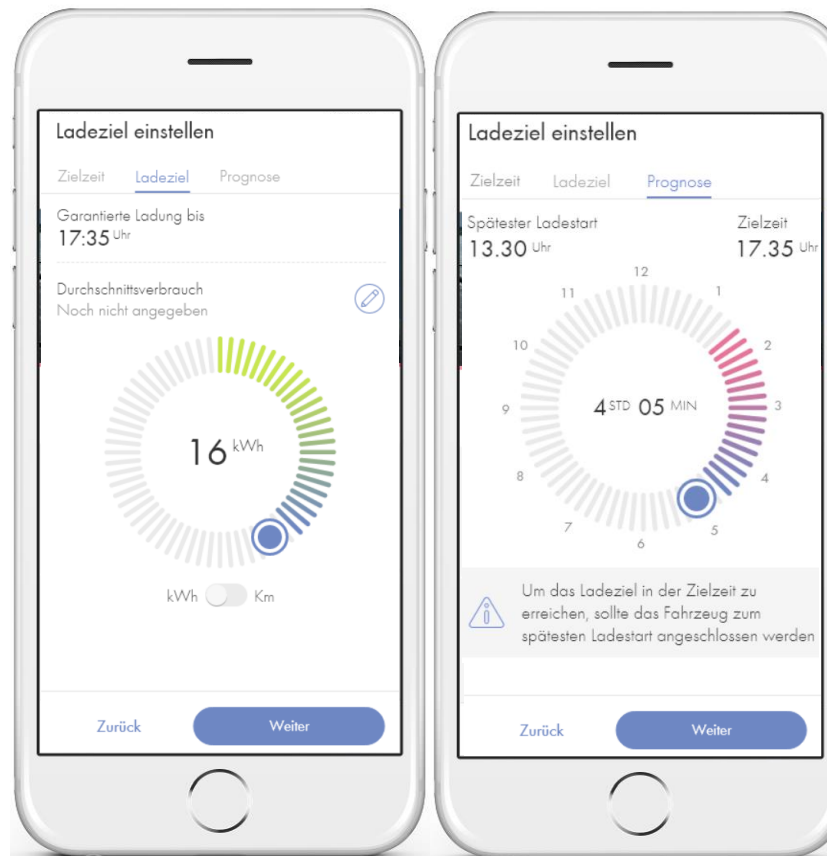
Fast, green, cost-effective Intelligent charging modes



Forecast-based charging



When you enter the charging target (departure time, amount of electricity to be charged) in the SMA Energy app, the Sunny Home Manager intelligently schedules charging and performs it at minimum cost while ensuring that your car will be ready when you need it.



Advantages of the SMA EV Charger compared to other wallboxes

- **Maximum utilization of solar energy**
(through automatic phase switching & prognosis based operation)
- **Cost-effective charging**
(through intelligent charging modes: PV-excess charging and ToU tariffs)
- **Higher safety**
(through blackout protection)
- **Faster charging times**
(through boost-function and dynamic adaption to given limits)
- **Fast, automated service**
(through SMA Smart Connected)
- **Everything from a single source**
(all components fit perfectly, modular expandable)



SMA Energy System Home



Generate solar power & get the most out of your PV system

Makes all energy flows visible, intelligently controllable and optimizable

No loss of yield due to automatic device monitoring and uncomplicated replacement

Store electricity and make it available when needed

Supply household appliances with electricity and switch on when the electricity is cheapest

Supply heat pump with solar power and control it intelligently

Optimised charging of e-vehicles

Logos: BOSCH, EDIMAX, AVM, EEBUS, Vaillant, MYPV, WOLF, EEBUS, STIEBEL ELTRON, MENNEKES, SMA, Audi.

Sustainability has been at the heart of SMA's people and business right from the beginning

Our conviction: Renewable energies are only sustainable, if the equipment used for their production is also sustainable.

That is why sustainability has been firmly anchored in our corporate mission since SMA was founded.



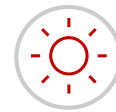
€10.5 billion

of environmental damage was prevented in 2019 through the use of SMA inverters.¹



58%

less energy is used today per kW of inverter power produced than four years ago.



2001

marks the installation of the first PV plant installed at our headquarters. Today, company-owned PV plants cover 38% of our total electricity consumption in Germany; the remaining electricity used is also renewable.



50,000 customers

from all segments were asked for their feedback in our global customer satisfaction survey 2019.



100%

transparency on our sustainability activities is secured by our sustainability reporting according to the GRI standard².

Back up



Managing Board and shareholder structure



Managing Board



Dr. Jürgen Reinert, CEO

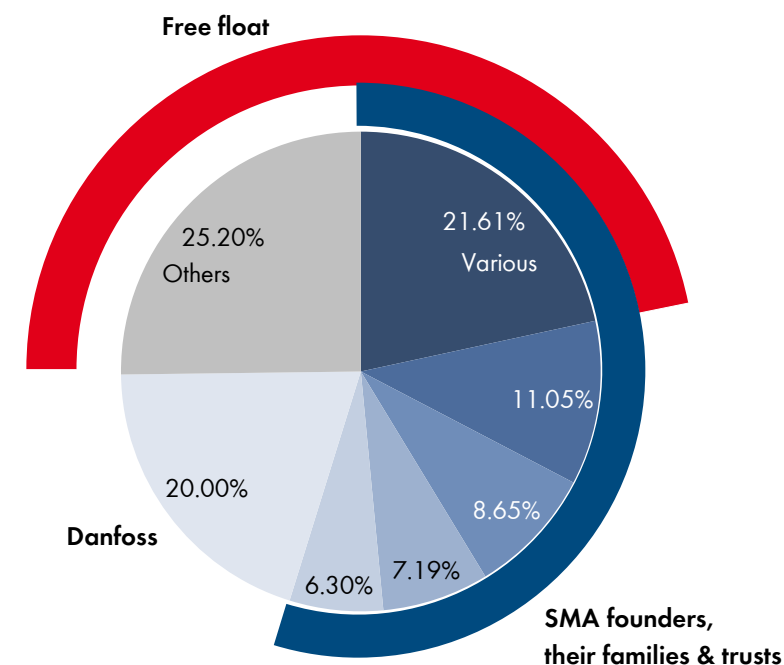
Sales & Service, Technology,
Operations, Business Units



Ulrich Hadding, CFO

Finance, HR, Legal, Investor Relations

Shareholder Structure¹



- No pre-emption rights or other restrictions

Thank you.

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