

SMA Solar Technology AG – Press Release

## **"Grid Control 2.0" research project: grid-forming inverters ensure stable grid operation with high shares of renewable energies**

**Kassel, July 12, 2022** – Inverter systems with grid-forming capability for voltage and frequency stabilization can ensure stable grid operation when power generation is dominated by renewable energies. This was the key finding from the "Grid Control 2.0" joint research project, which was funded by the German Federal Ministry of Economics and Climate Protection (BMWK) in the amount of €9 million. The aim was also to evaluate which control procedures and grid connection rules will be required in the future for decentralized power generation systems such as solar, wind and battery-storage systems. Wrapping up the project, the partners discussed their findings on the campus of the Fraunhofer Institute for Energy Economics and Energy System Technology (IEE) in Kassel, Germany. Among them were project coordinator Fraunhofer IEE, participants from the Technical University of Braunschweig, the University of Kassel and SMA Solar Technology AG (SMA), representatives of the German transmission grid operators and numerous professional associations as well as experts from industry and science.

"Based on the research conducted as part of the "Grid Control 2.0" project, it is clear, that grid-forming system solutions can already make a decisive contribution to grid stability," said Andreas Knobloch, system architect in the Energy Systems business unit at SMA and head of the SMA subproject. "With this project, we once again successfully demonstrated the grid-forming capabilities of SMA battery inverter systems for large PV/battery power plants and further optimized them to meet the needs of large, public utility grids. But we also found that there is an urgent need for new control methods to advance the integration of decentralized energy generators in system operations and to make them more commercially attractive for operators. This will require the relevant institutions, regulatory authorities and grid operators to define the technical and economic framework. International harmonization of the rules will also be of key importance to ensure that future solutions can be deployed worldwide in order to reduce costs and further accelerate the global energy transition."

### **Background of the "Grid Control 2.0" project**

It has always been the job mainly of the synchronous generators in large-scale PV power plants to ensure that frequency and voltage requirements are met in the utility grid. But the energy transition means that power plants are increasingly being replaced by power generation plants linked to the utility grid with inverters. As part of the Grid Control 2.0 research project, research institutes, manufacturers, grid operators, the VDE Netztechnik/Netzbetrieb forum and other partners investigated the conditions under which safe and stable grid operation is ensured even with a very high feed-in through inverters.

## **Stand-alone grids with SMA system technology enable operation with electricity derived entirely from renewable energy sources**

Thanks to comprehensive grid-supporting and grid-forming functions, SMA PV and battery inverters ensure, that PV and battery-storage power plants are capable of performing functions that have always traditionally been the job mainly of conventional power plants. These include voltage and frequency regulation, the provision of instantaneous reserves in the event of a sudden drop in frequency as well as black-start capability after grid failures. Projects involving stand-alone grids equipped with SMA system technology have already proved for years that a stable and secure supply with electricity derived entirely from renewable source is possible.

### **About SMA**

As a leading global specialist in photovoltaic and storage system technology, the SMA Group is setting the standards today for the decentralized and renewable energy supply of tomorrow. SMA's portfolio contains a wide range of efficient PV and battery inverters, holistic system solutions for PV and battery-storage systems of all power classes, intelligent energy management systems and charging solutions for electric vehicles and power-to-gas applications. Digital energy services as well as extensive services up to and including operation and maintenance services for PV power plants round off SMA's range. SMA inverters with a total output of more than 110 gigawatts have been installed in more than 190 countries worldwide. SMA's multi-award-winning technology is protected by more than 1,700 patents and utility models. Since 2008, the Group's parent company, SMA Solar Technology AG, has been listed on the Prime Standard of the Frankfurt Stock Exchange (S92) and is listed in the TecDAX index and SDAX index.

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