

## Press Release

### **Real world field testing of new power-enhanced ribbons for photovoltaic modules demonstrates outstanding gain of 2.1 percent in energy yield**

HANAU, Germany and SHANGHAI, China, August 22, 2019- Heraeus Photovoltaics, a leading technology solution provider for the renewable energy industry, today announced that an outdoor field test of its Selectively Coated Ribbons (SCR™), the industry's first "plug and play" power-enhancing ribbons for PV interconnection, has overachieved compared to previous tests conducted at standard testing conditions (STC).

In order to demonstrate SCR's real-world performance, a 12-month outdoor field test took place in Waldaschaff, Germany (49°58'N 9°8'E). Two groups of 60 cell modules (5BB Cz PERC cells) were installed, with one group using SCR and one using conventional ribbons, and the energy yields were monitored for a year. At the conclusion of the year-long test, modules with SCR achieved an outstanding 2.1% gain in energy yield over modules using conventional ribbons. SCR's superior optical properties enable improved reflection, even at low angles of incidence and at low-light conditions. The combination of energy yield and performance significantly improves the cost of ownership for PV energy.

Toralf Eggert, Head of Business Development for Heraeus Photovoltaics, noted another important aspect of Selectively Coated Ribbons is its unique design. While traditional ribbons have a solder coating, Heraeus Selectively Coated Ribbons is a tabbing ribbon designed with stripes of highly-reflective white coating running across its edges, with the solder coating in the middle. He said, "SCR was designed in such a way that module manufacturers could achieve higher module power without any changes to existing manufacturing processes. It is truly a plug-and-play solution."

Heraeus Selectively Coated Ribbons are compatible with relevant soldering technologies. Its versatility enables it to work on conventional designs as well as modules made with half-cut cells and bifacial modules.

Peter Berghofer, General Manager of Ulbrich of Austria, which jointly developed SCR with Heraeus, said, "Our customers particularly value the visual benefits of SCR that help to reduce errors in the alignment up to 15%. The recent results from the field testing are extraordinary, and we look forward to introducing this innovative product to the solar module market."

SCR are available already for the European and US module manufacturers. Availability for Asian customers will be announced in the coming weeks.

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#### **About the Heraeus Photovoltaics Global Business Unit**

The Heraeus Photovoltaics Global Business Unit is an industry leading developer and manufacturer of silver metallization pastes for the photovoltaic industry. For over 40 years, Heraeus has built a reputation of innovation, extensive research and new product development in thick film technologies for some of the most prominent companies within a variety of industries. In the field of photovoltaics, the Heraeus Photovoltaics Business Unit applies this history and its innovative technology to offer metallization pastes for solar cell applications. The Heraeus SOL Series of silver pastes

is specially formulated to provide higher efficiencies and wider processing windows, resulting in better yields and higher output for cell manufacturers.

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