ITRPV Photovoltaic Roadmap: Tenth issue published

- Module price down by almost a third in 2018
- Further reduction of PV system costs expected
- Module production capacities in 2018 at around 150 gigawatts worldwide
- Crystalline photovoltaic technologies dominate the market

Frankfurt, March 13, 2019 – 2019 Module prices fell by more than 30 percent in 2018. Reduced manufacturing costs and increased cell and module efficiencies help reduce PV system costs. These are central statements of the current ITRPV Photovoltaic Roadmap, which has been published in its 10th edition these days.

The roadmap also informs that the capacity utilisation in 2018 for Tier 1 manufacturers will be around 80 percent and for Tier 2 manufacturers about 50 percent.

Module prices down in 2018

With regard to prices, the ITRPV (International Technology Roadmap for Photovoltaic) has noted a drop in prices of around 30 percent and an extremely difficult market situation for all cell and module manufacturers. This is due to limits for new PV systems announced by the Chinese government on 31 May 2018. This has led to a reduction in PV installations in China in the second half of 2018, resulting in 40 GWp for the total installation in 2018 versus 54 GWp in 2017.
Prices for mc-Si and mono-Si modules also fell by around 30 percent. The average spot market prices for a representative mix of mc-Si and mono-Si modules in January 2018 and 2019 were determined to US$ 0.354/Wp and US$ 0.244/Wp, respectively. The cost share of wafers fell from 19 to 14 per cent and that of cells rose to 26 per cent. The share of module production rose to 46 percent of total costs in 2018.

**Price expectations of the PV industry**

The consistent implementation of PERC and other improvements as well as the use of improved materials led to higher average module outputs in 2018. In addition, the price experience curve with its historical learning continued with a further increase to 23.2 percent. According to the ITRPV Roadmap, the PV industry can keep this learning rate up over the next years by continuing the linking of cost reduction measures with the implementation of cell perfections, with enhanced and larger Si-wafers, improved cell front and rear sides, refined layouts, introduction of bifacial cell concepts, and improved module technologies.

Improvements in these areas will result in 60 cell PERC modules by 2029 with an average module power class of 325 Wp for mc-Si, 345 Wp for p-type mono-Si and 350 Wp for n-type mono-Si. It is expected that 144 half-cell PERC modules will reach average module power classes of up to 400 Wp with mc-Si, 420 Wp for p-type mono-Si and 430 Wp for n-type mono-Si at this time. The combination of reduced manufacturing costs and increased cell and module performance will help reduce PV system costs and ensure the long-term competitiveness of PV power generation.

**ITRPV**

The ITRPV (International Technology Roadmap for Photovoltaic) is regularly updated by the VDMA with contributions from leading international crystalline silicon producers, wafer suppliers, cell manufacturers, module manufacturers, PV machine builders, material manufacturers as well as PV research institutes and consultants. The aim of the ITPRV is to reduce costs and increase
efficiency by describes developments and trends for the c-Si based photovoltaic technology (itrpv.org).

Do you still have questions? Dr. Jutta Trube, VDMA Photovoltaic Equipment, Phone +49 (0) 69 6603 1879, jutta.trube@vdma.org, is happy to answer your questions.

The VDMA represents more than 3200 companies in the medium-sized mechanical and plant engineering sector. With 1.3 million employees in Germany and a turnover of 232 billion euros (2018), the sector is the largest industrial employer and one of the leading German branches of industry overall.