News

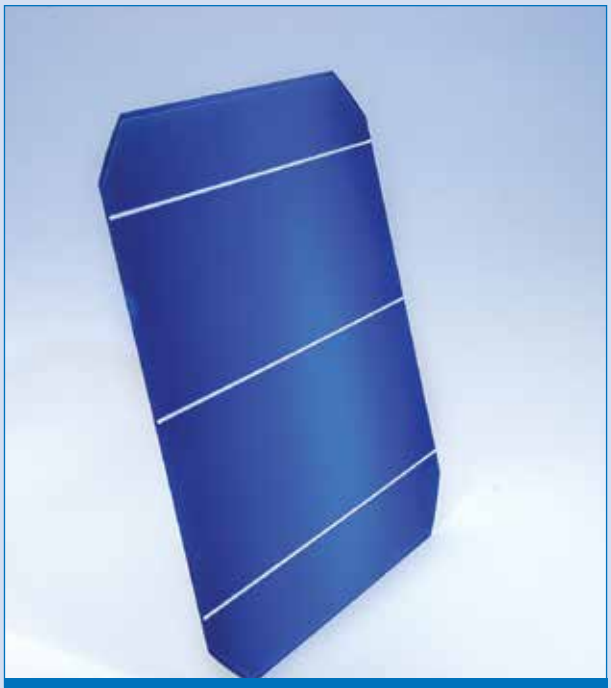
PERC solar cell production to exceed 15GW in 2017

Passivated emitter rear contact (PERC) production is forecast to exceed 15GW in 2017, accounting for more than 20% of all p-type solar cells produced in the year.

PERC has become the first major application for lasers in the mainstream c-Si cell sector in the solar industry, with all other applications either legacy/dormant or as part of process flows that may reside permanently in the research lab or at best make it into production, several years from now.

In contrast to deposition equipment suppliers for PERC (of which Meyer Burger is by far the dominant company), the landscape and choice for laser tools would appear to be more diverse. This includes the most active European based laser equipment suppliers, InnoLas Solutions GmbH (InnoLas) and 3D-Micromac and Asian tool suppliers, of which the most successful to date have been Wuhan DR Laser Technology (Dr Laser) in China and TeraSolar Energy Materials (TeraSolar) in Taiwan.

The trends in recent years of Chinese cell manufacturers seeking to implement a greater quantity of production equipment from Chinese-based suppliers, potentially represents a threat to how much companies like InnoLas and 3D-Micromac can follow the PERC trends from Southeast Asia and Taiwan back into Chinese cell manufacturing.



Credit Imec

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PERC

LONGi reaches 900MW of mono-PERC production

Leading integrated monocrystalline PV manufacturer Xi'an LONGi Silicon Materials reached 900MW of monocrystalline PERC solar cell production at the end of the first half of 2016.

Reaching 900MW of PERC solar cell capacity put the company ahead of rivals in China migrating to the high-efficiency cells and further PERC capacity will be added in the second half of the year.

The PERC capacity increases are also intended to support lower production costs, which have been supported by increased R&D expenditure across wafer, cell and modules in the last couple of years.

R&D spending in the first half of 2016 had topped RMB 340 million (US$51.3 million) after establishing a Science and Technology Department in Shaanxi Province, China.

Boviet Solar ramping PERC capacity with stream of advancements in the pipeline

Vietnam-located and Chinese-owned PV manufacturer Boviet Solar is set to position itself away from being perceived as a low-cost, low-quality producer by ramping a high percentage of its nameplate capacity to PERC solar cells and modules.

Manufacturing arm, Boviet Solar Technology and its affiliate Boviet Solar USA, is a wholly-owned subsidiary of China state-owned Powerway Alloy Materials, listed on the Shanghai Stock Exchange Market.

Boviet Solar in Vietnam has established a quasi OEM production model, looking after dedicated module assembly operations for a number of major China-based producers while establishing its own module brand.

Key to this strategy is running its own in-house solar cell production but with a new emphasis on high-efficiency multicrystalline and monocrystalline modules.

Meyer Burger gains orders for PERC cell and wafering upgrades

Leading PV manufacturing equipment supplier Meyer Burger has received an order valued at around CHF21 million (US$22 million) from a China-based integrated PV manufacturer.

Meyer Burger noted that the volume production order included its multiple DW288 Series 3 diamond wire wafer saw systems and its SiN/AlOx PECVD deposition system, MAiA 2.1 for PERC production upgrades.

The company expects to start delivery and commissioning of the equipment in the fourth quarter 2016.

The company has also received a follow-on order from an existing customer based in China for its MAiA 2.1 PERC technology upgrade platform.

The new order was said to be valued at around CHF18 million (US$18.3 million) with delivery and commissioning of the equipment expected in the fourth quarter 2016.Meyer Burger also noted that the same customer had already placed orders with the company valued at around CHF40 million (US$40.7 million), which included diamond wire cutting technology and cell efficiency upgrade equipment.

Efficiencies

SoLayTec backs up new cell efficiency gains with customer data

Atomic layer deposition (ALD) equipment specialist SoLayTec, a subsidiary of Amtech Systems, has launched its second-generation InPassion ALD tool for PERC cells.

Combined with the newest direct PECVD, it can annually produce up to 130MW, including the integrated anneal process.

The main improvements of the second-generation model is cited as the uptime and net throughput of the machine. The company also claimed that TMA usage and efficiency gains edge the new product above competitors.

Hanwha Q CELLS published results of using the InPassion ALD compared with

Credit SunPower

SunPower has reached a module conversion efficiency of 24.1% using IBC cells.

its MW-PECVD system. A comparison of the two technologies found that the SoLayTec product offered a 0.15-0.25% better efficiency for multi-cSi PERC compared to the MW-PECVD AIO×.

Trina Solar pushes average p-type mono PERC cell efficiencies to 21.1%

'Silicon Module Super League' (SMSL) leader Trina Solar has achieved an average efficiency of 21.1% for its industrially produced p-type monocrystalline cells (156 x 156 mm2) with PERC technology at its 'golden' pilot production line.

The p-type monocrystalline PERC cells were fabricated with standard industrial production materials and processes, developed on Trina Solar's 'golden' pilot line. PV module (60-cell) output reached 300W.

Trina Solar's lab to fab approach changed significantly in 2014, which meant R&D personnel were categorised to operate its pilot production line with key manufacturing staff implementing line upgrades as well as traditional R&D activities. This led to its R&D headcount reaching a new record high of 5,757 in 2015, up from 4,706 in 2014, around a 23% increase, year-on-year.

SunPower lab produces solar cells used in 24.1% module efficiency record

Solar firm SunPower has set a new PV module conversion efficiency record of 24.1%, using laboratory-made IBC-based solar cells that have been verified by the US Department of Energy's National Renewable Energy Laboratory (NREL).

NREL scientist Keith Emery, manager of the PV cell and module performance laboratory, said: "SunPower's X-Series panel was tested by our lab under standard test or reporting conditions. The module measured 11310.1 cm2 (aperture area) and had a power of 272.5W. We recorded 24.1% efficiency, which is a new record for silicon module efficiency."

SunPower's previous production record module conversion efficiency of 22.8% using production solar cells had a larger aperture area of 1.57389 m2.

Plans

Singulus signs MOU with GCL for heterojunction solar cell production equipment

Specialist PV manufacturing equipment supplier Singulus Technologies has signed a memorandum of understanding with Golden Concord Holdings Limited (GCL) and China Intellectual Electric Power Technology (CIE) to provide production equipment to fabricate heterojunction (HJ) solar cells.

CIE and GCL are collaborating in an effort to migrate CIE's previous R&D work with HJ cell technology and processes into production. Singulus will be responsible for optimizing, building and supplying the appropriate production systems for the manufacturing of HJT solar cells.

Singulus had already signed an agreement with Russian thin-film manufacturer Hevel to switch production to HJ technology. The company plans to provide Hevel with its SILEX II, wet-chemical treatment system.

GCL System Integration Technology, the solar cell and module assembly subsidiary of GCL Holding plans a 250MW HJ technology production plant in China.

Technology

Christophe Ballif wins Becquerel Prize 2016

Neuchâtel's Christophe Ballif is the 2016 winner of the Becquerel Prize. Ballif heads both EPFL's Photovoltaics-Laboratory in Neuchâtel, which focuses on fundamental research, and CSEM's PV centre, which is devoted to transferring solar technology to industry.

Ballif, who has devoted 20 years to the industry, was awarded for his achievements in solar technology research and industrialisation, not least for his research on high-efficiency crystalline heterojunction solar cells and multijunction cells. According to the prize committee, Ballif receives the award based on his "outstanding" work on silicon thin-film and silicon wafer solar cells and the transfer of PV technologies to industry, with his research on tandem solar cells

with a focus on silicon/perovskite and silicon/III-V compounds being highly recognized.

More stable perovskites remain a candidate for silicon tandem cells

Research on perovskite solar cells has made progress, but there is still a long way to go for a highly efficient tandem with a conventional crystalline silicon cell.

The PV-Lab at the Institute of Microengineering (IMT) in Neuchâtel, Switzerland has presented a 1.4cm² small, monolithically stacked silicon-perovskite tandem cell with an efficiency of 20.5%, a significant increase over the 16% value for a monolithic tandem that IMT showed last year.

Within just a few years, the efficiency of Perovskite solar cells has skyrocketed; the record for a lab cell is currently held by a group at the Korean Research Institute of Chemical Technology with 22.1%.

With further improvements, Christophe Ballif, director of the PV-Lab at IMT believes that 27% to 28% can be achieved.

Company news

SolarCity's Triex cell to be included in Chinese anti-dumping investigation

The US Department of Commerce has upheld its preliminary ruling that SolarCity's Triex cells were included within the scope of the anti-dumping duties, in a memorandum dated 17 June 2016.

SolarCity's claim that its products should be excluded from the scope of the order as the Silevo modules are manufactured with a c-Si substrate, and the substrate is not what defines a cell, was ultimately rejected, after a thorough analysis of the information put forward by both parties after the initial ruling.

The memorandum, which states that the Triex cells are to be included within the order, means that any Silevo products imported from China to the US will have to pay duties upfront at customs; reducing the competitiveness of the product.

ISRA Vision's solar inspection system sales continue strong growth

Optical inspection equipment firm ISRA VISION / GP Solar has reported strong fiscal first-half year sales and a strong order backlog that includes solar PV system sales.

New orders for the inspection of solar wafers, cells and modules were said to have increased strongly in the reporting period, notably orders were strong from PV manufacturers in China and other Asian countries, according to the company.

The company is benefiting from capacity expansions across wafers, cells and modules as well as technology migrations to fine line printing of solar cells and the migration to PERC (Passivated Emitter Rear Cell) technology and several new inspection products to high-light new defects and improve yields.

ISRA reported overall sales had increased around 10% from the prior year period to €53.3 million.

Overall order backlog stood at over €85 million, compared to €65 million in the prior year period.

Credit: SolarCity

SolarCity's Triex cells are to be included within the scope of the US anti-dumping duties.