Webinar – Half-Cut Cell Modules

Klaus Hofmeister
Product Marketing Manager
Trina Solar Europe

30 October 2018
From Full to Half-Cut Cell
Increase of Module Efficiency
From Full Cells to Half-Cut Cells

Power loss (Heat) = Resistance x Current$^2$

• Increasing module efficiency/higher watt classes and larger cells result in higher currents also within the module itself
• Resistive losses lead to heating and power loss
• Half-cut cells: 75% lower losses within cell interconnects
From Full Cells to Half-Cut Cells

• Half-cut cells clearly change the visual appearance of the module and require a new module design
• Half-cut cell modules consist of 2 halves connected in parallel, hence the current is split in 2 paths within the module
• Electrical parameters are identical to full-cell modules, thus no changes for the system design needed
Design half-cut cell modules

Connection of the module halves and position of the split junction box

Upper half

Lower half
Design half-cut cell modules

- 6 internal cell strings with 20 half-cut cells each
- Respectively 1 cell string of the upper and lower half are connected to one bypass diode
- The split junction box transfers less heat to the cells lying underneath
- Higher yields in specific shading situations
Product portfolio with half-cut cells

- Poly (PERC); Mono p-type (PERC); Mono n-type (PERT); bi-facial (???)
- 120 cells; 144 cells; glass/backsheet; dual glass; framed; without frame
- Full black mono half-cut cell module
Half-cut cell modules – advantage in shading conditions
Shading advantage half-cut cell module

- If the modules are installed in portrait mode, the half-cut cell module can achieve up to 50% more energy yield

Example of a typical shading situation (modules installed in portrait mode)
Shading advantage half-cut cell module

50% Power

33% Power
Installation of
half-cut cell modules
Installation of half-cut cell modules

**Half-cut cell**

*Portrait mounting:* For half-cut cell modules, fixing cables and connectors to the rails requires an alternative approach during installation.

**Full Cell**

Roof-parallel mounting or rack-mounted East-West oriented flat roofs require new ideas to do the module layout on the mounting structure.
Installation of half-cut cell modules

- Landscape mounting: For half-cut cell modules, fixing cables and connectors to the rails requires an alternative approach during installation.
THANK YOU

www.trinasolar.com