Introduction

Hyundai shingled modules

Hyundai energy solutions, affiliated with Hyundai Heavy Industries, has always been committed to providing customers with a completed and perfect energy solution.

As a modules company listed on Tier1, HES provides customers with different and more attractive products. Now HES is dedicated to vigorously promoting super high efficient shingled modules in the market.

Introduction of shingled modules

The shingled module is a high efficient cells package technology. It uses a specific pattern of cells and cut the cell along the main grid into 5 or 6 pieces (our company is 5 pieces) by laser scribing. The small pieces of cells are laminated and welded with automatic equipment. And each two pieces are bonded and overlapped with conductive (ECA) to form a cell string. The cell string is arranged and laminated to make a module. The current of the cell in shingled module is 1/5 of that of the whole cell after being cut. Therefore, parallel structure is introduced into the shingled module to keep its output performance consistent with that of the standard module.

The Advantage、Improvement、Manufacture、Appearance description

1、The advantage of shingled modules
   ❖ Shingled technology change cell connection and design compared to standard modules. It can allow more cells to be included on each panel. As a result, nearly 100 percent of the panel is covered with solar cells to promote power
   ❖ Shingled modules avoid the influence of cell main bus bar shadowing to promote output power
   ❖ Shingled modules reduce resistance inside and decrease impedance to enhance power
   ❖ Shingled modules use ECA instead of solder ribbon and reduce cracking among cells. It can improve greatly the reliability outdoors.
   Shingled structure makes sure that each cell string has contained lower current for reducing risk of hot spot.
   Shingled modules have a beautiful appearance, which is suitable for residential
   ❖ Besides IEC, Shingled Module can be compatible with main technology of crystalline silicon cells, such as: black silicon, PERC, HJT and so on.
   ❖ It can reduce module transportation cost.
   ❖ It can reduce system installation space with same output power, which is suitable for installation environment with limited area.
   ❖ It can save BOS cost. shingled modules can reduce system project cost, including holder, cable, bus bar for hardware cost and also labour cost、management cost.
Hyundai shingled modules offer customers 20 years product warranty and 25 years linear performance warranty.

2. Shingled modules improvements

- Due to special design, there are some difference of dimension between standard modules and shingled modules, the power should plan also according to its middle position junction box.

3. Shingled module production process

- HES Shingled Modules are produced by modern full-automatic assembly production line. This production line has advanced laser scribing machine, automatic laminated welding machine, automatic typesetting machine and other equipment. The products have higher consistency and reliability.
- There are two EL tests and three appearance tests in the production process of shingled modules, and all the modules have been inspected.
- HES Shingled Modules and plants have passed ISO9001, TUV, ts62941 and other certifications.

4. Shingled Product Parameter
Compared to other modules, HES Shingled modules have unique advantages, and there is no problem that it will soon attract many customers in the market, and bring more revenue of power for customer

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