



Company Profile



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Delta Group Overview

Forbes' Asian Fabulous 50 in 2007 & 2008

Delta Group is the world's largest provider of switching power supplies, brushless fans, power management solutions, components, visual displays, industrial automation, networking products, and renewable energy solutions. Established in 1971, Delta Group has sales offices worldwide and manufacturing plants in Taiwan, China, Thailand, Japan, Mexico, India and Europe. As a global leader in power electronics, Delta's mission is "to provide innovative, clean and efficient energy solutions for a better tomorrow." Delta is committed to environmental protection and has implemented green, lead-free production as well as recycling and waste management programs for many years.

Forbes

Delta Electronics Listed on Forbes' Asian Fab 50



- Company founded: 1971
- The Delta Group is a leading world-class provider of:
 - Power management and renewable energy solutions. (World's No.1 in OEM/ODM power supplies)
 - Components for IT, telecom, consumer, and automotive electronics.
 - Projection display solutions for professional and consumer use.
 - Networking and wireless products
 - Automation system devices
 - PV system key components



Delta Electronics has been the world's No. 1 power supply provider since 2002
(Source: Power Electronics Industry News)

DeSolar Overview

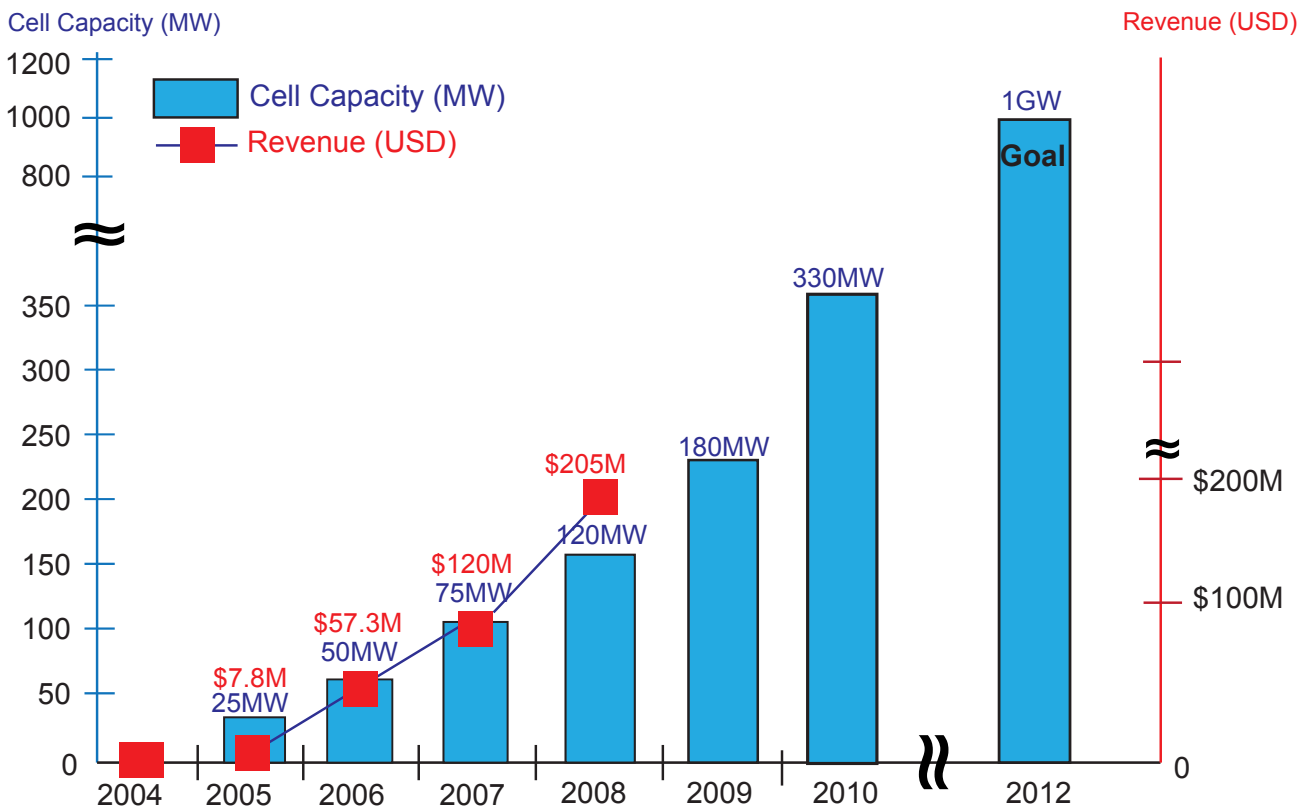
To usher the world into a greener and brighter future through solar power

Since its inception in 2004, DeSolar has quickly become a leading solar cell and module provider with proven process innovation, state-of-the-art manufacturing technology, world-class cell efficiency, and record production yields.

DeSolar is able to do more with less because of its seamless vertical integration with Delta Electronics and strategic alliances with its business partners. This is only the beginning of DeSolar's unique success story. DeSolar is dedicated to continuing its efforts to provide clean and effective solar energy to power as well as empower our world.

To Enable Ubiquitous Solar Systems for a Greener World.

DeSolar
DeSolar Co., Ltd.



DeSolar Milestones & Prospects

DeSolar Products / Quality Control and Assurance

From the first day, DeSolar has insisted on innovation and practicality of its products. Even within the past 5 years, through strong investment in research and development, DeSolar has achieved significant breakthroughs in its products' performance and quality, and successfully pushed the limits of the current silicon wafer-based technology to a new level. Capitalizing on its vast knowledge base and experiences, DeSolar now aims for aggressive exploration of more advanced technologies including those based on thin film, flexible, spherical and organic solar cells/modules.



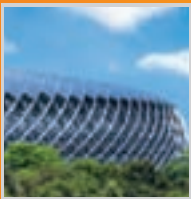
Solar Cells

DeSolar has successfully developed a new series of cells with conversion efficiencies of 18.3% for mono-crystalline silicon cells and 16.8% for multi-crystalline silicon cells. Also, the new cells feature a low temperature coefficient, making them less susceptible to light-induced degradation or module hot spot risk. In short, DeSolar's solar cells are not only efficient but also durable.



Solar Modules

DeSolar's solar modules have been certified by IEC61215, IEC61730 and UL1703. These modules enjoy power tolerance of +3% as well as low temperature coefficient of power and high shunt resistance. As such, DeSolar's solar modules are capable of a higher power output under all weather conditions.



The 2009 World Game Stadium, Kaohsiung, Taiwan

The stadium is the largest Building Integrated Photovoltaics system in the world. 14,155 m² of the stadium's roof surface area is covered by approximately 8,844 solar panels, which can generate 1.14 million kWh of electricity per year, thus reducing 660 tons of annual carbon dioxide output. Not only does the solar panel system provide electricity during the games, but the surplus energy can also be sold during the non-game period.

DeSolar completed the following certifications in 2007 to assure product quality and operational excellence:



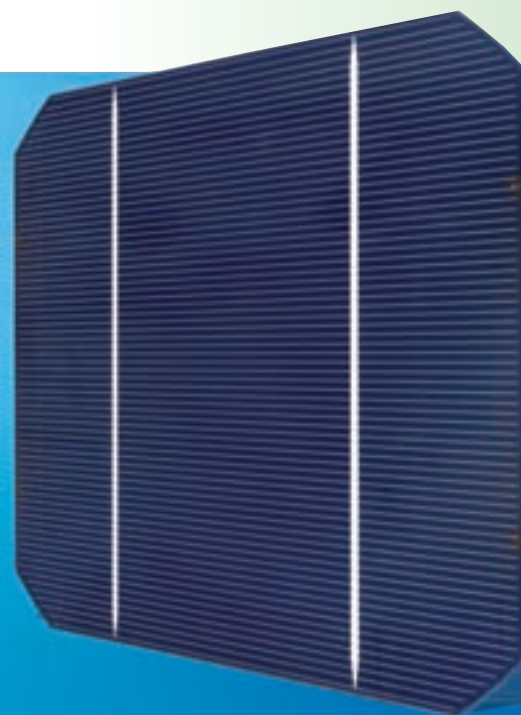
- Quality Management System (ISO 9001)
- Environment Management System (ISO 14001)
- Health and Safety Management Systems (OHSAS 18001)

Quality Control and Assurance

To realize its corporate mission, DeSolar has implemented a quality assurance policy that can be summarized by our guiding principle: "Quality is supreme; Trust is the priority; Quest for excellence".

DeSolar has received a number of certifications that demonstrate DeSolar's capability and resolution to be in line with international quality management standards. With a comprehensive quality control and management structure in place, DeSolar is confident in the quality and reliability of its products.

DelSolar Solar Cells



DelSolar's advanced manufacturing capabilities cover:

A full range of cell processing, including:

- Mono- and Multi- crystalline Silicon-based cells
- 6 inch cell size with 2 busbars and 3 busbars
- Wafer thickness of 180 to 200 μm

High efficiency and thin wafer handling capabilities:

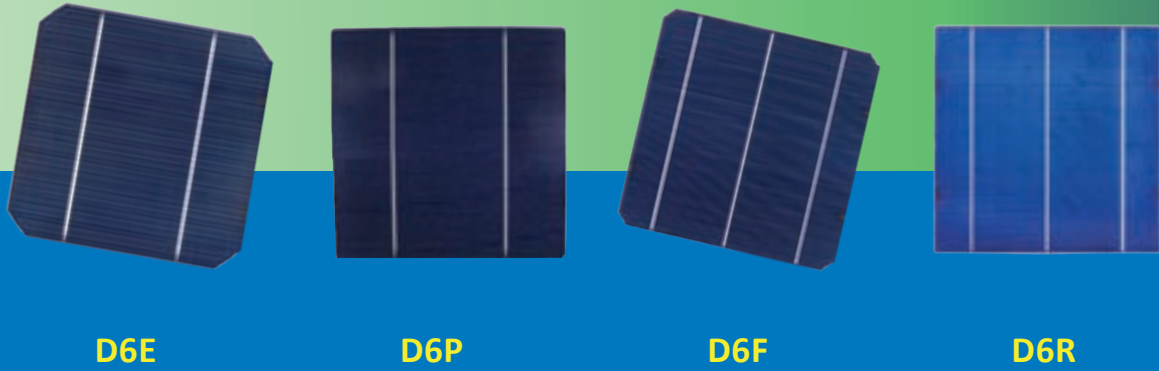
- Dynamic optimized setting system
- Soft-touch wafer handling system

Robust in-house automation systems:

- Improved quality, efficiency and yield increase
- Highly automated wafer transport system



**Direct & Foundry Business in
Mono & Multi- Crystalline Si Based Solar Cells**



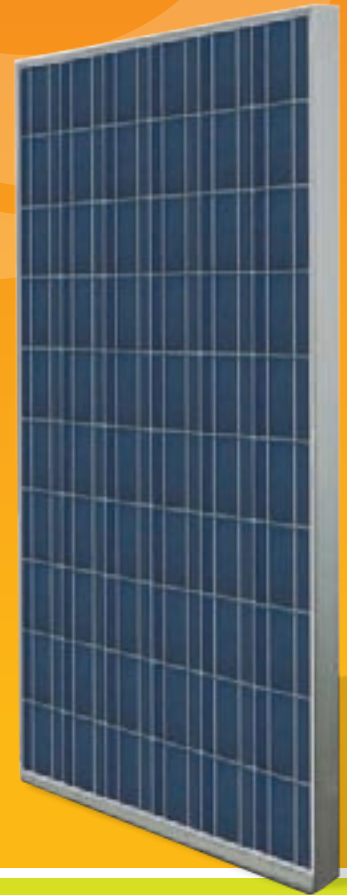
Keeping innovation as its top priority, DelSolar has assembled a world-class solar cell technology team. From the in-house integration of its state-of-art production lines to on-site development and refinement of fabrication processes, DelSolar seizes every possible opportunity for improvement.

DelSolar's advanced solar cell technology is due in no small part to the company's dedication to continuous innovation.

PRODUCT MODEL	D6E	D6P	D6F	D6R
Efficiency (%)	16.0~17.8	15.0~16.8	16.0~18.2	15.0~16.8
Pmax (W)	3.82~4.25	3.65~4.09	3.82~4.35	3.65~4.09
Isc(A)	8.08~8.59	7.67~8.15	8.03~8.56	7.67~8.15
Voc(V)	0.613~0.632	0.609~0.628	0.619~0.633	0.609~0.628
Dimension	156 mm x 156 mm ± 0.5 mm			
Diameter	∅ 200 ± 0.5 mm		∅ 200 ± 0.5 mm	
Thickness	200 ± 30 μm , 180 ± 30 μm			
Front	2.0 ± 0.1 mm busbar		1.5 ± 0.1 mm busbar	
Busbar	2		3	
Back	3.0 mm continuous soldering pads			
Testing conditions	1000 W/m ² , AM 1.5, 25 °C			
Tolerance	Efficiency ± 0.2% abs., Pmpp ± 1.5% rel.			

Mono & Multi- Crystalline Si Based Solar Cells Product Specification

DelSolar Solar Modules



Product: Multi-Crystalline Module D6P 210/230A3E series

The Advantages of DelSolar Modules

- Power Tolerance of 0 to +3% increases PV system output
- low temperature coefficients of power lead to better performance in hot climates
- High PV cell shunt resistance increases power output under low light conditions

5-year Product Warranty

25-year Performance Warranty:

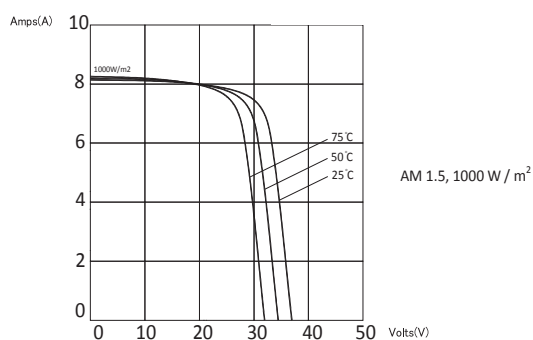
- 10 years: 90% minimum performance
- 25 years: 80% minimum performance

Certifications

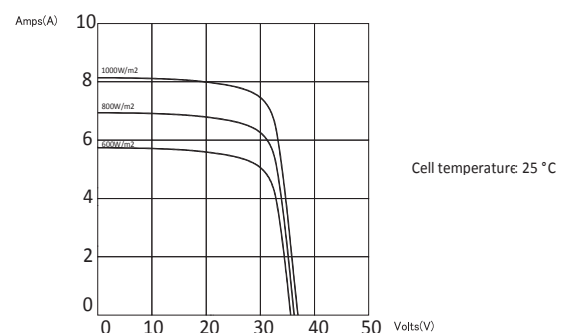
- IEC 61215 / 61730 certified
- Compliant with Buy American Act
- California Energy Commission listed

IV-Curve

Dependence on cell temperature



Dependence on irradiance

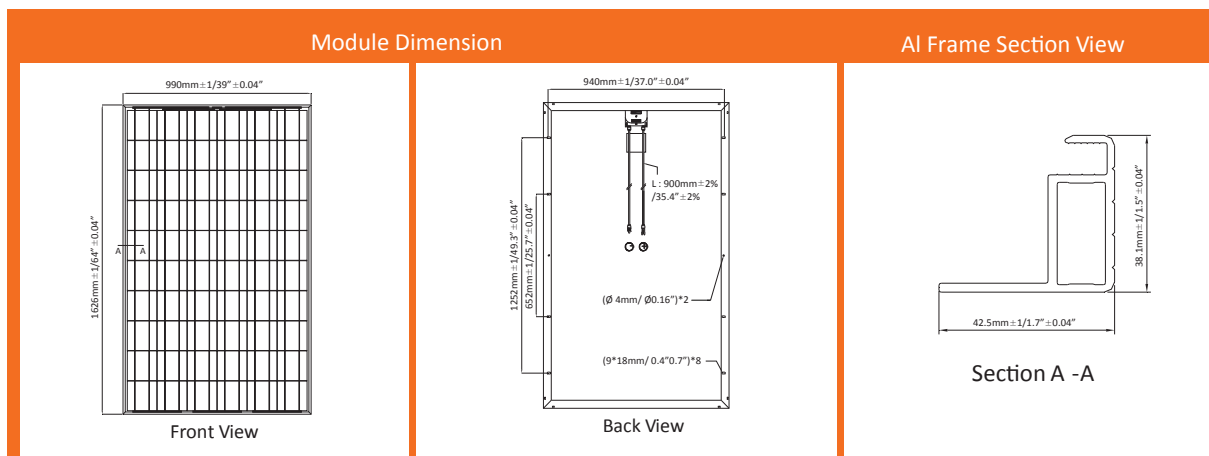


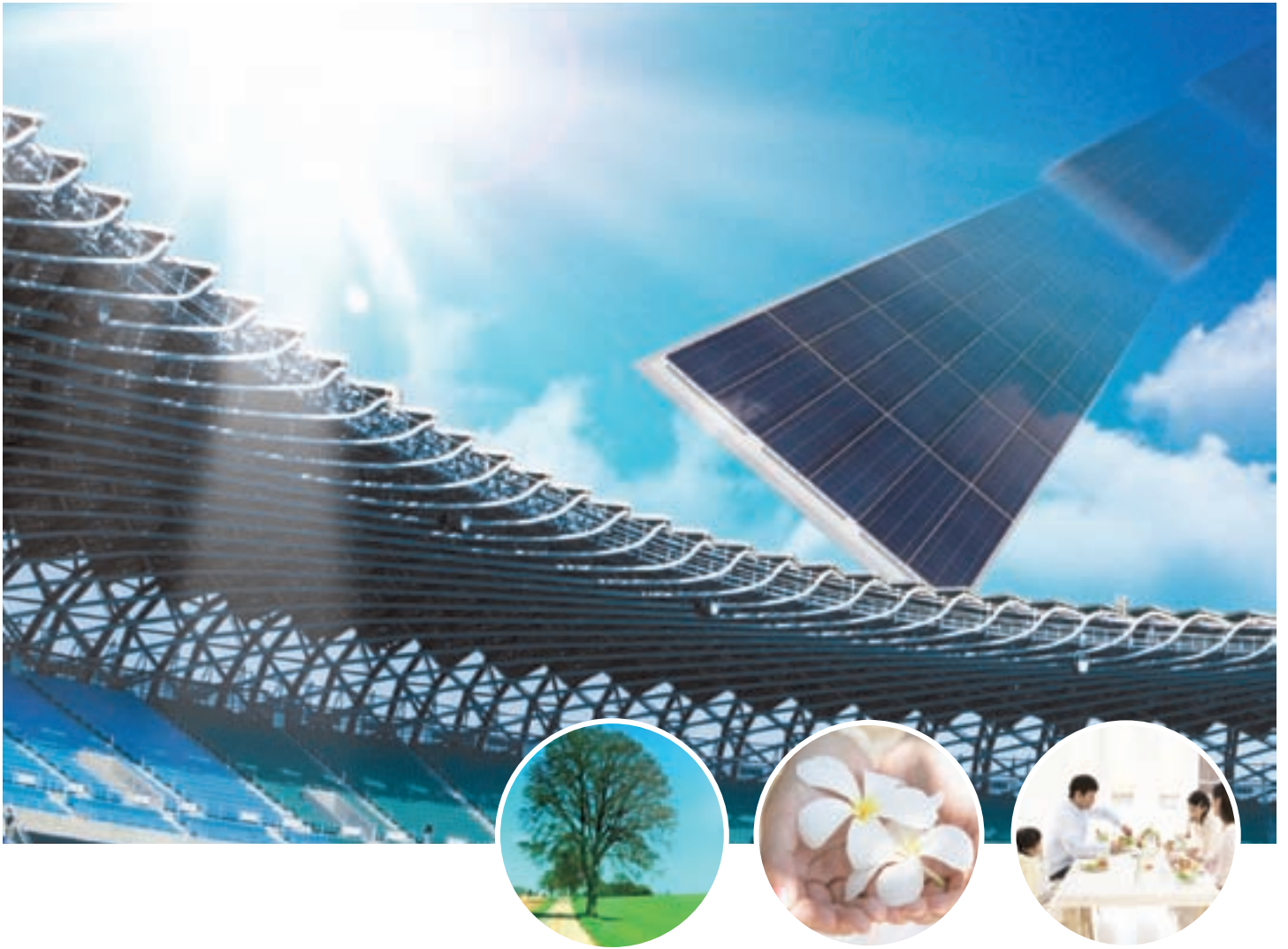
Specification

MODEL	D6P210A3E	D6P220A3E	D6P230A3E
Dimension	1626mm(L) X 990 mm(W) X 38.1mm (D)/ 64"(L) X 39"(W) X 1.5"(D)		
Quantity of Cell	60 cells in series (6X10)		
Module Weight	20Kg/ 44.09lbs		
Open Circuit Voltage (Voc)	36.60 V	36.90 V	37.20 V
Maximum Power Voltage (Vpm)	28.72 V	29.20 V	29.49 V
Short Circuit Current (Isc)	7.93 A	8.13 A	8.39 A
Maximum Power Current (Ipm)	7.32 A	7.54 A	7.80 A
Maximum Rating Power (Pmax)	210 W	220 W	230 W
Output Power Measurement Tolerance	0 ~ +3%		
Module Efficiency	13.00 %	13.60 %	14.30%
Maximum System Voltage	IEC : DC 1000 V / UL : DC 600 V		
Series Fuse Rating	15 A		
Operating Temperature	- 40 to 90 °C		
Temperature Coefficient of Voltage	- 0.32% / °C		
Temperature Coefficient of Current	0.08% / °C		
Temperature Coefficient of Power	- 0.38% / °C		
Normal Operating Cell Temperature	46 ± 1 / °C		
Wind / Snow Load	5400 Pa testing load		

* Electrical data under Standard Test Conditions (STC): 25 °C, 1000 W/m², AM 1.5

* Values w/o tolerance are typical numbers





**DelSolar, a solar company
of the Delta Group**

**To Enable Ubiquitous Solar Systems
for a Greener World**



www.delsolarpv.com

HEADQUARTERS

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