

# DuPont Apollo



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Version 09/2009



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# The World We Live In

## **Is this the kind of world we want to live in?**

The earth is getting warmer – the snow and ice at the polar ice caps are melting at an accelerated rate, the sea level is rising, and some of the living creatures near the shore have abandoned their homes in search of a safer place. Plant and animal species are also disappearing at an alarming rate as they are no longer able to survive in this ever changing harsh environment.

The impact of global warming is putting serious strains on our environment and ultimately threatening the existence of human survival.

Global reserves for non-renewable energy resources such as oil, coal and natural gas are quickly diminishing. We all wonder how well and quickly we can transition from this fossil fuel-reliant economy.



# Reaching For A Green Future



By focusing on the discovery and development of new solar energy solutions, we can transcend from the current reality to a greener and better future.

### **Our Vision**

To replace fossil fuel with solar energy.

### **Our Mission**

To become one of the world's top 3 solution providers in the thin film photovoltaic industry by 2015.

### **Why Solar Energy?**

At DuPont Apollo, we believe the abundance of solar energy is an answer to the environmental, social and economic challenges we are facing today.

The sun's power is free, virtually inexhaustible, and therefore reliable. By using advanced thin film technology, electricity can be generated from sunlight with no emission, no noise and no pollution. Thus, solar energy can give us peace of mind for long term sustainability.

Solar power also stands out for its compatibility with the city landscape. Thin film solar modules can be integrated into buildings as architectural elements, beautifully blending into the city landscape. Combining function with form, solar power offers a very unique form of energy versus alternatives.

Solar energy offers many economic benefits. With solar intensity well in line with conventional business hours, highest solar electricity can be generated during the peak business hours. This reduces energy load of a building which results in savings in utility expenses for business.

As solar electric system installation is a one-off fixed cost, a photovoltaic system will help offset unpredictable utility rate increase while delivers free and sustainable power in the long run. Moreover, system installation is quick and does not disrupt normal business operations and the surrounding environment.

Today, the photovoltaic industry is experiencing unprecedented growth as people around the world turn to renewable technologies, like photovoltaics, wind, hydro power, in order to supply the energy needs that cannot be fulfilled by the depleting fossil energies. The photovoltaic market is expected to grow exponentially in the next few years.

DuPont Apollo is proud to be at the forefront of the thin film photovoltaic industry, delivering a clean solution; meeting the energy needs and promise of a green future.

# Our Strategy: Starting from China

With an aim of being a leading global player in the thin film photovoltaic industry, DuPont Apollo initially builds its presence in the China market through the establishment of its thin film photovoltaic R&D Centre in Hong Kong and a manufacturing facility in Shenzhen.

## The First "Shenzhen-Hong Kong Innovation Circle" Project

DuPont Apollo has made history by being granted the first project under the "Shenzhen-Hong Kong Innovation Circle", supported both by the HKSAR Government and Shenzhen Municipal Government. Established in 2007, the Circle initiative aims to establish the Pearl River Delta Region as a hub for sustainable technologies, and has been designated as part of the PRC's 11<sup>th</sup> Five-Year Plan.

The joint effort between DuPont Apollo and the two governments will help establish a strong Solar Energy Research and Industrial Platform in the region, with Hong Kong as the R&D hub and Shenzhen as the manufacturing base, offering a complete value chain for the photovoltaic industry.

Equipped with state-of-the-art technology capable of delivering innovative solar solutions, we are committed to initially serving the China market and quickly expanding our presence globally to meet the increasing needs for clean alternative energy.

Upon the Letter of Intent signed in May 2008 on setting up a thin film photovoltaic business and R&D Centre in Hong Kong, DuPont Apollo started its R&D operation in March 2009 with over 100 engineers and scientists in place. The R&D Centre consists of a China's first Gen 5 thin film photovoltaic pilot line and the first PV test laboratory that is certified by TÜV Rheinland, leading the region's efforts in fostering world-class thin film R&D and innovations.

Simultaneously, with the support of the Shenzhen Municipal Government, DuPont Apollo will launch its first manufacturing facility in Shenzhen with its pilot lines fully in line with the set-up of R&D Centre. The first production line is expected to be operational by the 4<sup>th</sup> quarter of 2009, with full scale operation scheduled for 2010.



## Our Locations

### Headquarter and Thin Film Photovoltaic R&D Centre

#### Hong Kong Science Park

Headquarter Area: 14,600 sq. ft  
R&D Area: 21,800 sq. ft  
No. of Employees: Over 120

### Manufacturing Site

#### Guangming New District, Shenzhen

Site Area: 50,000 m<sup>2</sup> (12.4 acres)  
Expected No. of Employees: 300 (by 2010)  
Annual Production Capacity: 50 MW



DuPont Apollo High-Tech Industrial Park

Headquarter and Thin Film PV R&D Centre



Technology Advisor to Mayor of the Shenzhen Municipal Government, Mr Liu Yingli, Deputy Secretary-General of the Shenzhen Municipal Government, Mr Gao Guohui, Corporate Vice President and President for DuPont Greater China, Dr Douglas Muzyka and HKSTP Chairman, Mr Nicholas Brooke shake hands to congratulate the signing of Letters of Intent for the first project under "Shenzhen-Hong Kong Innovation Circle".



Chief Executive of HKSAR, The Hon Mr Donald Tsang (middle) and Former Mayor of Shenzhen, Mr Xu Zongheng (sixth from right), officiated at the Grand Opening Ceremony of DuPont Apollo R&D Centre, accompanied by Chairman of the Board of DuPont, Mr Charles O. Holliday, Jr (sixth from left), Chairman of HKSTP, Mr Nicholas Brooke (fourth from left) and a group of Senior Officials from HKSAR and Shenzhen Municipal Governments.

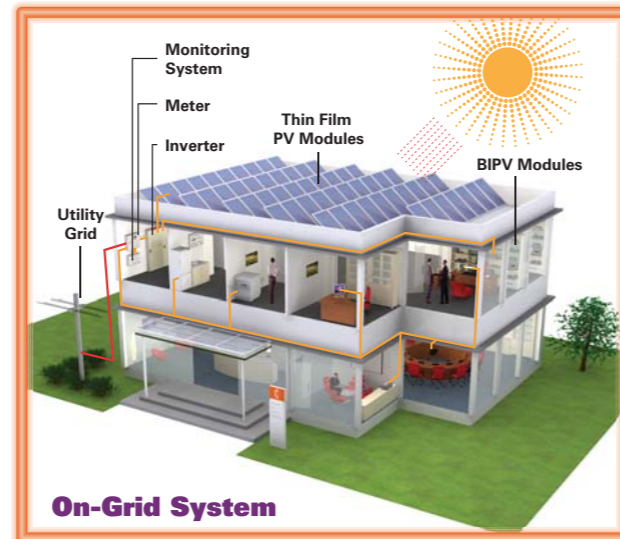
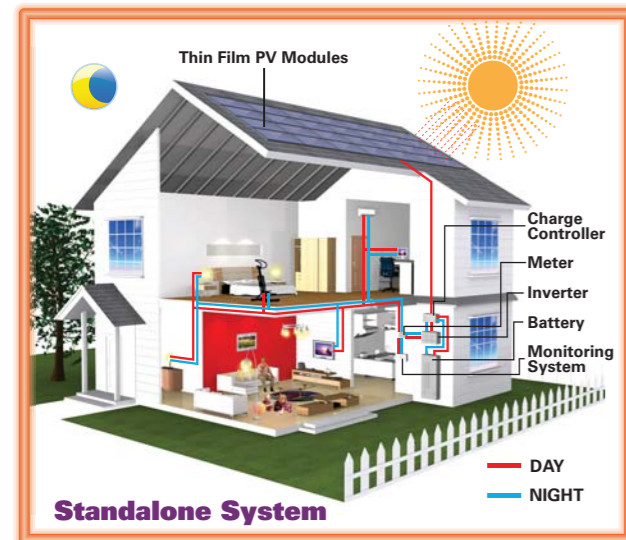
# Our Solar Innovations

## One-Stop Solar Solution

By using cutting-edge thin film technology, our innovative solar solutions incorporate amorphous silicon (a-Si) thin film modules, and bring you comprehensive one-stop solar electric solution services.

Our total solution ranges from planning and managing the entire system installation process, including module

### Solar Electric Systems:



supply, system design, financing consultation and installation, to post-installation services such as system monitoring and maintenance. By providing a full spectrum of services, we are giving you total peace of mind and helping safeguard your long term investment while maximizing your return on investment.

### Wide Applications:

<p><b>Solar Farm</b></p>	<p><b>Roofing</b></p> <p>Residential</p> <p>Commercial</p>	<p><b>BIPV</b></p> <p>Curtain Wall</p> <p>Canopy</p> <p>Façades</p> <p>Acoustic Barrier</p>
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### Total Solution Service Flow:



## Distinctive Thin Film Modules

DuPont Apollo attaches the highest priority to reliability and quality of our thin film modules, in addition to the performance of our solar electric systems. We offer a wide range of high quality modules that optimize energy output and allow our professional engineers to create custom solutions for your homes and businesses.

Our modules create tremendous values, both economically and environmentally, bringing you peace of mind throughout the life of ownership.

## Higher Return on Investment

With their weak light absorption capability, DuPont Apollo thin film modules can generate much more electricity output (kWh) under the same cost structure, and therefore provide a better return on investment.

## Shorter Energy Payback Period

With absorber layer thickness only about 1/200 of that of traditional crystalline cells, DuPont Apollo thin film modules consume little silicon and less encapsulant, and therefore are produced with less electricity, delivering the benefit of an effective energy payback period.

## Scale-up Capability and Reliability

Our thin film modules feature modular and monolithic nature that gives rise to higher reliability and better performance ratio than crystalline solar panels, whose reliability and performance is subject to the risk factor of solder joints.



## Building Integration and Wide Applications

With unique "see-through" capability and aesthetic design, DuPont Apollo thin film modules can seamlessly integrate into a building and the city landscape. They can be used as rooftops, curtain walls, canopies, façades, acoustic barrier, or ground-mounted solar farms.

## Green and Clean

Unlike crystalline solar panels, the entire manufacturing process of DuPont Apollo thin film modules is almost emission free. It generates electricity quietly from sunlight, an abundant and inexhaustible source, without producing waste, noise nor polluting the environment.





### Recognitions and Awards

Our commitment to solar innovations is sustained through our ongoing research and development initiatives. Continuously striving for technological innovation and excellence, DuPont Apollo is widely recognized.

### Asian Knowledge Management Award 2008

DuPont Apollo has been granted the Asian Knowledge Management Award 2008, an Honorary Award by the Asian Knowledge Management Association, in recognition of its solar innovations and excellence in knowledge management. Our company is the first in the PV industry to be given the Honorary Award by the Association.

### Quality Assurance Certifications

Quality assurance is of paramount importance to us. DuPont Apollo thin film modules were granted the IEC61646 and IEC61730 Certifications from TÜV Rheinland in June 2009 – an international recognition of quality and performance. We have also obtained ISO9001 certification, a testament to our on-going quality management process.

DuPont Apollo is also expected to obtain UL1703 certification in the near future, which recognizes products that meet US industry standards.



# Our Time-Honored Heritage

Founded in 1802, DuPont puts science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture and food; building and construction; communications; and transportation.

With science and innovation at the core of its business, DuPont has more than 50 R&D facilities throughout the world, and invests an average of USD 1.4 billion annually on global research and development in a diverse range of technologies. Today, DuPont employs more than 5,000 scientists and engineers around the world.

In particular, DuPont is a leading material and technology supplier to the PV industry, with more than 25 years of experience in PV materials development, applications know-how, manufacturing expertise and global market access.

Proudly, DuPont Apollo not only has inherited the solid foundation of scientific discovery, innovation and expertise from DuPont, but also a strong commitment to the core values of:

- Safety and Health
- Environmental Stewardship
- Highest Ethical Behavior
- Respect for People

DuPont Apollo is now, and will remain, a trusted partner in delivering solar innovations to meet customers' needs for alternative energy.

