



Manufacturing lines and Solar system projects of
NanoPV Solar U S A

NanoPV Solar Inc.

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Company Confidential

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NanoPV Solar

List of Manufacturing Line and Solar System Projects Using NanoPV Solar Technologies.

NanoPV is a leading, pioneering solar technology company of USA since 2005. Following are the lists of solar manufacturing lines and solar system projects of NanoPV.

No	Country	Description	Capacity
1.	Thailand	First Solar manufacturing line of the country using thin film technologies	65MW
2	Taiwan	First Solar manufacturing line of Taiwan using thin film technologies	65MW
3.	India	Solar manufacturing line using crystalline Silicon Technology	75MW
4	China	Solar Manufacturing line at Shandong Province	200MW
5	Thailand	Second Manufacturing Facility with crystalline silicon	100MW
6	USA	Solar manufacturing line at Americus, Georgia, USA	Starting Capacity 450MW to be expanded to 2.5 GW in the next two years
7	Morocco	Solar Manufacturing line at Tangier (Planning)	500MW

Solar Farm Projects
(Given Below)

No	Company, Country,	Description	Capacity, year	Contact
1.	Harrisons Power Chennai, India Solar Farm at Sillanatham Village Scheme: Jawaharlal Nehru Solar Mission	One of the first solar farm projects of India, using thin film Si Technology PPA from TANGEDCO (Tamil Nadu Electricity Board Tamil Nadu Electricity Board (TNEB) (TNEB))	1.3 MW, 2010	Mr. Sunny Pokala President and CEO Amtex Towers, Plot H10, 3rd Main Road, Sipcot, Siruseri, Chennai - 603103 TEL : +91-44-42997575 FAX : +91-44-42177083 <u>Head quarters:</u> 50 Broad Street, Suite 801, New York, NY-10004 TEL : (212) 269-6448 FAX : (212) 269-6458 (Amtex)
2.	IMW Solar Farm Paralachi, Aruppukottai Tamilnadu, India	Solar Farm using NanoPV poly crystalline	1.3MW 2013	Mr. Marudhu COO Adhiev Chennai.com www.adhiev.com Tel: +91 7639643377
3	TANGEDCO Solar Farm at Tuticorin, Tamil nadu, India	Solar Farm using NanoPV poly crystalline	10 MW 2015	Mr. Marudhu COO Adhiev Chennai.com www.adhiev.com Tel: +91 7639643377
4.	1.644MW Solar Power Plant Chachoengsao.	Solar Farms using NanoPV a-Si thin film solar panels and technology	1.6MW and more solar farms since 2006 See below:	Mr. Sompong Nakornsri Chairman Bangkok Solar Bangkok Cable Bangkok, Thailand www.bangkok solar.com Tel: :+66 (0) 3857 7373

PV Solar Power Plant Udonthani 2



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Udonthani, Thailand
GPS Coordinate	: 17.576898 N, 102.80154 E
Capacity	: 1.500 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 2 April 2009

► PV Solar Power Plant Angthong



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Angthong, Thailand
GPS Coordinate	: 14.590169 N, 100.477053 E
Capacity	: 1.200 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 11 February 2009

► PV Solar Power Plant Phetchaburi



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Phetchaburi, Thailand
GPS Coordinate	: 12.724975 N, 99.924324 E
Capacity	: 2.125 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 10 February 2009

» PV Solar Power Plant Udonthani 1



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Udonthani, Thailand
GPS Coordinate	: 17.558426 N, 102.802227 E
Capacity	: 0.250 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 1 July 2008

» PV Solar Power Plant Chachoengsao



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Chachoengsao, Thailand
GPS Coordinate	: 13.576023 N, 101.00358 E
Capacity	: 1.300 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 5 October 2007

PV Solar Power Plant Lopburi 4



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Lopburi, Thailand
GPS Coordinate	: 14.779634 N, 100.911806 E
Capacity	: 2.000 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 4 April 2012

► PV Solar Power Plant Lopburi 5



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Lopburi, Thailand
GPS Coordinate	: 14.777186 N, 100.912210 E
Capacity	: 2.000 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 5 October 2011

► PV Solar Power Plant Nakhonratchasima



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Nakhonratchasima, Thailand
GPS Coordinate	: 15.619916 N, 102.563295 E
Capacity	: 1.000 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 1 January 2011

» PV Solar Power Plant Lopburi 1



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Lopburi , Thailand
GPS Coordinate	: 14.889859 N, 100.908544 E
Capacity	: 2.000 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 25 May 2010

» PV Solar Power Plant Nakhonsawan



Status	: Completed
Design by	: Bangkok Solar Power co., ltd.
Project Manager	: Bangkok Solar Power co., ltd.
Owner	: Bangkok Solar Power co., ltd.
Location	: Nakhonsawan , Thailand
GPS Coordinate	: 15.959916 N, 99.99022 E
Capacity	: 0.530 MW.
Details	: a-Si Thin film technology Produced by Bangkok Solar co., ltd
COD.	: 1 November 2009

NanoPV Solar Technology. Panels, system designs and project management services were used in many international location as given below:

NanoPV Solar Systems using NanoPV solar technologies:

Following are the Solar systems using NanoPV Technologies and solar panels.



Utility Scale solar farms: thin Film Si using NanoPV technologies, 1.26MW, Thailand,
Built in 2007



Grid Tie-solar farms: NanoPV Thin film Silicon panels, 1.6MW , Thailand,
Built in 2007



Utility Scale Solar Farm using NanoPV Solar Technologies, 2.3 MW, Thailand
Built in 2009



Utility Scale Solar Farm using NanoPV Solar Technologies, 1.3 MW, USA
Built in 2011



Solar Farm with capacity of 1.563MW, Built in 2010



High energy efficiency thin film solar farms: NanoPV Thin film Silicon, India,
Year built 2011



Power plant using NanoPV Thin film technologies. Built in 2007

Inverter station with BIPV



Poly-Crystalline Silicon solar farms, Aruppu Kottai, India, Year Built 2016



Independent power producing solar farms, Chachengsao, 2012



Multi MW roof top systems, Bangkok, 2013



Suttee Group Roof top 250kW Design and Engineering by NanoPV



Figure BangPa In Solar Farm with the capacity of 44MW with NanoPV group system design and engineering, 2014



Bang Pa in solar farm, 44MW with NanoPV group system design and Engineering, 2014.



Bang Pa Han solar farm, capacity of 25MW with NanoPV system design and engineering, 2015



Bum net narong solar farm, 25MW capacity with NanoPV system design and Engineering 2013.



Prachin buri Solar Farm, 25MW, designed and engineered by NanoPV group, 2014.



Rojana solar farm with the capacity of 29.4MW: NanoPV group system and engineering



Solar Farm control room with viewing stage and a BIPV building

NanoPV Solar USA

NanoPV is one of the first companies in the world to break the records of the lowest manufacturing cost for solar panels and highest energy delivery. Today the use of NanoPV technology as well as NanoPV solar panels and systems gives substantial profit for solar panel manufacturers, solar system providers and end-users. NanoPV panels, manufacturing units and the systems carry all the major certifications and warranties

NanoPV technologies Inc. was incorporated in 2004 with nearly 25 years of experience in solar cell technologies, panel manufacturing and system integration. NanoPV is an US New Jersey based company with subsidiaries in Asia. NanoPV has silicon solar panel manufacturing facilities as well as solar farms using NanoPV technologies in various locations in the world.

Today, NanoPV is a leader in high energy delivery, cost effective Si PV technology. NanoPV manufactures solar panels, provides manufacturing equipment and end-to-end turn key solutions and provides complete solar system and engineering. NanoPV has proven, highly profitable baseline solar module manufacturing technology already in the market.

NanoPV's solar panels are fully certified for their performance and safety for twenty years by international certification agencies for standards such as IEC, UL, TUV and CE.

NanoPV has unique technology based on crystalline silicon, amorphous and nano-crystalline silicon and proprietary light-trapping & TCLO technologies. NanoPV has filed and owns several IPs in the areas of solar panel manufacturing and system engineering.

NanoPV possesses the lowest manufacturing and system cost per Watt for any kind of PV technology anywhere in the world.

Compared to conventional solar cells, NanoPV's solar cell manufacturing possesses one third of manufacturing cost, one third of number of process steps and nearly 300 times less amount of PV active material consumption. These factors correspond to the lowest system cost.

For the solar energy to become a main electrical energy resource the cost per kWh is the basis and NanoPV possesses the lowest levelized cost per kWh with its total vertical integration of all the components of a solar system.



Figure: NanoPV solar panel at the NanoPV manufacturing facility.

NanoPV has team of scientists, manufacturing professionals, system design, execution engineers and business minds with exceptional experience in the field. NanoPV has global network for manufacturing, panel distribution and solar systems.

World wide Solar Facilities of NanoPV:

Following are some of the facilities that use NanoPV technologies:







Recent Ventures:

1. NanoPV Cambodia Co., Ltd

Location: Sihanoukville Special Economy Zone, SSRZ Rd, Sihanoukville Cambodia.

2. NanoPV Solar TK Co. Ltd-

Location: Şanlıurfa Ticaret ve Sanayi Odası Yeni Hizmet Binası (A Blok,Kat 4) Paşabağı Mah.Adalet Cad. No:7/A, Şanlıurfa, Turkey

3. NanoPV Ukraine

“Ananiev Soniachna Electriczna Stantsia”

JV with PJSC, 88B, Sumskaya Str., city of Kharkov, UA-61002, Ukraine.

Current solar projects under planning/development

1. Solar Farms with PPAs from Georgia power and Gulf Energy GA, SC and FL
Total Capacity **205MWac**
Location: Georgia, Florida and South Carolina, USA
2. Solar Farm with Ukraine State enterprise «Energorynok»
Capacity **13 MWac**
Location: Kharkov, UA-61002, Ukraine
3. Solar Farm with PPA from Georgia power
Capacity **55MWac**
Location: Elberton county, Georgia, USA
4. Solar Farm in the state of Texas with VPPA
Capacity **420MWac**
Location: Texas, USA
5. Solar Farm with PPA from Government of Madagascar
Capacity **1,500 MWac**
Location: Madagascar



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