

PHOTON's 5th

Photovoltaic Technology Show 2010

February 2 – 4, 2010, San Francisco

USA

Photon
ACADEMY

Sponsored by



**PHOTON's
2nd PV Thin Film Conference**



**PHOTON's
2nd PV Start-up Conference**



**PHOTON's
3rd Solar Electric Utility Conference**

www.photon-expo.com

PROGRAM

9:00 - 9:05

CONFERENCE OPENING

Chairperson:

- **Michael Schmela**,
PHOTON International, Germany

Invited speakers

9:05 - 9:30

KEYNOTE

- **Zhengrong Shi**, Suntech Power, China
»Good reasons for the world-leading c-Si
module maker's thin-film investment«

9:30 - 10:00

*COSTS, PRICES & INVESTMENTS –
SURVIVING THE HARD TIMES*

- **Ryan Boas**, PHOTON Consulting, USA
»Cost & price outlook«
- **Steve O'Rourke**, Deutsche Bank, USA
»Levelized cost of electricity –
thin film vs. c-Si«

10:00 - 10:45

*PERFORMANCE: TALES FROM LAB
AND FIELD*

- **Christian Hinsch**, Juwi, Germany
»Performance of thin-film power plants«
- **Willi Vaaßen**, TÜV, USA
»Testing TF modules for certification«

10:45 - 11:15

Coffee-Break

11:15 - 13:00

*TECHNOLOGY: CHOOSING THE RIGHT
EQUIPMENT TO SCALE BIG AT LOW COST*

- **Chris Eberspacher**, Applied Materials,
USA
- **Hans Ebinger**, Oerlikon, Switzerland
- **Ruurd Boomsma**, Energosolar, Hungary
- **Michael Liehr**, Leybold Optics, Germany

13:00 - 14:00

Lunch

14:00 - 15:30

*THIN-FILM COMPANIES HEADING
FOR TERA-WATT-HOUR MODULE
MANUFACTURING I*

- **Paul Wormser**, Sharp, Japan
»Micromorph«
- **Sicco Westra**, SunFilm, Germany
»Micromorph«
- **Yurika Hanaki**, Sanyo Eneos, Japan
»Micromorph«
- **Rick Wan**, ENN, China
»A-Si/micromorph«
- **Liyong Yang**, Chint Solar (Astronergy), China
»A-Si/micromorph«
- **Howard Chu**, Trony, China
»A-Si«

15:30 - 15:50

Coffee-Break

15:50 - 17:30

*THIN-FILM COMPANIES HEADING
FOR TERA-WATT-HOUR MODULE
MANUFACTURING II*

- **Lynn Sha**, QS, China
»A-Si«
- **DuPont Apollo**, USA
»A-Si«
- **Satoru Kuriyagawa**, Showa Shell, Japan
»CIGS«
- **Florian Holzapfel**, Q-Cells, Germany
»CIGS & CdTe«
- **Chris Gronet**, Solyndra, USA
»CIGS«
- **Tom Tiller**, Abound, USA
»CdTe«

17:30 - 18:30

EXECUTIVE PANEL:

*»Thin film's role in the big solar
power generation game«*

IMPRESSIONS 2008



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▲ Who's the next First Solar?: Several module manufacturers, including Kaneka, Nanosolar, Q-Cells, United Solar, Inventux and Solyndra, presented their thin-film technologies at PHOTON's 1st PV Thin Film Conference.



▲► Hard facts: In his keynote speech, Lars Podlowski, CTO of Solon AG, challenged the thin-film community with his technical cost comparison in favor of crystalline products.

Tickets cost \$840
(\$740 for PHOTON International subscribers)
**Limited space: To save your place,
please register now!**
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9:30 - 10:15

FUNDAMENTALS

- **Joe Muscat**, Ernst & Young, USA
»Overview of VC flow into the PV sector«
- **Martha Symko-Davies**, NREL, USA
»Start-up funding in the US«
- **N.N.**, American Patent Office, USA
»Patent distribution in PV technologies«

10:15 - 10:45

VC

- **Guido Agostinelli**, Good Energies,
Switzerland
- **Bill Joy**, David Wells Kleiner Perkins, USA

10:45 - 11:00

PANEL – FUNDAMENTALS & VC

11:00 - 11:30

Coffee-Break

11:30 - 12:15

C-SI WAFERS, CELL AND MODULES

- **Jennifer Woolwich**, PV Recycling, USA
»Solar module recycling«
- **Mehrdad Moslehi**, Solexel, USA
»Lift-off cell from Si wafer substrates«
- **David O'Connor**, Spectrawatt, USA
»From traditional c-Si to up-converter cells«

12:15 - 12:45

CONCENTRATING PHOTOVOLTAICS (CPV)

- **David Schultz**, Banyan Energy, USA
»Low CPV«
- **Bob Conner**, Semprius, USA
»High CPV«

12:45 - 13:00

PANEL – C-SI & CPV

13:00 - 14:00

Lunch

14:00 - 14:45

THIN FILMS

- **Michael Bartolomeusz**, AQT, USA
»AQTek, USA«
- **John Palmer**, Vanguard, USA
»CdS modules«
- **Alan Majid**, Nliten, USA
»Substrates for TF«

14:45 - 15:30

BALANCE OF SYSTEMS (BOS)

- **Ravi Naiknaware Azuray**, USA
»DC-DC«
- **Paul Engle Enecsys**, UK
»Microinverters«
- **Ron van Dell**, SolarBridge, USA
»Microinverters«

15:30 - 15:45

PANEL – THIN FILMS & BOS

15:45 - 16:15

Coffee-Break

16:15 - 17:30

THIRD GENERATION TECHNOLOGIES

- **Mike Clary**, Solasta, USA
»A-Si/carbon nanotubes on glass substrates«
- **Tony Defries**, Matter, USA
»Plasmonics-based solar cells«
- **Lawrence A. Kaufman**, Lightwave, USA
»Plasmonics-based solar cells«
- **Andreas Rückemann**, Heliatek,
Germany
»Organic cells«
- **David Bushnell**, QuantaSol, UK
»Quantum dot cells«

17:30 - 18:30

EXECUTIVE PANEL:

»Mastering start-up challenges in times of cheap silicon«

- **Sunil Gupta**, Morgan Stanley, Singapore
- **Christopher Moran**, Applied Ventures,
USA
- **Florian Holzapfel**, Q-Cells, Germany

PHOTON's 2nd
PV Start-up Conference

February 3, 2010, San Francisco

IMPRESSIONS 2008



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▲ Silicon Valley, US-based SiGen came out of stealth mode at our conference, presenting its revolutionary technology to cut kerfless wafers.

▲ Israel-based Xjet introduced its high speed ink-jet technology to print electrical contacts on solar cells at our last conference. The first commercial machine was shipped in late 2009.

▶ Trendy newcomer: SolarEdge introduced its power optimizer technology at PHOTON's 2008 event.

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PROGRAM

9:00 - 9:05

CONFERENCE OPENING

Chairperson:s

- **Garrett Hering**,
PHOTON International, Germany
- **Sanjay Shrestha**, Lazard Capital, USA
- **Christy Herig**, Solar Electric Power
Association (SEPA), USA

Invited speakers

9:05 - 9:30

KEYNOTE

9:30 - 10:30

FUNDAMENTALS

- **Michael Rogol**,
PHOTON Consulting, USA
»Solar growing quickly: Implications
for electric power supply«
- **Peter Lorenz**, Quanta Renewable
Energy Services, USA
- **Ryan Pletka**, Black & Veatch, USA

10:30 - 11:00

Coffee-Break

11:00 - 12:30

UTILITY ACTIVITIES OF PV COMPANIES

- **N.N.**, First Solar, USA
»Thin films for low-cost large-scale
solar power«
- **Steven Chan**, Suntech, China
»Global utility-scale PV in the US,
Europe and China«
- **Howard Wenger**, SunPower, USA
»Highest solar system efficiencies«
- **Reyad Fezzani**, BP Solar, USA
»Focus on downstream projects«
- **Carlos Domenech**, MEMC, USA
»From silicon to solar installations«

12:30 - 13:30

Lunch

13:30 - 15:00

PV ACTIVITIES OF UTILITIES & PROJECT DEVELOPERS I

- **Dave Rubin**, PG&E, California, USA
- **Mark Nelson**, SCE, California, USA
- **N.N.**, Xcel Energy, Colorado, USA
- **Eric Silagy**, FPL, Florida, USA
- **Al Matos**, PSE&G, New Jersey, USA

15:00 - 16:45

PV ACTIVITIES OF UTILITIES & PROJECT DEVELOPERS II

- **Mike Webster**, LADWP, California, USA
- **Tom Doyle**, NRG Energy, New Jersey, USA
- **Micheal Allman**, Semptra Generation,
California, USA
- **Larry Greene**, Acciona, Spain
- **Sheldon Kimber**, Recurrent Energy,
California, USA

16:45 - 17:00

Coffee-Break

17:00 - 18:30

TECHNICAL & ECONOMIC CHALLENGES

- **Kenneth Westrick**, 3Tier
»Forecasting solar irradiation«
- **Tsurayuki Okamoto**, NGK, Japan
»Cost-effective storage for PV systems«
- **Jürgen Krehnke**, SMA America, USA
»Connecting & monitoring PV power
plants the right way«
- **Hugh Wynne**, Bernstein Research, USA
»Financing traditional electric power
plants vs. solar«
- **Mike Milligan**, NREL, USA
»Solar in US energy generation«
- **Paul Douglas**, CPUC, USA
»Regulatory requirements to enable fast
and sustainable growth of solar«

18:30 - 19:00

EXECUTIVE PANEL

PHOTON's 3rd
Solar Electric Utility Conference

February 4, 2010, San Francisco

IMPRESSIONS 2008



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- ▶▶ Solar goes utility-scale: Q-Cells was one of several PV companies to provide details about their business strategies for the solar power plant segment at our last conference.
- ▶ Utility goes solar: California, US-based electricity company Pacific Gas & Electricity Co. (PG&E) is moving toward distribution and utility-scale solar.
- ▲ The regulator's view: The California Public Utilities Commission (CPUC) is facing massive amounts of solar power being connected to the electric grid in the biggest US solar market.

PHOTON's 5th

Photovoltaic Technology Show 2010 USA

February 2 – 4, 2010, San Francisco



The Moscone Center
Administrative Office 747
Howard Street, 5th Flr.
San Francisco, CA 94103

REDUCED PACKAGE PRICE

The total price to attend all three conferences is only \$2,270 (or \$1,970 for PHOTON International subscribers) instead of \$2,520 (incl. conference party). Conference participants can visit the exhibition free of charge.

PHOTON's 2nd PV Thin Film Conference • February 2, 2010

PHOTON's 2nd PV Start-up Conference • February 3, 2010 (conference party)

PHOTON's 3rd Solar Electric Utility Conference • February 4, 2010

Please register at: www.photon-expo.com