

Thin Film Solar PV Manufacturing Equipment Worldwide

<https://marketpublishers.com/r/TB4C1048E30EN.html>

Date: July 2011

Pages: 292

Price: US\$ 4,950.00 (Single User License)

ID: TB4C1048E30EN

Abstracts

Prices

Single User PDF: **US\$ 4,950.00**

Global Site License: **US\$ 6,200.00**

Out of the over 38.2 gigawatts (GW) of production capacity added to the global solar photovoltaic (PV) manufacturing industry during the past five years, nearly 20% or 7.5 GW of the capacity was for the production of thin film solar photovoltaic (TFPV) technologies. Thin film PV technologies are produced through deposition processes and production line equipment distinct from conventional, market leading crystalline silicon (c-Si) solar PV technologies. Thin film PV technologies use “thin” vapor deposited or physically applied semiconductor active layers that use substantially less of alternative materials. Other PV technologies using TFPV manufacturing equipment and similar production processes include multijunction / III-V elemental compound solar cells, dye-sensitized solar cells (DSSC), and organic PV (OPV).

The crystalline silicon PV supply chain - silicon feedstocks, ingots, wafers, cells and modules - is the primary beneficiary of global industry investment. The global production capacity for c-Si PV cells is over four times that for all TFPV technologies. The current global market share for c-Si PV modules is above 80% with the remaining share largely represented by CdTe TFPV module production.. First Solar's expansion in the production of CdTe TFPV modules and a rising bubble in investment in thin film silicon PV technologies led phenomenal growth in the market for TFPV manufacturing equipment. While the commanding global market share has not been lost by c-Si PV, it has been pressured by c-Si PV technology's more intricate supply chain. Shortages in solar-grade silicon metal and polysilicon pushed up c-Si PV supply chain prices from silicon feedstocks to modules. New and existing PV producers responded by investing in TFPV technologies as a means of reducing material consumption (in the case of thin

film silicon technologies) and eliminating dependence upon crystalline silicon supplies.

The diversity of thin film PV technologies had aided continued growth in industry capital expenditures for TFPV manufacturing equipment. Thin film PV technologies will continue to capture shares of global PV industry investment based upon their individual strengths in production and performance: CIGS PV has the highest demonstrated efficiency for major thin film technologies, CdTe is an established low-cost PV product, and thin film silicon PV technologies are well represented by OEM suppliers in terms of turnkey production lines and a broad base of industry experience in production.

Supported by persistent industry interest in the production advantages and design flexibility of thin film PV technologies, thin film solar PV manufacturing equipment will continue to represent a diverse range of high-growth capital equipment markets. From a total market value of \$384 million in 2006, the global TFPV manufacturing equipment market is estimated by SBI Energy to have reached \$3.2 billion in 2010 for a CAGR of 70.3%. The total market is projected to reach approximately \$4.3 billion in 2015 and \$15.7 billion in 2020 on the basis of continuing advances in TFPV manufacturing and improved cost-competitiveness with c-Si PV production. Asian countries are expected to predominate among many of the TFPV technology and equipment type market categories, particularly China, Taiwan, and several Southeast Asian countries like Malaysia and Vietnam. Equipment markets already exist and are projected as well in Japan, India, and Korea. Other notable markets include the United States, Germany, Spain and Italy, with promising expansion markets in the Americas and Europe projected in countries such as Mexico, Brazil, Russia, and several Eastern European countries.

Contents

CHAPTER 1 EXECUTIVE SUMMARY

Scope

Emergence and Expansion of the Global Thin Film PV Industry

The Thin Film PV and Crystalline Silicon PV Industries

Figure 1-1 Global Crystalline Silicon PV Cell and Thin Film PV Panel Production Capacities (2006-2010) (in megawatts [MW] of rated output)

Figure 1-2 Thin Film and c-Si PV Supply Chains

Thin Film PV Manufacturing and Production Processes

Figure 1-3 General Thin Film PV Manufacturing Process

Thin Film PV Manufacturing Development

Table 1-1 Cross-Industry Reference Chart for TFPV Manufacturing Stages

Markets for Thin Film PV Manufacturing Equipment

Equipment Demand by Regions and Countries

Figure 1-4 Global Market for Thin Film PV Manufacturing Equipment - Americas, Europe, Asia/Pacific, Africa/Middle East (Historical and Projected: 2006-2020) (\$ millions)

Equipment Demand by Thin Film PV Technology

Table 1-2 Thin Film PV Comparison Chart

Figure 1-5 Global Market for Thin Film PV Manufacturing Equipment by TFPV Technology (Historical and Projected: 2006-2020) (\$ millions)

Markets for Core and Emerging Global Thin Film PV Manufacturing Equipment

Figure 1-6 Global Market for Thin Film PV Manufacturing Equipment by Equipment Type (Historical and Projected: 2006-2020) (\$ millions)

Figure 1-7 Compound Annual Rates of Market Growth (CAGR) by Equipment Type (Historical: 2006-2010) (%)

Summary

CHAPTER 2 OVERVIEW OF THIN FILM PV MANUFACTURING TECHNOLOGIES AND EQUIPMENT

Scope

Thin Film PV Manufacturing Equipment Design and Development

Equipment Applications from Other Manufacturing Industries

Table 2-1 Cross-Industry Reference Chart for TFPV Manufacturing Stages

Turnkey Development of TFPV Production Lines

Figure 2-1 TFPV Supply Chain Overview

Proprietary Production Line Development
Production Line Customization
Thin Film PV Manufacturing Equipment Categories
Surface and Substrate Cleaning Equipment
Physical Vapor Deposition Equipment
 Table 2-2 PVD Methods in Commercial TFPV Manufacturing
 Table 2-3 Pressure Requirements for PVD Methods used in TFPV Manufacturing
Chemical Vapor Deposition Equipment
 Table 2-4 Pressure Requirements for CVD Methods used in TFPV Manufacturing
 Table 2-5 Thin Film Deposition Methods in Commercial TFPV Manufacturing
Printing Equipment
Water, Gas and Chemical Treatment Equipment
Laser Tools
Mechanical Scribing Equipment
Wet Chemical Etching Equipment
Thermal Processing Equipment
Panel Conveyance and Handling Systems
Back-End Equipment
Thin Film PV Manufacturing Processes
 Table 2-6 Primary Deposition Applications in Industry TFPV Manufacturing
 Table 2-7 Thin Film PV Comparison Chart
Cadmium Telluride (CdTe)
 Figure 2-2 CdTe TFPV Production Flow
Thin Film Silicon (TF-Si)
 Figure 2-3 Thin Film-Si PV Production Flow
Copper Indium (Gallium) Diselenide (CIS/CIGS)
 Figure 2-4 CIGS TFPV Production Flow
Multijunction (III-V)
 Figure 2-5 Multijunction (III-V) PV Production Flow
Organic (Emerging)
 Figure 2-6 Organic TFPV Production Flow
Dye-Sensitized (Emerging)
 Figure 2-7 Dye-Sensitized TFPV Production Flow
Summary

CHAPTER 3 MARKET TRENDS AND FACTORS FOR THIN FILM PV MANUFACTURING EQUIPMENT

Scope

Global PV Production Capacities

Figure 3-1 Global Crystalline Silicon PV Cell and Thin Film PV Panel Production Capacities (2006-2010) (in megawatts [MW] of rated output)

Table 3-1 Thin Film and c-Si PV Production Capacity Growth Worldwide, Year-over-Year and Compound Annual Growth Rate (2006-2010)

Figure 3-2 Global PV Production Capacity by Technology (2010)

Table 3-2 Global Proliferation of PV Industries by Country (2000-2020)

The Americas

Table 3-3 Major World PV Markets and Industries

Figure 3-3 Thin Film and c-Si PV Supply Chains by Production Stage

Figure 3-4 U.S. PV Production Capacity Additions (2006-2010) (MW)

Table 3-4 U.S. PV Production Capacity Additions (2006-2010) (MW)

Figure 3-5 PV Production Capacity Additions in the Americas (2010-2020) (MW)

Table 3-5 PV Production Capacity Additions in the Americas (2011-2020) (MW)

Figure 3-6 PV Production Capacity Investment in the Americas (2006-2010; 2011-2015; 2016-2020) (% of total capacity)

Figure 3-7 Thin Film PV Production Capacity Additions by Country - Americas (2016-2020) (%)

Figure 3-8 Global Cumulative Thin Film PV Production Capacities by World Market - Asia/Pacific, the Americas, Europe, Africa and the Middle East (%)

Europe

Table 3-6 Cumulative PV Installations - Spain, Germany, Italy (2006-2010) (MW)

Figure 3-9 Year-over-Year Growth in PV Installed Capacities under Feed-In-Tariff Schemes - Spain, Germany, Italy (2006-2010) (%)

Figure 3-10 Cumulative European PV Production Capacity Additions by Country (2006-2010)

Figure 3-11 European PV Production Capacity Additions (2006-2010) (MW)

Table 3-7 European PV Production Capacity Additions (2006-2010) (MW)

Figure 3-12 PV Production Capacity Investment in Europe (2006-2010; 2011-2015; 2016-2020) (% of total capacity)

Figure 3-13 European PV Production Capacity Installations (2010-2020) (MW)

Table 3-8 European PV Production Capacity Additions (2011-2020) (MW)

Figure 3-14 Thin Film PV Production Capacity Additions by Country/Region - Europe (2011-2020) (%)

Asia/Pacific

Figure 3-15 Asia/Pacific PV Production Capacity Additions (2006-2010) (MW)

Table 3-9 Asia/Pacific PV Production Capacity Additions (2006-2010) (MW)

Figure 3-16 Comparative Annual Thin Film PV Production Capacity Additions in the Americas, Europe and Asia/Pacific (MW) (2006-2010)

Figure 3-17 Thin Film Silicon PV Production Capacity Additions in China, Taiwan, Japan and Other Asia/Pacific Countries (MW) (2006-2010)

Figure 3-18 Asia/Pacific PV Production Capacity Installations (2010-2020) (MW)

Table 3-10 Asia/Pacific PV Production Capacity Additions (2011-2020) (MW)

Figure 3-19 PV Production Capacity Investment in Asia/Pacific (2006-2010; 2011-2015; 2016-2020) (% of total capacity)

Figure 3-20 Thin Film PV Production Capacity Additions by Country/Region - Asia/Pacific (2011-2020) (%)

Africa and the Middle East

Figure 3-21 Thin Film PV Production Capacity Additions in Africa and the Middle East by Technology (2014-2020) (%)

Trends in Thin Film and Crystalline Silicon PV Product Prices

Silicon Price Trends

Figure 3-22 U.S. Prices for Silicon Metal (1996-2010)

Prices and Demand for Thin Film Materials

Figure 3-23 U.S. Price Trends for Thin Film PV Materials (Copper, Gallium, Indium, Selenium, Tellurium) (1996-2010)

Table 3-11 U.S. Prices for Thin Film PV Materials (1995-2010) (real \$/metric ton)

Cost Reductions in PV Manufacturing

Trends in PV Technology Efficiency

Historical Trends and Advances in PV Efficiency

Figure 3-24 Best Research Cell Efficiencies by PV Technology (1975-2011)

Table 3-12 Best Research Cell Efficiencies by PV Technology (1975-2011) (%)

Efficiency and PV Sales

Efficiency and Rated Production Capacities

PV Products as Commodities

Summary

CHAPTER 4 MARKETS FOR THIN FILM PV MANUFACTURING EQUIPMENT

Scope

Markets by Technology

Cadmium Telluride

Figure 4-1 CdTe Thin Film PV Production Capacity Additions by Producer (Historical: 2006-2010) (% of MW)

Figure 4-2 Global Market for CdTe Thin Film PV Manufacturing Equipment (Historical: 2006-2010) (\$ millions)

Table 4-1 CdTe Thin Film PV Manufacturing Equipment Markets - Americas, Europe, Asia/Pacific (Historical: 2006-2010) (\$ millions)

Figure 4-3 CdTe Thin Film PV Manufacturing Equipment Markets by Country
(Historical: 2006-2010) (\$ millions)

Figure 4-4 Global Market for CdTe Thin Film PV Manufacturing Equipment (Projected:
2011-2020) (\$ millions)

Table 4-2 CdTe Thin Film PV Manufacturing Equipment Markets - Americas, Europe,
Asia/Pacific, Africa and the Middle East (Projected: 2011-2020) (\$ millions)

Figure 4-5 CdTe Thin Film PV Manufacturing Equipment Markets by Country
(Projected: 2011-2015) (\$ millions)

Figure 4-6 CdTe Thin Film PV Manufacturing Equipment Markets by Country
(Projected: 2016-2020) (\$ millions)

Thin Film Silicon

Figure 4-7 Global Market for Thin Film Silicon PV Manufacturing Equipment (Historical:
2006-2010) (\$ millions)

Table 4-3 Thin Film Silicon PV Manufacturing Equipment Markets - Americas, Europe,
Asia/Pacific (Historical: 2006-2010) (\$ millions)

Figure 4-8 Thin Film Silicon PV Manufacturing Equipment Markets by Country
(Historical: 2006-2010) (\$ millions)

Figure 4-9 Global Market for Thin Film Silicon PV Manufacturing Equipment
(Projected: 2011-2020) (\$ millions)

Table 4-4 Thin Film Silicon PV Manufacturing Equipment Markets - Americas, Europe,
Asia/Pacific, Africa and the Middle East (Projected: 2011-2020) (\$ millions)

Figure 4-10 Thin Film Silicon PV Manufacturing Equipment Markets by Country
(Projected: 2011-2015) (\$ millions)

Figure 4-11 Thin Film Silicon PV Manufacturing Equipment Markets by Country
(Projected: 2016-2020) (\$ millions)

CIGS

Figure 4-12 Global Market for CIGS Thin Film PV Manufacturing Equipment
(Historical: 2006-2010) (\$ millions)

Table 4-5 CIGS Thin Film PV Manufacturing Equipment Markets - Americas, Europe,
Asia/Pacific (Historical: 2006-2010) (\$ millions)

Figure 4-13 CIGS Thin Film PV Manufacturing Equipment Markets by Country
(Historical: 2006-2010) (\$ millions)

Figure 4-14 Global Market for CIGS Thin Film PV Manufacturing Equipment
(Projected: 2011-2020) (\$ millions)

Table 4-6 CIGS Thin Film PV Manufacturing Equipment Markets - Americas, Europe,
Asia/Pacific, Africa and the Middle East (Projected: 2011-2020) (\$ millions)

Figure 4-15 CIGS Thin Film PV Manufacturing Equipment Markets by Country
(Projected: 2011-2015) (\$ millions)

Figure 4-16 CIGS Thin Film PV Manufacturing Equipment Markets by Country

(Projected: 2016-2020) (\$ millions)

Multijunction

Figure 4-17 Global Market for Multijunction (III-V) Cell Manufacturing Equipment (Historical: 2006-2010) (\$ millions)

Figure 4-18 Global Market for Multijunction (III-V) Cell Manufacturing Equipment - Americas, Europe, Asia/Pacific (Projected: 2011-2015 [Cumulative]) (\$ millions)

Figure 4-19 Global Market for Multijunction (III-V) Cell Manufacturing Equipment - Americas, Europe, Asia/Pacific (Projected: 2016-2020 [Cumulative]) (\$ millions)

Organic

Figure 4-20 Global Market for Organic TFPV Manufacturing Equipment - Americas, Europe (Projected: 2011-2015 [Cumulative]) (\$ millions)

Figure 4-21 Global Market for Organic TFPV Manufacturing Equipment - Americas, Europe, Asia/Pacific, Africa/Middle East (Projected: 2016-2020 [Cumulative]) (\$ millions)

Dye-Sensitized

Figure 4-22 Global Market for Dye-Sensitized Thin Film PV Manufacturing Equipment (Historical: 2006-2010) (\$ millions)

Figure 4-23 Global Market for Dye-Sensitized TFPV Manufacturing Equipment - Americas, Europe, Asia/Pacific, Africa/Middle East (Projected: 2011-2020 [Cumulative]) (\$ millions)

Markets by Equipment Type

Figure 4-24 Compound Annual Rates of Market Growth (CAGR) by Equipment Type (Historical: 2006-2010) (%)

Figure 4-25 Compound Annual Rates of Market Growth (CAGR) by Equipment Type (Historical: 2010-2015) (%)

Figure 4-26 Compound Annual Rates of Market Growth (CAGR) by Equipment Type (Historical: 2015-2020) (%)

Plasma Source Deposition Equipment

Figure 4-27 Markets for Plasma Source Deposition Equipment (including Sputtering and PECVD Equipment) (2006-2020) (\$ millions)

Table 4-7 Markets for Plasma Source Deposition Equipment (including Sputtering and PECVD Equipment) (2006-2020) (\$ millions)

Thermal Deposition Equipment

Figure 4-28 Markets for Thermal Deposition Equipment (including Evaporation, Sublimation, MBE, LPCVD, and Selenization Equipment) (2006-2020) (\$ millions)

Table 4-8 Markets for Thermal Deposition Equipment (including Evaporation, Sublimation, MBE, LPCVD, and Selenization Equipment) (2006-2020) (\$ millions)

Printing Deposition Equipment

Figure 4-29 Markets for Inkjet and Screen Printing Equipment (2006-2020) (\$ millions)

Table 4-9 Markets for Inkjet and Screen Printing Equipment (2006-2020) (\$ millions)
Wet Process Equipment

Figure 4-30 Markets for Wet Process Equipment (including Wet Etching Benches/CBD Equipment/Washers/Chemical Layer Activation Equipment) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Thermal Processing Equipment

Table 4-10 Markets for Wet Process Equipment (including Wet Etching Benches/CBD Equipment/Washers/Chemical Layer Activation Equipment) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Figure 4-31 Markets for Thermal Processing Equipment (including Furnaces/Annealing/Layer Activation/Sintering) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Table 4-11 Markets for Thermal Processing Equipment (including Furnaces/Annealing/Layer Activation/Sintering) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Laser Tools

Figure 4-32 Markets for Laser Tools - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Table 4-12 Markets for Laser Tools - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Water , Gas and Chemical Treatment Equipment

Figure 4-33 Markets for Water, Gas and Chemical Treatment Equipment - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Table 4-13 Markets for Water, Gas and Chemical Treatment Equipment - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Product Conveyance and Handling Systems

Figure 4-34 Markets for Product Handling and Conveyance Systems (including Automation / MES / Robotics / Metrology) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Table 4-14 Markets for Product Handling and Conveyance Systems (including Automation / MES / Robotics / Metrology) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Back-End Equipment

Figure 4-35 Markets for Back-End Equipment (including Buswire Application, Junction, Testing/Simulation, Lamination/Encapsulation) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Table 4-15 Markets for Back-End Equipment (including Buswire Application, Junction, Testing/Simulation, Lamination/Encapsulation) - Americas, Europe, Asia/Pacific, Africa/Middle East (2006-2020) (\$ millions)

Employment in Thin Film PV Equipment Manufacturing

Figure 4-36 Global Employment in the Thin PV Manufacturing Equipment Production and Support (Customer Service / Installation / Contracting / Sales / Marketing / R&D) (2006-2020)

Table 4-16 Global Employment in the Thin PV Manufacturing Equipment Production and Support (Customer Service / Installation / Contracting / Sales / Marketing / R&D) (2006-2020)

Summary

Figure 4-37 Global Market for Thin Film PV Manufacturing Equipment by TFPV Technology (Projected: 2006-2020) (\$ millions)

Figure 4-38 Global Market for Thin Film PV Manufacturing Equipment by Equipment Type (Projected: 2006-2020) (\$ millions)

CHAPTER 5 EQUIPMENT MANUFACTURER PROFILES

Scope

Methodology and Selection of Profiles

Apollo Solar Energy Technology

Corporate Background

Product Portfolio

Table 5-1 Apollo Solar Energy Technology TFPV Manufacturing Equipment Performance

Figure 5-1 Financial Performance of Apollo Solar Energy Technology Holdings Ltd., 2006-2010 (in millions of HK\$)

Company News

Expansion

Acquisitions and Divestitures

Orders and Innovation

Outlook

Applied Materials

Corporate Background

Product Portfolio

Table 5-2 Applied Materials TFPV Manufacturing Equipment Performance

Figure 5-2 Financial Performance of Applied Materials' Energy and Environmental Solutions Segment, FY 2006-2010 (in millions of \$)

Company News

Orders and Innovation

Acquisitions and Divestitures

Outlook

BTU International

Corporate Background

Product Portfolio

Table 5-3 BTU International TFPV Manufacturing Equipment

Performance

Figure 5-3 Financial Performance of BTU International, 2006-2010 (in millions of \$)

Company News

Expansion

Orders and Innovation

Outlook

Personnel Changes

Centrotherm Photovoltaics

Corporate Background

Product Portfolio

Table 5-4 Centrotherm Photovoltaics TFPV Manufacturing Equipment

Performance

Figure 5-4 Financial Performance of Centrotherm Photovoltaics AG, FY 2006-2010 (in millions of €)

Company News

Market Expansion

Orders and Innovation

Acquisitions and Divestitures

Outlook

Personnel Changes

Coherent

Corporate Background

Product Portfolio

Table 5-5 Coherent TFPV Manufacturing Equipment

Performance

Figure 5-5 Financial Performance of Coherent in the Microelectronics Market, 2006-2010 (in millions of \$)

Company News

Expansion

Orders and Innovation

Acquisitions and Divestitures

Outlook

Edwards Vacuum

Corporate Background

Product Portfolio

Table 5-6 Edwards Vacuum TFPV Manufacturing Equipment

Company News

Expansion

Acquisitions and Divestitures

Outlook

Personnel Changes

Gebr. Schmid

Corporate Background

Product Portfolio

Table 5-7 Gebr. Schmid TFPV Manufacturing Equipment

Company News

Expansion

Orders and Innovation

Acquisitions and Divestitures

Outlook

GreenSolar

Corporate Background

Product Portfolio

Table 5-8 GreenSolar TFPV Manufacturing Equipment

Company News

Expansion

Orders and Innovation

Outlook

Grenzebach

Corporate Background

Product Portfolio

Table 5-9 Grenzebach TFPV Manufacturing Equipment

Company News

Outlook

Personnel Changes

Leybold Optics

Corporate Background

Product Portfolio

Table 5-10 Leybold Optics TFPV Manufacturing Equipment

Company News

Orders and Innovation

Outlook

Manz Automation

Corporate Background**Product Portfolio**

Table 5-11 Manz Automation TFPV Manufacturing Equipment

Performance

Figure 5-6 Financial Performance of Manz Automation AG's Solar business unit, FY 2006-2010 (in millions of €)

Company News**Orders and Innovation****Acquisitions and Divestitures****Outlook****Mirle Automation****Corporate Background****Product Portfolio**

Table 5-12 Mirle Automation TFPV Manufacturing Equipment

Performance

Figure 5-7 Financial Performance of Mirle Automation, 2006-2010 (in millions of TW\$)

Company News**Orders and Innovation****Outlook****Oerlikon Solar****Corporate Background****Product Portfolio**

Table 5-13 Oerlikon Solar TFPV Manufacturing Equipment

Performance

Figure 5-8 Financial Performance of Oerlikon Solar, FY 2006-2010 (in millions of CHF)

Company News**Market Expansion****Orders and Innovation****Acquisitions and Divestitures****Outlook****Personnel Changes****Pall Corporation****Corporate Background****Product Portfolio**

Table 5-14 Pall Corporation TFPV Manufacturing Equipment

Performance

Figure 5-9 Financial Performance of Pall Corporation in the Microelectronics Market, 2006-2010 (in millions of \$)

Company News

Expansion

Outlook

Personnel Changes

Roth & Rau

Corporate Background

Product Portfolio

Table 5-15 Roth & Rau TFPV Manufacturing Equipment

Performance

Figure 5-10 Financial Performance of Roth & Rau AG's PV Segment FY 2006-2010

(in millions of €)

Company News

Orders and Innovation

Acquisitions and Divestitures

Outlook

Singulus

Corporate Background

Product Portfolio

Table 5-16 Singulus TFPV Manufacturing Equipment

Performance

Figure 5-11 Financial Performance of Singulus' Solar Segment, 2006-2010 (in millions of €)

Company News

Expansion

Orders and Innovation

Acquisitions and Divestitures

Outlook

Smit Ovens

Corporate Background

Product Portfolio

Company News

Expansion

Orders and Innovation

Outlook

Tokyo Electron

Corporate Background

Product Portfolio

Performance

Figure 5-12 Financial Performance of Tokyo Electron's FPD/PV Production Equipment business segment, FY 2006-2010 (in billions of Japanese yen [¥])

Company News

Orders and Innovation

Outlook

ULVAC

Corporate Background

Product Portfolio

Table 5-17 ULVAC TFPV Manufacturing Equipment

Performance

Figure 5-13 Financial Performance of ULVAC's PV Production Equipment Segment, 2006-2010 (in billions of ¥)

Company News

Expansion

Orders and Innovation

Outlook

Veeco Instruments

Corporate Background

Product Portfolio

Table 5-18 Veeco Instruments TFPV Manufacturing Equipment

Performance

Figure 5-14 Financial Performance of Veeco Instruments' LED & Solar Process Equipment Product Segment, 2006-2010 (in millions of \$)

Company News

Orders and Innovation

Acquisitions and Divestitures

Outlook

Personnel Changes

Von Ardenne Anlagentechnik

Corporate Background

Product Portfolio

Table 5-19 Von Ardenne Anlagentechnik TFPV Manufacturing Equipment

Company News

Expansion

Orders and Innovation

Outlook

I would like to order

Product name: Thin Film Solar PV Manufacturing Equipment Worldwide

Product link: <https://marketpublishers.com/r/TB4C1048E30EN.html>

Price: US\$ 4,950.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/TB4C1048E30EN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970