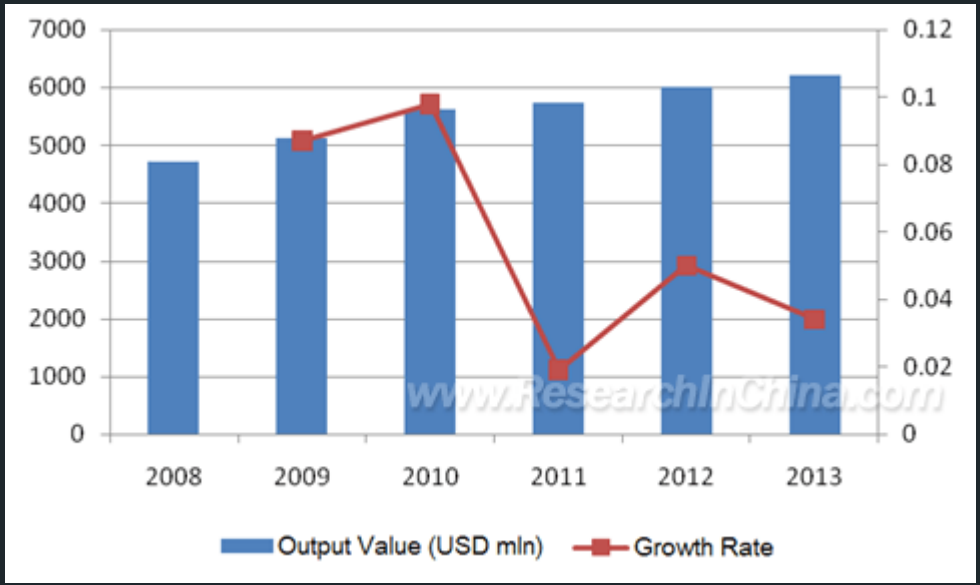
Global and China Solar Cell (Photovoltaic) Equipment Industry Report, 2010

The equipment expenditure of the thin film photovoltaic cell industry is much higher than that of traditional crystalline silicon photovoltaic cell industry. With the decline of the polysilicon price since H2 2008, the advantages of thin film photovoltaic cells in low-cost raw materials have become less impressive. Many manufacturers have become extremely cautious about or even stopped investing in the field of thin film photovoltaic cells, resulting in the decline of PV equipment industry. But, Chinese manufacturers of crystalline silicon photovoltaic cells have improved capacity significantly in 2010 to offset the decline of thin film photovoltaic cell equipment.

In H2 2010, the polysilicon price began to soar. It's expected that manufacturers may increase the investment in thin film photovoltaic cells, but obviously, the polysilicon price will not skyrocket as in 2008. Therefore, people are still cautious about thin film photovoltaic cells.

Output Value of PV Equipment Industry, 2008-2013



Compared with traditional energy technologies, photovoltaic cell, especially thin film photovoltaic cell, still has lower conversion efficiency, which is a theoretical defect that cannot be removed within 5 to 10 years. PV industry has relatively strong dependence on policies, but many countries will cut government spending and subsidies to reduce their deficits. With rich experience accumulated in the development from 2006 to 2010, PV equipment has already been quite mature. In addition, as many new entrants offer low prices, the unit price has fallen a lot. As a result, PV equipment industry will only see a moderate instead of explosive growth in the future.

Rank of Global PV Equipment Manufacturers by Revenue, 2008-2010

	2008 (USD mln)	2009 (USD mln)	2010 (USD mln)
Applied Materials	808	1155	1156
Oerlikon	598	442	210
Centrotherm	375	646	711
ULVAC	382	405	220
GT Solar	510	682	689
Roth & Rau AG	272	249	302
MEYER BURGER	455	530	892 (including the income from the field of semiconductor wafers)
Manz	237	108	163
Gebr Schmid	502	508	510
Von Ardenne Anlagentechnik	124	182	180
NPC	93	150	176

Applied Materials is the largest semiconductor equipment manufacturer, the second largest TFT-LCD equipment manufacturer and the largest PV equipment manufacturer in the world. Among various types of PV equipment, PECVD is the most expensive. Applied Materials takes a dominant position in PECVD market, with nearly 90% market share. At the end of July 2010, Applied Materials reorganized its Energy and Environmental Solutions (EES) Division which suffered successive operating deficits. The primary business of EES Division is PV equipment. After the reorganization, the company will dispose of Turnkey Solution business which provides complete thin film silicon solar cell production lines, and turn to crystalline silicon solar cell and LED business. In the field of PV equipment, Applied Materials also has strong advantages in wafer cutting equipment, due to its acquisition of Swiss wafer cutting company HCT Shaping Systems for USD475 million in 2007.

Oerlikon is committed to thin film PV equipment. Its performance suffered a substantial decline in H1 2010. The order value fell from SEK497 million in H1 2009 to SEK11 million in H1 2010, down 98%. Japan's ULVAC, also engaged in thin film PV equipment, has the same experience. Fortunately, ULVAC is also the world's largest TFT-LCD equipment manufacturer, and PV equipment only holds a small share in its business.

Centrotherm has the most complete product lines and advanced PECVD technology. Its clients are concentrated in Asia, especially Taiwan. Taiwanese Motech, E-TON, Gintech, Sun Microsystems, Mosel Vitelic Inc., Sun Well Solar, Uniteck, Green Energy Technology, Solartech Energy Corp. and Neo Solar Power all adopt Turnkey Solution of Centrotherm. In 2010, Taiwanese manufacturers have expanded their production, and most of them have adopted the equipment of Centrotherm, pushing Centrotherm to the second place in the world.

GT Solar is a giant of CVD reactor and polycrystalline silicon ingot furnace in the world, and its CVD reactors and silicon ingot furnaces are widely used in the field of polycrystalline silicon which locates at the upstream of photovoltaic industry. In the field of polycrystalline silicon, manufacturers are competing with each other in capacity. GT Solar has made considerable achievements, but in the field of ingot furnaces, Chinese manufacturers have made great efforts to catch up, grabbing some market shares of GT Solar.

Roth & Rau AG a giant of PECVD engaged in CdTe thin film solar cell devices. Although First Solar is almost the only CdTe thin film solar cell company, it has continuously expanded production capacity, which has stabilized the revenue of Roth & Rau AG.

MEYER BURGER is a large Swiss wafer cutting company renowned for diamond cutting technology. In January 2010, the company merged with its Swiss rival 3S Industries to further enhance its strength and scale, which allows it to gain more revenue in 2010.

Gebr Schmid is a leading manufacturer of PCB equipment. Based on years of experience in the field of PCB equipment, it has large shares in PV etching equipment market. Meanwhile, the company works closely with ABB to offer complete industrial robot equipment.

Table of Contents

Selected Charts

- Technology Distribution of PV Cell Industry by Region, 2009
- Global Distribution of PV Cell by Technology, 2009-2014E
- PV Installed Capacity of Germany, 2010-2014E
- PV Installed Capacity of USA, 2010-2014E
- PV Installation of Britain, Apr-Jul 2010
- PV Installed Capacity of Britain, 2010-2014E
- PV Installed Capacity of Japan, 2000-2014E
- PV Installed Capacity of India, 2000-2014E
- PV Installed Capacity of China, 2000-2014E
- PV Installed Capacity of Spain, France, Belgium, Portugal and Greece, 2008-2014
- Capacity and Output of Crystal Silicon Cell in China, 2006-2011
- Chinese PV Power Plant Planning
- Operation Models of PV Power Plants in China
- Accumulative Installed Capacity of German Solar Cell, 2000-2008
- Output of German Solar Cell, 2000-2010
- Polysilicon Refining Process
- Spot Price of Polysilicon, Jan 2009 -Aug 2010
- Global Market Demand for Solar Cell Equipment, 2003-2014
- Output Value of PV Equipment Industry, 2008-2013E
- Production Flow of Polysilicon Solar Cell
- Production Flow of Amorphous Silicon Solar Thin Film Cell
- Output Value of Global Solar Cell Equipment by Technology, 2008
- Output Value of Global Solar Cell Equipment by Region, 2010
- Organizational Structure of OERLIKON

- Revenue and EBIT Rate of Oerlikon, 2004-2010
- Revenue of Oerlikon by Division, 2007-H1 2010
- Technology Roadmap of Oerlikon
- Organizational Structure of Centrotherm Photovoltaics AG
- Revenue and EBIT of Centrotherm Photovoltaics, 2005-2010
- Revenue of Centrotherm Photovoltaics by Region, 2006-H1 2010
- Revenue of Centrotherm Photovoltaics by Business, 2006-H1 2010
- Revenue of Centrotherm Photovoltaics by Product, 2008-H1 2010
- Order Book of Centrotherm Photovoltaics, June, 2009-June 2010
- Revenue of Centrotherm Photovoltaics by Business, Q3 2009
- Revenue of Centrotherm Photovoltaics by Region, H1 2010
- Revenue of Centrotherm Photovoltaics by Business, H1 2010
- Shipment of Centrotherm Photovoltaics by Product, 2008 vs. Q1-Q3, 2009
- Financial Data of Centrotherm Photovoltaics by Division, H1 2010
- Expenditure of Centrotherm Photovoltaics by Proportion, H1 2010
- Revenue and Operating Margin of ULVAC, FY2004-FY2010E
- Global Presence of ULVAC
- Revenue of ULVAC by Region, FY2002-FY2010
- Quarterly Order Value of ULVAC by Division, FY2010
- Quarterly Revenue of ULVAC by Division, FY2010
- Orders of ULVAC by Division, FY2000-FY2011
- Revenue of ULVAC by Division, FY2000-FY2011
- Revenue of ULVAC by Division, FY2011E
- Orders of ULVAC by Division, FY2011E
- Research Expenditure of ULVAC, FY2000-FY2011
- ULVAC Revenue from Flat-panel Display and Solar Equipment, FY2005-FY2010 vs. FY2014

- Revenue of ULVAC by Region, FY2005-FY2009
- Revenue of GT SOLAR by Business, FY2009-FY2010
- Revenue and Gross Margin of GT Solar, FY2006-FY2010
- Expenditure Distribution of GT Solar, FY2009-FY2010
- Recent Orders of GT Solar
- Revenue of GT Solar by Region, FY2007-FY2010
- Main Customers of GT Solar
- Revenue and EBIT of Roth & Rau AG, 2004-2010E
- EBIT of Roth & Rau, Q3 2009
- Revenue of Roth & Rau by Product, H1 2010
- Revenue of Roth & Rau by Region, H1 2010
- Order Intake of Roth & Rau by Product, H1 2010
- Order Intake of Roth & Rau by Region, H1 2010
- Order Backlog of Roth & Rau, H1 2010
- Organizational Structure of MEYER BURGER
- Revenue and Gross Profit of MEYER BURGER, 2006-2010E
- Revenue of MEYER BURGER by Region, H1 2010
- Revenue and Pre-tax Profit of Manz Automation, 2005-2010
- Revenue of Manz Automation by Region and by Business, 2009
- Order Backlog and Revenue by Business of Manz Automation, End of June 2010
- Revenue and Gross Margin of Applied Materials, FY2004-FY2009
- Sales Revenue of Applied Materials by Division, FY2006-FY2009
- New Orders of Applied Materials by Region, Q2-Q3 FY2010
- Revenue of Applied Materials by Region, Q2-Q3 FY2010
- Revenue and Orders of Applied Materials by Division, Q3 FY2010
- Order Backlog of Applied Materials by Division, Q3FY2010

- Operation of New Energy Division of Applied Materials, Q3 FY2010
- Order Value of Applied Materials by Division, FY2006-Jan-Sep FY2010
- Revenue of Applied Materials by Division, FY2006-Jan-Sep FY2010
- Revenue and Gross Margin of Tianlong Photoeletric, 2006-2012
- Organizational Structure of JYT Corporation
- Revenue and Operating Margin of NPC, FY2006-FY2010
- Accumulative Installed Capacity of Major PV Markets, 2001-2009
- Newly-added Installed Capacity of Major PV Markets, 2002-2009
- Global Newly-added PV Installation Demand Distribution by Region, 2000-2014E
- Distribution of Newly-added PV Installation Demand in Europe by Region, 2000-2014E
- Rank of 34 Solar (Photovoltaic) Cell Manufacturers Worldwide by Revenue and Output, 2009-H1 2010
- Gross Profit Margin of Major Photovoltaic Manufacturers Worldwide, H1 2010
- Net Profit of Major Photovoltaic Manufacturers Worldwide, H1 2010
- Capacity and Output of Major Crystal Silicon Cell Manufacturers in China, 2008-2010
- Equipment Source & Capacity of Thin Film Solar Cell Manufacturers in China
- Output Value of German Solar Cell Enterprises, 2004-2009
- Capacity and Output of Leading Polysilicon Manufacturers in the World, 2010-2013E
- Supply and Demand of Polysilicon, 2008-2011E
- Power Generation Cost of CdTe Cell, 2008-2011E
- Core Components of Trough Power Generation Technology
- Major Trough Solar Power Generation Projects in the World
- Major Parabolic Solar Power Generation Projects in the World
- Development Goals for Cost and Performance of Parabolic Solar Power Generation
- Major Tower Solar Power Generation Projects in the World
- Rank of Global PV Equipment Manufacturers by Revenue, 2008-2010

- Revenue of Main Silicon Solar Cell Equipment Manufacturers in China, Jan.-Jun. 2010
- Rank of PV Equipment Manufacturers in China by Revenue, 2009
- Orders, Revenue and EBIT of Oerlink's PV Division, 2007-H1 2010
- Major Customers of Oerlinkon, 2009
- Assets and Net Asset Value of Centrotherm Photovoltaics, 2005-2008
- Employees and Residual Order Value of Centrotherm Photovoltaics, 2005-2009
- Client Structure of GT Solar, FY2007-FY2010
- Financial Data of Manz, 2005-2009

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