

Corporate Presentation

iNDOSOLAR LIMITED



- Project being set up with a capital investment of over \$500 million to reach 560MWp capacity by 2012 for Multi and Mono Crystalline Photovoltaic Cells.
- Currently 160MW - Multi Crystalline Cells in full production.
- Turnkey Installation by Schmid Technology Systems GmbH, Germany.
- Fully Automated new generation - Wafer to Cell production line.
- 300,000 sq. ft. , Most compact PV cell facility under one roof.
- India's first to manufacture LIP (Light Induced Plating) for production of Multi crystalline PV Cells.
- Manufacturing using LIP + SE technology Mono Crystalline Cells by Q4 2011
- Concept to commissioning in just 14 Months

- Promoted by **Mr. B. K. Gupta** and his son, **Mr. H. R. Gupta**, Founder Chairman and Managing Director - Phoenix Lamps Limited, India. (1989-2007)
- *Pioneers* in bringing Halogen and Compact Fluorescent Lamp technology to India in 1989.
- Controlled –
 - 98%** of the Indian market share in **Halogen Lamp** with automatic lines from Japan. (as of 2007)
 - 55%** of the share in **Compact Fluorescent Lamp (CFL)** Market with automatic lines from UK. (as of 2007)
- Combined experience of over 75 year in the field of manufacturing of High Technology Products and International Business.



Vision

More than an industrial venture we are a mission, a challenge and a commitment to make the world self-reliant in clean energy.

- *Mr. B.K. Gupta, Chairman*

Mission

To be the market leader and preferred suppliers for our customers. We are producing 160MWp and targeting to reach 360MW by 2012 & taking the cell production ultimately to 1 GWp.

PROJECT SITE, MARCH 2008



STATUS AS ON MAY 2009



PROJECT DIVIDED IN II PHASES:

- **Phase I - Multi Crystalline Silicon Cells**
Consists of 2 lines of 80 MW each for a total of 6000 Multi Crystalline wafers processing capacity per hour on an in-line automated production system equipped with LIP technology for higher cell efficiencies with average efficiency of 16.20%.
- **Phase II - Multi & Mono Crystalline Cells**
Consists of 4 lines of 100 MW each for a total of 13,200 Multi & Mono Crystalline wafers per hour in a in-line automated production system equipped with SE technology for higher cell efficiencies range of 17% to 18%
- **The Production lines have been bought on a turn key basis from Schmid, Germany, which includes a technology collaboration with ISE, Fraunhofer and a 5 years technology upgradation.**



CTO: Dr. D. N. Singh, M. Sc (Electronics), Ph.D from IIT Delhi, has over 35 years of experience in Semiconductor Technology and VLSI Design,



AGM: C M Mauli, M. Sc (Electronics) has over 12 years of experience in Production in PV.



DGM (Quality): Rajeev Bhoosan Gupta, M.Sc material Science & technology, has over 15 years of experience in Quality and New Product Development in PV.

Office Block



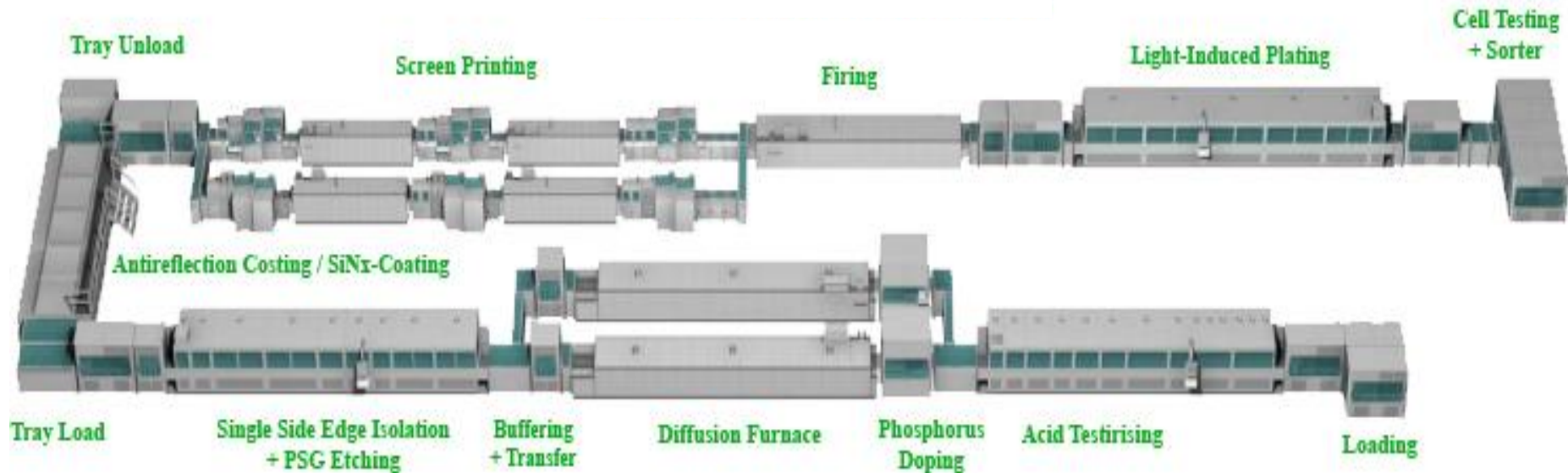
CONFIDENTIAL

Utilities (Basement)





Photovoltaic Cell Production Line



MECHANICAL DATA AND DESIGN

Product Format	: 156 mm X 156 mm \pm 0.5 mm
Average thickness	: 220 μ m \pm 30 μ m
Substrate Material	: p-Type multi crystalline silicon wafer
Front contact (-)	: 2 mm (2 nos) wide bus bar (Silver) Improved contact by Ag LIP process
Back Contacts (+)	: 3 mm (2 nos) wide soldering pads (Silver) with Aluminum back surface field
Anti reflection coating:	Blue Anti-reflecting coating (Silicon Nitride)

TEMPERATURE COEFFICIENT

Tk Voltage	: -0.37%/K
Tk Current	: +0.06%/K
Tk Power	: -0.47%/K

PRODUCT DETAILS (ELECTRICAL)

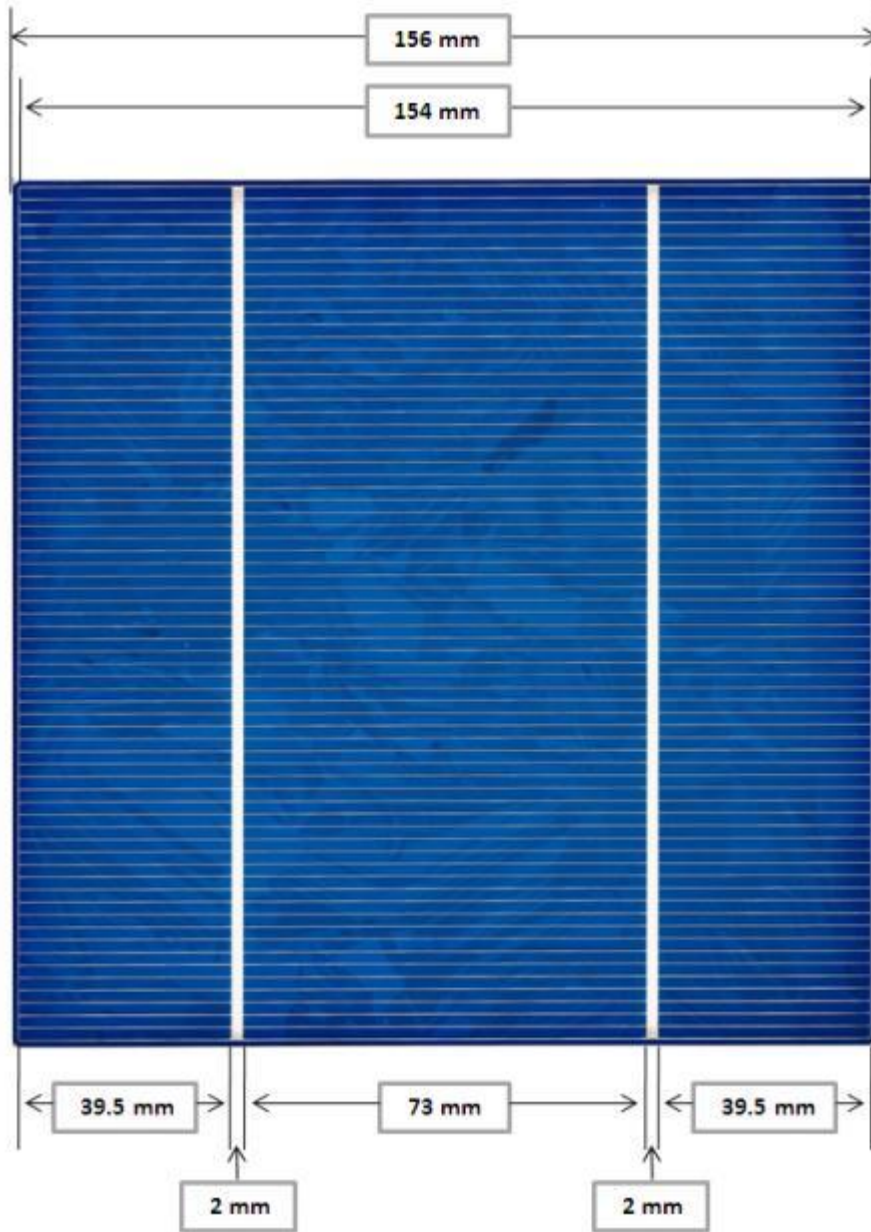
Part No.	Efficiency (%)	P _m (Wp)	V _{mp} (V)*	I _{mp} (A)*	V _{oc} (V)*	I _{sc} (A)*	Current (A) at 0.5 V
I6MU1660	16.60	4.03	0.516	7.781	0.621	8.391	≥8.00
I6MU1640	16.40	3.99	0.513	7.760	0.617	8.250	≥7.89
I6MU1620	16.20	3.94	0.511	7.701	0.615	8.240	≥7.82
I6MU1600	16.00	3.89	0.509	7.635	0.613	8.160	≥7.75
I6MU1580	15.80	3.85	0.508	7.578	0.612	8.110	≥7.65
I6MU1560	15.60	3.80	0.505	7.510	0.610	8.060	≥7.57
I6MU1540	15.40	3.75	0.504	7.443	0.608	8.000	≥7.49
I6MU1520	15.20	3.70	0.501	7.384	0.606	7.940	≥7.39
I6MU1500	15.00	3.65	0.498	7.324	0.603	7.880	≥7.30

Note: All data are at Standard Testing Condition i.e. Irradiance 1000 W/m² with AM1.5 spectrum, Cell temperature 25°C. Test method according to IEC-60904-1

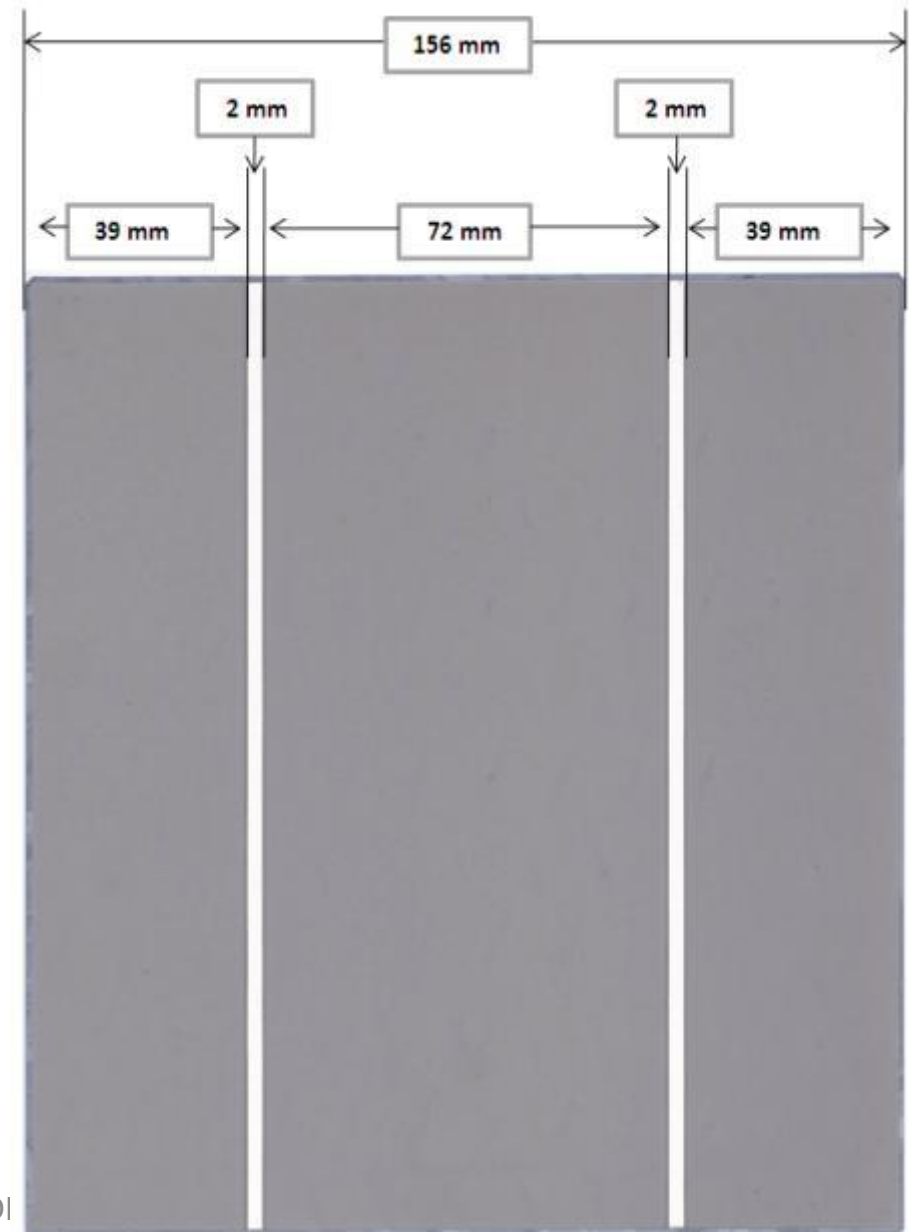
Tolerance Efficiency: \pm 0.2% abs, PMPP (P_m): \pm 1.5% rel.

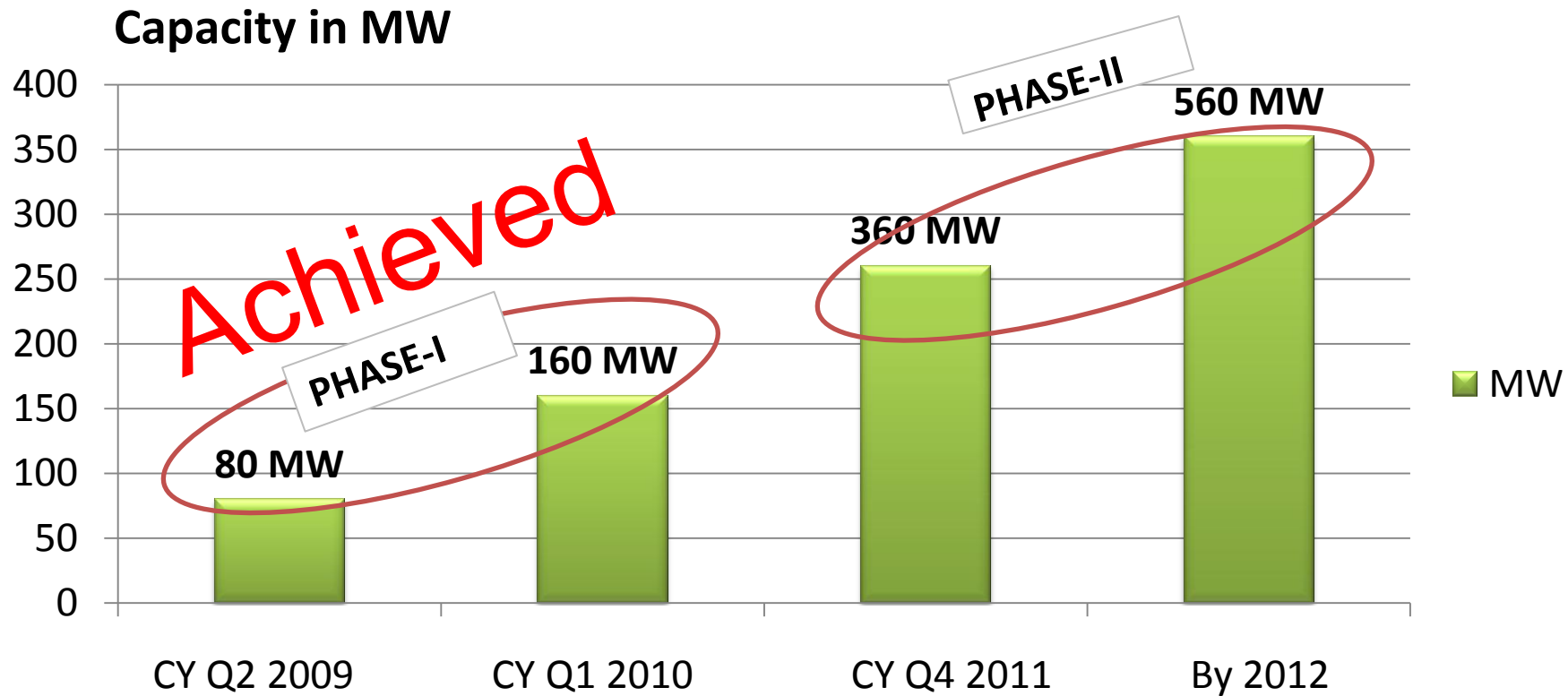
* These column gives typical average value of current production performance and subject to change time to time as process keeps on improving

Photovoltaic Cell Dimensions



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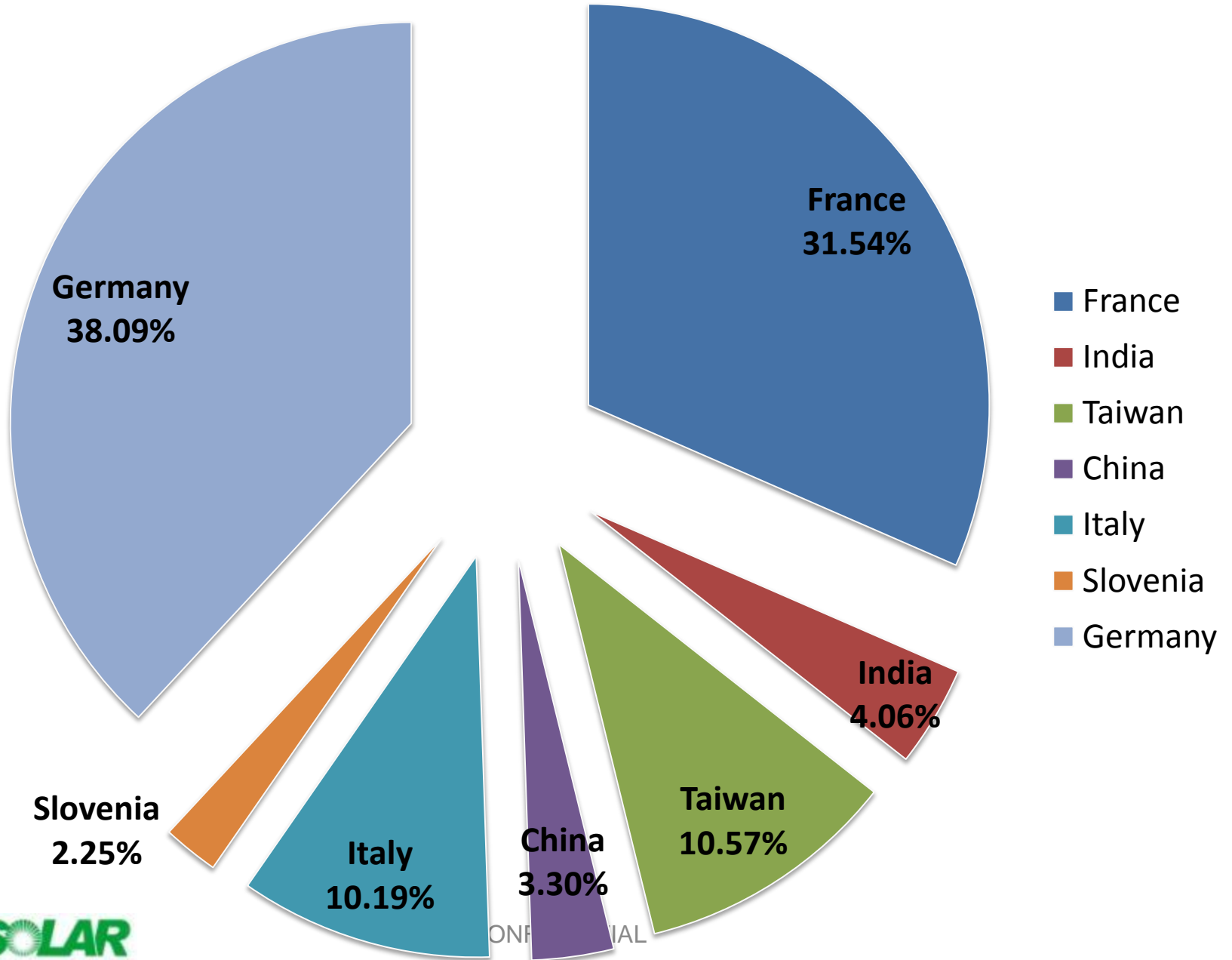


Line 1 - Multi Crystalline - LIP line of 80 MW (in Commercial Production)

Line 2 - Multi Crystalline - LIP line of 80 MW (in Commercial Production from March 2010)

Line 3 - Multi / Mono Crystalline - SE line of 200 MW (Ordered , Commercial Production in Q4 '2011)

Line 4 - Mono Crystalline - LIP + SE line of 100 MW (To be ordered in 2011)



Certification

ISO : 9001 – 2008
(Quality Management System)

ISO : 14001 – 2004
(Environmental Management System)

OHSAS : 1801 – 2007
(Occupation Health and Safety
Assessment Series)

By : TUV NORD



High Efficiency
Multi-crystalline PV Cells

Manufactured using Light Induced Plating (LIP) Technology

iNDOSOLAR™

CON



Thank You ...

iNDOSOLAR LIMITED

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