



TPS Corporate Overview

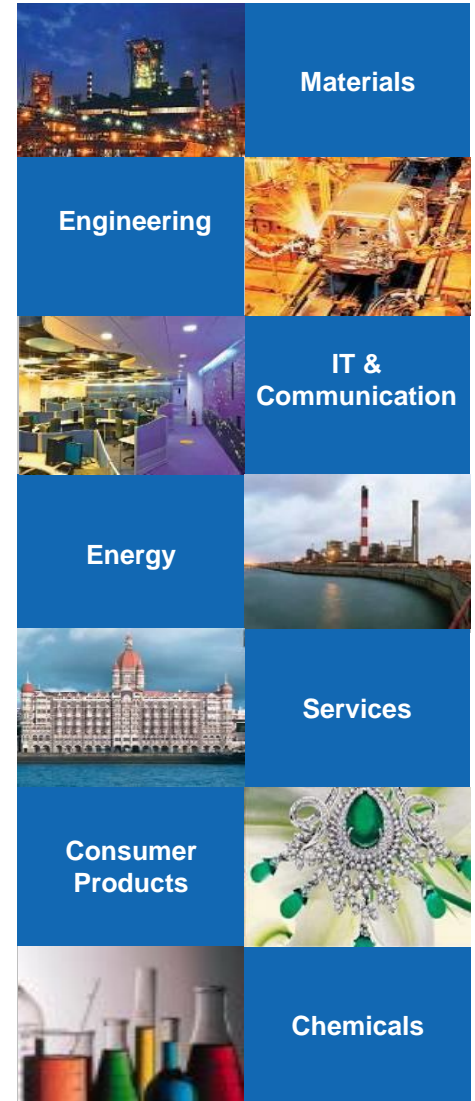
Manufacturing, Projects and Products

A **global** business group with revenues of **\$100bn** and products and services in over **150** countries

Over **half a million** employees and operations in over **150** countries

Group revenue of over **67%** generated in geographies other than India

Global leader in several sectors



Tata Power Solar (TPS) has a rich legacy of **over two decades of pioneering excellence in Solar**

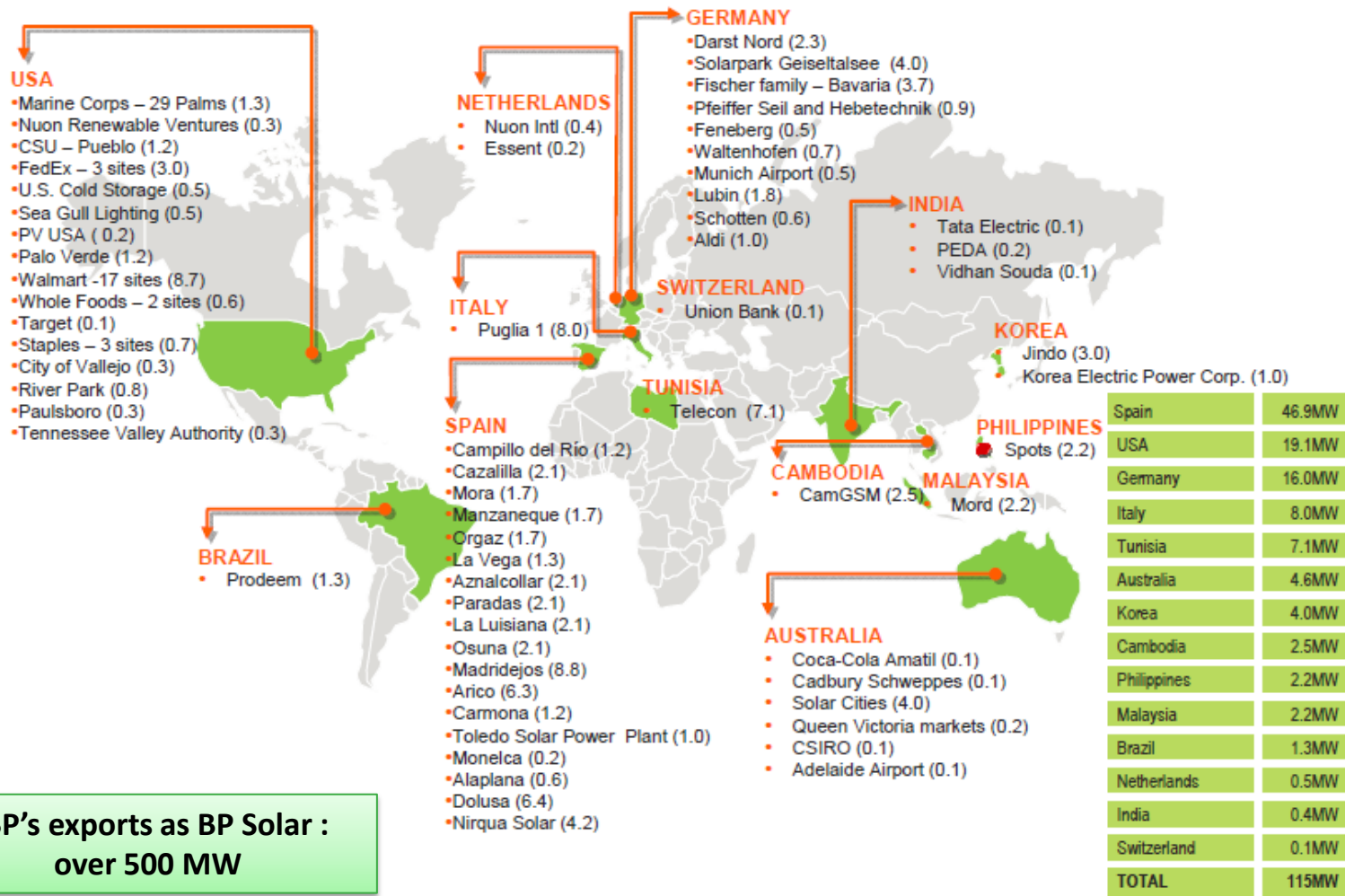
- ❑ Established in 1989, Tata Power Solar (formerly Tata BP Solar) was a joint venture between Tata Power and BP Solar
- ❑ As of August 2012, it is a wholly owned subsidiary of Tata Power, India's largest integrated power utility which is part of the global \$100bn Tata Group
- ❑ Tata Power Solar is based in Bangalore, India's Silicon Valley, where it operates 200MW of manufacturing facilities and cell capacity of 180MW. The manufacturing plant is ISO 9001 and 14001 along with OHSAS 18001.
- ❑ Tata Power Solar now is a fully integrated Solar Solutions provider covering :
 - Manufacturing of cells and modules
 - Large projects and industrial solutions
 - Solar products and water heaters



Tata Power Solar module manufacturing facility

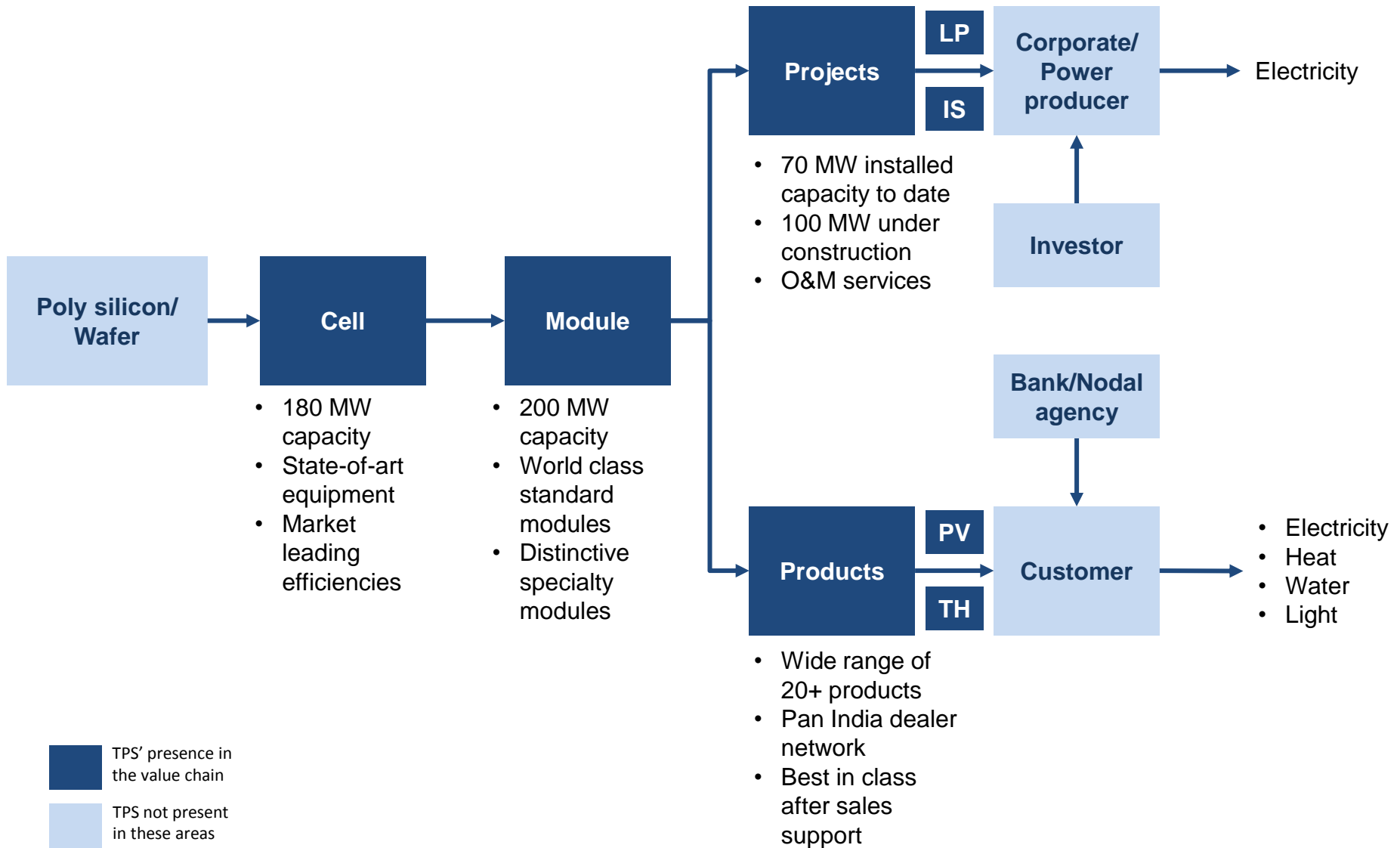
BP Solar's Track Record Completed Turnkey Projects: 115MW

**BP Solar Installed Capacity:
1 GW in more than 160 countries**



**TBP's exports as BP Solar :
over 500 MW**

Where we play in the solar value chain?



Tata Power Solar is the largest integrated solar solutions provider in India
Rich legacy of over two decades of pioneering excellence in solar



Manufacturing

- Module Manufacturing
 - Manufacturing capacity of 200 MW
 - Produces both standard (60/72 cell) and specialty modules (2W-100W)
 - More than 500 MW of modules shipped worldwide
- Cell Manufacturing
 - 180 MW of capacity with market leading efficiency
 - Both mono and multi cells

Projects

- Large Projects
 - Strong EPC expertise for 3+ years executing diverse projects of multiple sizes across India
 - 70 MW commissioned till date and 100 MW under construction
 - Lifetime O&M services
- Industrial Solutions
 - 18+ years of experience with 1000+ installations nationwide
 - 60+ installations under progress

Products

- PV Products
 - 15+ years history of a broad range of proven solar products
 - Range of 20+ products in market (home/street lighting systems, solar water pumps, power packs, etc.)
- Water Heaters
 - 18+ years of experience delivering high quality, reliable products
 - Available in 3 ranges – Zing, Duro & Ultima
 - Strong network of 130+ dealers across India

High Quality Materials

- Only carefully selected and high quality materials and components go into our modules
- BOM fixed for past 8 years based on rich experience of what works best
- Stringent incoming quality checks and vendor evaluation

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Best-in-class Equipment

- High quality best-in-class equipments
 - Advanced auto tabber & stringer (closed loop soldering; 1500cells/hr & above)
 - Critical Equipments from Europe, Japan and USA

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Excellent Workmanship

- Processes established with BP Solar, pioneer in the Industry
- Most workers have years of experience in manufacturing modules
- Extreme focus on quality – Designed to deliver beyond the lab tests

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Assured Bankability

- Backed by India's largest and most trusted business house - \$100 billion+ Tata Group
- One of the few companies globally with 25+ years of Industry experience



**TP250 Series
Multi-Crystalline
Modules**



**TP300 Series
Multi-Crystalline
Modules**

Characteristics

- Available in the range of 230-310W
- Internationally certified by TUV, IEC, UL
- Modules with positive power tolerance of 0 ~ +5 W
- Torsion and corrosion resistant anodized aluminium frame
- Optimized edge clearance for high quality rugged design
- Ability to withstand high wind pressure and snow loads

Unique features	Benefits
Anti-reflective glass (ARC glass)	High energy yield
High fill factor	Improved energy conversion efficiency
Ultra-soft interconnect with stress relief	Enhanced reliability
Unique output termination using spot soldering	Improved product longevity and reliability
Unique back sheet design	Use even under corrosive environments

■ Features

- Up to 260 W peak power
- Module efficiency > 15 %
- Positive Tolerance 0 to +5 W
- 60 (156mm) Multi-Crystalline PV cells
- High energy yield ARC glass
- Anodized Aluminium frame
- 1666x1000x40 mm
- Ability to withstand high wind pressure and snow loads
- Backed by TPSS 25 year Linear module warranty



TP250 Series
Multi-Crystalline Modules

■ Features

- Up to 310 W peak power
- Module efficiency > 15 %
- Positive Tolerance 0 to +5 W
- 72 (156mm) Multi-Crystalline PV cells
- High energy yield ARC glass
- Anodized Aluminium frame
- 1984x1000x40 mm
- Ability to withstand high wind pressure and snow loads
- Backed by TPSS 25 year Linear module warranty



TP300 Series
Multi-Crystalline Modules

Industry leading international warranty

- 10 year limited product warranty
 - Covering defects in design, material, workmanship or manufacture
- 25 year limited power output warranty

	1 st Year	Thereafter
Multi-Crystalline	2.5 %	0.70 % per year with minimum 90% in 10 th year and 80 % in 25 th year
Mono-Crystalline	3.5 %	0.68 % per year with minimum 90% in 10 th year and 80 % in 25 th year

TATA POWER SOLAR SYSTEMS LIMITED

LIMITED WARRANTY CERTIFICATE FOR PHOTOVOLTAIC MODULES – TP SERIES

TPS-GEN-001 Rev 2, March 10, 2014

This limited warranty is valid for the Products supplied on or after March, 10 2014 and shall continue to remain valid unless modified in accordance with the terms and conditions contained herein.

Tata Power Solar Systems Limited, having its registered office at Plot No.78, Electronics City Phase I, Hosur Road, Bangalore - 560100, India ("Tata Power Solar") provides the following limited warranties to its Buyers (as defined below), subject to the exclusions contained in Section 3, and in Section 4 hereof.

This warranty is only available to a customer who has purchased the Product(s) from Tata Power Solar or from Tata Power Solar's authorized dealers/distributors and has installed such Product for its own use ("Buyer") as an integral part of the solar plant of the Buyer. In case of transfer of ownership of the Product by the Buyer, the Warranty for the Product shall continue to be applicable so long as such Product continues to remain physically installed in its first installation location in accordance with Clause 8 hereof.

Section 1: Warranted product(s)

The limited warranty ("Warranty") shall only apply to the TP Series of modules ("Product(s)") with a nominal power output of greater than or equal to 190W.

Section 2: Warranty Commencement Date

The Warranty commences from the earlier of
 (i) date of delivery of the Product(s) to the Buyer, or
 (ii) 6 months after the date of dispatch of the Product(s) from the Tata Power Solar factory premises ("Warranty Commencement Date").

A Buyer making a claim under this Warranty will have to demonstrate the delivery date by handing in their original invoice or sales receipt to establish the delivery date of the Product.

Section 3: Warranty Descriptions and Warranty Period

The Product(s), depending on their nominal power output indicated in the Product Data Sheet, will have the following product and the power output warranty:

- (i) 10 Year Limited Product Warranty

Subject to terms, conditions and limitations contained herein, Tata Power Solar warrants to the Buyer that for a period of ten years commencing on the Warranty Commencement Date (as defined above), the Product(s):

- (a) will be free from defects in design, material, workmanship or manufacture that materially impede their functioning; and
- (b) will conform to the specifications and drawings of Tata Power Solar.

- (ii) 25 Year Limited Power Output Warranty

Subject to terms, conditions and limitations contained herein, Tata Power Solar

Characteristics

- Wide range – 5W to 100W available
- Industry leading power warranty
- Meets MNRE, DGS&D and STQC specifications for use in Indian market
- Blocking and bypass diode available
- IV curve and specifications available for all products
- UV resistant, weather-proof junction box available

Applications

- Lighting: Indoor, street and lanterns
- Telecommunication and radio relay towers
- Stand alone systems
- Defense and offshore applications
- Solar water pumps
- Signage and flashers

Unique features

Torsion and corrosion-resistant anodized aluminum frames with high strength and mounting holes

High efficiency cells used in modules for applications in which space is a constraint

High transitivity glass used as superstrate

Benefits

Quick and easy installation

Highly customizable solutions

Higher impact resistance



Certified in accordance with IEC 61215 Edition II & IEC 61730
 Protection Class: Class A Installations
 Maximum System Voltage: 1000V



Module Certification

Production facility overview

- 180 MW of cell manufacturing capacity
- 20+ years of production experience
- High quality German equipment and tools

Production facility overview

- Precision cell efficiency sorting procedure
- Stringent criteria for color uniformity and appearance
- Reverse current and shunt resistance screening
- REACH-SVHC test passed, ISO9001, ISO14001 and OHSAS 18001 certified
- Calibrated against Fraunhofer ISE

Features

- Efficiency – 17.6%
- Yield – 97%
- High conversion efficiency, resulting in superior power output
- Outstanding power output even in low light/high temperature
- Optimized design for ease of soldering and lamination
- Long-term stability, reliability and performance
- Low breakage rate
- Color uniformity



Tata Power Solar Client/Partner List



Tata Power Solar is committed to enabling solar everywhere and bringing the power of the Sun to people in the most efficient and cost effective way possible