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# ***‘Development of Solar Power in India’***

## ***An NTPC Perspective***

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***Presentation***

***by***

***Research & Development Centre, NTPC ,Noida***



# NTPC Overview

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- The largest power generation company in India
- Good in-house capabilities in building & operating power projects
- Current operating capacity – 29,000 + MW
- 15 coal based and 8 gas based power plants
- Setting up hydro power plants
- Developing coal mines for captive use
- Exploring oil / gas blocks in consortium with partners
- Subsidiary & JV companies for taking up generation, power trading, distribution business and for setting up of small hydro plants (<250 MW)
- Plans to become 75,000 + MW company by 2017

**Plans to have 1000 MW renewable by 2017- solar included!!!**

# NTPC Overview

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- **One of the largest Indian companies - Market cap > US\$ 28 billion**
- **Net worth – about US\$ 10 billion**
- **Total assets – about US\$ 16 billion**
- **The largest generator in India with 20% of installed capacity & 28% generation of the country**
- **Capacity utilization of NTPC coal plants – 92.24% (2007-08) – one of the world's highest**
- **494<sup>th</sup> largest company in the world**
- **6<sup>th</sup> largest utility in Asia**
- **Government has 89.5% stake**
- **10.5% with public**

**NTPC key strengths – Engineering, project management & plant operations**

# NTPC – Solar Perspective

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Consistently increasing deployment in

- **Building integrated PV systems**
- **Concentrated PV for utility size applications**
- **Solar thermal**
  - **Central receiver etc. for large utility applications (100 MWs)**
  - **Heating & cooling applications**

# NTPC – Solar Perspective

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What we need to work upon:

## Building integrated PV systems

- PV Materials – Single/ poly silicon, thin film, organic polymer & quantum dots
- Low cost production of material, films, cells, module
  - Integration in building *'building'* processes and materials
- Concentrated PV for utility size applications
  - Suitable materials' identification
  - System design, demonstration, optimization – Fresnel, trough, dish, heliostats??
- Solar thermal
  - Receiver Materials (ceramics?)
  - System design, demonstration, optimization – Fresnel, trough, dish, heliostats??

**Energy storage – Power / intermediary fluid ?? -Critical development area**

## **NTPC – Solar – Current activities**

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- **10.5 kW Silicon PV module installed at Jaraha Chetwa, Rihand, UP**
- **More PV systems under planning**
- **Feasibility study under way for solar thermal integration with CCPP at Anta**
- **Planning for ‘big leap’ – Overall ‘Concept Paper’ and Roadmap under finalization**
- **R&D plans under finalization**

# **NTPC – Strengths for Accelerated Solar Development**

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- **Good engineering and project management capabilities**
- **Ready use available in**
  - **Feed water heating systems**
  - **Spare steam turbine capacities in CCPP**
- **Lower demonstration costs due to requirement of ‘only solar component’ BoP available**
- **Power plant operations expertise**
- **Good appreciation of power sector ‘realities’**
- **May support tie-ups with foreign universities/ research institutions**

# Coordinated Research

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## What we bring on table?

- Input for plant design conditions – role of industrial partner
- Good plant design and engineering capabilities
- Good project management and equipment sourcing capabilities
- Making available plants for technology demonstration
- Appropriate funding
- Making available Human Resource- Scientists & engineers
- Making R&D labs/ equipment available

**In fact NTPC can develop & provide a central solar development facility a la Almeria**

# Coordinated Research

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## What we expect?

- Technology / patent ownership or
- First claim on use of developed technology and
- Commercial benefits

**In the overall framework of coordinated research**



**Thanks for kind attention!**

