



Solar Thermal Hybrid Plant at Dadri

Sub Group – 1

Efficiency Enhancement in Fossil Fuel Power Plant

19th May, 2016

Solar Thermal Hybrid Plant at NTPC Dadri

A. Project Details:

1. Location: 210 MWe, Unit-1, Dadri Coal

2. Capacity: 15 MW-Thermal, 3.66 MW-Electric, Efficiency-24.39%

3. Resource:

- **Solar Resource:** DNI 1169 kWh/m²/year
- **Land:** 28 acres
- **Water:** 0.0041 cusec ie 10 TPD (No significant water requirement)

4. Technology:

- **Solar:** Single / Two Axis Tracking, Concentrated Solar Thermal (Technology neutral for the sub variants to increase the vendor participation and get the competitive bids)
- **Power Generation & Evacuation:** Thru existing Turbo-Generator & Switch Yard

Solar Thermal Hybrid Plant at NTPC Dadri

- 5. Project Cost:** Estimated cost is Rs. 69 Cr
- 6. Project Financing:** NTPC, NETRA Budget
- 7. Project Schedule:** 15 Months - from the date of LOA

Additional Information

1. Approved by NTPC Board
2. Considering the potential of this project, MoP has recommended it for Viability Gap Funding under National Clean Energy Fund (NCEF).

Solar Thermal Hybrid Plant at NTPC Dadri

Salient Details:

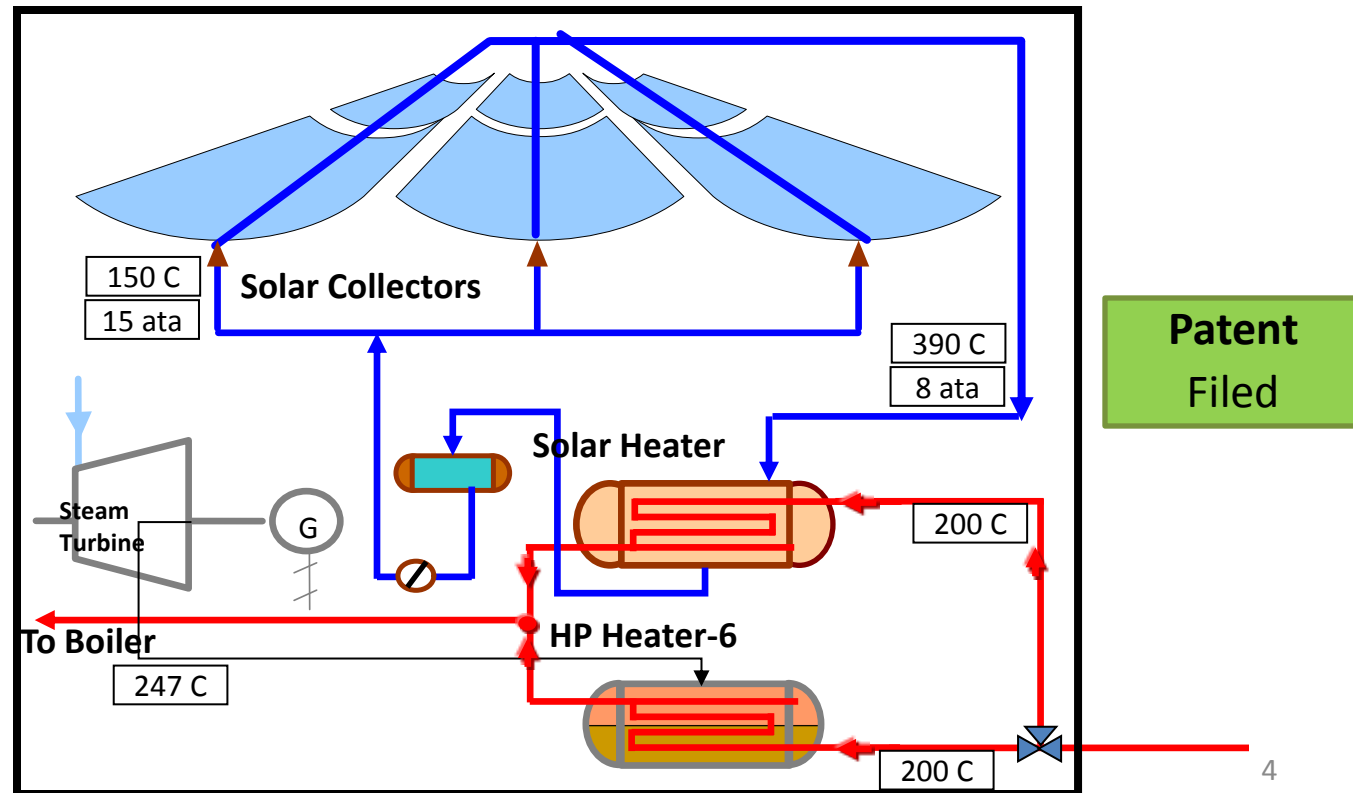
- Solar Block - 15MWTh at 550 DNI
- Solar Thermal in slip stream of HPH-6
- Controls - Feed water flow regulation

Benefits:

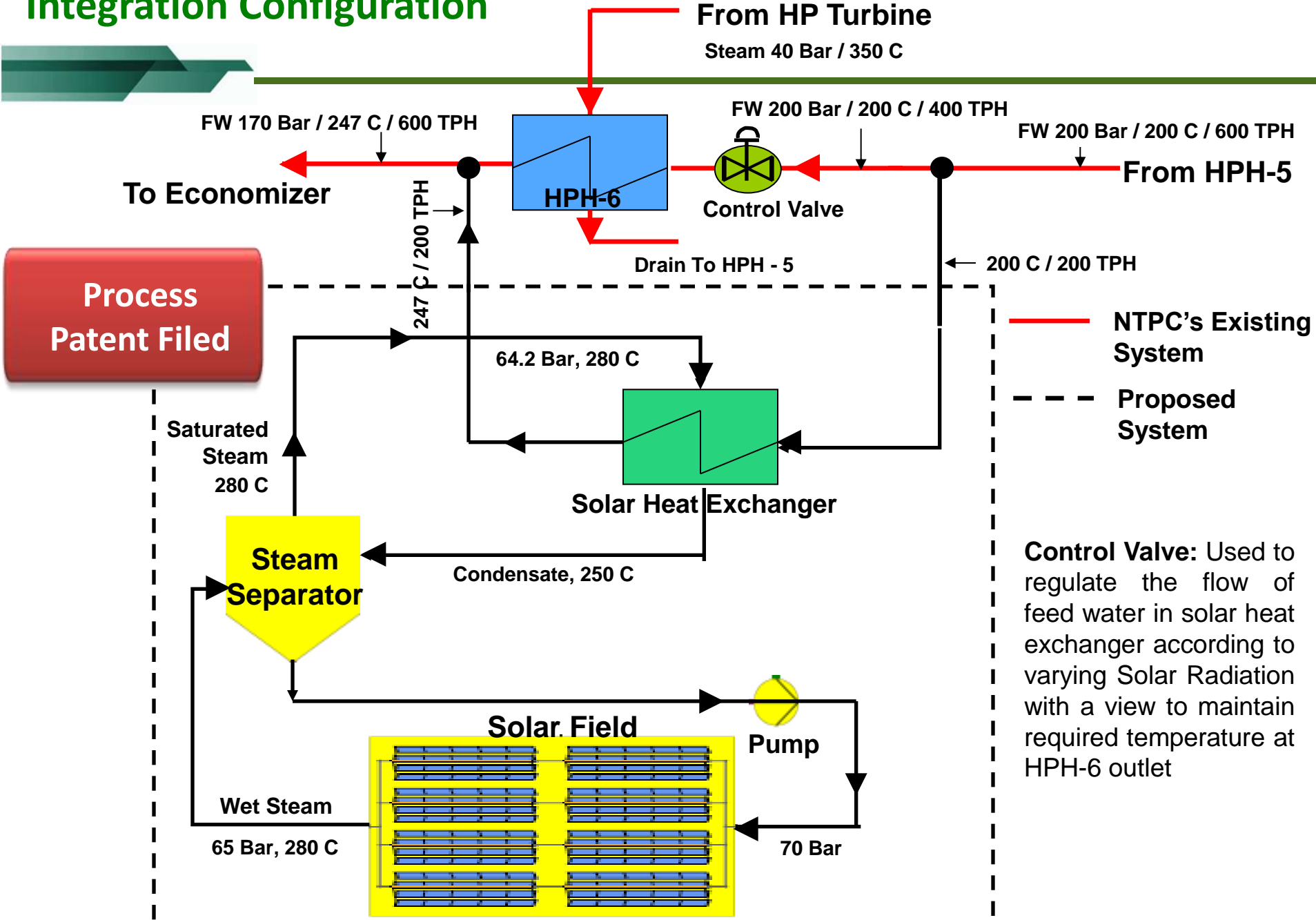
- High Solar to Electricity Efficiency > 24%
- 3.66 MWe from 15 MWTh Solar Energy
- First Solar Thermal Hybrid Plant in India

Status:

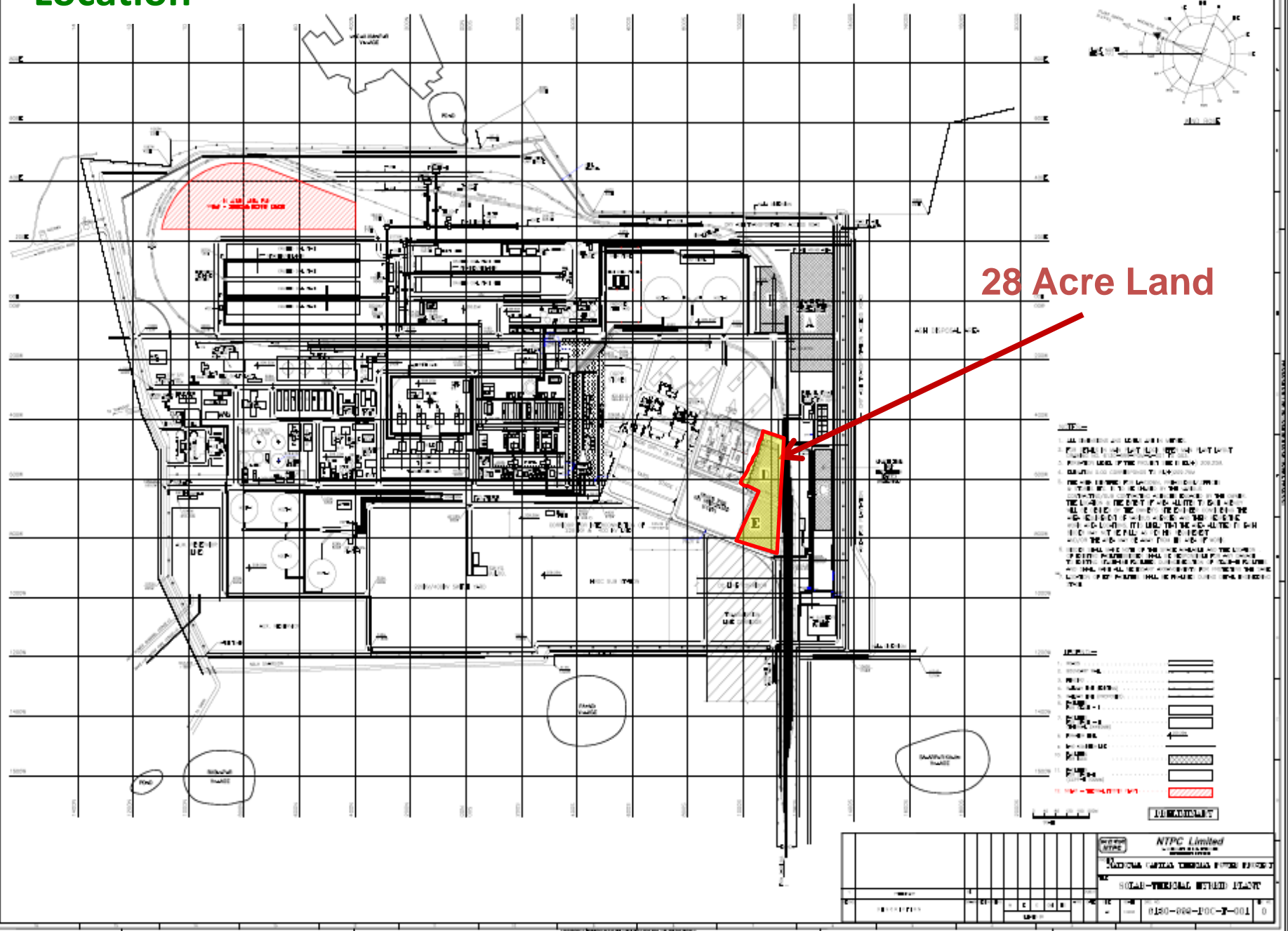
- NIT – 31st Mar'16
- LOA – by Sept'16
- Execution - 15 month after LOA



Integration Configuration



Location



28 Acre Land

- NOTES:**
1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 2. PROPERTY LINES FOR THE PROJECT ARE INDICATED BY A DOTTED LINE.
 3. DISTANCE AND COORDINATES TO 0.000000M.
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LEGEND:

1. ROAD
2. PROPERTY LINE
3. FENCE
4. SAND POND
5. SAND POND
6. SAND POND
7. SAND POND
8. SAND POND
9. SAND POND
10. SAND POND

SCALE: 1:1000

DATE: 10/10/2010

PROJECT: 1.133 AC. PA. - 2800000000000000

NTPC Limited
 NATIONAL THERMAL POWER CORPORATION
 SOGAL-VERGAL STEEL PLANT
 0120-002-100-1-001 0



Uncha Amirpur

Cooling towers

Power Plant

NTPC Dadri

Switchyard

Patary

Site for Solar Thermal Hybrid Plant



Advantage: Solar Thermal Hybrid Plant V/s Solar Thermal Stand Alone Plant

- 1. Higher Thermal Efficiency:** 24.39% against 16-18% of stand alone
- 2. Low Capital Cost:** No separate turbine block, No additional DM Plant
- 3. Low Operational Cost:** No TG auxiliaries -Lo APC & DM makeup
- 4. No daily start-stop:** Independent of solar radiation.
- 5. Higher CUF :** No daily TG rolling, Lower start-up time.
- 6. No Thermal Energy Storage:** Not required for hybrid operation
- 7. Reduction in CO2 Emission:** 4060 Tons /year (approx)



THANK YOU !