

TATA MOTORS, SANAND

Gujarat's largest on-site solar power system

QUICK FACTS

- ❖ Location: Sanand, Gujarat
- ❖ Capacity: 2036 kWp
- ❖ Type of system: Metal Roof Installation
- ❖ Type of modules: Polycrystalline
- ❖ Type of inverters: String
- ❖ Annual generation: 28.5 lac units annually
- ❖ Carbon dioxide abated: 2690 tons of CO₂ annually
- ❖ Date of commissioning: August 2015

DEDICATED TO SUSTAINABILITY

Tata Motors is seen as thought leaders in the country. Carrying the same trend, they identified the idea of installing solar power systems, to utilize their idle rooftop. When CleanMax got chosen as their partners for a 25 year long journey, the zeal to meet the expectations and quality was very high.

THE SHIFT TO SOLAR

Since the plant was a key component of the Tata motors' cost reduction programme, they were very keen that it be set up at the earliest. Working under tremendous pressure, Clean Max executed the project in record time. The site was mobilised in June, 2015 and the plant (2 MWp spread over two metal roofs) was completed by August, 2015. This execution time of 2 months is half that usually taken to execute rooftop solar projects (3-4 moths) and is particularly notable in the face of strict safety regulations at the client's factory and the challenging working conditions (such as extremely high roofs – 20m+)



Meeting Solar Requirements

Cleanmax met the expectations by installing the solar power plants in a record time of 2 months, thereby, surpassing its own benchmarks. Not just the plant was installed in a record time, but also technologically significant practices were undertaken to ensure that the plant performs at its maximum efficiency.

Zero penetration of roof

The project was executed without a single tear or penetration on the client's roof sheeting (Standing seam galvanium sheet). German make non-penetrating module mounting clamps were used to achieve this. This design innovation will ensure that the roof remains leak free over the long life of the solar plant (25 years) and that the solar plant and associated activities will not cause disruptions to the factory processes below the roof.

Lightweight aluminum structures used

All the module mounting structures used are aluminum thereby reducing the load on the roof significantly. The aluminum structure based design puts a load of 20-25 kg/sq.m. on the roof, compared to ~70kg/sq.m. for conventional steel structure design. By this reduction of load, the roof is under much less stress than with heavier structures and is less susceptible to damage. While lightweight, the structures are designed to withstand 100 year highest wind speeds in Gujarat.

LT system with string inverters used to minimise losses

Despite the plant being megawatt scale, central inverters as well as transformers have been avoided. Instead more expensive string inverters have been used and all connections have been made at LT (415V) to minimise energy losses involved in step up as well as the higher loss levels in central inverter systems. The electrical layout has been created to ensure that the cabling from the roof travels the minimum distance and connects directly to the LT distribution panels in the factory below. The principle of enabling consumption within the loads nearest to the generation source has been used in establishing which solar power plant output should connect to which client LT panel.

KEY CHALLENGES

- ❖ Height of the building
- ❖ Safeguarding against damages to the roof sheeting
- ❖ Ensuring factory processes are not disrupted in the future

HIGHLIGHTS

- ❖ Lightweight aluminium structures used to reduce load on the roof
- ❖ String inverters and LT connections used to minimize energy losses
- ❖ Roof will remain leak-free over lifespan of solar plant (25 years)

ABOUT TATA MOTORS



Tata Motors Limited is an Indian multinational automotive manufacturing company headquartered in Mumbai, Maharashtra, India, and a subsidiary of the Tata Group. Its products include passenger cars, trucks, vans, coaches, buses, construction equipment and military vehicles. It is the world's 17th-largest motor vehicle manufacturing company, fourth-largest truck manufacturer, and second-largest bus manufacturer by volume.

ABOUT CLEANMAX SOLAR



Founded in 2011, CleanMax Solar is India's largest onsite rooftop solar developer with 45 MWp installation in more than 72 projects. The company has been awarded best rooftop solar developer as well as best solar EPC player by Ministry of New & Renewable Energy.

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Website:
www.cleanmaxsolar.com