

QUICK FACTS

- ❖ Location: Newai, Rajasthan
- ❖ Capacity: 434 kWp
- ❖ Type of system: Ground mount system with trackers
- ❖ Type of modules: Polycrystalline
- ❖ Type of inverters: String
- ❖ Annual generation: 7.8 lac units
- ❖ Carbon dioxide abated: 740 tonnes annually
- ❖ Date of commissioning: January 2016

THE LONG STANDING PARTNERSHIP

NBC Bearings extended its long standing partnership with CleanMax Solar when it decided to install a solar plant at its Newai unit and appointed CleanMax Solar as the preferred partner for this facility as well as three other locations: Jaipur, Vadodara and Manesar. Since NBC had spare land at the back of the manufacturing facility, CleanMax Solar suggested a ground-mount tracker based installation to maximise the generation.

A tracker-based system is a solar power generating system that “tracks” the movement of the sun throughout the day. It is an axle based on a shaft that rotates to maximize the solar irradiation falling on the modules. The shaft starts at 45 degrees east in the morning and goes up to 45 degrees west by the evening, achieving a total rotation of 90 degrees. Though a tracker-based system costs more as compared to a standard ground mount system, the higher generation can justify the cost, depending on the specific location and other factors. CleanMax Solar was able to provide more generation power than promised, and this has led to NBC partnering with CleanMax Solar for the expansion of the existing plant, as well as business across multiple other sites.



Optimization – Leading to More Solar Power

The tracker-based system generated on an average 20% more clean energy as compared to a ‘non-tracker’ based system, but there were quite a few challenges to be overcome before and during the installation.

The Surface Flattened

The backyard of the manufacturing facility was made up of barren land that contained a lot of heavy metal scrap. Unearthing all the metal scrap turned out to be a tedious task and an important one too since the boring (for the civil work) could not have happened had there been metal pieces present underground. As a result, the engineers had to dig about one metre deep and clean the land parcel. The entire cleaning process took about two months to be completed. The engineers removed all excess metal and scrap, did back filling, compacting, and watering. Post this, the surface was flattened and civil work began on the barren land, which was now “solar ready”.

Installing Solar Trackers

Once the surface was flattened, the meticulous job of installation began. Once installed, the trackers are easy to operate but a lot of precision goes into designing and installing them. About a hundred photovoltaic solar modules were installed on a single shaft, simultaneously rotating from east to west from morning through to evening, constantly tracking the motion of the sun. The highly mechanised work of aligning the shafts and placing the modules required a great amount of accuracy and exactness for the system to work. Apart from the alignment, the technicians also ensured that all the panels were angled at the same degree at all times to maximise generation.

Key Benefits

Post the successful installation, the plant spread across an area of approximately 2.8 acres. The plant has surpassed all expectations and is performing 20% better as compared to “fixed tilt” or non-tracker systems in terms of generation. The solar plant has also helped NBC Bearings significantly reduce its carbon footprint.

KEY CHALLENGES

- ❖ Cleaning the 40 year old scrapyards to make the land suitable for installation
- ❖ Aligning all the solar panels on shafts with high degree of precision
- ❖ Ensuring exact degree movement for the modules

HIGHLIGHTS

- ❖ A ground mount solar tracker system to increase power generation by about 20%
- ❖ About a hundred PV modules were installed on a single shaft
- ❖ Ensuring that trackers move precisely from east to west through morning to evening, constantly tracking sun’s movement

ABOUT NBC BEARINGS



NBC Bearings is India's leading bearings manufacturer and exporter. An integral part of the US\$ 1.6 billion CK Birla Group, NBC produces over 100 million bearings each year to serve a host of varied customers across 22 countries in five continents.

ABOUT CLEANMAX SOLAR



Founded in 2011, CleanMax Solar is India's largest on-site 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 the Ministry of New & Renewable Energy.