Solar generation maximized at NBC, Newai – 20% more delivered with solar trackers

Quick Facts

- Location: Newai, Rajasthan
- Capacity: 434 kWp
- Type of system: Gound mount system with trackers
- Annual generation: 7.8 lacs units
- Carbon dioxide abated: 740 tons annually
- Date of commissioning: January 2016

Overview

NBC Bearings extended its long standing partnership with CleanMax when it decided to install a solar plant at its Newai unit and appointed CleanMax as their preferred sustainability 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 suggested a ground-mount tracker based installation to maximize 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 was able to provide more generation power than promised, and this has led to NBC partnering with CleanMax for the expansion of the existing plant, as well as business across multiple other sites.

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.

Challenges

Safety Measures

- Cleaning the 40-year old scrapyard 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

Solutions

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 engineering team suggested to dig about one meter deep and clean the land parcel. The entire cleaning process took about two months to be completed, removing all excess metal and scrap, and ensuring back filling, compacting, and watering. Post this, the surface was flattened and civil work began on the barren land, which was now "solar ready"

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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 mechanized work of aligning the shafts and placing the modules require a great amount of accuracy and exactness for the system to work. Apart from alignment, the technicians also ensured that all the panels were at the same degree at all the times to maximize generation.

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 manufacture 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

CleanMax is the sustainability partner for India's leading corporates. Headquartered in Mumbai, we are the largest provider of solar power to commercial and industrial customers.

The company develops projects on turnkey basis, providing cheaper-than-grid solar power without any upfront investment from its customers. With a highly skilled in-house team, CleanMax operates across India, Middle East and South East Asia.

Our track record with India's top companies has made CleanMax a preferred partner across sectors such as Automotive, Pharmaceuticals, Food & Beverages, Information Technology, Education and many other industries. We also partner with some of India's leading government institutions and top universities.