

4. SUSTAINABLE ALTERNATIVE FUELS

COCHIN INTERNATIONAL AIRPORT - WORLD'S FIRST SOLAR-POWERED AIRPORT

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Cochin International Airport, India's first airport built under a public-private-partnership (PPP) model, has scripted another chapter in aviation history by becoming the first airport in the world that operates completely on solar power. The 12 MWp solar power plant was inaugurated by Hon Chief Minister Mr. Oommen Chandy, on 18 August 2015. It comprised 46,150 solar panels laid across 45 acres of land near the air cargo complex. Now, Cochin Airport will have 50,000 to 60,000 units of electricity per day available to power all of its operational functions, making the airport "absolutely power neutral".

Cochin International Airport Limited (CIAL), which has always adhered to the philosophy of sustainable development, ventured into the Solar PV sector in early 2013 by installing a 100 kWp solar PV Plant on the roof top of the arrival terminal block. This was a first in the field of grid-connected solar PV in the State of Kerala. The plant contains 400 polycrystalline modules of 250Wp, with five 20kW capacity *Refu-sol* made string inverters. After the successful commissioning of this plant, CIAL installed a 1 MWp solar PV power plant partly on the roof top and partly on the ground in the aircraft maintenance hangar facility. This plant includes 4,000 monocrystalline modules of 250Wp, with 33string inverters of 30kW capacity. This plant is the first Megawatt scale installation of a Solar PV system in the State of Kerala.

Both these plants are equipped with a remote monitoring systems. Since commissioning, these plants have saved more than 550Mtonnes of CO₂ emissions, thus contributing significantly to the efforts of CIAL to reduce environmental degradation.

Inspired by the success of the above-mentioned plants, CIAL has decided to set up a larger scale 12MWp solar PV plant as part of its green initiatives. This will be built in an area of about 45 acres near the international cargo terminal. and will include PV modules of 265Wp capacity, and inverters of 1MW capacity. It generates around 48,000 units of electricity per day, which along with the electricity generated from the existing 1.10 MWp plants, would be sufficient to meet the power requirements of the airport. This is a grid connected system without any battery storage. A power banking module has been worked out with the Kerala State Electricity Board (KSEB); wherein, CIAL gives as much power it produces (during day time hours) to the KSEB grid and "buys back" the power from KSEB when needed (especially at night). This plant will produce 18 million units of electricity from the sun annually— enough to power 10,000 homes for one year.

Over the next 25 years, this green power project will replace the need for carbon dioxide emissions from coal fired power plants by more than 300,000 tons, which is equivalent to planting 3 million trees, or not driving a motor vehicle(s) 750 million miles.

Solar Capacity To Be Doubled

In November 2015, the CIAL board of directors decided to double the airport's solar capacity in to accommodate the needs of the new international terminal, which is currently under construction. It is expected that the power consumption needs of the new complex will be approximately 100,000 units of electricity per day.

In the next 25 years, this project would have avoided 300,000 tons of CO₂, which is equivalent to planting 3 million trees.

CIAL's decision to install more panels is to meet that demand and retain its unique status as a fully solar energy-powered airport. At present, the solar power project comprising 46,000 panels is spread over 45 acres alongside the cargo complex. Another 10,000 plus panels would be installed in the remaining space here to generate an additional 2.40 MW power.

Panels to be installed atop the building housing hangar would help generate 3 MW and those to be laid above the new park are expected to bring another 1 MW to the airport's power pool. Generation of another 7 MW through panels to be installed over the three km-long irrigation canal would take the total installed capacity to 26.50 MW.

