

Visit Report

Industrial Visit- Visit to Suzlon Wind Power Plant

1. **Event Title:** Industrial Visit Organized by Electrical and Electronics Engineering Department , SOET, Nashik at Suzlon Wind Power Plant, Sinner .

2. **Event Date:** 06th Sep 2023

3. **Event Conduction Duration:** Full Day

4. **Event Mode:** Field Visit

5. **Event Resource Person Details:**

6. **Name of Event Coordinator with contact details:**

Mr. Harshal Chaughule , Assistant Prof., EEED, SOET, Nashik.

Report Prepared By : Mr. Yogesh Kahandal ,TA , EEED, SOET, Nashik

7.Event Outline & Outcome of the event:

Generalities

Wind farm name: Sinnar

Country: India

County / Zone: Maharashtra

Details

Part #1:

City: Nashik

Commissioning:

1 turbine: Suzlon S82/1500 (power 1 500 kW, diameter 82 m)

Total nominal power: 1,500 kW

Operational

Onshore wind farm

Developer: AllGrow Ventures

Part #2:

City: Nashik

Commissioning:

6 turbines: Suzlon S95/2100 (power 2 100 kW, diameter 95 m)

Hub height:

Total nominal power: 12,600 kW

Operational

Onshore wind farm

Developer: Mytrah

Operator: Mytrah

Owner:

Source:

Localisation

Part #1:

Latitude: 19° 50' 37.1"

Longitude: 73° 59' 54.8"

Altitude: 948 m

Geodetic system: WGS84

Precise localization: no

Part #2:

Latitude: 19° 50' 37.1"

Longitude: 73° 59' 54.8"

Altitude: 948 m

Geodetic system: WGS84

Precise localization: no

Objective of Program:

The main objective of wind farms in the short term is to produce renewable energy power that homes and businesses can utilize. Wind farms can also help offset the use of fossil fuels, such as coal and natural gas, used to generate electricity.

Wind energy offers many advantages, which explains why it's one of the fastest-growing energy sources in the world. To further expand wind energy's capabilities and community benefits, researchers are working to address technical and socio-economic challenges in support of a decarbonized electricity future.

Efficient extraction of wind energy is a complex, multidisciplinary process. This paper examines common objectives used in wind turbine optimization problems. The focus is not on the specific optimized designs, but rather on understanding when certain objectives and constraints are necessary, and what their limitations are. Maximizing annual energy production, or even using sequential aero/structural optimization, is shown to be significantly suboptimal compared to using integrated aero/structural metrics. Minimizing the ratio of turbine mass to annual energy production can be effective for fixed rotor diameter designs, as long as the tower mass is estimated carefully. For variable-diameter designs, the predicted optimal diameter may be misleading. This is because the mass of the tower is a large fraction of the total turbine mass, but the cost of the tower is a much smaller fraction of overall turbine costs. Minimizing the cost of energy is a much better metric, though high fidelity in the cost modeling is as important as high fidelity in the physics modeling. Furthermore, deterministic cost of energy minimization can be inadequate, given the stochastic nature of the wind and various uncertainties associated with physical processes and model choices. Optimization in the presence of uncertainty is necessary to create robust turbine designs.

Output of Program:

Wind is used to produce electricity by converting the kinetic energy of air in motion into electricity. In modern wind turbines, wind rotates the rotor blades, which convert kinetic energy into rotational energy. Wind power plants affect voltage levels and power flows in the networks. These effects can be beneficial to the system, especially when wind power plants are located near load centres, and certainly at low penetration levels.

Uses of wind energy

- generating electricity.
- milling grain.
- pumping water.
- powering cargo ships (via kites)
- reducing carbon footprint.
- sailing.
- windsurfing.
- land surfing.

Wind energy is a source of renewable energy. It does not contaminate, it is inexhaustible and reduces the use of fossil fuels, which are the origin of greenhouse gasses that cause global warming.

In addition, wind energy is a “native” energy, because it is available practically everywhere on the planet, which contributes to reducing energy imports and to creating wealth and local employment.

For these reasons, producing electricity through wind energy and its efficient use contributes to sustainable development.

- Renewable energy
 - Inexhaustible
 - Not pollutant
 - Reduces the use of fossil fuels
 - Reduces energy imports
 - Creates wealth and local employment
 - Contributes to sustainable development
- Wind power is the most ef

For these reasons, producing electricity through wind energy and its efficient use contributes to sustainable development.

- Wind energy does not emit toxic substances or contaminants into the air, which can be very damaging to the environment and to human beings. Toxic substances can acidify land and water ecosystems, and corrode buildings. Air contaminants can trigger heart disease, cancer and respiratory diseases like asthma.
- Wind energy does not generate waste or contaminate water—an extremely important factor given the scarcity of water. Unlike fossil fuels and nuclear power plants, wind energy has one of the lowest water-consumption footprints, which makes it a key for conserving hydrological resources.

Number Students Attended: 50

7. Event photos:







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Entry Permitted If And Only If
प्रवेश परवानगी फक्त आणि केवल तब

Wear all PPE (Hard hat, safety glasses, safety shoes, safety harness, etc.) सभी PPE (हार्ड हेलमेट, सुरक्षा चश्मा, सुरक्षा 신발, सुरक्षा harness, etc.) पहनें।	Wear fire-resistant clothing आग-रोधी कपड़ा पहनें।
Stand back from the equipment सुरक्षा दूरी बनाए रखें।	Do not touch the equipment सुरक्षा दूरी बनाए रखें।
Do not use tools or equipment unless you are trained and authorized to do so. सुरक्षा दूरी बनाए रखें।	Do not use tools or equipment unless you are trained and authorized to do so. सुरक्षा दूरी बनाए रखें।
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SLUXON

NO OPEN FLAME
NO SMOKING

EMERGENCY STOP

WARNING
CAUTION
SAFETY