Implementation of the wind turbine

- **Wind Turbine Specifications**:
  - **Type of Wind Turbine:** Vertical Axis Wind Turbine (VAWT) – H Rotor Type
  - **Main Supporting Column:**
    a) Diameter: **60 mm**
    b) Length: **1.2 m**
  - **Rotor Shaft:**
    a) Diameter: **25 mm**
    b) Length: **30 cm**
  - **Rotor Dimensions:**
    a) Rotor Diameter: **80 cm**
  - **Blades:**
    b) Number of Blades: **6**
    c) Height: 60 **cm**
    d) Semi-circle Area (per blade): **≈91.1 cm²**
- **The used components:**
  - **<u>Mechanical Components</u>**
    a) Base: Metal (for stability and support)
    b) Rotor Shaft: Seamless pipe (**25mm diameter, 30cm length**
    c) Rotor Bars: Aluminum (for structural support)
    d) Rotor Blades: PVC (**6 blades, 60cm height, 6-inch width**)
    e) Ball Bearings: 2 (to reduce friction and ensure smooth rotation)
    f) Gears: 16T to 98T (used for torque and speed adjustment)
  - **<u>Electrical Components</u>**
    a) **Generator: 50W DC Motor (1500 RPM)** (acts as the power-generating unit)
    b) **Boost Converters:** Used to step up the voltage from the wind turbine output to match the required system voltage
- **Real-time data of wind speed:**
  - Wind speed in m/s:

S.NO	Date	Minimum	Average	Maximum
1	18/12/2024	2.4	3.8	5.6
2	19/12/2024	2	3.3	4.6
3	20/12/2024	2.9	4.5	7.2
4	Total average	2.4	**3.9**	5.8

The above data gathered in the top roof of **Shivaji Bhuvan**