PROBLEM STATEMENT

Extracting electricity from renewable resources has been widely investigated in the past decades to decrease the worldwide crisis in the electrical energy and environmental pollution. In our project, the wind power generation enlarged growth and the tremendous availability of wind energy depends on the wind speed. The climatic conditions present in the site decide the power output of a wind farm. Thus highly depends on the weather condition at that place. Wind power availability is not known in advance, this causes problems for wind farm operators in terms of system and energy planning so this is considered as a **random variable**. In our project, we propose an intelligent technique for forecasting wind speed and power output of wind turbine from several hours up to specific hours ahead. If the output is forecasted accurately, energy providers can keep **away from costly overproduction.**

We will carry out this problem on publicly available weather and energy data sets correlating and considering different features in our project. This will enable us to cut down on the production cost and collaborate on different energy source more efficiently. The energy output of the wind energy is obtained with the help of the following parameters such us **Active Power, RotorRPM Wind Direction, Blade2PitchAngle, Wind Speed, ControlBoxTemperature, GearboxBearingTemperature, GeneratorRPM,GearboxOilTemperature, GeneratorWinding1Temperature, GeneratorWinding2Temperature, Hub Temperature, MainBoxTemperature, Nacelle Position, Reactive Power.**

Thus, we will develop an application which can forecast the wind power of the **future leveraging AI tools** and **powerful visualization**. The advantage of using ours over others is, it provides an Application with **interactive UI** with **optimized model with higher accuracy** to predict the energy output of the **wind energy's accurate parameters**. It is important and easy for a user to browse with the help of AI and analyse the Wind Speed, Wind Direction and Power Output of the flow of the wind. Helpful for people who want to browse the energy outputs of the wind turbine.