**Fuzzy Logic Control of Wind Energy System**

**Problem Statement**

Fuzzy logic is a basic control system that relies on the degrees of state of the input and the output depends on the state of the input and rate of change of this state. In other words, a fuzzy logic system works on the principle of assigning a particular output depending on the probability of the state of the input.

A **wind turbine**, or alternatively referred to as a **wind energy converter**, is a device that converts the wind's kinetic energy into electrical energy.

Consider that the power generated from wind turbine depends upon two factors:

* Wind speed (km/hour):

1. Low: 12 – 25
2. Medium: 26 - 60
3. High: 61 - 90

* Air density (kg/m3 at sea level)

1. Low: 0.1 - 0.6
2. Medium: 0.7 - 1.3
3. High: 1.4 – 1.8

Write the GUI based program in python which gives the following output:

* Wind speed Membership graph
* Air density Membership graph
* Power Membership Graph
* Take input (wind speed and air density) from user the output the Power generated and its membership graph.