**Project Design Phase-I**

**Proposed Solution Template**

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| Date | 19 September 2022 |
| Team ID | PNT2022TMID26268 |
| Project Name | Predicting the energy output of Wind Turbine based on Weather conditions |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

Project team shall fill the following information in proposed solution template.

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| --- | --- | --- |
| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Wind Energy is the widely used Renewable energy source, but it is not a sustained source. The power generated is affected by various environmental factors. Thus it cannot be relied upon completely, thereby reducing its efficiency. |
|  | Idea / Solution description | Using Machine Learning that takes on previous performance data and real time weather parameters to predict the energy output will help in integrating with the grid and make use of its full potential. |
|  | Novelty / Uniqueness | This model takes in the previous years energy outputs and corelate it with the weather and other parameters that affected it. By using this model we can give the Weather conditions as input and obtain the energy output. It also dynamically alters the algorithm based on the predicted value and actual output value. |
|  | Social Impact / Customer Satisfaction | This model helps in increasing the usage of renewable energy. It optimizes the operation of Wind Turbines. The cost of Implementing this solution makes it an Unformidable one. |
|  | Business Model (Revenue Model) | Wind Energy Companies will be able to increase their energy output thereby increasing revenue. Wind Energy can be trusted as a consistent source as we are able to predict the total power output for any given time. |
|  | Scalability of the Solution | This doesn’t require any additional equipment to be set up at the Wind turbine. The existing Sensors can be used to get the Weather parameters for predicting the power output. With Weather stations all across the world, the data can be obtained easily in real time. The prediction can be carried out at the control station of the Wind mills. The algorithm can be easily modified to work for every single Wind Turbine to get accurate results. |