# **Project Charter- Rachit Gandhi** (Management Advisory Intern Industry 4.0)

## Building a Deep Learning model for accurately calculating the wind power generated.

**Business Case:** Wind Farm Owners producing electricity to supply the Power Grid promise a certain amount of power to be produced by the wind farm during a specific time slot of the day which is calculated using the wind turbine power curve for the turbines based on the wind speed forecasted.

**Problem Statement:** The power produced by the wind turbine in real life generally differs from the promised theoretical value which results in a penalty or revenue loss for the wind farm owners.

**Objectives:**

- To accurately calculate the Theoretical Usable Power Produced using the wind turbine power curve and time-series forecasting methods.
- Employing deep machine learning methods for feature extraction and time series data input to predict day-ahead wind power generation with the smallest error.

**Benefits:**

- Accurate reading for the theoretical power will help Wind Farm Owners in avoiding revenue losses in forms of compensations and penalties.
- Helps in predictive maintenance as a more specific schedule for maintenance and operation could devised using the data from deep learning network.

**Scope:** Plotting Historical data of a Wind turbine on Power Curve using TabNet and LSTMS to accurately read the graph.

- Using SciPy and Pandas to Clean Data
- Using Pytorch to implement these models and make a deployable application

**Roles & Responsibilities:**

- **Supervisor:** Sandeep Chittora
- **Team Members:**
  - Aryaman Arora
  - Rishit Jain
  - Rachit Gandhi

**Time Frame:**

| Achievements | Due Date | Status |
|---|---|---|
| Research & Reading Material | 20 Jun 23 | |
| Data Exploration and Preprocessing | 1 Jul 23 | |
| Feature selection with TabNet | 10 Jul 23 | |
| Implement and Train the Transformer model | 17 Jul 23 | |
| Testing and Tuning Transformers | 21 Jul 23 | |
| Validation and Evaluation | 24 Jul 23 | |
| Testing data and Finalizing Documentation | 27 Jul 23 | |
| Compiling Results | 31 Jul 23 | |

Reviewed & Signed by:_____