Project Design Phase-I - Solution Fit

Project Title : Predicting The Energy Output Of Wind Turbine Based On Weather Conditions

Team ID : PNT2022TMID03363

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Define CS, fit

CS

1.Customer Segment:

- The onshore segment dominated the market and held a revenue share of 71.66% in 2021.

CC

6.Customer Constraints:

- Wind turbine revolves around harnessing wind energy to power a daily use product like lights.

AS

5. Available solution:

Available solution takes lot of time in identifying the energy output of wind turbine. utilised aerostructural simulations data for a turbine and applied regression trees to forecast turbine power output, accounting for wind speed, turbulence and shear.

Explore AS, differentiate

Focus on PR, tap into BE,

PR

2. Problems / Pains:

The biggest problem with wind turbines is that they can be loud and unsightly, sometimes harming the physical environment.

9. Problem Root Cause:

The mechanisms of leading edge erosion, adhesive joint degradation, trailing edge failure, buckling and blade collapse phenomena are considered.

BE

7.Behaviour:

Wind energy is tied to variabilities of weather patterns, especially wind speed, which are irregular in climates with erratic weather conditions.

Focus on PR, tap into BE,

Identify stíong I'R

I'R

3. Triggers:

The energy output of a wind farm is highly dependent on the weather conditions present at its site. If the output can be predicted more accurately, energy suppliers can coordinate the collaborative production.

EM

4. Emotions:

- Most significant is the hub height wind speed, followed by hub height turbulence intensity and then wind speed shear across the rotor disk.

SL

10. Your Solution:

Our studies are carried out on publicly available weather and energy data for a wind farm. We report on the correlation of the different variables for the energy output.

CH

8. Channels of behaviouí:

Behaviour include the functions of wind turbine weather it works properly with all the mechanisms included.

Extíact online & offline