openSAP

TOUCH IOT WITH SAP LEONARDO

PROTOTYPE CHALLENGE

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SAP Leonardo IoT Prototype

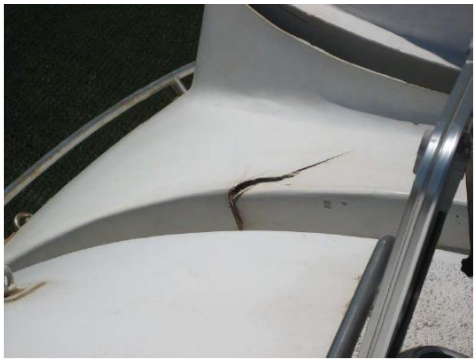
Story

As the consumption of convential fossil fuels for power generation is resulting in adverse climatic changes, it is but obvious that we have to turn towards ecofriendly sources for our power generation requirements.

One such tried and tested source is power generation by harnessing the wind energy. The reliable, safe and beneficial operation of wind turbine requires the use of a number of Engineered Safety Solutions (ESS).

This involves thorough study and identification of possible failure scenarios under multiple conditions such as environmental, topographical, haphazard installations etc.

One of major issue associated with a Wind Turbine failure is blade ejection due to loosening of the bolts. The other issues are impact on the structural integrity of machine due to development of cracks near the blade roots and failure of speed controllers resulting in high impact blade collisions resulting in tower collapse.



In order to address these major concerns, SAP Leonardo can be implemented so as to detect and take enable automated actions with the motive of

1. Reducing maintenance cost

2. Increasing productivity by lowering machine downtime.

SAP Leonardo with S/4 Digital Core

Since SAP Leonardo site on top of S/4 HANA, it easily integrates with S/4 Digital Core so that it will start reading Wind Turbine real time sensor data at one side and processing business transactions and applications at other. SAP Leonardo enables users to receive instant notifications of any failure events happening at Turbine Tower.

When any issue rises such as oil leakage or break down, Leonardo will search for extra available spare part from S/4 Digital Core's Warehouse Management Component.

If a spare part exists in the S/4 warehouse, Leonardo will process a PTO (Pick Transfer Order) and assign a work order to nearest technician to a tower using his/her GPS coordinates. A technician will pick up the spare part from warehouse and fix the turbine issue.

In case if Leonardo does not find spare part in S/4 Warehouse Component, it will automatically place a Purchase Order to a Vendor and maintain its record in a custom Z table.

Once a factory user performs a GR (Goods Receive) for spare part through SAP t-code MIGO, Leonardo will check its existence in custom created Z table & if found, it will automatically create and assign a new work order to a technician.

This integrated automation will drastically save time for troubleshooting & maximize the Turbine Power generation.

Persona

Persona

Ravi

Wind Farm Senior Engineer

- 36 Married, 8 years of experience in Wind Energy sector
- He ensures the constant uptime and monitors wind turbines
- Research and develops new methods of Wind Turbine maintenance
- Closely coordinates with production team and technicians at the site

Responsibilities

- To ensure the wind turbines are in good working conditions
- To monitor the power output & other technical
- Placing orders of spare parts to OEMs.

Needs

- Real time insights of mechanical failures in wind turbines
- Data Analysis of downtime and its causes
- Pattern analysis thereby enabling better forecast
- Automatic placement of Purchas Order to vendor

Main Goals

- To ensure cost efficiency in maintaining and servicing wind turbines
- Immediate order placement in case of inventory exhaustion.
- To maintain the desired power output from wind farm to grid
- Maximize the Turbine Power Generation

Pain Points

- Un-availability of real time data from wind turbines
- Delayed detection of mechanical and structural faults
- Delayed order placements of spares/replacements
- Reliance on manual inspection of every turbine

Point of View (PoV)

User + need + insight/why

Point of View

As a Wind Farm senior engineer,

He always needs to reduce downtime from service maintenance so that he can maintain increased productivity has to always monitor track of alerts and warnings arising from all the towers

so that downtime can be minimized by servicing broken parts much faster & maintaining increased productivity because of uptime.

User Experience Journey

ACTIONS	Senior Engineer Walks into the office Goes through all Wind Turbines Tower Overview in Legacy system	He receives a low performance alert from a turbine tower He contacts any one of the on-field technician	Technician reaches turbine tower After inspection, he concludes oil leakage from pitch controller hydraulics	Technician informs Senior Engineer about broken hydraulic component Senior Engineer checks for spare component in warehouse	He does not find any component in warehouse He places an order to Vendor & waits	Once he receives a shipment, he asks technician to replace the hydraulic component Technician replaces the broken part
MINDSET	Is everything working Fine?	Oh! Something went wrong with a turbine tower. Time to contact technician	Let me fid the problem	Time to repair or replace broken part	Oh! I need to get this part from vendor as early as possible	Broken part replaced, but with the cost of time ☹
FEELING						
TOUCH POINTS	Leonardo Overview Page	Warning Notification	Data flowing from Wind Turbine Tower sensor	S/4 HANA warehouse inventory	Spare part existence	Fixing and resolving the problem

Prototype

https://standard.build.me/prototype-editors/api/public/v1/snapshots/bba7df1711bebec80e1b9b51/artifacts/latest/index.html#/launch_page