



Testing Data Analysis of Traction Motor and Alternator Using power BI

¹Humera Anjum Abdul Khaled, ²Ashwini Sahebrav Waghmare, ³Rohini Datta Ambrule, ⁴A.B. Mali

¹Designation 1st Student, ²Designation of 2nd Student, ³Designation of 3rd Student, ⁴ Guide Prof.

¹ Electrical Engineering,

¹TSSM's Bhivrabai Sawant collage of Engineering & Research ,Narhe Pune

Abstract : This study presents the testing data analysis of traction motors and alternators using Power BI software. The research explores the performance and reliability of these critical components in various applications, such as automotive and industrial machinery. Through data collection, cleaning, and visualization with Power BI, key insights into the health and efficiency of these components are gained. The findings aid in optimizing maintenance and decision-making processes, ultimately enhancing the overall functionality and longevity of traction motors and alternators.

INTRODUCTION

An Testing Data analytics is a business intelligence tool that allows Manufacturing Resource teams to track, analyse and report on Testing KPIs. Modern, Interactive dashboards leverage an Testing analytics platform which makes it easy to combine data from all systems and deeply explore this data directly within the dashboard. This way, manufacturing teams can quickly find insights that will improve testing time, optimize workplace management and enhance employee performance. For this project no need to invest single money.

Which Type Of Machine Testing Data Visualize
GEB24 - 4500 HP

• Following type of testing data include

1. Winding resistance
2. Insulation resistance
3. Voltage
4. Leakage current (Hipot Test)
5. Surge test

METHODOLOGY :

Power BI supports many forms and formats of data that it can analyse. We decided to use an Excel spreadsheet for this purpose. The methodology for conducting data analysis of a traction motor using Power BI typically follows a structured approach to ensure thorough exploration, analysis of the data.

Data Collection: Gather relevant data sources related to the traction motor. This may include sensor data, maintenance records, operating parameters, environmental conditions, and another data points that could provide insights into motor performance. Ensure that the data is clean, organized, and properly formatted for analysis.

Data Preparation: Preprocess the data to ensure it's ready for analysis. This may involve cleaning the data to remove errors or inconsistencies, transforming the data into a suitable format for analysis. Power BI provides tools for data cleansing, transformation, and data modeling to facilitate this process.

Hypothesis Testing (if applicable): If there are specific hypotheses to be tested regarding motor performance or factors influencing motor behavior, conduct hypothesis testing using appropriate statistical techniques. This could involve comparing different groups, testing

relationships between variables, or assessing the significance of specific factors on motor performance.

In this case, Power BI is also used as a method to rapidly evaluate data. For worksheets and dashboards, visualizations. Power BI helps us to build dashboards that provide actionable insights for companies which spreads more rapidly.

Visualization and Dashboard Creation: Create informative visualizations and dashboards to communicate the findings of the analysis effectively. Use Power BI's drag-and-drop interface to design interactive dashboards that allow users to explore the data

dynamically and gain actionable insights. Incorporate key performance metrics, trend analyses, and anomaly detection alerts into the dashboards to monitor motor performance in real-time.

TESTING AND EVALUTION

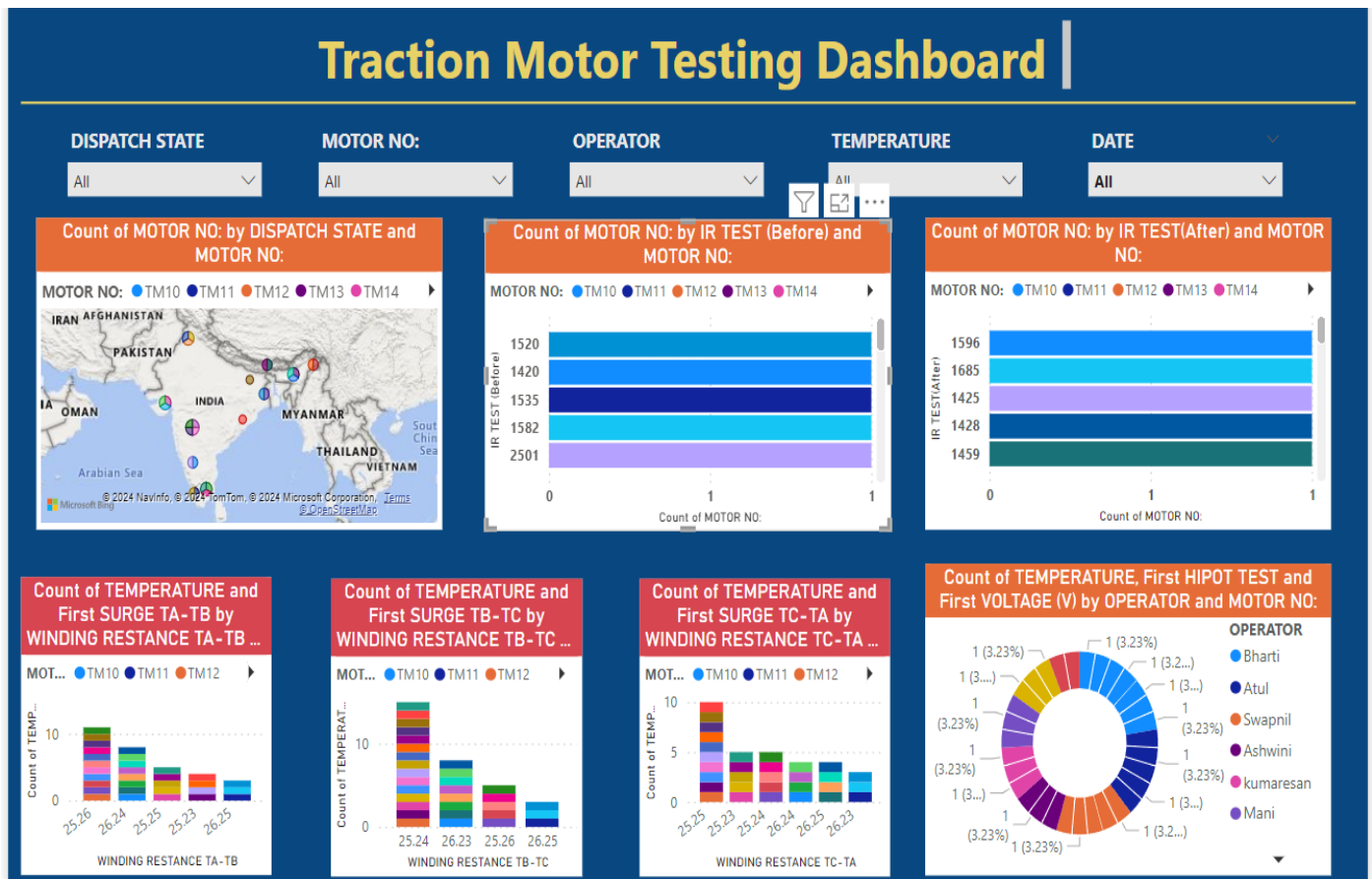
A traction motor is an electric motor used in various types of vehicles, particularly in electric and hybrid locomotives, trams, trolleybuses, and some electric vehicles.

Function: Traction motors are responsible for converting electrical energy into mechanical energy to propel the vehicle. They provide the necessary power to move the wheels or drive axles.

Below type of data is large amount of data in excel sheet its three year old testing data of traction motor we use to visualize these data in power BI

DATA VISUALIZATION OF TRACTION MOTOR IN POWER BI																	
DATE	TEMPERATURE	INDING RESSTANCE TA-TB	INDING RESSTANCE TB-TC	INDING RESSTANCE TC-TA	(m)URGE TA-T	SURGE TE	SURGE TC	IR TEST(Before)	TIME (SEC HIPOT TEST)	VOLTAGE	TIME (SIR TEST) After	(M)IME	SEC	OPERATOR	DISPATCH STATI	COUNTRY	
03-08-2019	25	25.26	25.24	25.25	0.1	0.2	0.1	1420	60	143	5000	60	187	60	Swapnil	Bihar	India
04-08-2019	25	25.23	25.24	25.25	0.2	0.1	0.2	1520	60	172	5000	60	173	60	Atul	Odisa	India
05-08-2019	25	25.25	25.24	25.23	1.1	1.1	0	1450	60	154	5000	60	1524	60	Shripad	Tamilnadu	India
06-08-2019	24	25.26	25.26	25.24	0.2	0.3	0.1	1462	60	170	5000	60	1718	60	Bharti	Maharashtra	India
07-08-2019	25	26.24	26.23	26.25	0.3	0.4	0	1560	60	156	5000	60	1539	60	Atul	Andhrapradesh	India
08-08-2019	25	26.24	26.23	26.24	1.2	1.1	0.1	1420	60	149	5000	60	1377	60	Ajit	Karnataka	India
09-08-2019	25	26.25	26.25	26.23	1.1	1.1	0.3	1535	60	153	5000	60	1664	60	Swapnil	Kerala	India
10-08-2019	26	25.26	25.24	25.25	0.7	0.5	0.2	1535	60	165	5000	60	1475	60	Bharti	madhya pradhesh	India
11-08-2019	25	25.23	25.24	25.25	0.1	1.1	0.7	1423	60	162	5000	60	1649	60	Atul	Assam	India
12-08-2019	25	25.25	25.24	25.23	0.3	0.3	0.3	1425	60	176	5000	60	1084	60	Shripad	Gujarat	India
13-08-2019	24	25.26	25.26	25.24	0.1	0.2	1.1	1456	60	149	5000	60	1737	60	kumareean	West Bengal	India
14-08-2019	25	25.25	25.24	25.23	0.6	0.3	0.2	1458	60	178	5000	60	1016	60	Pradhumn	Panjab	India
15-08-2019	26	25.26	25.26	25.24	0.5	0.1	1.1	1435	60	169	5000	60	163	60	Mari	Anunachal Pradesh	India
16-08-2019	25	26.24	26.23	26.25	0.6	1.2	1.2	1459	60	154	5000	60	1114	60	Atul	Sikkim	India
17-08-2019	25	26.24	26.23	26.24	0.5	1.1	1.3	1496	60	157	5000	60	1886	60	Ajit	Tamilnadu	India
18-08-2019	25	26.25	26.25	26.23	1.1	1.1	0	1582	60	178	5000	60	1684	60	Swapnil	Gujarat	India
19-08-2019	25	25.26	25.24	25.25	0.2	0.3	0.1	1582	60	168	5000	60	1308	60	Bharti	Assam	India
20-08-2019	25	26.24	26.23	26.25	0.3	0.4	0	1463	60	154	5000	60	1662	60	Swapnil	Panjab	India
21-08-2019	25	26.24	26.23	26.24	1.2	1.1	0.1	1725	60	157	5000	60	1758	60	Bharti	Maharashtra	India
22-08-2019	25	25.26	25.24	25.25	1.1	1.1	0.3	1268	60	174	5000	60	1721	60	kumareean	Maharashtra	India
23-08-2019	25	25.23	25.24	25.25	0.7	0.5	0.2	2501	60	169	5000	60	1931	60	Pradhumn	Karnataka	India
24-08-2019	25	25.25	25.24	25.23	0.1	1.1	0.7	2501	60	171	5000	60	1975	60	Mari	Kerala	India
25-08-2019	25	25.26	25.26	25.24	0.3	0.3	0.3	2014	60	164	5000	60	1091	60	Bharti	madhya pradhesh	India
26-08-2019	25	26.24	26.23	26.25	0.1	0.2	1.1	1562	60	171	5000	60	1883	60	Atul	Assam	India
27-08-2019	24	26.24	26.23	26.24	0.6	0.3	0.2	2450	60	142	5000	60	1027	60	Ajit	Gujarat	India
28-08-2019	25	26.25	26.25	26.23	0.5	0.1	1.1	1520	60	179	5000	60	1664	60	Swapnil	West Bengal	India
29-08-2019	24	25.26	25.24	25.25	0.6	1.2	1.2	1520	60	164	5000	60	1313	60	Bharti	Panjab	India
30-08-2019	25	25.23	25.24	25.25	0.5	1.1	1.3	1533	60	145	5000	60	1250	60	kumareean	Anunachal Pradesh	India
31-08-2019	24	25.25	25.24	25.23	0.3	0.2	1.1	1523	60	153	5000	60	1972	60	Pradhumn	Sikkim	India
01-09-2019	25	25.26	25.26	25.24	0.5	0.6	0.4	1525	60	149	5000	60	1529	60	Mari	Tamilnadu	India
02-09-2019	25	25.12	25.17	25.47	0.2	1.9	0.3	1520	60	156	5000	60	1264	60	Bharti	Maharashtra	India
03-09-2019	26	25.24	25.26	25.56	0.3	1.6	0.2	1250	60	163	5000	60	1647	60	Swapnil	Bihar	India
04-09-2019	25	25.16	25.18	25.48	1.3	1.3	0.1	1526	60	164	5000	60	1696	60	Atul	Odisa	India
05-09-2019	24	25.18	25.19	25.49	1.2	1.2	1.6	1425	60	175	5000	60	1695	60	Shripad	Tamilnadu	India
06-09-2019	25	25.22	25.24	25.54	1.1	1	1.5	1423	60	141	5000	60	1522	60	Bharti	Maharashtra	India
07-09-2019	25	25.26	25.28	25.58	0.2	1.1	1.4	1482	60	145	5000	60	1483	60	Atul	Andhrapradesh	India
08-09-2019	25	25.2	25.22	25.52	0.3	0.1	1.2	1366	60	178	5000	60	1275	60	Ajit	Karnataka	India
09-09-2019	25	25.23	25.26	25.56	0.5	0.5	1.1	1363	60	165	5000	60	1683	60	Swapnil	Kerala	India
10-09-2019	25	25.24	25.26	25.56	0.3	0.4	0	1311	60	146	5000	60	1556	60	Bharti	madhya pradhesh	India

SOFTWARE IMPLEMENTATION :



FUTURE SCOPE

The increasing integration of IoT sensors in industrial equipment, the future scope for data Analysis of induction motors using Power BI is promising. It enables predictive maintenance, energy optimization, and performance monitoring, contributing to cost savings and operational efficiency for industries relying on motor system. As technology evolves, the integration of AI and machine learning algorithms with Power BI can further enhance predictive analytics capabilities, allowing for more accurate predictions and proactive decision-making in motor management.

- Its help in industry to visualize large amount of data into one slide in less time
- Its help in school, collage for attendance data visualization
- In Industry Predictive maintenance, energy optimization ,and performance monitoring, contributing to cost saving.
- In industry also we use as router
- In shopping mall & Restaurants

RESULT

- Get real-time updates of your Testing data anytime and from anywhere.
- Receive interactive reports.
- Enjoy a clear and intuitive data-visualization.
- Make informed decisions with valuable insights.
- View reports across multiple platforms and devices.
- Integral multiple data sources.
- No need to invest money for this project.

CONCLUSION

Our experience with Power BI has shown that it is a radical approach to simplifying the business intelligence and data analytics space.

Testing data alternators and traction motors using Power BI allowed for the visualization and analysis of critical performance metrics. Enhance energy efficiency by identifying opportunities for optimization and reducing operational costs.

Testing Data Analytics has become the imperative instrument for using existing data for systematically reporting to high end predictive modeling to predict the testing value and also calibrate testing time. Improve maintenance strategies through predictive analytics, minimizing downtime and extending motor lifespan. Through this project we are able to visualise the data of testing. three year old data can be easily seen on one dashboard and less time required to visualise large amount of data

REFERENCE

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