AN INTERNSHIP REPORT WITH GODREJ & BOYCE MFG. CO. LTD, GODREJ SECURITY SOLUTIONS

(25/06/2024 - 24/07/2024)

Submitted in Fulfilment of the requirement of internship of one month, under the guidance of **Mr. Bhuvansingh Mehta.**

Submitted By:

Siddhant Nana Kate,

(Electronics & Telecommunication)

B. Engineering 2021-2025

Submitted To:

Godrej Security Solutions

Godrej & Boyce Mfg. Co. Ltd.

Plant No. 17, Pirojshanagar, Vikhroli, Mumbai-400 079.

Acknowledgment

The internship opportunity I had with Godrej was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me though this internship period.

I take the opportunity to extend my hearty thanks to the Engineering Cell Department for their constant support throughout the internship. I take the Privilege to extend my hearty thanks to **Mr. Sanjay Gawane** (Manufacturing Head), **Mr. Subhash Kale** (Department Head Engineering Cell and Maintenance), for their constant guidance and support throughout the internship. I convey my sincere thanks to my mentor, **Mr. Bhuvansingh Mehta** & **Mr Majid** for their interest and support throughout my internship period.

I take the privilege to extend my hearty thanks to the Maintenance staff members**, Mr. Vinayak Pawade, Mr. Mahesh Naik**, for their suggestions, support and encouragement towards the completion of the internship with perfection.

I would like to express my sincere thanks to the Engineering cell staff who gave many suggestions from time to time that made my internship better and well finished.

Finally, I thank to all the other unnamed who helped me in various ways to complete my internship.

Godrej & Boyce Mfg. Co. Ltd.

Certificate

This is to certify that

Mr. Siddhant Nana Kate

has successfully completed one month of internship in the Engineering Cell Department, Godrej Security Solution, Godrej & Boyce Mfg. Co. Ltd

The Internship was conducted from 25th June, 2024 to 24th July, 2024

Mr. Bhuvansingh Mehta
(Project Guide)

Mr. Subhash Kale
(Head of Department)

Table of Contents:

1. Introduction

Incorporated to the electronics and telecommunication engineering study program, the professional internships main aim is to introduce the bachelor students to what are the main skills of an Engineer and how does he manage and solves problem at work.

Rajiv Gandhi Institute of Technology permits its students to fulfil a month's professional internship during vacation before graduating. It is very important that everyone knows not only the theoretical part of study but also how projects are carried out practically and what are problems that we, students cannot imagine without having experienced it by ourselves.

After the end of third year of my Bachelor's degree, I realized how important it was for me to know more about the job I will carry following years down the line in my life ahead. For this reason, I decided to accomplish a month’s internship during my vacation.

When I was looking for an internship, I was told about the opportunity at Godrej & Boyce Mfg. Co. Ltd. and applied in the department that interested me. A month later, I was accepted for training in Godrej Security Solution plant in Vikhroli, Mumbai. I couldn't miss an opportunity to get a professional experience in such a renowned organization.

Indeed, I could experience work not only on the shop floor but also at the department office and follow the rules and regulations of the Godrej Security Solution, Plant 17. All these experiences were obviously always supervised by professionals. Thus, no incident or safety problem occurred during my entire involvement with Godrej & Boyce Mfg. Co. Ltd.

2. About Godrej & Boyce Mfg. Co. Ltd.

VIKHROLI BRANCH, MUMBAI-400079.

Godrej has been active in India for more than 100 years and is amongst the front-line companies in the domestic and office equipment industries. Godrej covers a wide spectrum of products exacting to international standards. Besides standard domestic equipment's like store well, refrigerators, steel furniture, locks and office ware like filing cabinets, typewriters, printers Godrej is also in the field of manufacturing of industrial equipment's like machine tools, forklifts, pressure vessels, boilers, press tools, industrial storage systems etc.

The Godrej story began way back in 1897 when Ardeshir Burjorjee Godrej, a lawyer by profession, stepped into the manufacturing industry by producing high quality surgical instrument. These were so good that a reputed pharmacist wanted to sell them under a foreign brand name. Ardeshir Godrej rejected the offer and decided to manufacture the best locks in the world. Safes then followed locks. And both products by virtue of their superior quality held highest esteem. Thus, Ardeshir Godrej built the foundation block of the Godrej Empire. If Ardeshir was the artist who initiated the painting, then it was his younger brother, Pirojshah Godrej, who enlarged the canvas to stunning and rewarding proportions.

3.1 Vision

Godrej in Every Home and Workplace

3.2 Mission

Enriching Quality of Life

Everyday Everywhere

3.3 Values

Integrity | Trust | To serve |

Respect | Environment

4. OCCUPATIONAL HEALTH & SAFETY POLICY

I. The Goal:

To achieve the milestone of "ZERO ACCIDENT" every year in the organization.

II. Guiding Principles:

This Occupational Health and Safety Policy is guided by the following principles:

1. It is essential to respect human life.
2. Working safely is a condition of employment.
3. All accidents are preventable as all hazards can be safeguarded either physically or through safe working procedures.
4. It is the responsibility of the management to ensure that injuries are prevented.
5. Occupational Health and Safety training is essential at all levels.
6. Periodic Occupational Health and Safety audit by management is a must.
7. Occupational Health and Safety promotes good business practices, pays high dividend.
8. Whatever we do, we shall do it safely.

III. Scope:

The Occupational Health and Safety (OHS) Policy covers:

1. Employees of the Company including Trainees & Apprentices at all locations, including Customer sites.
2. Service providers including Contractors, Transporters, their sub-contractors, and their employees,
3. Vendors and their employees.
4. All visitors to our establishments.

5. Godrej Plants:

Plant 1 – Electrical &Electronics Division:

The Electrical and Electronics division, a part of Godrej & Boyce group is recognized as one of the leading technology solution providers in India. This division basically caters to the needs of Indian and global customers in the area of energy and environment related issues with complete installation and maintenance. This division is also responsible for the maintenance of the entire plant machinery and tends to machine repairs and complaints. The Electrical & Electronics division came into existence due to the rapid industrial growth and the need for Green Business setup.

Plant 7 – Tooling:

Godrej Tooling is one of India's most advanced tool room. This division caters to entire tooling solutions and has emerged as a key player in design, manufacture and proving of tools. Tooling manufactures custom-built, high quality tooling that caters to a wide cross section of players in the automobile sector, among others. Tooling division is highly experienced in Pressure Die Casting Dies, Thermo-compression Molds, Complex and large sheet metal tooling for Auto Panels and Progressive Dies. Honda cars, Toyota, Suzuki, Mahindra & Mahindra, Tata Motors, Caparo, etc. are some of the international customers it caters to.

Plant 8 – Aerospace Division:

Godrej Aerospace started out with the development of critical, high precision spacecraft components, made from exotic alloys. Today, Aerospace division is executing major Aerospace projects involving Precision machining, Fabrication, Heat treatment, Surface treatment, Assembly, Testing & Supply of Complex & Air worthy Systems. This division has specialized infrastructure of large CNC Machine Shop, Weld Shop, Heat Treatment & Surface Treatment facilities, Elaborate Test Facilities, CMMS & Other CNC measuring devices for Inspection.

Plant 13 & 14 – Interio:

Interio Plants 13 & 14 manufacture various furniture products and offers home and office products along with solutions for laboratories, hospitals and healthcare establishments, education and training institutes, Shipyards and Navy, Auditoriums and stadiums. The Interio plants consist of various welding technology machines, a robotic cell, and a paint shop for delivering the finished product. It has a line of various cutting, folding and bending machines and punching machines which help deliver high quality products with exceptional accuracy.

Plant 15 – Process Equipment Division (PED):

Godrej process equipment is a leader in fabricating unit static equipment for process industries. Godrej process equipment manufactures the entire range of processes for end users in core industry segments like refineries, petrochemicals, fertilizers, oil and gas, chemicals, pharmaceuticals and power around the world.

Plant 16 – Material Handling Equipment:

Godrej Material Handling is India's largest manufacturer of lift trucks. Its range includes electrical, LPG and diesel counter balanced forklifts, warehouse trucks and special trucks for specific applications. It also manufactures attachments of design for addressing a wide range of handling applications besides offering attachments made by international specialists in the field when the application demands. It exports equipment to over 40 countries throughout Asia, Middle East, Africa, Latin America and Europe.

Plant 9 – Precision Engineering Systems:

Godrej Precision Engineering Division delivers customized solutions meeting exacting quality requirements in the high technology domain. Broadly Godrej PES businesses can be classified as:

- **Equipment for Nuclear Power Generating plants of Nuclear Power Corporation Ltd**: Godrej Precision Engineering is qualified for several fuel handling and positioning systems for the Power Plants and competes for orders from NPCIL.

- **Customized equipment**: Large precision fabricated and machined equipment for Gas& Steam Turbines, Turrets for Ladles in Steel industry for the continuous casting process.

- **Equipment for Indian Defence**: Largely contributed for 1st time developmental projects for Indian Defence systems.

- **Manufacture of Wind Turbine Generator Parts**: These are precision fabricated and machined to close tolerances. The present focus is to produce the large parts needed for gearless wind turbines.

PROJECT NAME:

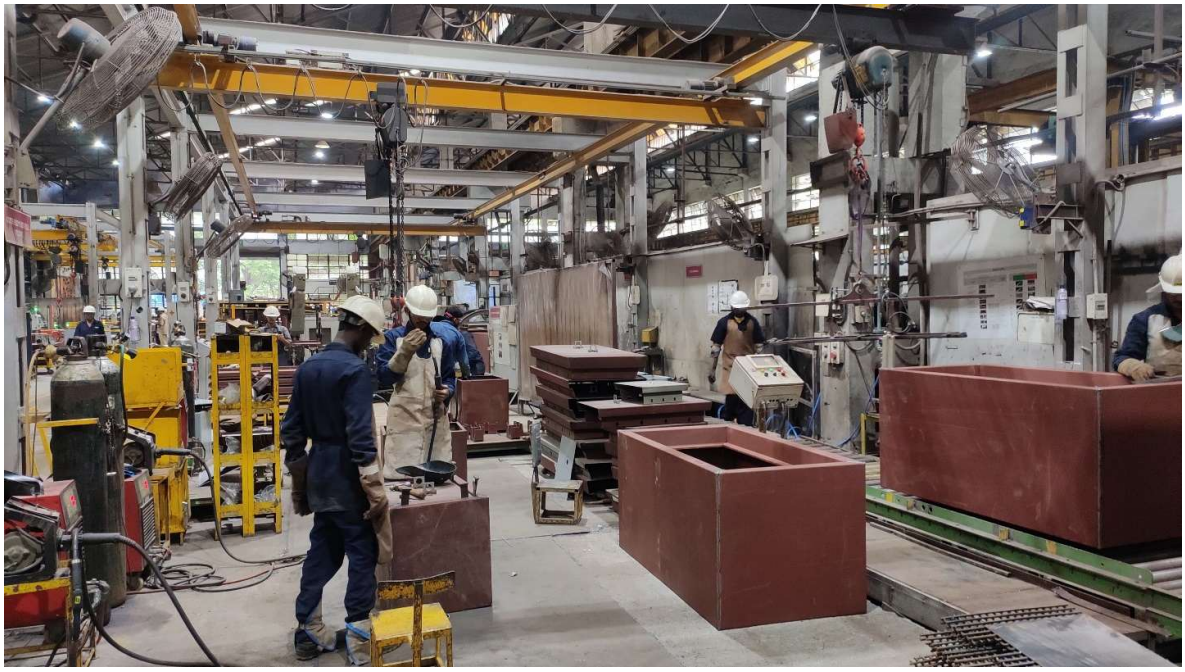
DIGITAL DASHBOARD CREATION USING POWER BI

Business Intelligence Dashboard Creation for Safe Inner Body Cell

Sub-topics included in the project

- Overall Equipment Effectiveness (OEE)
- Jobs produced
- Power consumed
- Energy Monitoring System (EMS)
- Continuous Monitoring Systems (CMS)
- Power Monitoring System (PMS)
- Quality Monitoring System (QMS)
- Data traceability
- Operator performance

6.UNIVERSAL INNER BODY CELL (UIB)



Welding Robot

Inner body

6.1 Overall Equipment Effectiveness (OEE)

Aim:

This section provides administrators utilization of OEE to measure the effectiveness and performance of manufacturing processes or individual pieces of equipment.

Description:

Using this report, administrators can implement OEE to identify areas for optimization, track improvements over time and benchmark different equipment or production lines.

What is OEE?

Overall Equipment Effectiveness (OEE) is a measure of how well a manufacturing operation is utilized (facilities, time and material) compared to its full potential, during the periods when it is scheduled to run.

How to calculate OEE?

OEE = Availability x Performance x Quality

- **Availability**: For how much time the machine was ready for actual production out of total available production time
  Formula:
  Availability = Actual run time / Total available time

- **Performance:** How fast the machine produced products during the actual production time.
  Formula:

Performance = Actual production quantity / Planned production quantity

- **Quality:** How much material produced during the production time is good quality.
  Formula:
  Quality = Good quality products / Total products produced

Benefits of OEE calculation

The goal of OEE is to identify and reduce (or even eliminate) the 6 Big Losses of **Total Productive Maintenance** (**TPM**) i.e.

SSSMCB the most common causes of equipment-based productivity loss in manufacturing:

Quality	S: SCRAP LOSS
Quality	S: START-UP LOSS
Performance	S: SPEED LOSS
Performance	M: MINOR STOPPAGES
Availability	C: CHANGEOVERS
Availability	B: BREAKDOWN

Production process

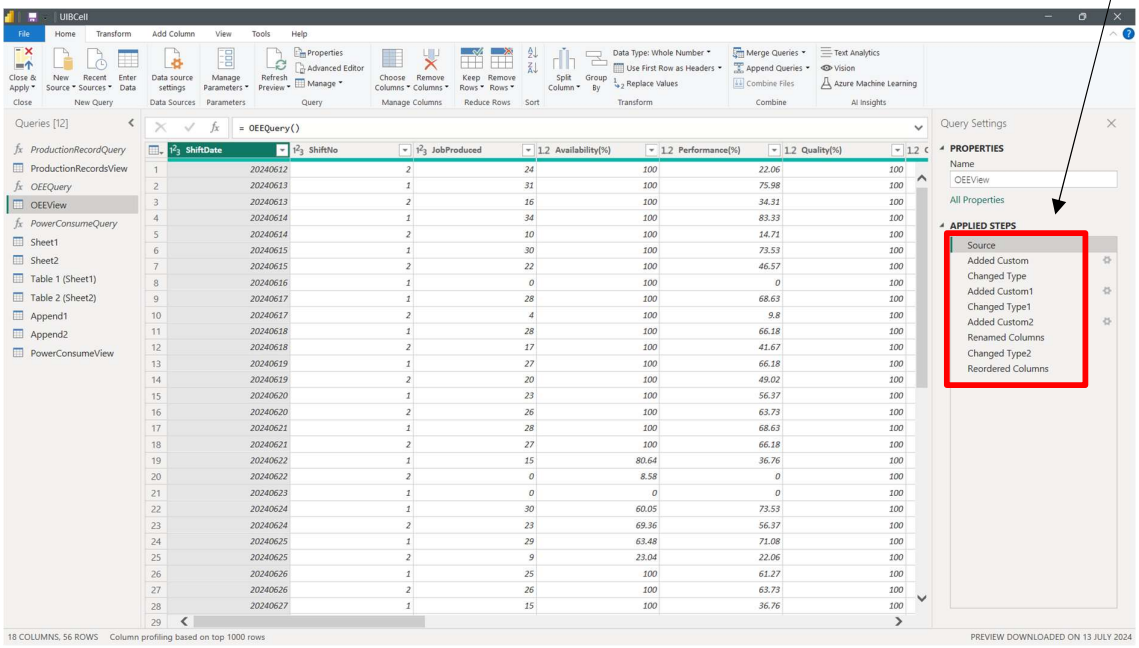
Total shift duration =

Mhandling + G1process + Idle time + Breakdown

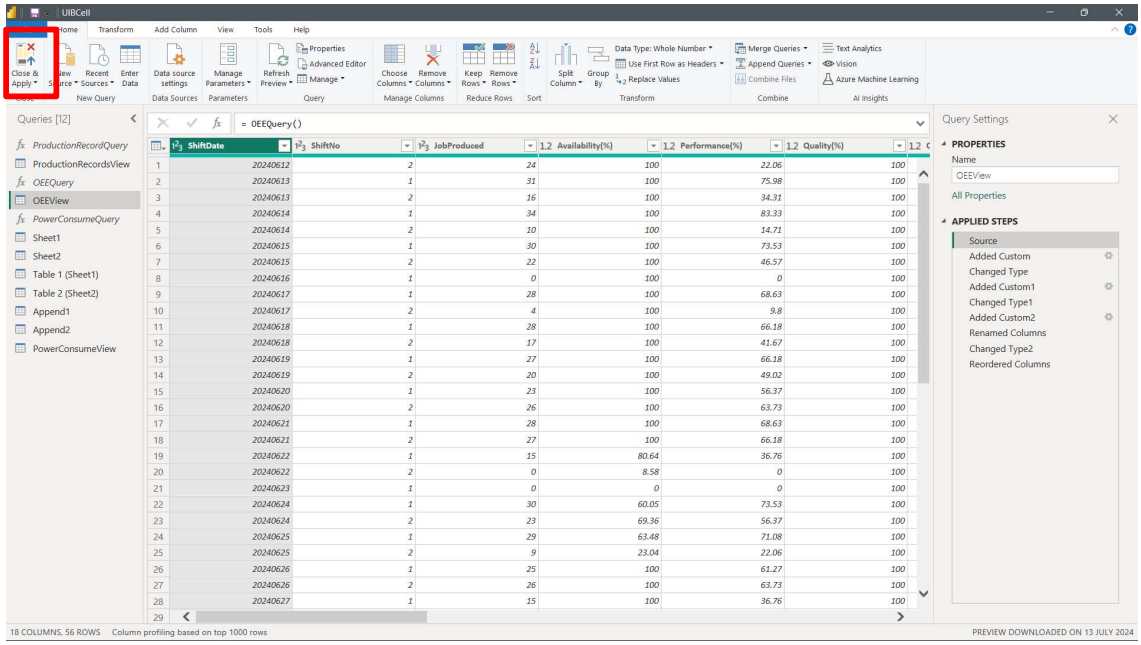
- Mhandling: Material handling (loading & unloading)
- G1 Process: Welding process
- Idle: Machine in standby mode
- R Breakdown: Faults during process

Dashboard creation:

Step 1: Cleaning raw data and applying necessary modifications

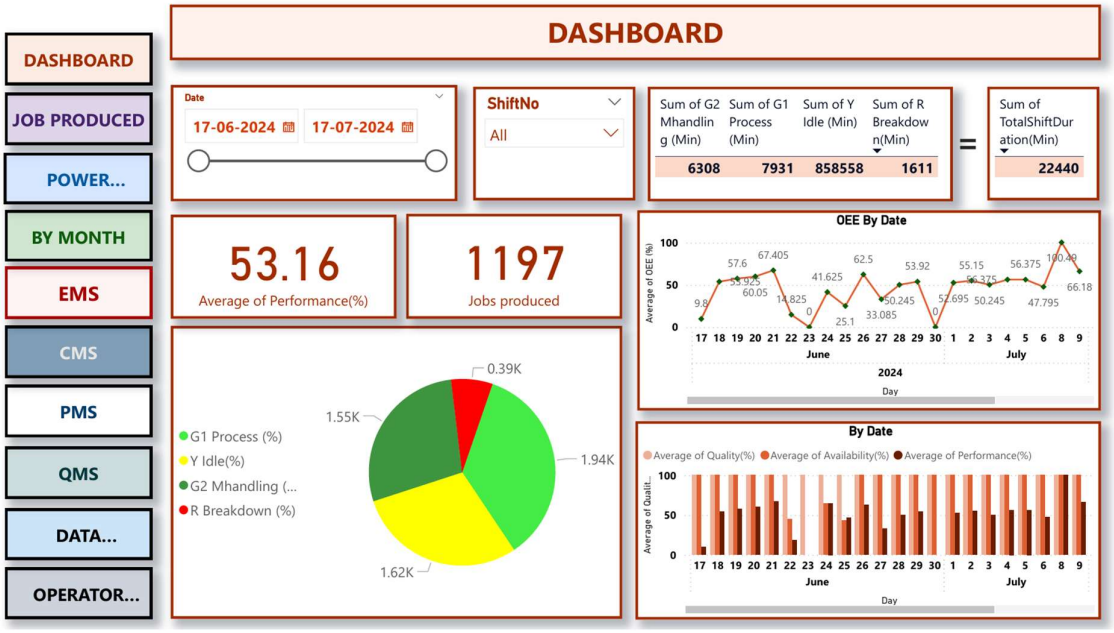


Step 2: Committing the new changes in the dataset



Step 3: Designing the layout to display necessary information on the dashboard

- OEE Dashboard displaying the Mhandling process, G1 process, Breakdown, Idle time, etc

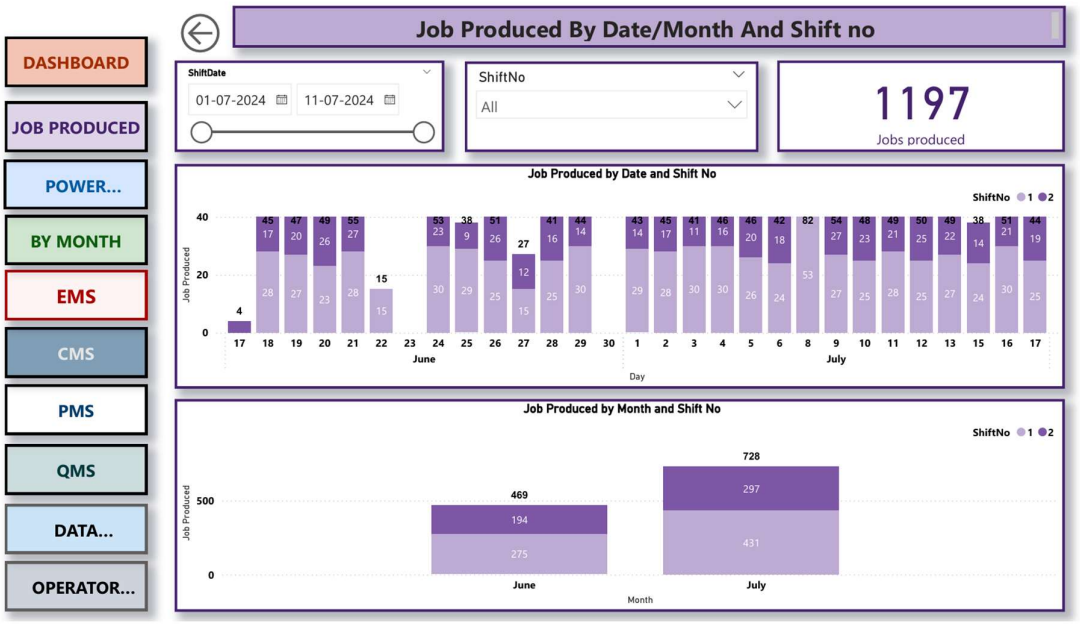


6.1 Jobs produced by Date, Month and Shift No.

Aim:

This section provides administrators the total number of jobs produced during the given period of time

Dashboard:



Observation and Analysis:

- Jobs produced in month on **July** are more in number than that produced in the month of **June.**
- Efficiency of **Shift 1** is higher than **Shift 2**

6.2 Power Consumption

Aim:

This section provides information about the amount of power consumed during the production process in kilowatt-hour (kWH)

Formulas to calculate power consumption:

- Total Productive Time = Shift duration - Idle time of machine
- Machine Utilization = (Total productive time / Shift duration) × 100
- Total Power Consume = Average power consumption × Total productive time

Dashboard:

Fig 1.

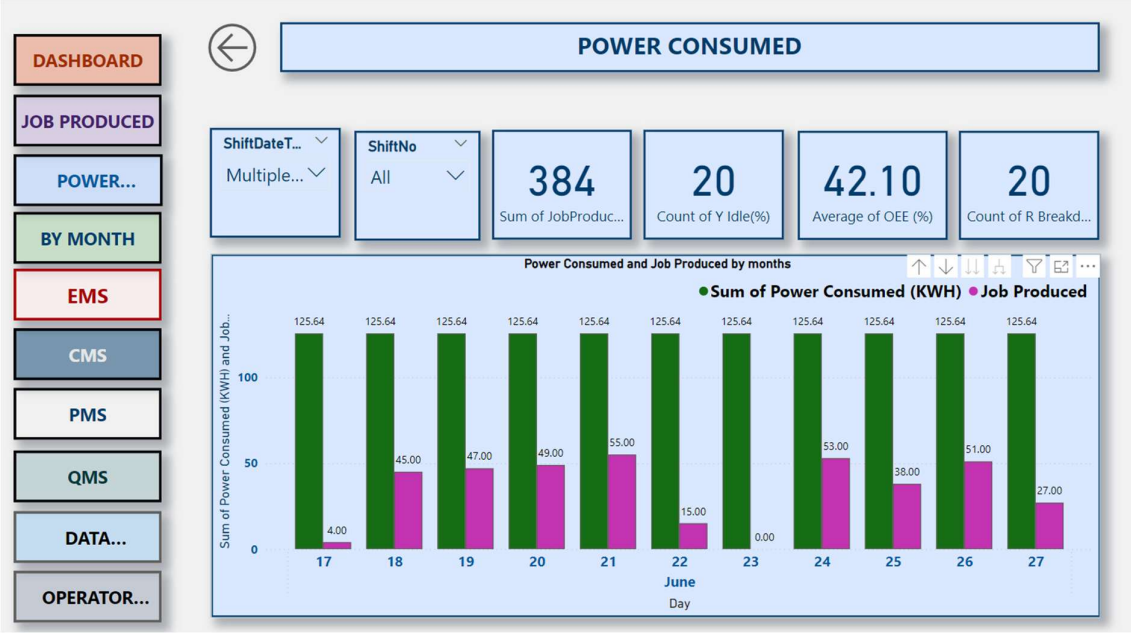
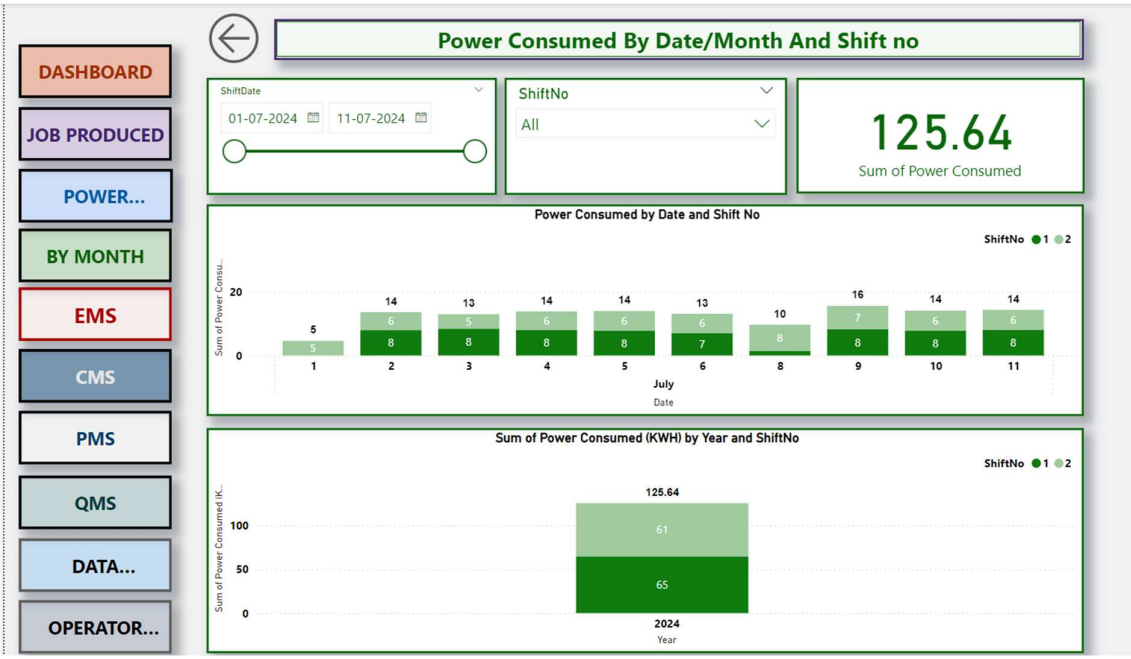

DASHBOARD
JOB PRODUCED
POWER...
BY MONTH
EMS
CMS
PMS
QMS
DATA...
OPERATOR...
POWER CONSUMED
ShiftDateT...
Multiple...
ShiftNo
All
384
Sum of JobProduc...
20
Count of Y Idle(%)
42.10
Average of OEE (%)
20
Count of R Breakd...
Power Consumed and Job Produced by months
Sum of Power Consumed (KWH)
Job Produced
Sum of Power Consumed (KWH) and Job...
125.64
4.00
45.00
47.00
49.00
55.00
15.00
0.00
53.00
38.00
51.00
27.00
17
18
19
20
21
22
23
24
25
26
27
June
Day

Fig 2.


DASHBOARD
JOB PRODUCED
POWER...
BY MONTH
EMS
CMS
PMS
QMS
DATA...
OPERATOR...
Power Consumed By Date/Month And Shift no
ShiftDate
01-07-2024
11-07-2024
ShiftNo
All
125.64
Sum of Power Consumed
Power Consumed by Date and Shift No
ShiftNo 1 2
Sum of Power Consu...
July
Date
Sum of Power Consumed (KWH) by Year and ShiftNo
ShiftNo 1 2
125.64
61
65
2024
Year

6.3 Energy Monitoring System (EMS)

Aim:

EMS provides an insight about the energy consumption during entire process of production.

Description:

Calculations such as power consumed by welding machine, total products produced, electricity cost, highest consumption, cost per product, etc are derived using formulas mentioned below:

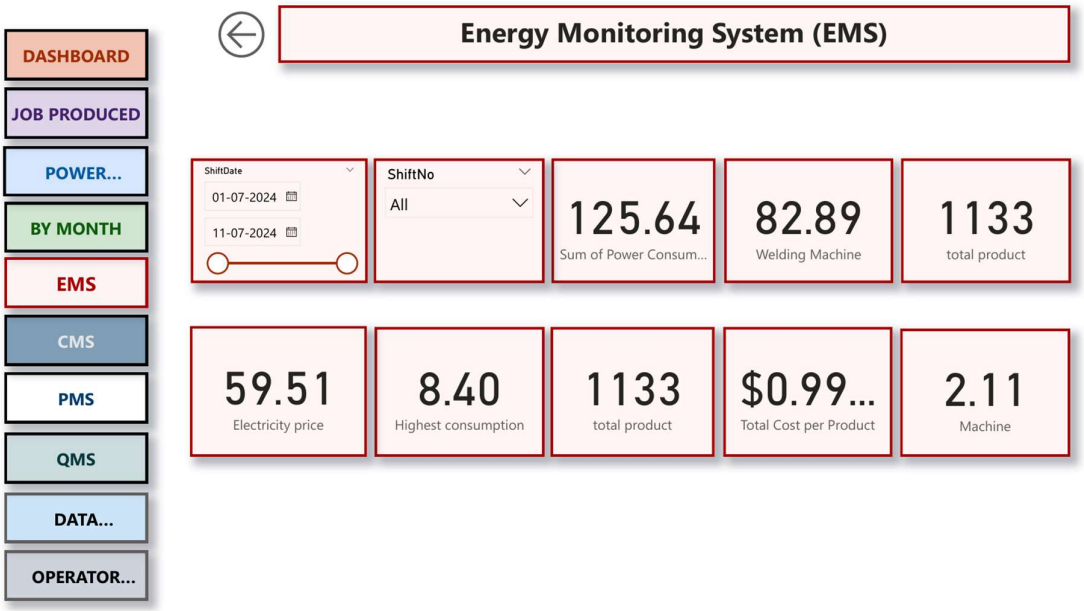
- Welding Machine = (PowerConsumeView [Stn2Power After]) - (PowerConsumeView [Stn2 Power Before])

- Total product = COUNT(ProductionRecordsView [Serial No])

- Electricity price = ('PowerConsumeView' [Power Consumed (kWH)]) * 9

- Highest Consumption = MAX('PowerConsumeView' [Power Consumed (kWH)])
  Total Cost per Product =
  VAR ElectricityCostPerProduct =
  SUMX(
  'PowerConsumeView',[Electricity price]
)
  VAR TotalProducts = COUNT(ProductionRecordsView[Serial No])
  RETURN
  DIVIDE(ElectricityCostPerProduct, TotalProducts)

Dashboard:

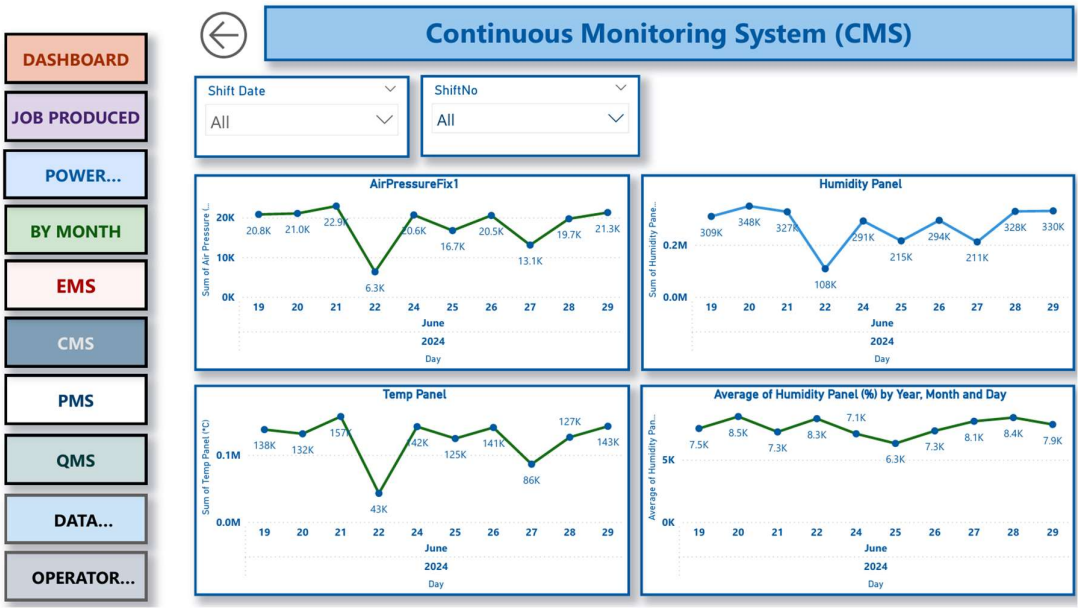

DASHBOARD
JOB PRODUCED
POWER...
BY MONTH
EMS
CMS
PMS
QMS
DATA...
OPERATOR...
Energy Monitoring System (EMS)
ShiftDate
01-07-2024
11-07-2024
ShiftNo
All
125.64
Sum of Power Consum...
82.89
Welding Machine
1133
total product
59.51
Electricity price
8.40
Highest consumption
1133
total product
$0.99...
Total Cost per Product
2.11
Machine

6.4 Continuous Monitoring System (CMS)

Aim:

CMS displays the readings of the sensors that calculate the air pressure, temperature, humidity and many such sensors.

Dashboard:

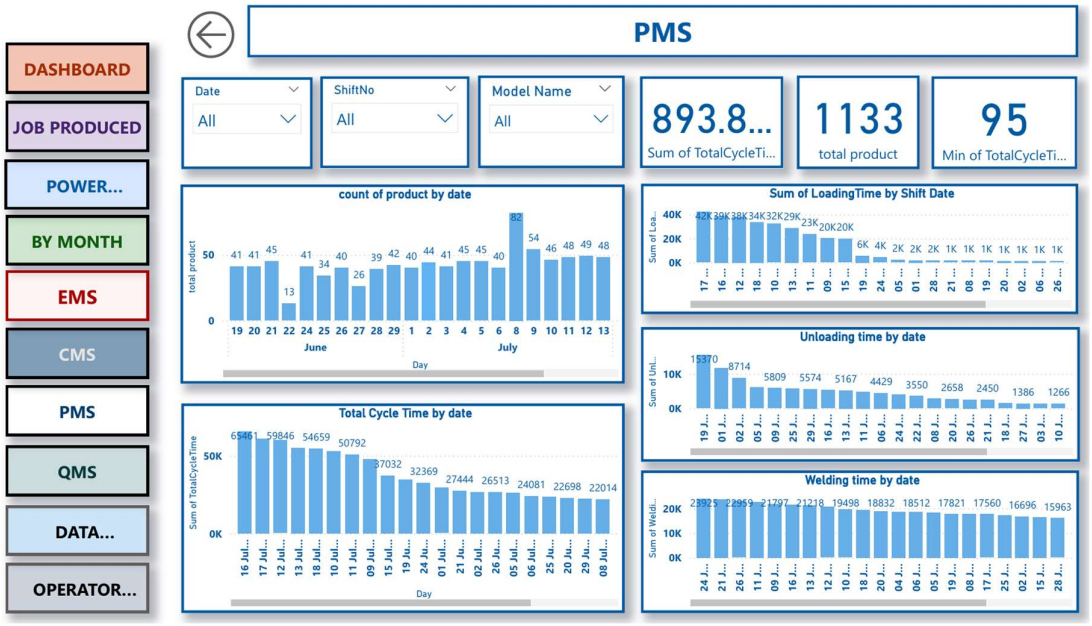


6.5 Production Monitoring System

Aim:

PMS tracks and analyses various production-related metrics in real-time, enabling manufacturers to optimize their processes and improve overall efficiency

Dashboard:



Observation:

➢ Products of Class 61 were produced most during the time period

Class wise production:

- CLASS 61: 697
- CLASS 41: 147
- CLASS 49: 118
- CLASS 26: 113
- CLASS 31: 61

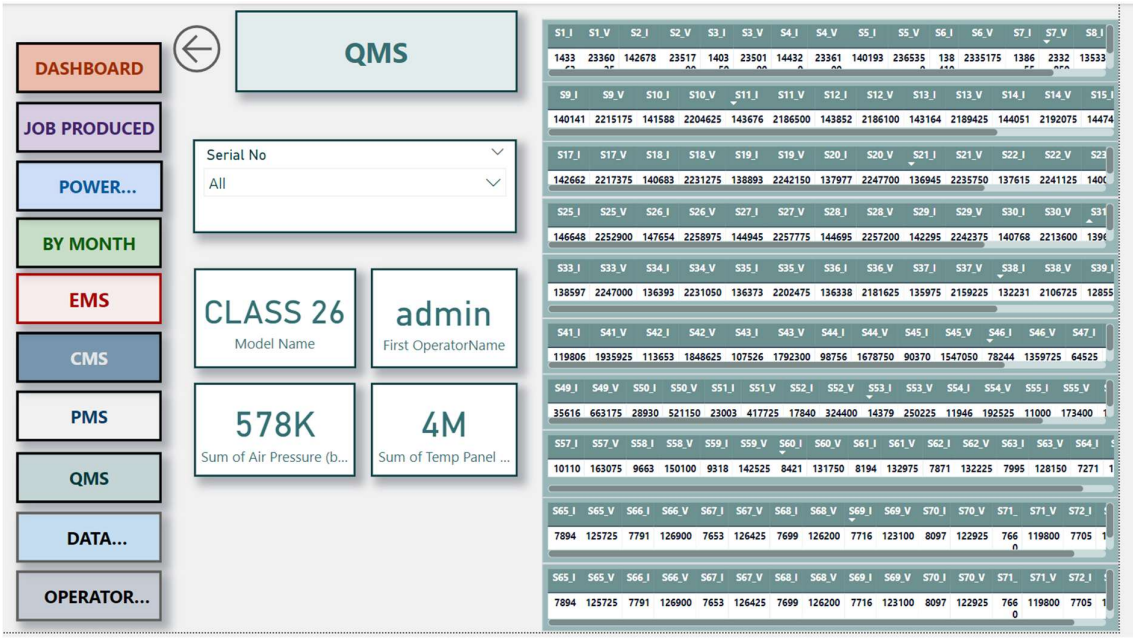
- Total cycle time take by each of each of the model (secs)
  CLASS 61: 14.50K
  CLASS 31: 6516
  CLASS 41: 6471
  CLASS 26: 5737
  CLASS 49: 5627

6.6 Quality Monitoring System

Aim:

QMS ensures that products produced meet the required standards of quality, reliability, and safety.

Dashboard:

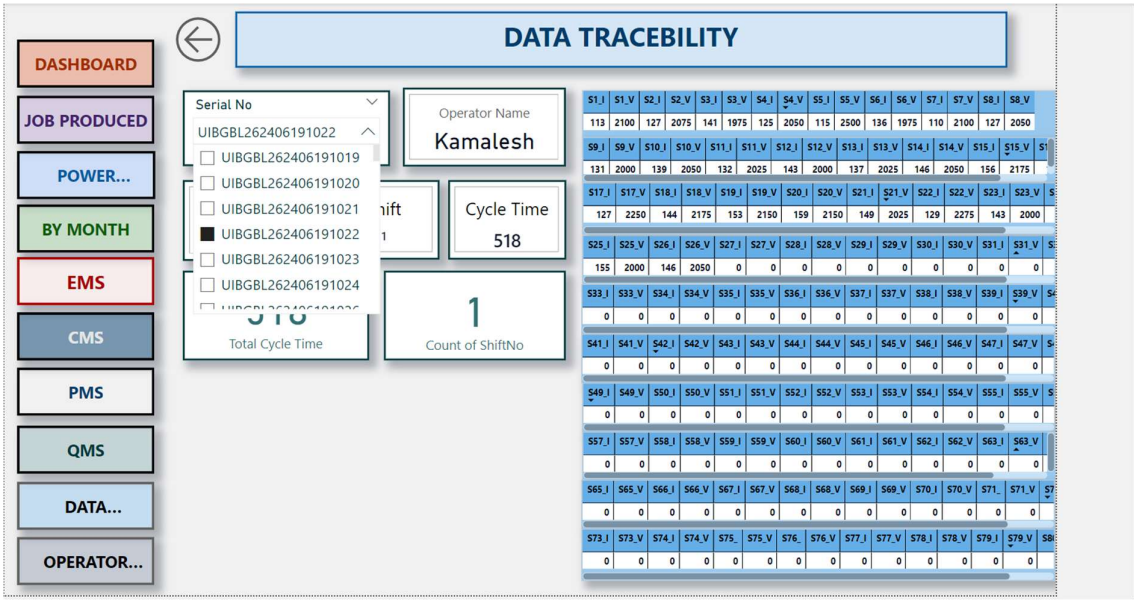


7. Data Traceability

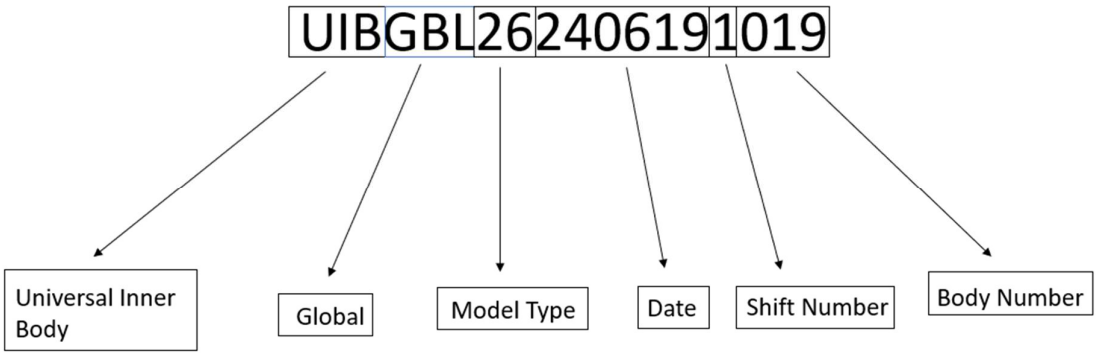
Aim:

Data traceability refers to the ability to track and identify the origin, movement, and changes of data throughout its lifecycle.

Dashboard:



Serial No. bifurcation:



8. Operator Performance

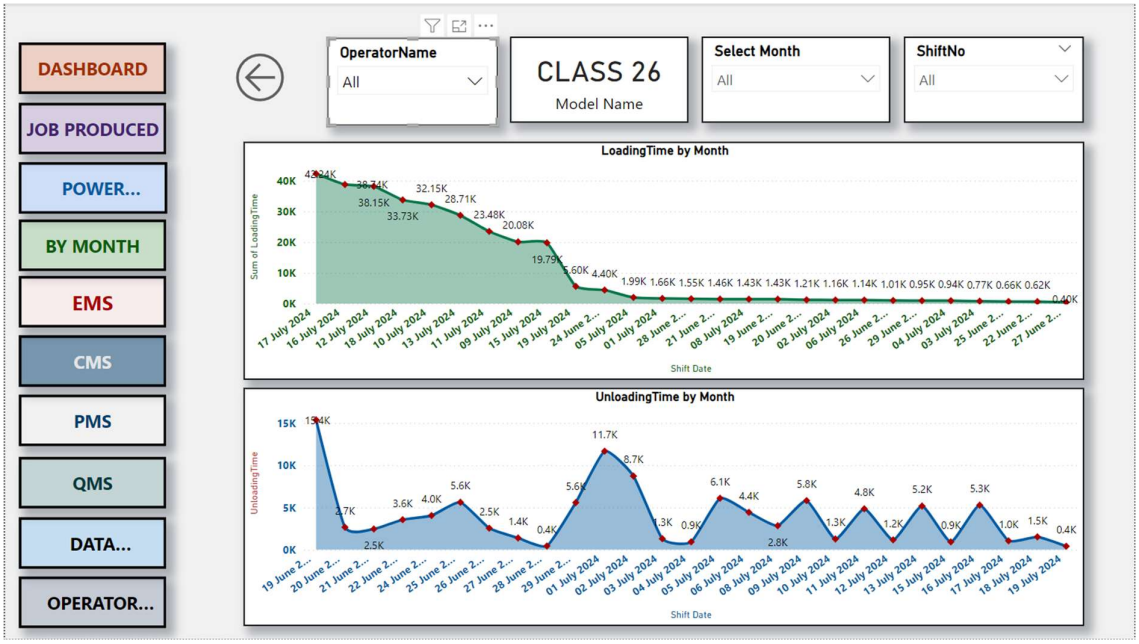
Aim:

Operator performance refers to the effectiveness and efficiency of an operator or system in performing specific tasks or operations.

Operators:

OperatorName
admin
Ajay
Hameed
Kamalesh
Prathamesh
Pratik
Shubham
Tushar

Dashboard:



Conclusion:

This internship at Godrej & Boyce was an exciting and enriching experience where I had the opportunity to learn the practical and industrial application of Power Bi software and got a chance to work under the experts of the field.

This internship has edified a great quantity of technical as well as managerial skills in me and made aware of my responsibilities as an engineer.

During this internship, I came across many applications of data analysis and was able to understand a part of the professional life. The skills which I have acquired in this field were enriching and the experience was unforgettable.

At Godrej and Boyce Mfg. Co. Ltd, I understood that proper management and accuracy goes a long way in improving the quality of the end product.

Lastly, I would like to thank one and all at Godrej and Boyce for guiding me during this marvellous experience.