Manufacture Analysis

REPORT

INTRODUCTION

- **Domain:**
  Manufacture

- **Business Problem:**
  The manufacturing process is producing inconsistent quality. This leads to increased waste, higher rework costs, and reduced operational efficiency.

- **Goal:**To improve manufacturing quality and consistency by identifying and addressing the root causes across different areas, reducing waste and rework, increasing usable output, enhancing overall production efficiency .

DATA OVERVIEW

- **File:**
  Manufactured analytics. Xlsx

- **Size:**
  6431 rows across 64 columns

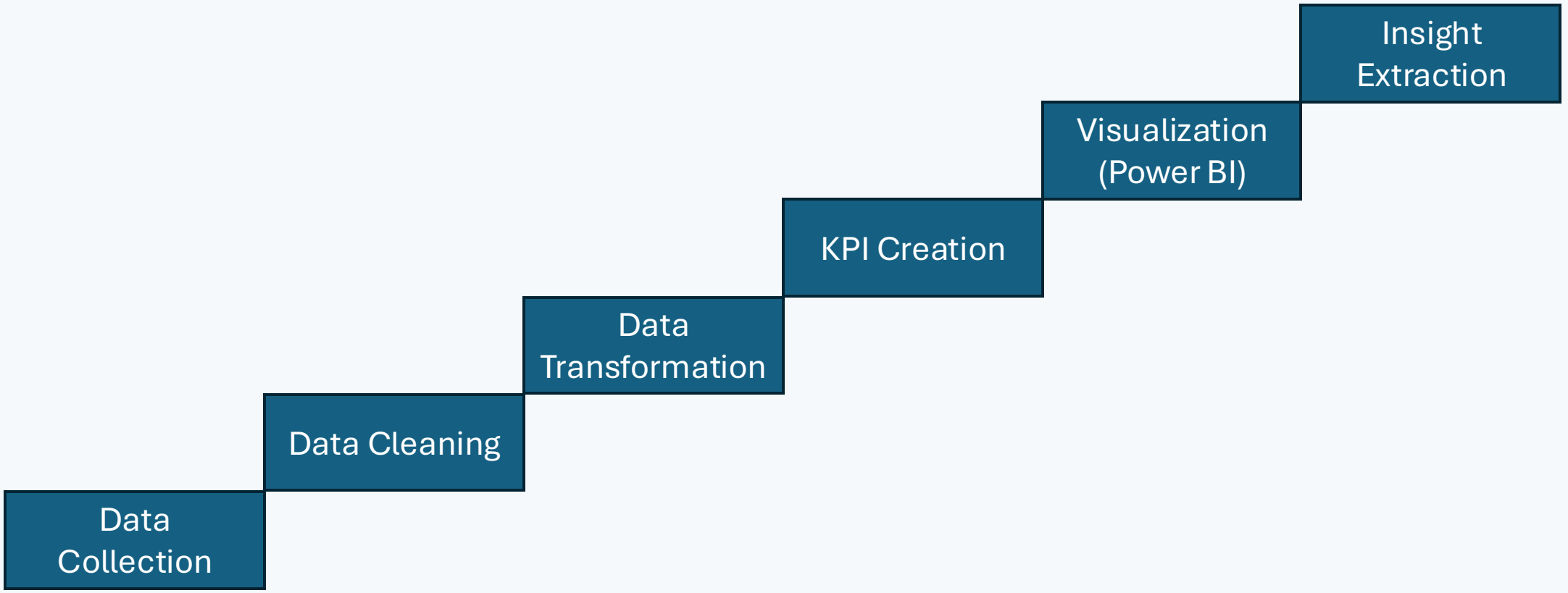
- **Key columns:**
  Manufactured Qty, Processed Qty, Produced Qty, Rejected Qty, Wastage Percentage,Doc date .

- **Aggregation:**
  Total Manufactured Qty , Total Processed Qty , Total Rejected Qty , Total Wastage Qty

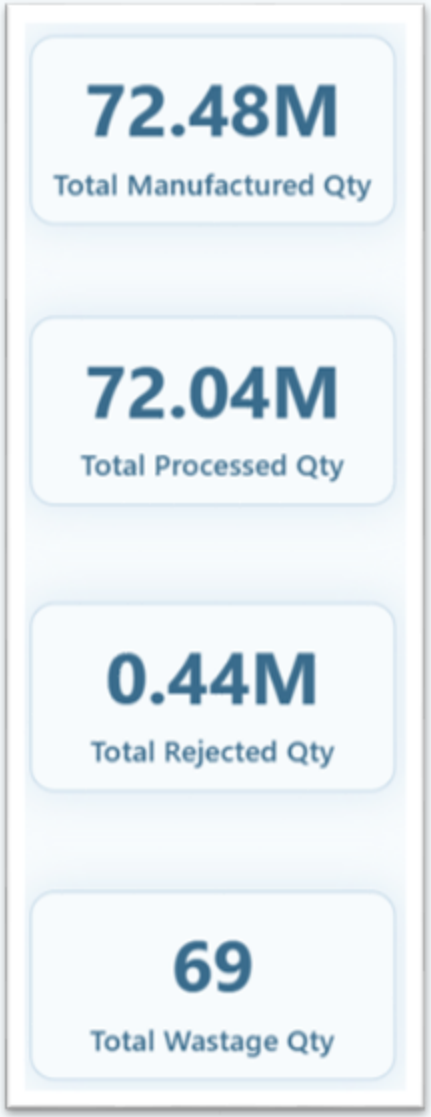
OBJECTIVES : KPI

- Manufactured Qty
- Processed Qty
- Rejected Qty
- Wastage Qty
- Employee Wise Rejected Qty
- Department Wise Rejected Qty
- Machine Wise Rejected Qty
- Production Comparison trend

PROCESS


Data Collection
Data Cleaning
Data Transformation
KPI Creation
Visualization (Power BI)
Insight Extraction

ANALYSIS 1



A strong output of 72M units reflects highly efficient and consistently stable manufacturing operations.

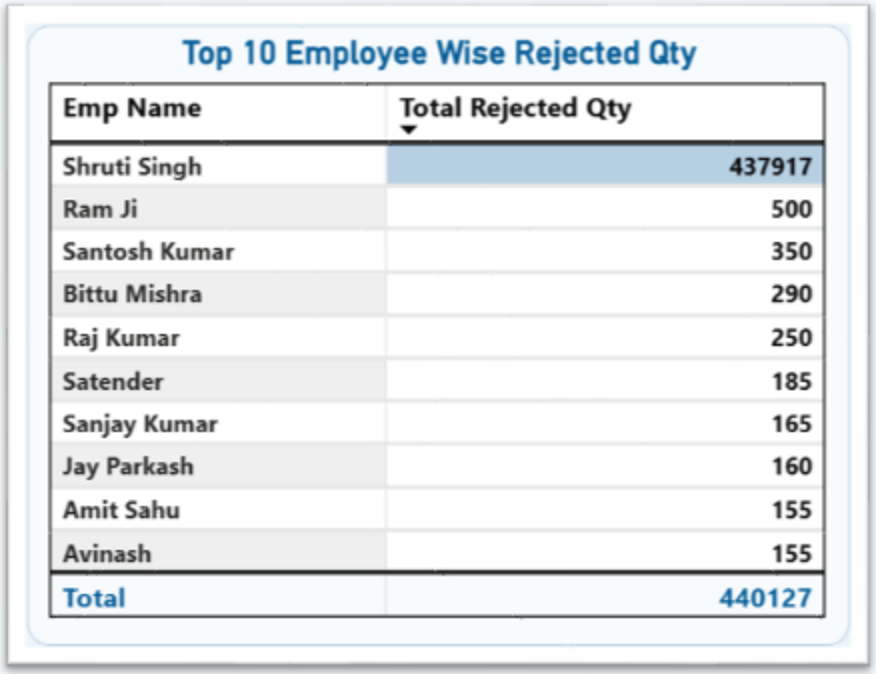
An impressive 72.04M units processed qty showcases exceptional throughput and well-optimized production flow.

A minimal rejection volume of 0.44M highlights effective quality control and reliable process performance.

With only 69 units wasted, the process demonstrates outstanding material efficiency and precision.

ANALYSIS 2

EMPLOYEE WISE REJECTED QUANTITY



Top 10 Employee Wise Rejected Qty

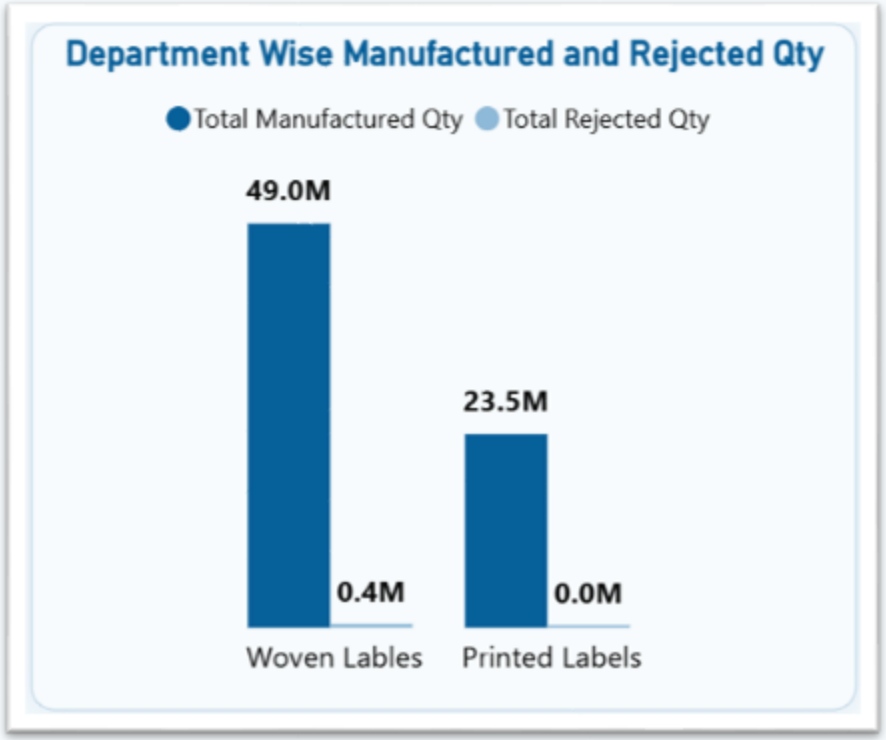
Emp Name	Total Rejected Qty
Shruti Singh	437917
Ram Ji	500
Santosh Kumar	350
Bittu Mishra	290
Raj Kumar	250
Satender	185
Sanjay Kumar	165
Jay Parkash	160
Amit Sahu	155
Avinash	155
Total	440127

The employees contributing the highest volume of rejected units. **Shruti Singh** shows a significantly higher rejection count compared to others, indicating a potential skill, process adherence, or workload imbalance issue.

Need for targeted training, process review, or quality monitoring to reduce overall rejection rates.

ANALYSIS 3

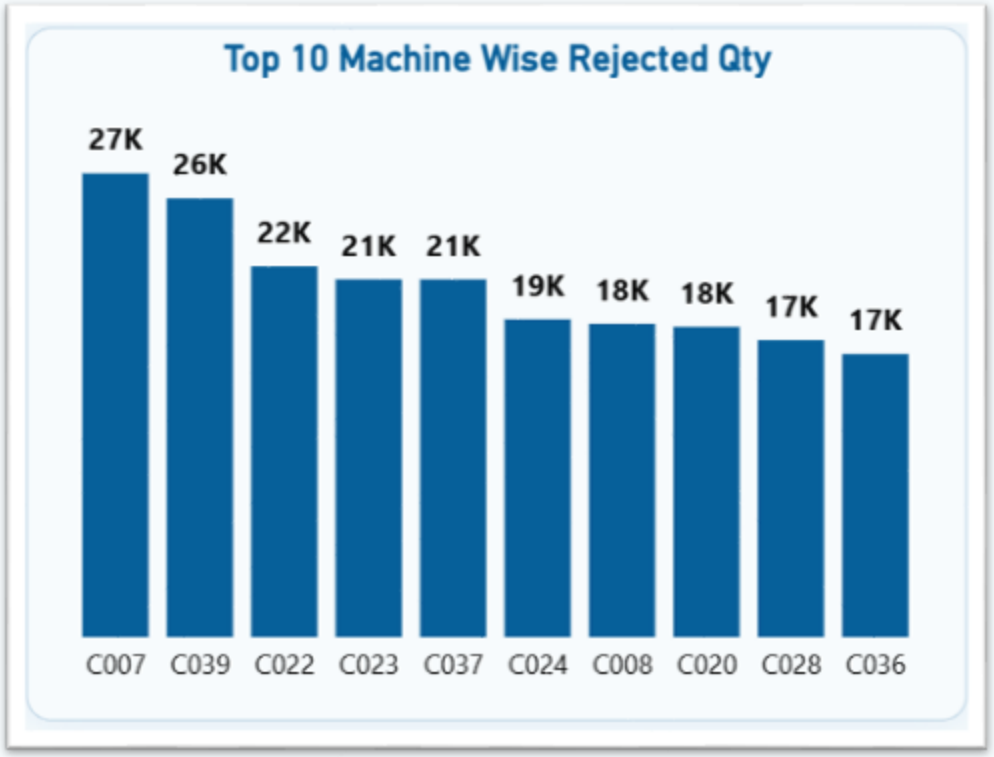
DEPARTMENT WISE REJECTED QUANTITY



Woven Labels department leads in production output but also contributes the majority of total rejections, indicating higher complexity or quality challenges in this segment.
Printed Labels, on the other hand, shows minimal defects, reflecting more stable or efficient processes. These insights can guide department-level process improvement strategies.

ANALYSIS 4

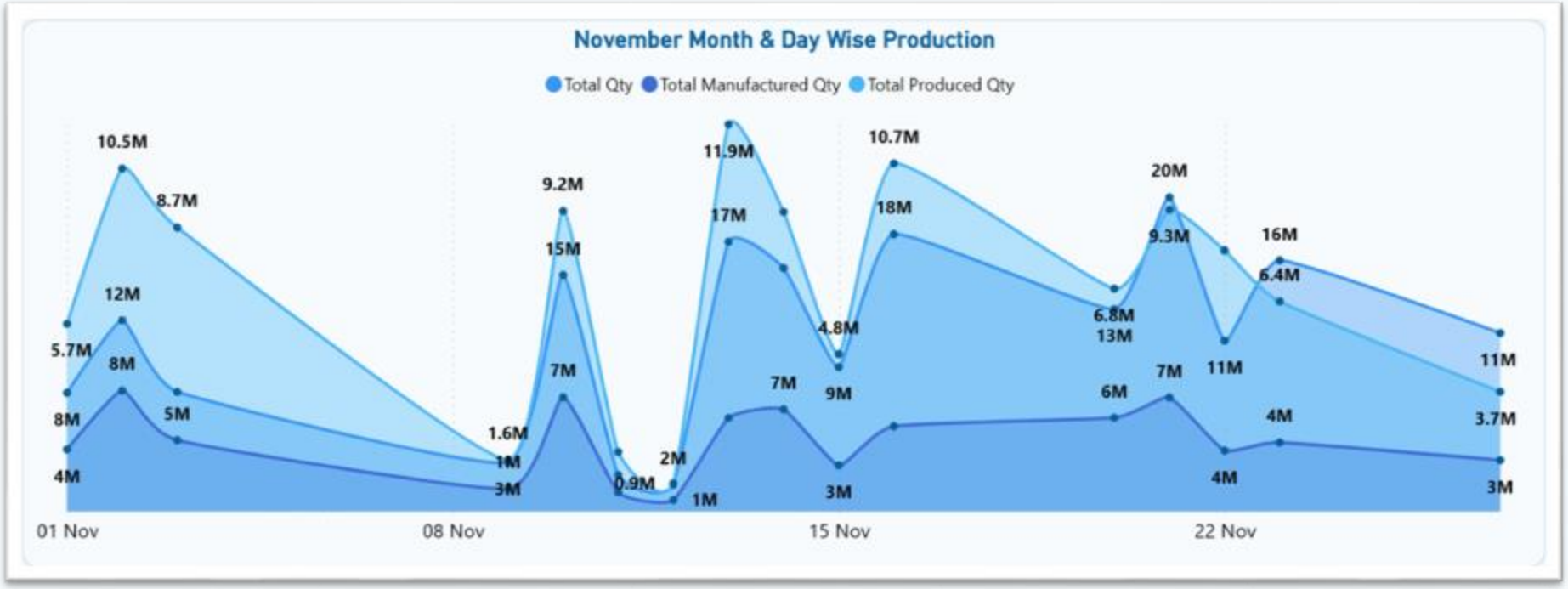
MACHINE WISE REJECTED QUANTITY



Top 10 machines show rejects ranging from 27K to 17K. C007 and C039 lead with the highest rejections, followed by C022, C023, and C037 (21–22K). Remaining machines fall between 17–19K. Overall, the top 10 machines show significant variation and highlight key focus areas for reducing total rejects.

ANALYSIS 5

PRODUCTION COMPARISON TREND



Production shows sharp fluctuations across November. Peak outputs occurred on 1st (10.5M), 14th (11.9M), and 21st (10.7M), while significant drops happened around 7th–8th and 28th Nov. Manufactured Qty and Produced Qty follow the same pattern, indicating consistent process flow but unstable daily performance. Overall trend shows strong peaks followed by sudden dips — suggesting machine downtime, material issues, or shift variations.

Recommendations

- **Maintenance and calibration check**: For high-reject machines, schedule maintenance or inspect them.
- **Train staff**: Based on operator performance data, identify knowledge gaps, re-train
- **Set targets & continuous improvement plan**: Aim to reduce reject rate from over next quarter, monitor weekly. Use dashboard to track progress publicly within teams.
- **Institute root-cause tracking and feedback loops**: Whenever rejects occur, capture defect type , cause , corrective action, feed that back to operators, maintenance teams, and management.

INSIGHTS

- Total manufactured quantity : **72.48 M** units.
- Total processed quantity: **72.04 M** so most manufactured units are processed.
- Total rejected quantity: **0.44 M** units.
- Total Wastage Qty : **69** relatively small compared to totals.
- A breakdown of rejections by employee shows one outlier one employee with 437,917 rejects far above others with 500, 350.
- Top 10 machine-wise rejected qty: shows some machines with high reject counts like “C007” at **27k** rejects, then others 26k, 22k.
- Department wise rejected shows that Woven Labels produces a very large share of total output but also results in the bulk of rejects where as Printed labels has much lower rejects relative to its output.
- overall reject rate is low about **0.6%** of total production, the rejects are highly concentrated in a few machines and a very few employees.

CONCLUSION

- Overall production performance remained strong, but quality-related issues need focused attention.
- The majority of rejections were concentrated in a few machines and operators, making corrective actions easier to target.
- Enhancing training, strengthening machine maintenance, and improving planning can significantly reduce rejections.
- With targeted improvements, the company can further stabilize production and improve operational efficiency.

CHALLENGES

- Cleaning and preparing the data took more effort than expected.
  We had to identify essential columns and create accurate calculated fields using formulas.

- Understanding the dataset was a key challenge.
  We spent time learning what each column represented and how they connected to the KPIs.

- Building the dashboard required several refinements.
  Choosing suitable visuals and arranging them clearly took multiple iterations.

LEARNINGS

- Gained strong skills in data cleaning and transformation using Excel and MySQL.
- Improved Power BI skills for creating KPIs, visuals, and interactive dashboards.
- Understood the importance of data standardization and documentation.
- Enhanced teamwork, communication, and problem-solving during real project challenges.

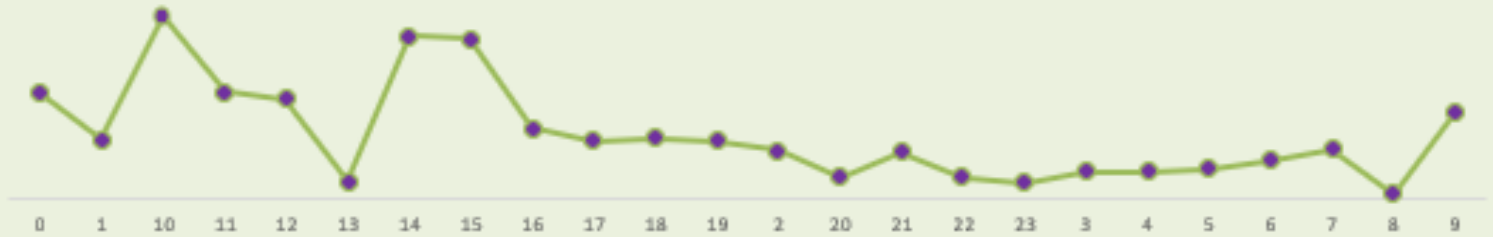
MANFACTURING ANALYSIS

MANFACTURED QTY	REJECTED QTY	PROCESSED QTY	WASTAGE QTY
725 L	4.41 L	720 L	42

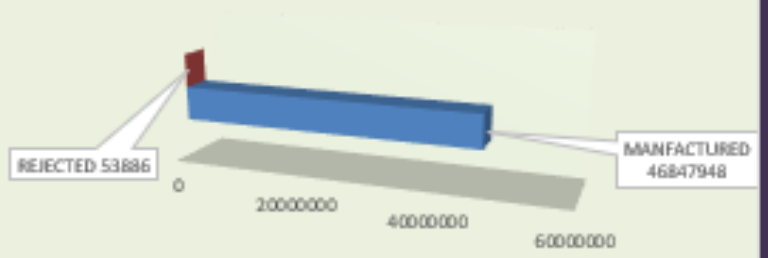
MACHINEWISE REJECTED

DEPARTMENT WISE MANFACTURED VS REJECTED

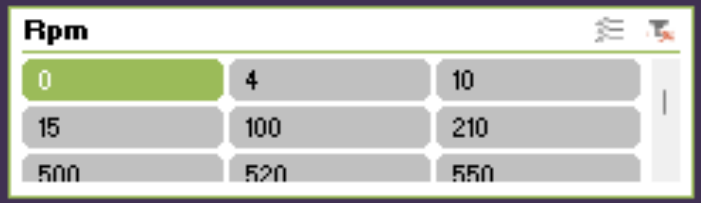
HOURLY MANFACTURED QTY IN NOVEMBER 2015



MANIFACUTRE VS REJECTED



PRODUCTION COMPARISON TREND



EMPWISE REJECTED QTY(>100)

EMPLOYEE NAME	SUM OF REJECTED QTY
Shruti Singh	437917
RAMJI	500
SANTOSH KUMAR	350
BITTU mishra	290
raj kumar	250
SATENDER	185
sanjay kumar	165
JAY PARKASH	160
AVINASH	155
Amit Sahu	155
PREM PAL	141
Shekhar Chandra	130
SAMEER	105

MANUFACTUREED
72.5M

REJECTED QTY
0.44M

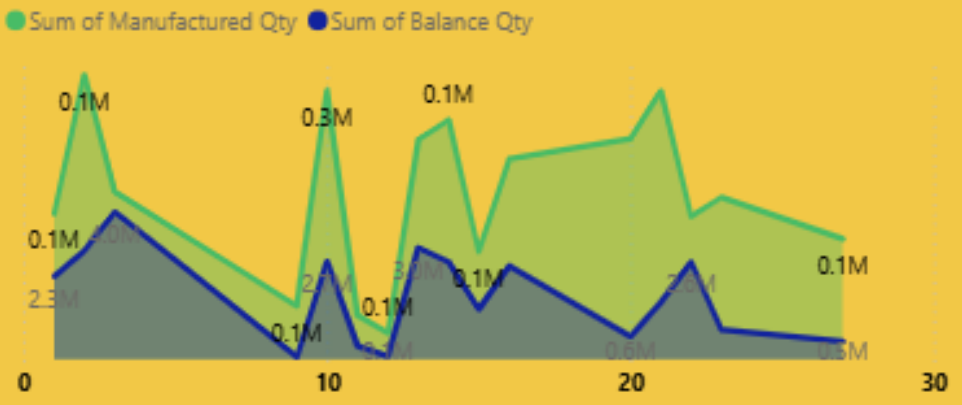
MANUFACTURING ANALYSIS
(NOVMBER 2015)

PROCEESSED QTY
72.0M

WASTAGE QTY
42

MACHINEWISE REJECTED QTY

PRODUCTION COMPARISON TREND



Choose the Top N machines/employee based on rejection

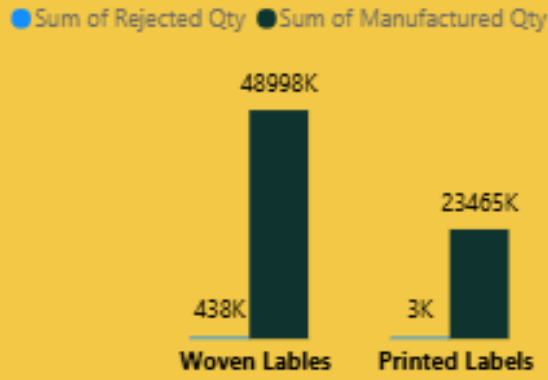
TOP N
5

Day
All

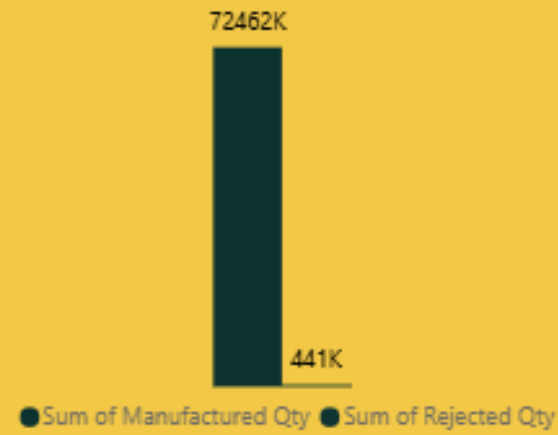
EMPLOYEEWISE REJECTED QTY

Emp Name	Sum of Rejected Qty
Shruti Singh	437717
SANTOSH KUMAR	350
RAM JI	500
raj kumar	250
BITTU mishra	290
Total	**439107**

DEPARTMENTISE MANUFACTURED VS REJECTED



MANUFACTURED VS REJECTED



MANFACTURING ANALYSIS

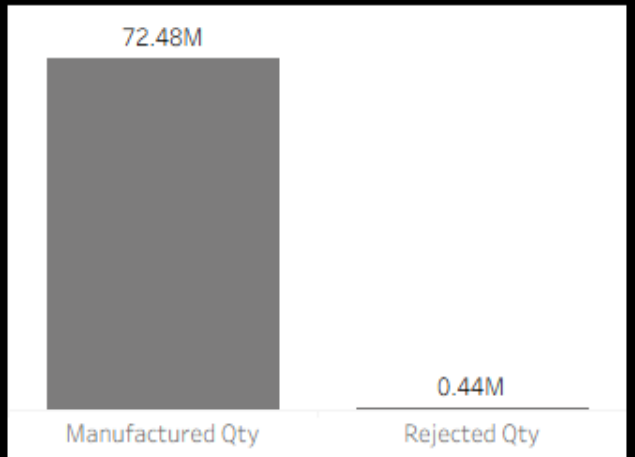
(NOVEMBER 2015)

MANFACTURED	REJECTED	WASTAGE(%)	PROCESSED
72.48M	0.44M	42%	72.04M

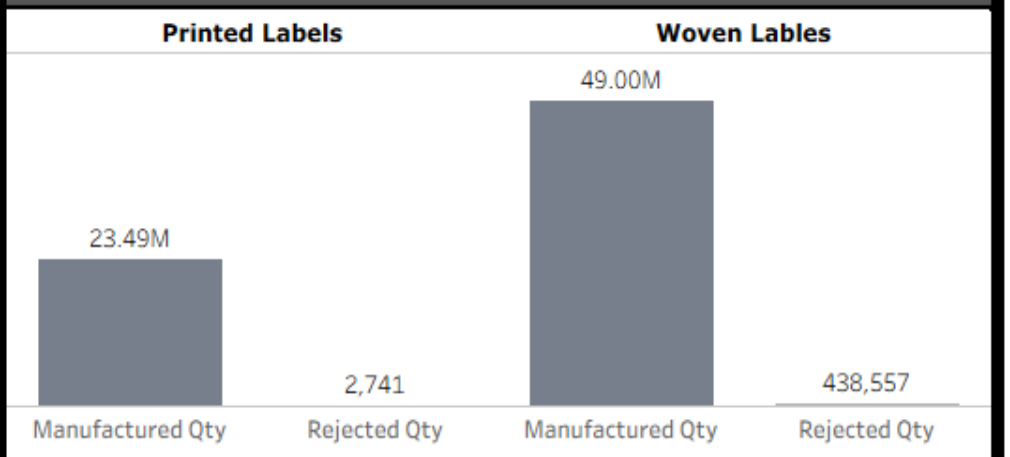
TOP 5 EMPLOYEEWISE REJECTED

Emp Name	REJECTED QTY
Shruti Singh	437,917
RAM JI	500
SANTOSH KUMAR	350
BITTU mishra	290
raj kumar	250

MANUFACTURED VS REJECTED



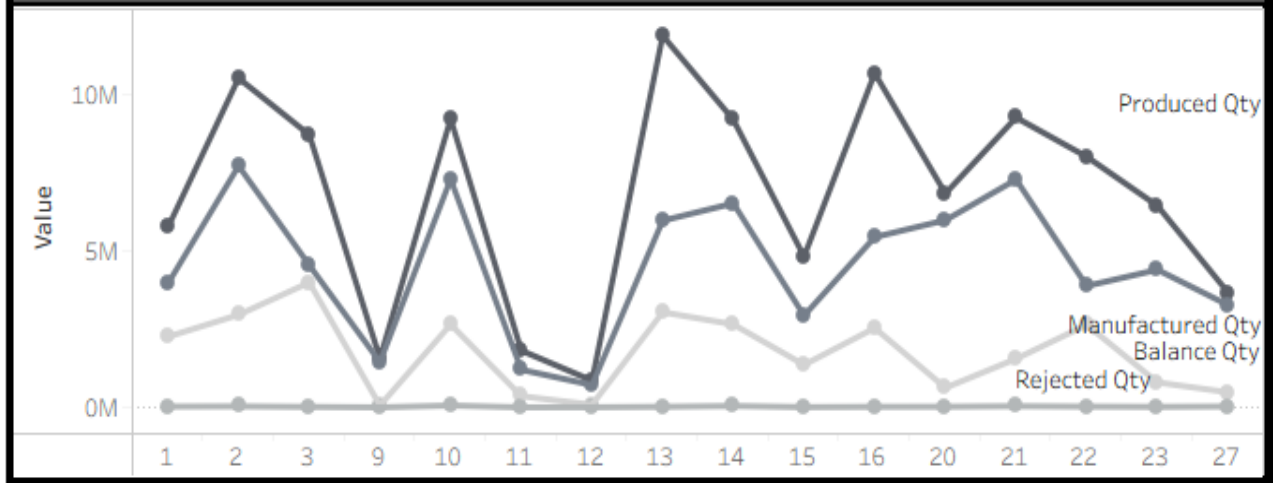
DEPARTMENTWISE REJECTED VS MANFACTURED



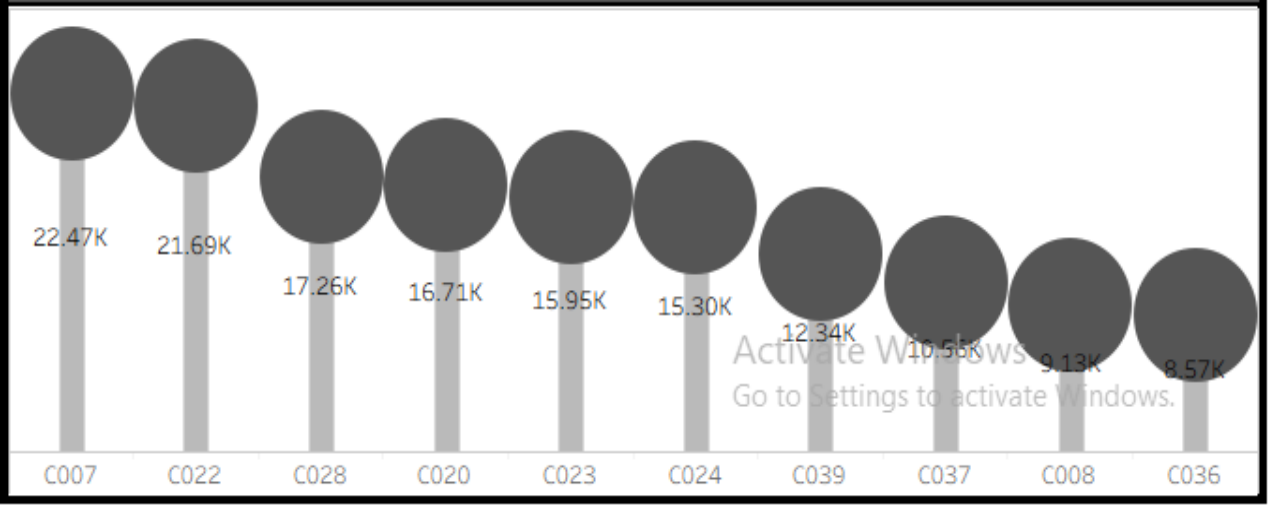
Day of Doc Date

(All)
1
2
3
9
10
11
12
13
14
15
16
20

PRODUCTION COMPARISON TREND



TOP 10 MACHINEWISE REJECTED QTY



Activate Windows
Go to Settings to activate Windows.

```sql
#TOTAL MANUFACTURED QUANTITY
SELECT CONCAT(ROUND(SUM(`Manufactured Qty`) / 1000000, 2), ' M') AS TOTAL_MANUFACTURED_QTY FROM PROJ;

#TOTAL REJECTED QUANTITY
SELECT CONCAT(ROUND(SUM(`REJECTED QTY`) / 1000000, 2), ' M') AS TOTAL_REJECTED_QTY FROM PROJ;

#TOTAL PROCESSED QUANTITY
SELECT CONCAT(ROUND(SUM(`PROCESSED QTY`) / 1000000, 2), ' M') AS TOTAL_PROCESSED_QTY FROM PROJ;

#TOTAL WASTAGE QUANTITY
SELECT  ROUND(SUM(`WASTAGE QTY`)) AS TOTAL_WASTAGE_QTY FROM PROJ;

#MACHINEWISE REJECTED QUANTITY
SELECT `MACHINE NAME` AS MACHINE_NAME , SUM(`REJECTED QTY`) AS TOTAL_REJECTED_QTY FROM PROJ GROUP BY `MACHINE NAME`;

#EMPLOYEEWISE REJECTED QUANTITY
SELECT `EMP NAME` AS EMPLOYEE_NAME , SUM(`REJECTED QTY`) AS TOTAL_REJECTED_QTY FROM PROJ GROUP BY `EMP NAME`;

#DEPARTMENTWISE REJECTED QUANTITY
SELECT `DEPARTMENT NAME` AS EMPLOYEE_NAME , SUM(`REJECTED QTY`) AS TOTAL_REJECTED_QTY FROM PROJ GROUP BY `DEPARTMENT NAME`;
```

```sql
#DEPARTMENTWISE REJECTED QUANTITY
SELECT `DEPARTMENT NAME` AS EMPLOYEE_NAME , SUM(`REJECTED QTY`) AS TOTAL_REJECTED_QTY FROM PROJ GROUP BY `DEPARTMENT NAME`;

#MANUFACTURED VS REJECTED
SELECT  SUM(`REJECTED QTY`) AS TOTAL_REJECTED_QTY, SUM(`MANUFACTURED QTY`) AS TOTAL_MANUFACTURED_QTY FROM PROJ;

#PRODUCTION COMPARISON TREND
SELECT `DOC DATE`,SUM(`MANUFACTURED QTY`) as TOTAL_MANUFACTURED_QTY, SUM(`REJECTED QTY`) AS TOTAL_REJECTED_QTY,
SUM(`PROCESSED QTY`) AS TOTAL_PROCESSED_QTY FROM PROJ GROUP BY `DOC DATE`;
```

MAIN KPI's

Result Grid | Filter Rows:

TOTAL_WASTAGE_QTY
69

Wastage Quantity

Result Grid | Filter Rows

TOTAL_PROCESSED_QTY
72.04 M

Processed Quantity

Result Grid | Filter Rows:

TOTAL_MANUFACTURED_QTY
72.48 M

Manufactured Quantity

Result Grid | Filter Rows:

TOTAL_REJECTED_QTY
0.44 M

Rejected Quantity

Result Grid | Filter Rows: | Export:

TOTAL_REJECTED_QTY	TOTAL_MANUFACTURED_QTY
441298	72484991

Rejected Quantity VS Manufactured Quantity

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

DOC DATE	TOTAL_MANUFACTURED_QTY	TOTAL_REJECTED_QTY	TOTAL_PROCESSED_QTY
2015-11-09 12:23:00	10640	20	10620
2015-11-09 08:03:00	52476	1000	51476
2015-11-09 11:10:00	104952	0	104952
2015-11-09 18:41:00	38433	450	37983
2015-11-09 21:46:00	146272	0	146272
2015-11-09 14:07:00	199210	0	199210
2015-11-09 14:39:00	10900	150	10750
2015-11-09 12:18:00	6900	50	6850
2015-11-09 10:47:00	241918	180	241738
2015-11-09 21:06:00	12210	60	12150
2015-11-09 22:20:00	31179	860	30319
2015-11-09 20:44:00	4785	0	4785
2015-11-09 17:01:00	71735	950	70785
2015-11-09 20:59:00	61317	0	61317
2015-11-09 17:44:00	40640	350	40290

Production Comparison Trend

Result Grid | Filter Rows:

EMPLOYEE_NAME	TOTAL_REJECTED_QTY
Shruti Singh	437917
Pyare Lal	0
Sandeep Kr	50
Ashish	0
Mahendra Singh	0
Gyan Bhushan	70
Sandeep	0
Ram Suti	40
Mohit	20
Santosh	15
Mukesh Kumar	0
Rajeev Choudhary	0
Ravish Pathak	0
Satender	185
Raj Kumar	250

Employee wise Rejected Quantity

Machine wise Rejected Quantity

Result Grid | Filter Rows:

MACHINE_NAME	TOTAL_REJECTED_QTY
C020	18160
CR001	0
Pack001	0
F3	1731
C026	7900
C031	15775
C022	21690
C027	7660
6	0
4	0
C021	12045
C028	17360
24	0
C011	14530
US001	500