**README**

**Quality Control Dashboard (Power BI)**

**Project Overview**

This project delivers a **Quality Control Dashboard** in Power BI for monitoring product defects in a manufacturing company.  
The dashboard is designed to give production managers a clear, interactive way to track defect rates, identify problematic products, and analyze performance by production lines and inspectors.

**Data Sources**

Two CSV files were provided:

1. **production\_data.csv**
   * ProductID
   * BatchID
   * Date
   * Status (*Pass* / *Fail*)
2. **batches\_data.csv**
   * BatchID
   * ProductionLine
   * InspectorName

**Data Modeling**

* Imported both CSVs into Power BI.
* Established relationship:
  + Production[BatchID] → Batches[BatchID]
* Created a **Merged Table** (MergedData) combining production details with batch and inspector info.

**DAX Measures**

Key measures created for analysis:

Total Inspected = COUNTROWS(MergedData)

Defective Items =

CALCULATE(

COUNTROWS(MergedData),

MergedData[Status] = "Fail"

)

Overall Defect Rate =

DIVIDE([Defective Items], [Total Inspected], 0)

Daily Defect Rate =

DIVIDE(

CALCULATE([Defective Items]),

CALCULATE([Total Inspected]),

0

)

Passed Items = [Total Inspected] - [Defective Items]

**Dashboard Visuals**

The dashboard answers four key business questions:

1. **What is our overall defect rate?**
   * KPI Card: *Overall Defect Rate (%)*
2. **Which products have the highest number of defects?**
   * Clustered Bar Chart: *Top 5 products by defect count*
3. **Is the defect rate improving or worsening over time?**
   * Line Chart: *Daily Defect Rate trend (last year)*
4. **Are certain inspection batches performing worse than others?**
   * Matrix Table: *Defects by Production Line & InspectorName*

Additional Interactivity:

* **Date Slicer** for filtering across all visuals.
* Visual interactions configured so selecting a product or time period filters related visuals.

**Dashboard Layout**

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| KPI (Overall Defect Rate) | Date Slicer |

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| Top 5 Products (Bar) | Defect Trend (Line) |

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| Matrix: ProductionLine → InspectorName |

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**Insights (Sample from Provided Data)**

* Total inspected items: **150**
* Total defective items: **9**
* Overall defect rate: **6.0%**
* Some products show higher defect concentrations.
* Defect trend can be tracked to see if quality is improving or declining.
* Certain inspectors/lines may need review if defect rates are higher.

**How to Use**

1. Open Quality\_Control\_Dashboard.pbix in Power BI Desktop.
2. Use the **date slicer** to filter results by specific time ranges.
3. Hover over visuals to see detailed tooltips (inspected vs defective counts).
4. Drill down by clicking products or production lines to isolate defects.

**Deliverables**

* **Power BI file**: Quality\_Control\_Dashboard.pbix
* **Export**: PDF version of dashboard (optional for stakeholders).
* **README (this file)**: Documentation of process, design, and usage.