

Testing & Final Report

Manufacturing Downtime Analysis

5.1 Testing & Quality Assurance

Test Plan

Test Case ID	Scenario	Expected Outcome	Status
TC-01	Verify Total Production Time	Sum of all batch durations matches Excel source sum.	Pass
TC-02	Check Shift Logic	8:00 AM is "Day Shift", 8:00 PM is "Night Shift".	Pass
TC-03	Validate Relationships	Filtering by "Charlie" filters the downtime charts correctly.	Pass
TC-04	Stress Test	Rapidly switching between Product filters does not crash the visual.	Pass

Data Validation:

- Verified that factLineDowntime rows count matches the non-null entries in the raw "Line downtime" sheet.
- Confirmed dimProducts contains no duplicate Product IDs.

5.2 Final Project Report & Insights

Executive Summary: The project successfully integrated production data to reveal a current **Efficiency of 64.02%**. The analysis pinpointed **Machine Adjustments** and **Operator Error** as the primary causes of the 21% below the standard (80-90%).

Key Findings:

- Low Efficiency:** 92% of batches fail to meet target times.
- Critical Bottlenecks:** "Machine Adjustment" causes 332 minutes of downtime; "Inventory Shortage" causes 225 minutes.
- Operator Performance:** Operators **Charlie** (Night) and **Dee** (Day) have the highest downtime, specifically correlated with product **CO-600**.
- Shift Patterns:** Night shift experiences higher downtime volatility than Day shift.

5.3 Recommendations

Based on the data, the InfoVerse Team recommends:

1. **Targeted Training:** Implement immediate retraining for Charlie and Dee on CO-600 Machine Adjustments.
2. **SOP Creation:** Develop a **Standard Operating Procedure** (checklist) for machine calibration to reduce the 332-minute loss.
3. **Supply Chain Review:** Investigate warehouse logistics to eliminate "Inventory Shortage" delays.
4. **Performance Monitoring:** Use this dashboard in weekly operational reviews to track the impact of these interventions.