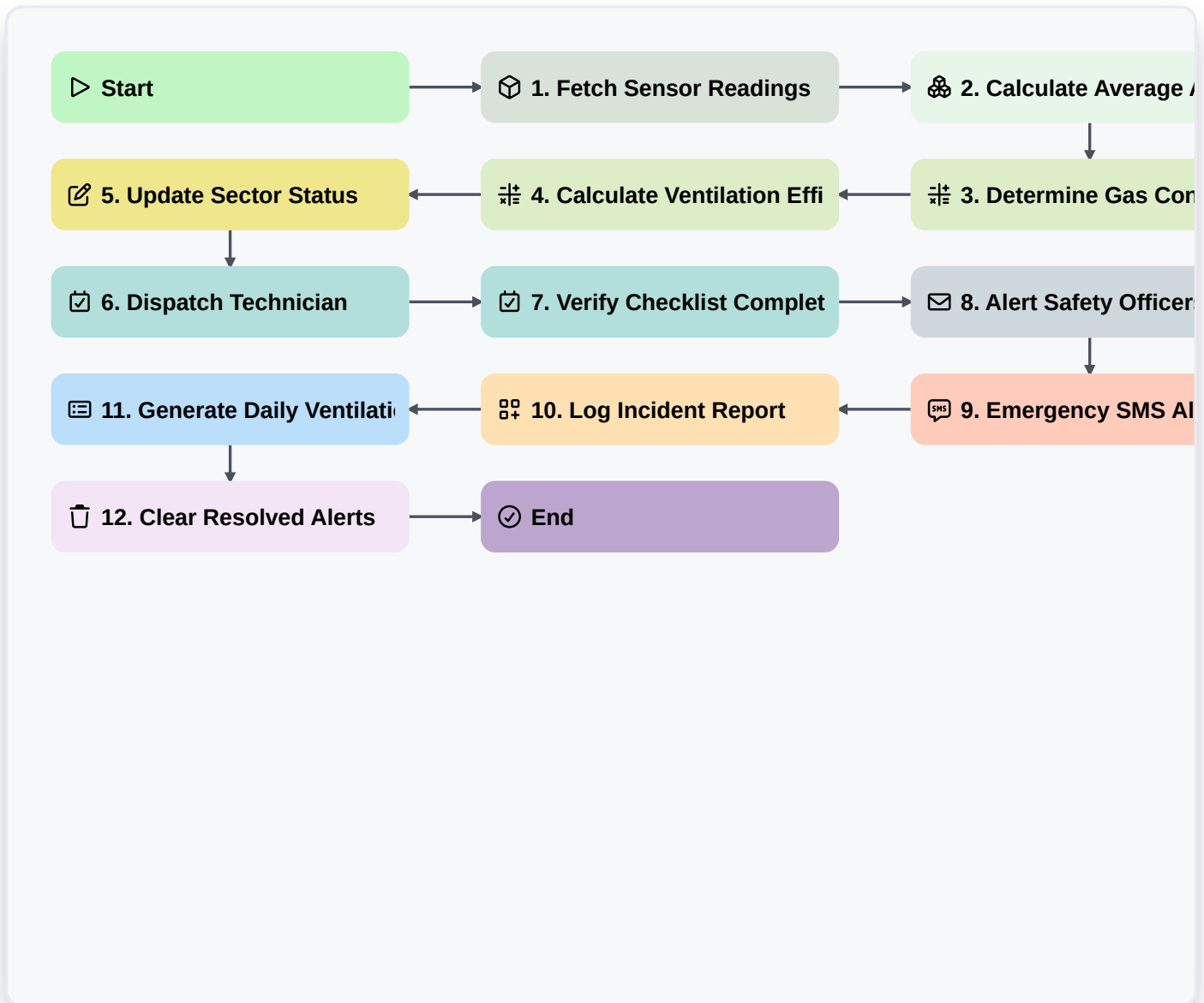


Underground Mine Ventilation Monitoring



Start

Start of the Workflow/Process.

1. Fetch Sensor Readings

Retrieve the latest CO, NO₂, and CH₄ gas level entries from the Ventilation Sensor Data Model.

2. Calculate Average Airflow

Calculate the average airflow velocity across all active ventilation fans in the current sector.

3. Determine Gas Concentration Ratio

Calculate the ratio of current gas levels against the safety threshold limits.

4. Calculate Ventilation Efficiency

Calculate the efficiency score based on airflow volume vs. power consumption of the fans.

5. Update Sector Status

Update the status of the Mine Sector entry to 'Hazardous' or 'Safe' based on gas readings.

6. Dispatch Technician

Create a high-priority task for the Ventilation Engineer to inspect the localized sensor nodes.



7. Verify Checklist Completion

Assign a maintenance checklist to the technician to ensure all physical fan blades are inspected.

8. Alert Safety Officers

Send an urgent email notification to the Mine Safety Department regarding threshold breaches.

9. Emergency SMS Alert

Send an automated SMS to the underground pit boss and emergency response team.

10. Log Incident Report

Create a new entry in the Incident Management Data Model for every detected gas spike.

11. Generate Daily Ventilation Summary

Generate a daily PDF report summarizing all airflow fluctuations and sensor anomalies.

12. Clear Resolved Alerts

Delete expired or resolved alert entries from the active notification queue to maintain system performance.

End

End of the Workflow/Process.