

4. **Ladle Usage data – Manual to auto for melting section**

Objective:

The main objective of this project is to design and implement an **automatic ladle usage monitoring system** to replace the existing manual tracking process in the foundry.

Problem Statement:

In the current foundry operation, the **ladle usage count is tracked manually** by operators. Each time a ladle is used to carry molten metal from the furnace to the pouring section, the operator updates a register or sheet. This manual method has several drawbacks:

- **Human error** in counting or recording.
- **No real-time tracking** of ladle usage.
- **Difficulty in maintenance planning** since actual usage data is not accurate.
- **Inconsistent data** leads to premature or delayed ladle lining replacement.
- **Reduced efficiency and increased downtime** during audits or breakdowns.

Due to these challenges, a **smart automated system** is required to monitor and record ladle usage automatically and generate alerts for maintenance or replacement based on predefined limits.

Expected Outcome:

- Automatic counting of each ladle usage without manual intervention.
- Accurate data for maintenance and life tracking.
- Reduction in human error and improved safety.
- Real-time visibility of ladle status and remaining life.

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