

# Instrumentation in Milk Processing at Dairy Development Corporation (DDC), Balaju

*Presented By*

*Siddharth Acharya : HCE080BCT037*

*Sneha Rawal : HCE080BCT040*



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## Introduction



Overview of Kathmandu Milk Supply Scheme (KMSS)



Part of Dairy Development Corporation (DDC)



Semi-automated plant established in 1980 A.D.



Processes 75,000+ liters per shift

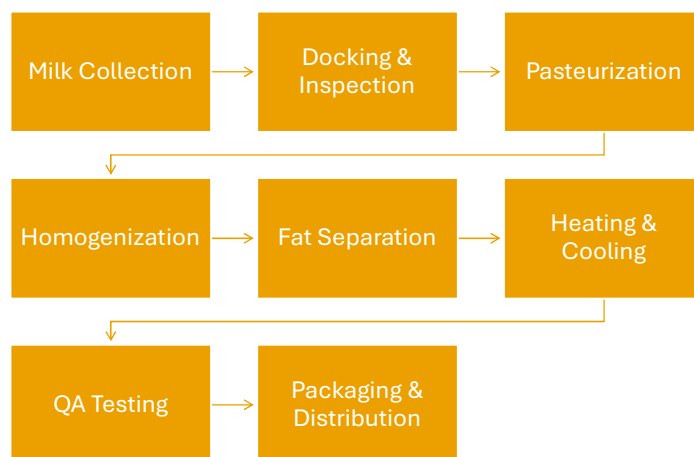
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## Objectives of the Study

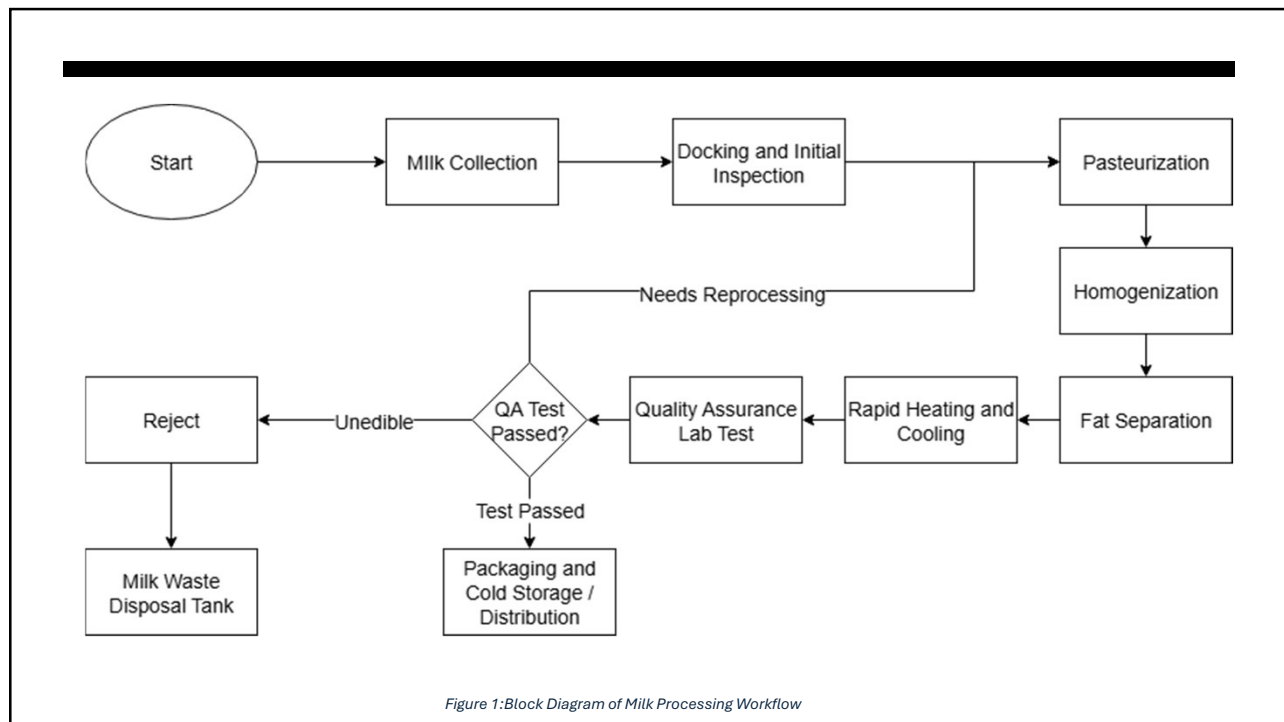


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## Milk Processing Workflow



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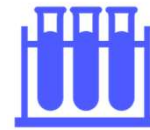
## Instrumentation & Parameters



**Key Parameters Monitored:**  
Temperature, Pressure, Flow, Level,  
Fat Content, SNF, Microbial Safety



**Sensor Types:** NTC-001 temperature  
sensors, flow meters, pressure  
sensors



**Analyzers:** Lab analyzers for pH, fat,  
and moisture

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## Machinery Overview



**Cooling:** Ammonia Compressor (Vic-1)



**Heating:** PiL-4 Steam Boiler



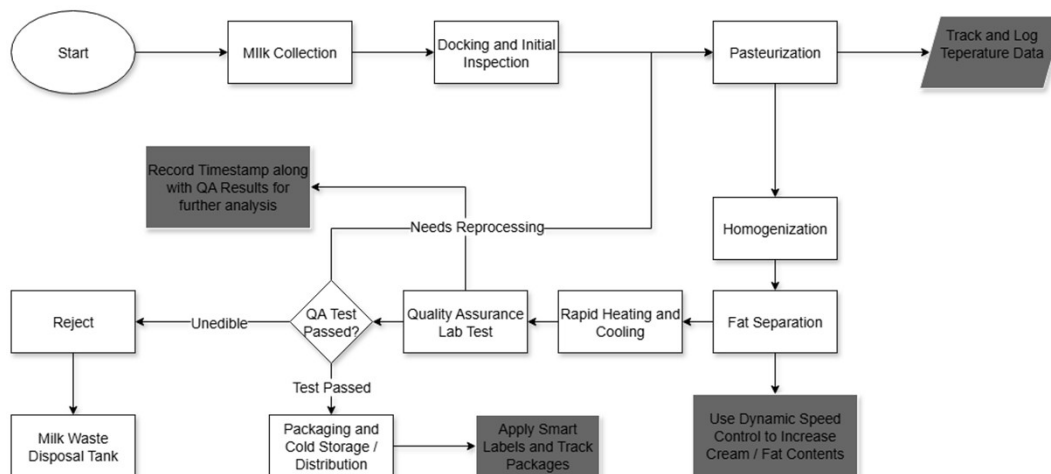
**Storage Tanks:** Capacity up to 70,000+ liters



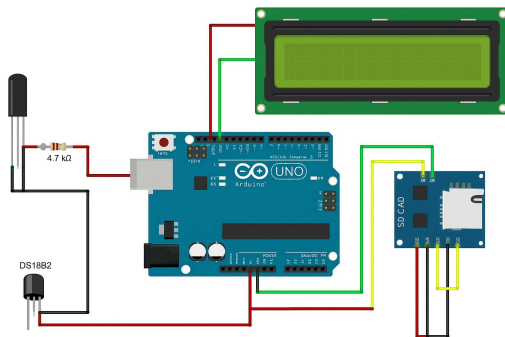
**Flow Control:** Pneumatic Valves and Sensors

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## Recommendations (Overview)



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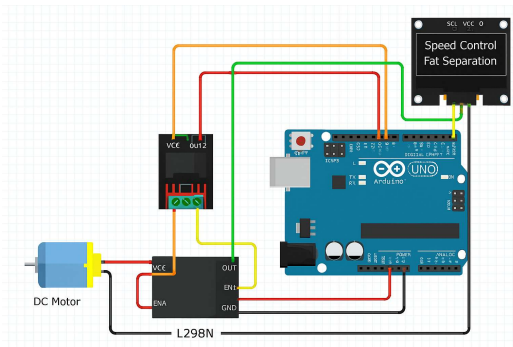


## Arduino-Based Automation (1)

### Pasteurization Monitoring:

- DS18B20 temperature sensor
- Real-time display + SD card logging
- Alarm triggers + heater control possible

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## Arduino-Based Automation (2)



**Dynamic Speed Control for Fat Separation:**



Arduino-controlled centrifuge speed (PWM)



RPM monitoring using Hall sensor



OLED display for real-time status

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## Additional Recommendations

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**Timestamp QA**  
**Results:** RTC +  
batch logging

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**Smart Labels:**  
RFID/NFC for  
package tracking

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**Predictive Maintenance:**  
Arduino +  
performance  
tracking

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## Conclusion



DDC BALAJU  
DEMONSTRATES STRONG  
AUTOMATION  
INTEGRATION



FUTURE UPGRADES CAN  
OPTIMIZE EFFICIENCY,  
TRACEABILITY, AND  
SAFETY



ACTS AS A MODEL FOR  
MODERNIZATION IN  
NEPAL'S DAIRY INDUSTRY

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## Thank You / Q&A



### ◆ Thank You for Your Attention!

We appreciate your time and interest in our case study.



### 🎤 Questions & Discussion

We welcome any questions, feedback, or suggestions.

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## Acknowledgements



**Er. Hasina Shakhya –**  
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