1. Project background
Dairy Lab Automation

- Partners
  - Central Counties DHIA
    - Atwater, California
    - Christine Hackler
    - Provided vision & funding
  - Ram Mechanical, Inc.
    - Ceres, California
    - Steve Nelson
    - Automation expertise & fabrication
  - Advanced Instruments, Inc.
    - Norwood, Massachusetts
    - Milk analysis

Ram Mechanical, Inc. Services

- Mechanical Contracting
- Custom Manufacturing
- Engineering
- Electrical and Controls
- Robotic Integration
- Bottled Water Equipment
- Laboratory Automation
- Dairy Automation
Automated Lab Program Objectives

- Automate the sample handling, loading and unloading of **two** analyzers
- Improve test results through uniform sample handling
- Reduce labor costs
  - Reduction in staff
  - Reduced insurance cost

Typical Automatic Lab System

- Staging table(s) for incoming racks (60 or 100 count)
- Reliable Fanuc Robot with custom manufactured End of Arm tooling
- Automatic temperature controlled water bath(s)
- Conveyor system with 1x10 cassettes
  - Replaces conveyor from analyzer manufacturer
- Milk sample analyzers (Filter or FTIR)
- Vial washing station with drying, preservative application and capping
- Up to 1200 Samples per hour
Measurable Results

- **Lower workers compensation exposure**
  - By elimination of repetitive stress injury activities
- **More reliable results for your clients**
  - As a product of more consistent, uniform sample handling
- **Labor cost savings**
  - Lower direct labor cost
  - Lower preservative cost
  - Ability to use existing staff to expand operations

Additional Benefits

- Sample vials ready to go back out the same day
  - Reduced drying space and expense
- **Uniform application of preservative**
  - Better mixing when new sample is added to vial
- **Improvement in lab morale**
  - Acquisition of new skills
Key Features

- No significant modifications of analyzer
  - Racks & conveyor updated to accommodate automated loading
- Analyzers and robot can be acquired independently
- Analyzers and robot can be operated independently
- Analyzers and robot can be configured to fit individual lab requirements
- Wash station can operate during periods when analyzer is down
- No software conflicts
- Compatible with RFID systems

Upcoming Features

- Automatic De-stacker or Stacker
  - Allows a stack of up to 10 racks to be loaded onto staging table, or stacked after completion
- Injection Molded Racks
  - Strong, lightweight and durable
  - 10 x 10 configuration
  - Stackable
  - Allows for automated or manual handling
  - Designed for use in water bath
  - Taking orders now!
- Sour sample detection
  - Electronic nose alerts operator to sour samples
Recap

- High reliability
- Low acquisition costs
- Rapid return on investment
- Low maintenance costs
- Low cost of ownership
- User friendly

- Installation, on-site training
- 24/7 service and support

Thank you
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Questions?