



# Fluid Technology Roundup

Mixing Systems  
Manual to Automated

# Batching Systems

## Open System

- Mixers for blending NPK products with Micros.
  1. Mixer on load cells.
  2. Products weighed in one at a time.
  3. Agitator with baffles.
  4. Circulation / load out pump.
  5. Dry additions by auger, eductor or over top.

# Open System



# Batching Systems

## Closed System

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  5. Dry additions by auger or eductor.
  6. Closed mixer to control heat, pressure or pH.

# Closed System



# Closed System



# When to Automate

- To speed up production.
- Load out and cold blend systems.
- Eliminate human error on blending.
- Help inventory control.
- Continuous system.
- Help cut back on overhead / labor.
- Run multi systems at one time.

# When to Automate

- Automate to speed up production and load out.
  1. Install meters on individual products to speed up production.
  2. Install custody sales meter on load out.
  3. Cold blend directly to tanker trailers.
  4. Unmanned load out system.

# When to Automate



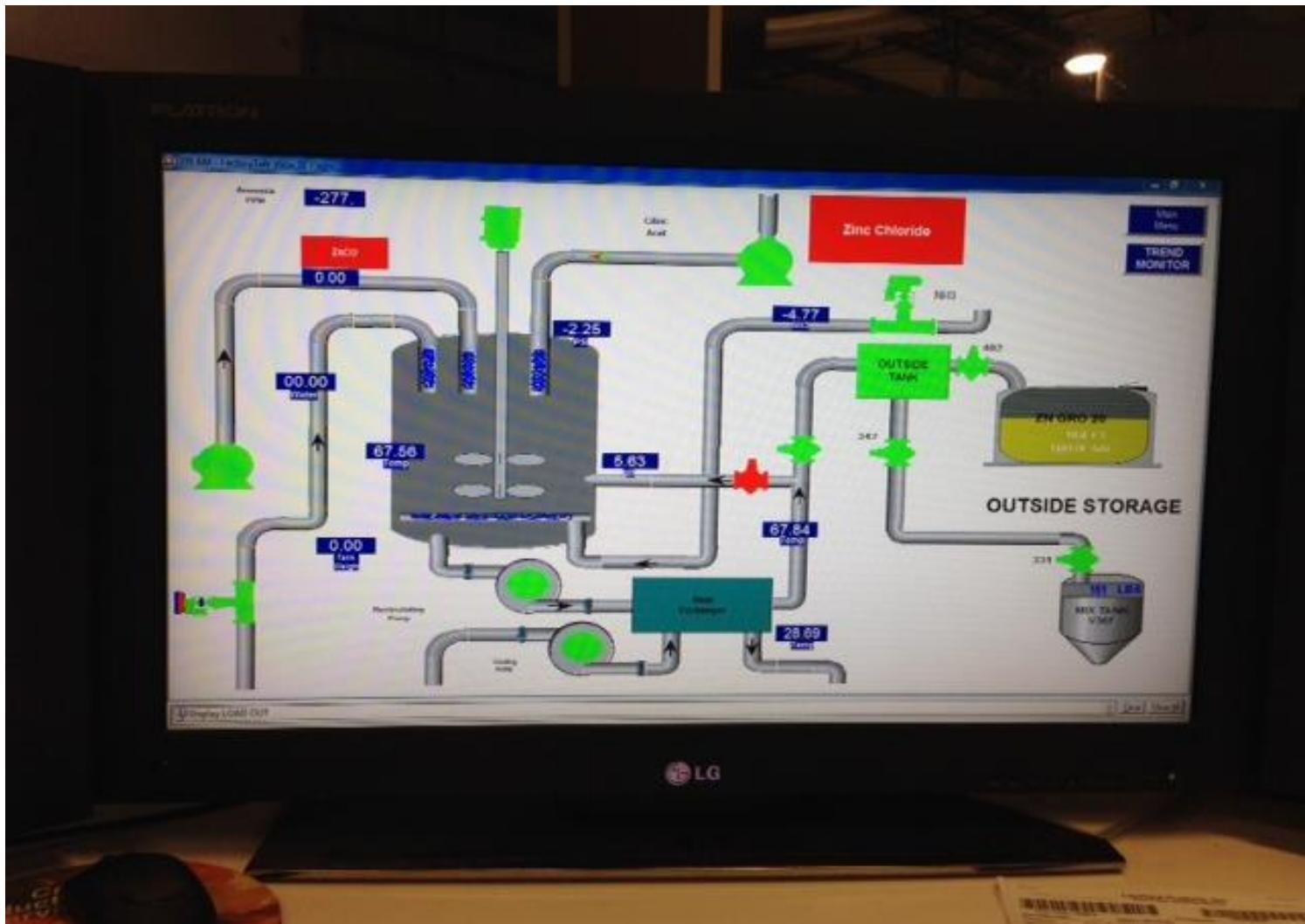
# When to Automate



# When to Automate

- Eliminate human error.
  1. QA/QC control
  2. Maintain regulatory compliance.
- Inventory recording and control
  1. Tons manufactured recorded daily.
  2. Raw material usage recorded daily.
  3. Printed mix tickets showing required vs. actual weights.

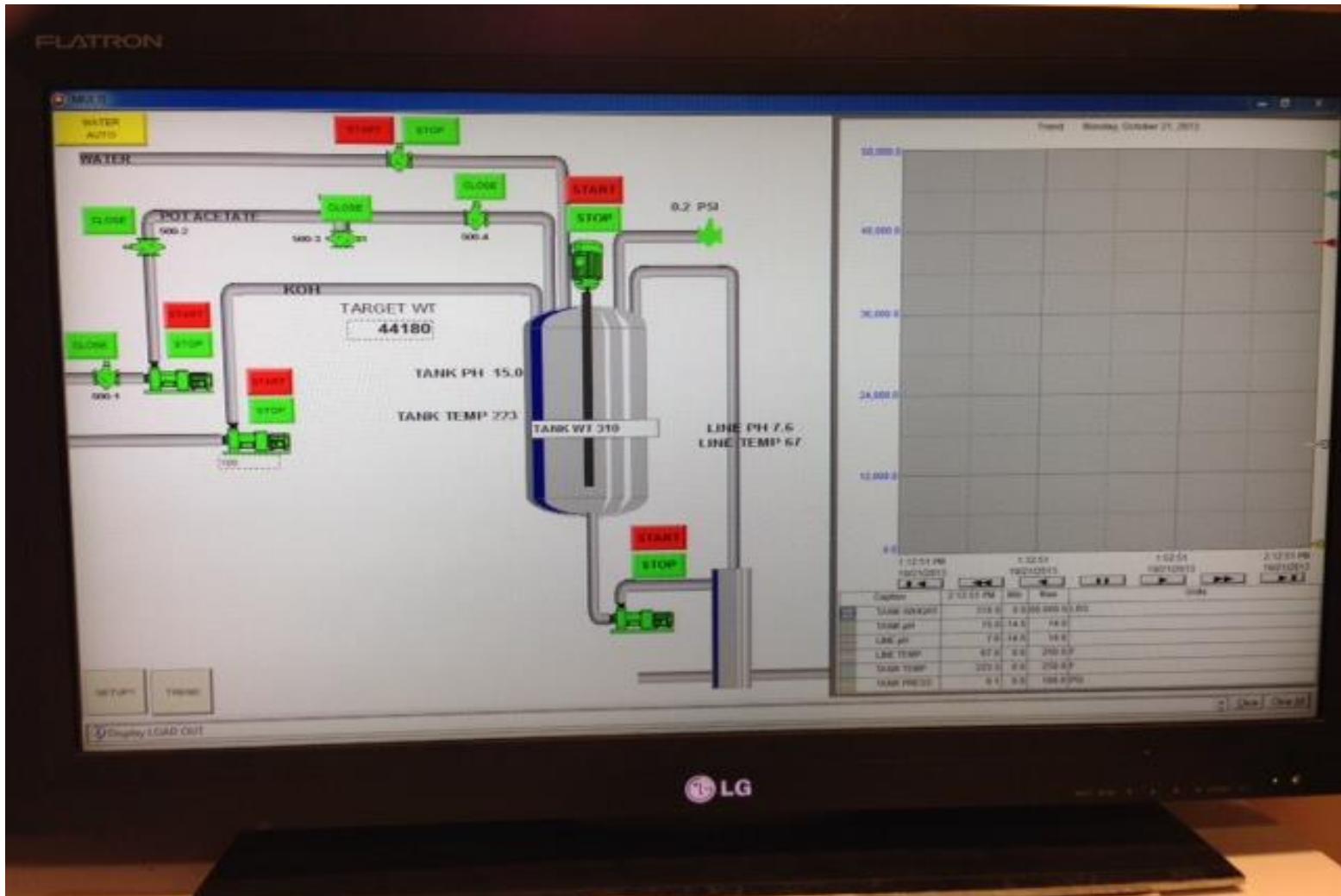
# When to Automate



# When to Automate

- Continuous Batching systems – When does it make sense.
  1. Total volume needed.
  2. Time table / window of opportunity.
  3. Logistics of raw materials – rail vs. trucks.
  4. Safety / trend monitoring.

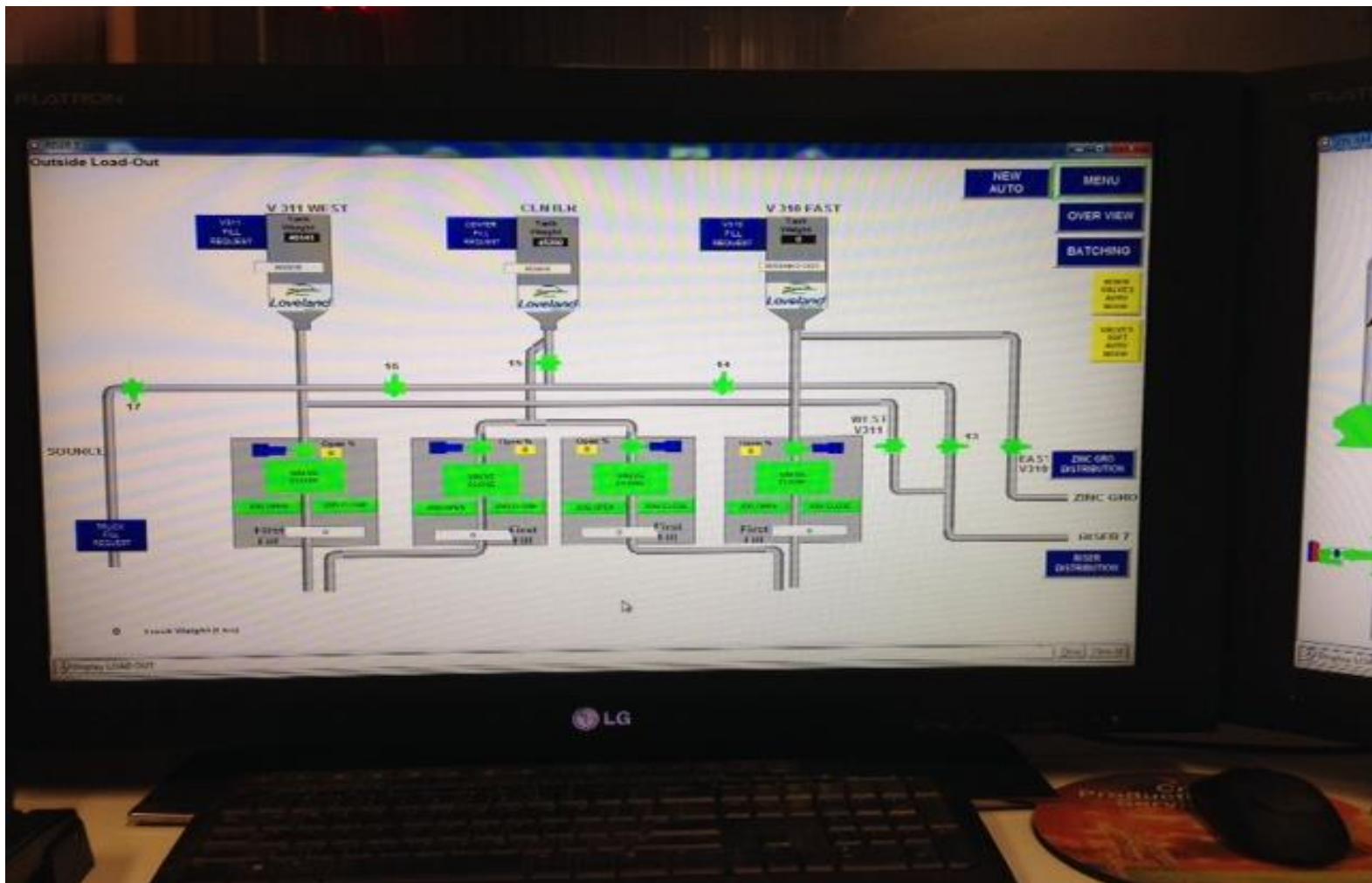
# When to Automate



# When to Automate

- Reduce overhead / labor cost.
- Run multiple systems at one time.
  1. Unloading system.
  2. Loading system.
  3. Batching system.

# When to Automate



# Questions

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