

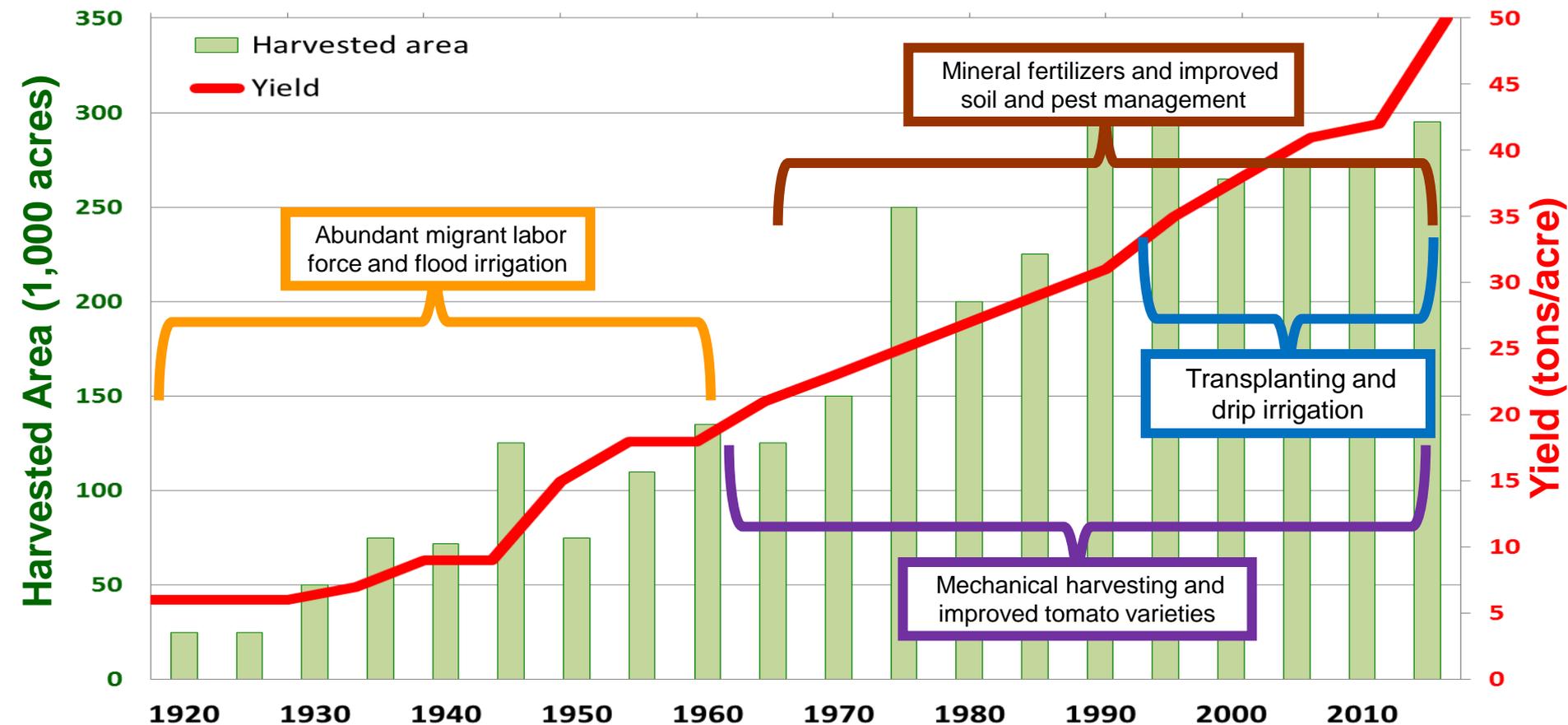
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**New engineering
concepts (technologies)
in tomato processing**

NEW TECHNOLOGIES!



Before 1962
All hand-harvested



1962- First commercial harvester
Required 12 people to operate



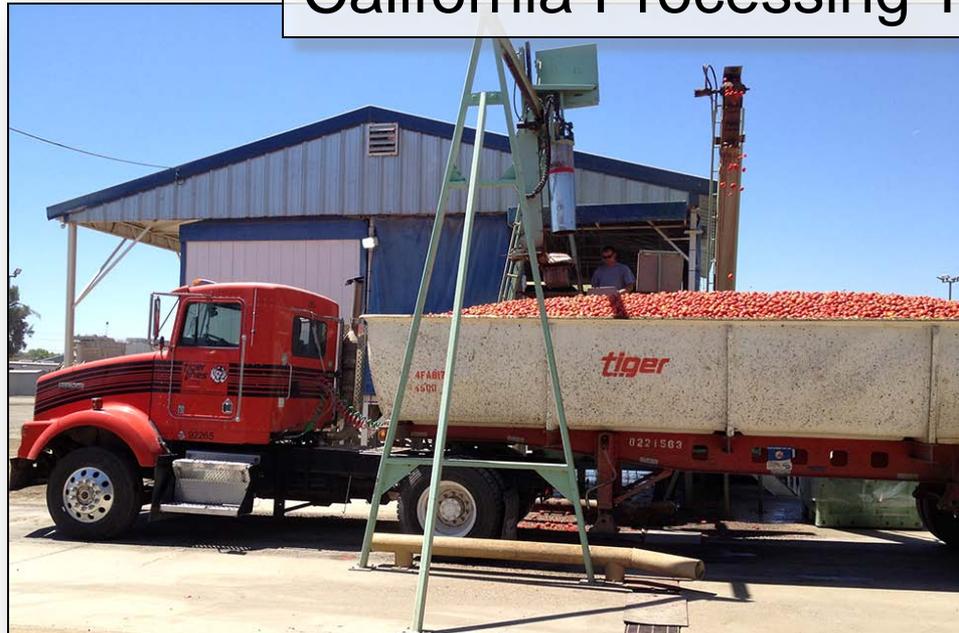
NOW Harvester
Single operator

Assessment of Tomato Quality

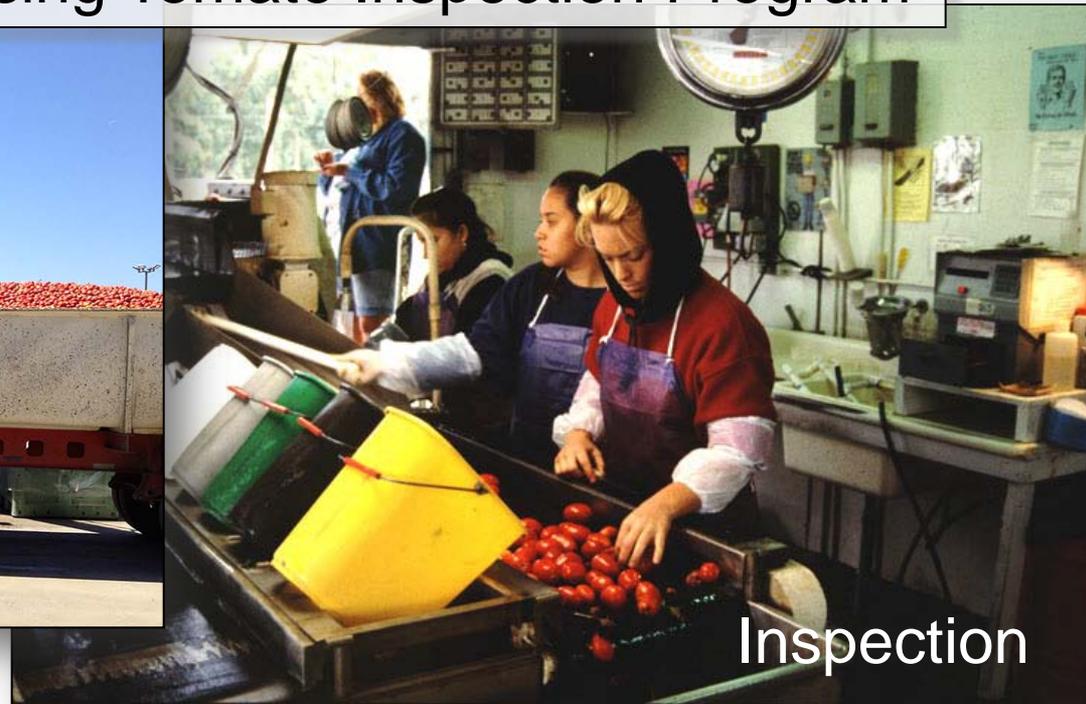
Mechanized
Harvest



California Processing Tomato Inspection Program



Random Sampling



Inspection

Example 1. Automated Inspection System for Processing Tomatoes (AIS-PT)

Processing Tomato Advisory Board
In association with
The University of California, Davis
Department of Biological Systems Engineering
(Lead PI: Professor David Slaughter)



TOMATO QUALITY ASSESSMENT

PHYSICAL



- Cleanliness
- Disease or decay
- Size
- Weight
- Color

TOMATO QUALITY ASSESSMENT

CHEMICAL

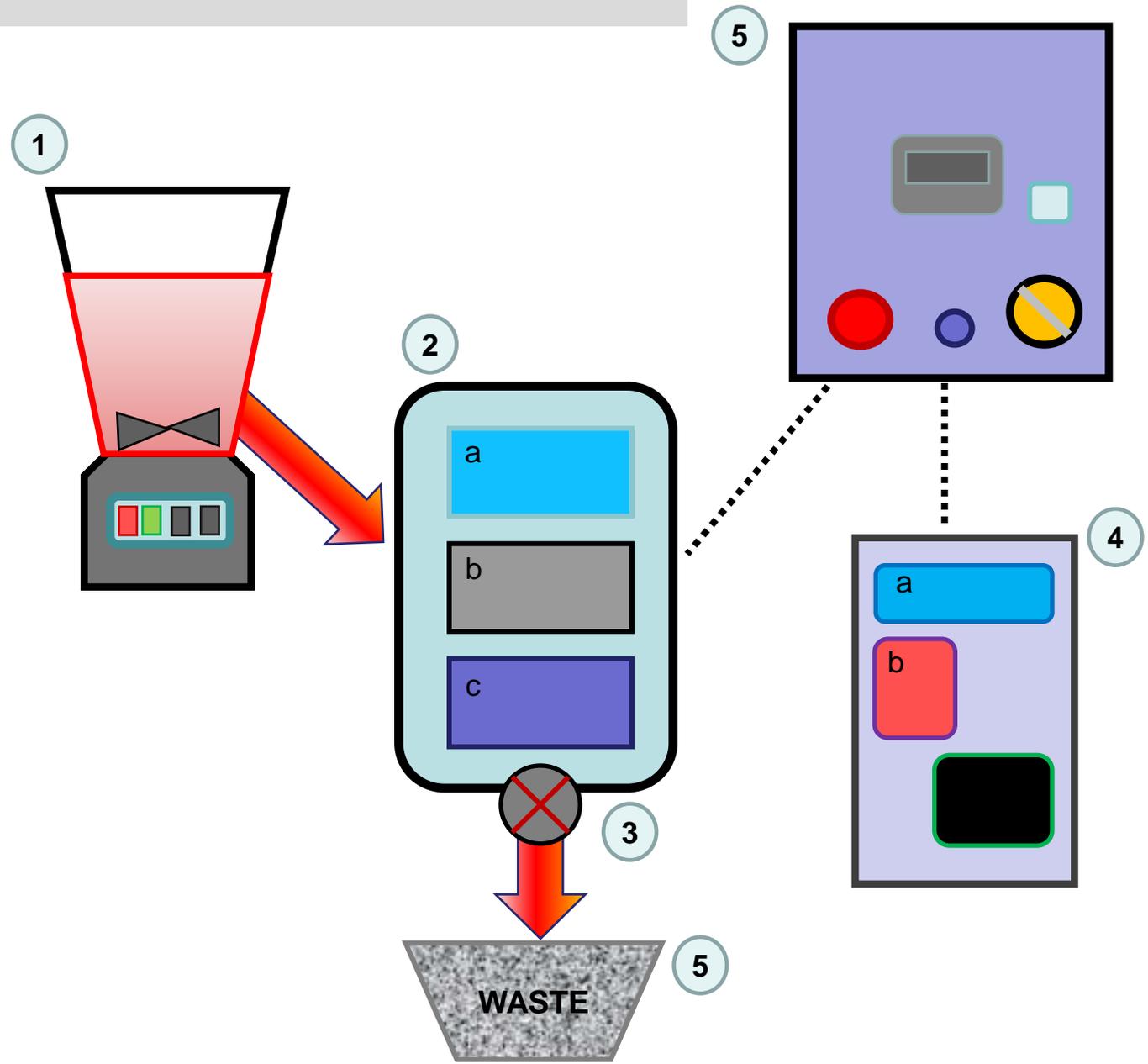
- **Color**
 - **pH**
 - **Soluble Solids**
 - Titratable Acidity
 - Bostwick consistency
 - Juice/Serum Viscosity
- AIS-PT



OPERATIONS OVERVIEW

MAJOR COMPONENTS

1. Blender
 - a) Colorimeter
 - b) pH Meter
 - c) Refractometer
2. Valve/Pumps
 - a) Air vacuum
 - b) Water Pump
 - c) Flowmeter
3. Logic Controller & Touch Panel
4. Waste stream



MAJOR COMPONENTS

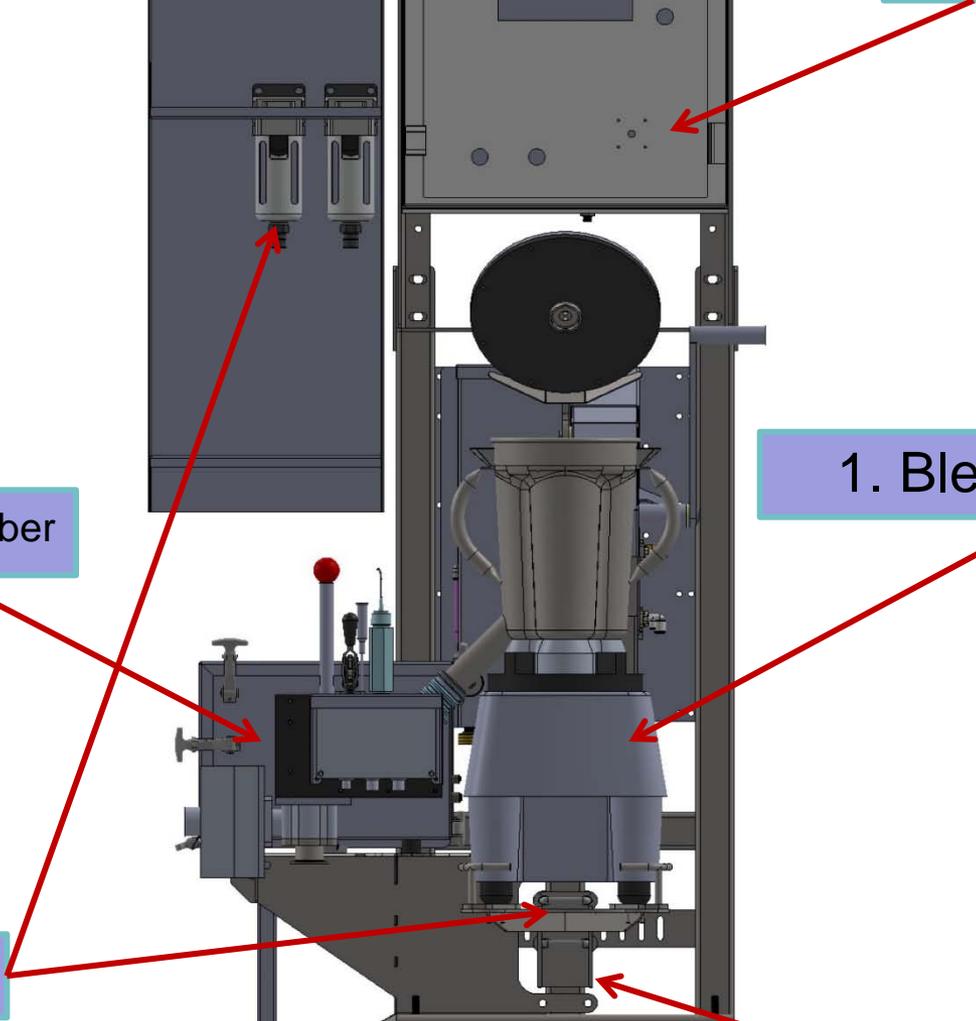
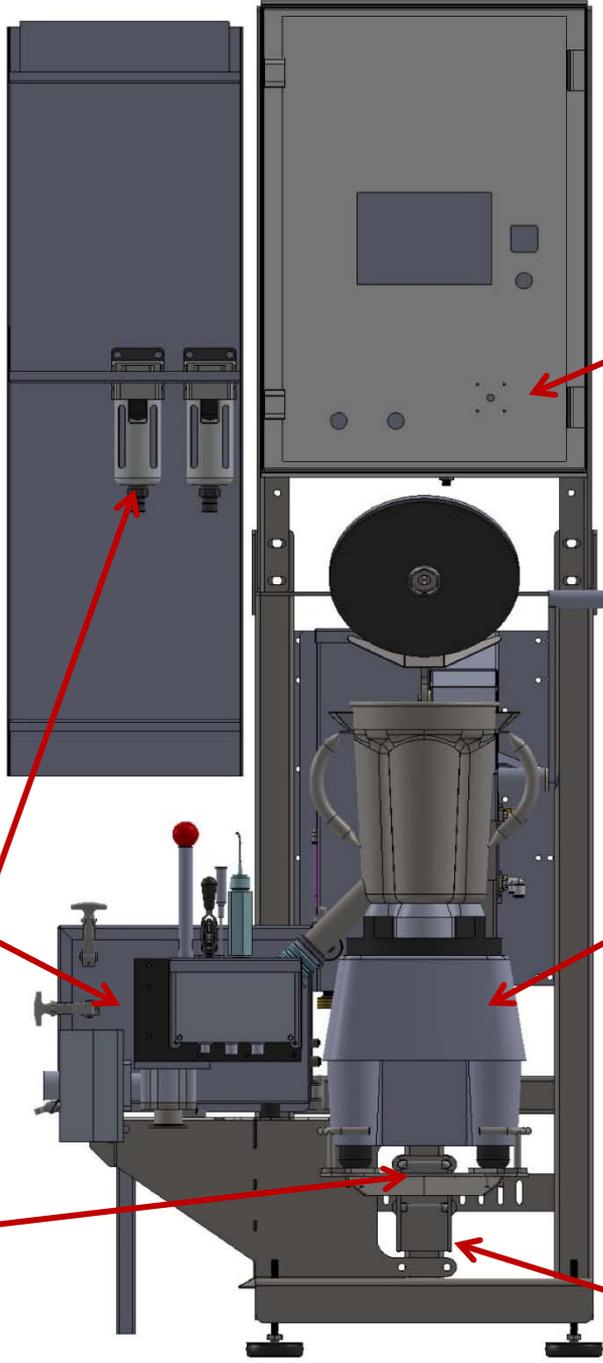
2. Analysis Chamber

3. Valve/pumps

1. Blender

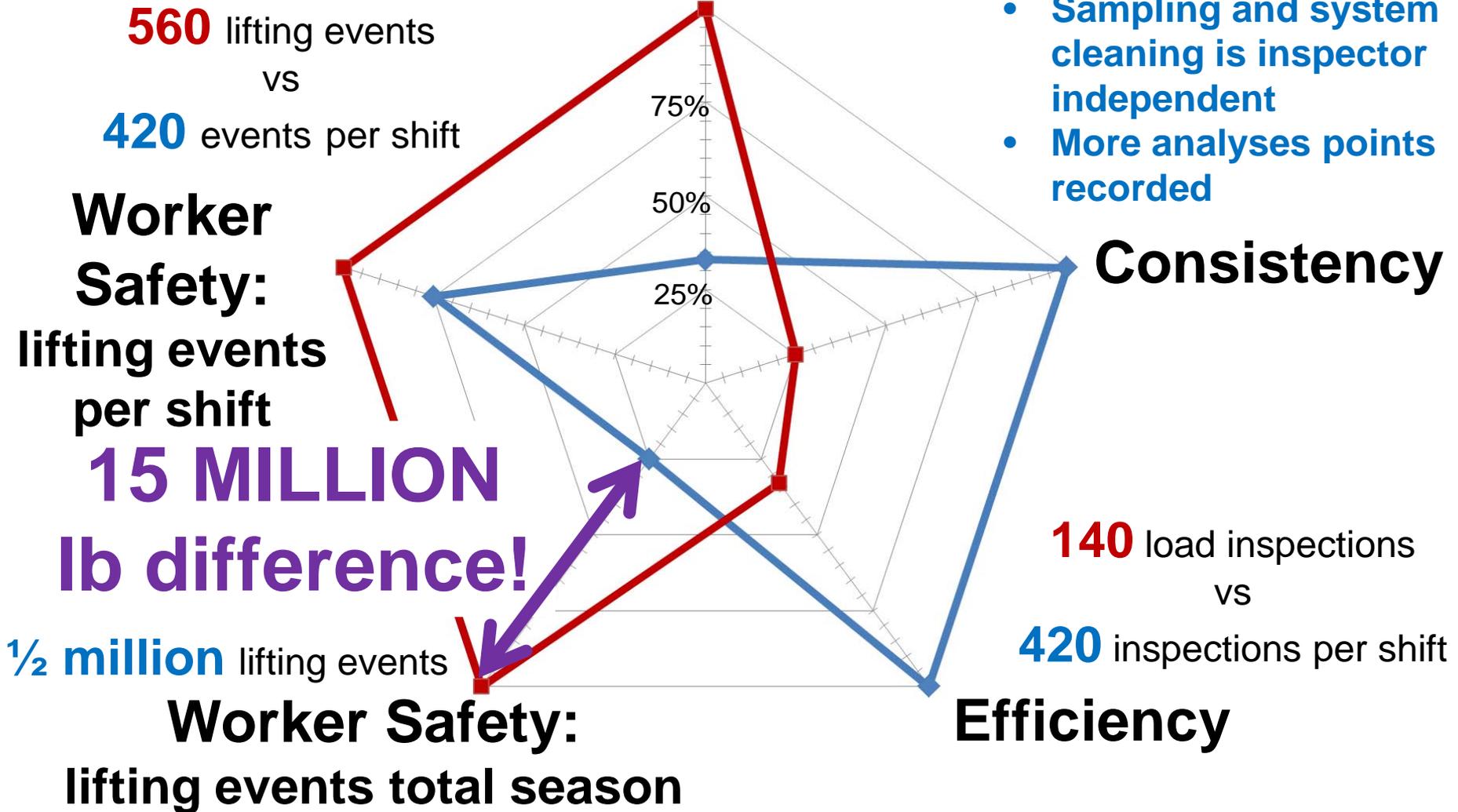
4. Logic Controller & Touch Panel

5. Waste stream

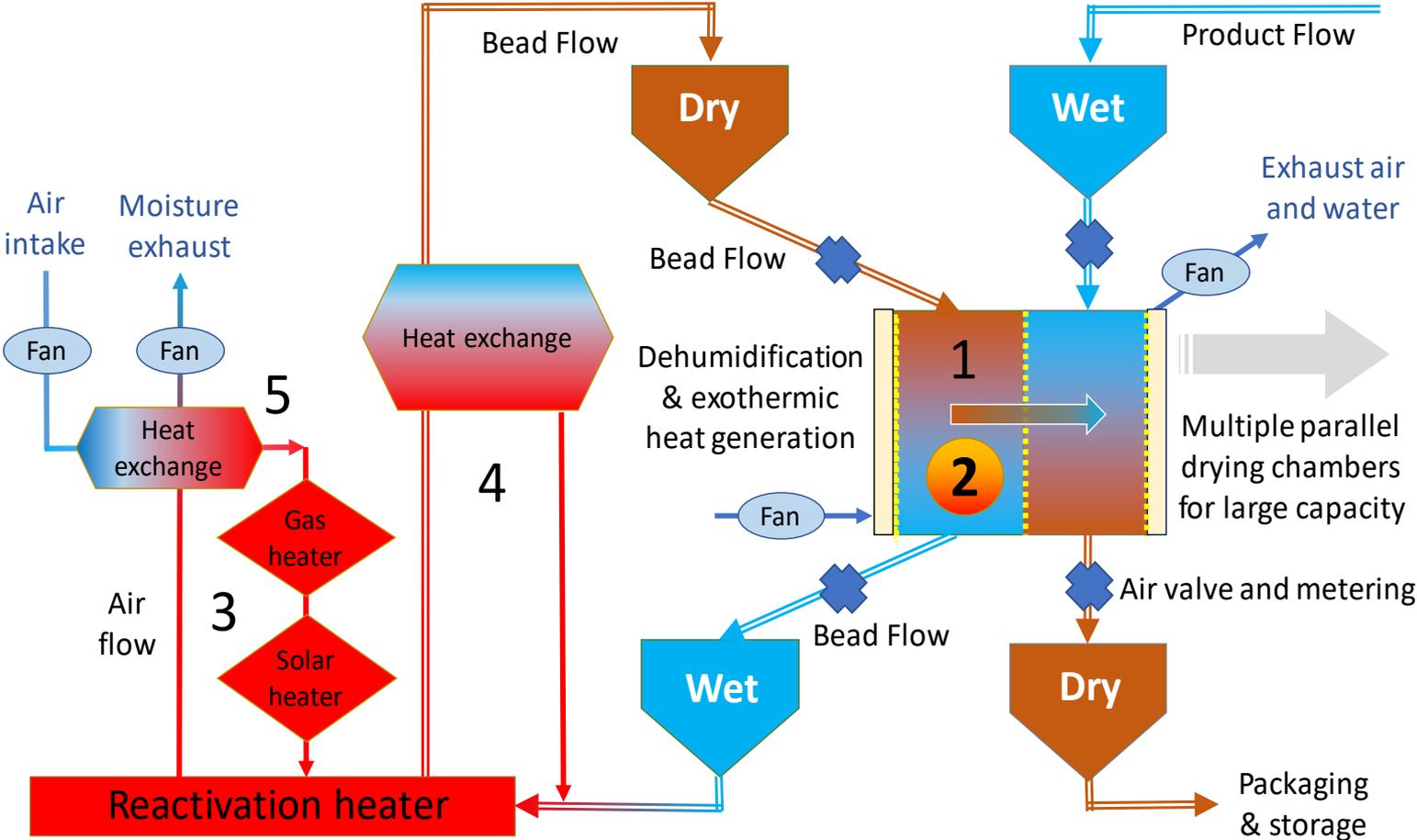


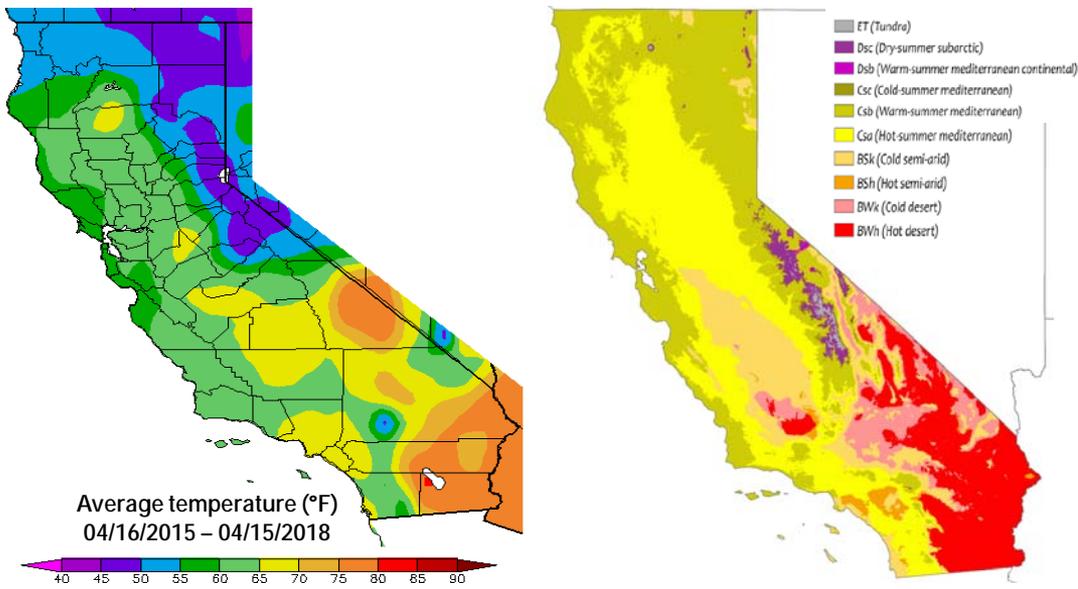
COMPARISON: OLD vs NEW (AIS-PT)

Reduced from **3 min** to **1 min**
Grading Time

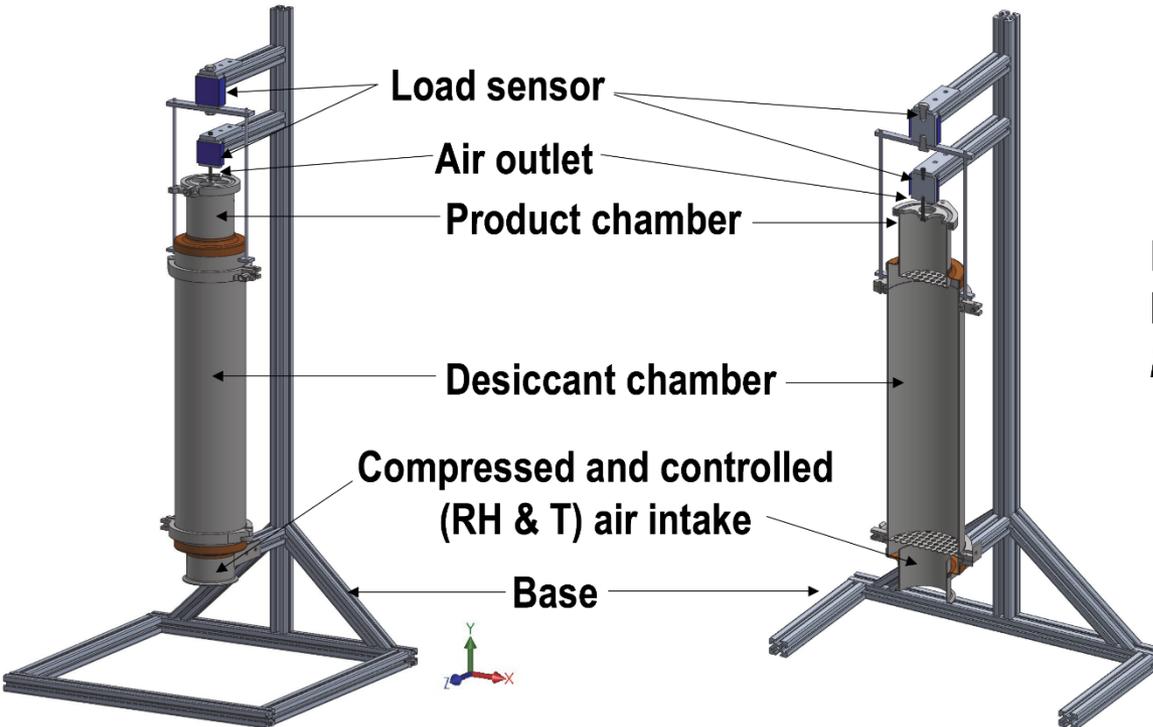


Example 2. Desiccant-based drying/dehydration system with continuous flow of both hygroscopic materials and product





Different drying conditions



Left: Isometric view of the proposed system
Right: Cross sectional view of the system
Drawing courtesy: Jedediah Roach

THANK YOU!

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