IoT, Automation, and the Future of Food Safety

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What’s the Point?

Goal:
Profitably produce and deliver product on time that is food safe and to specification.

Everyone is Responsible for the Finished Product

• Supply Chain
• Production
• Maintenance
• QA
• Sanitation
• HR
• Administration
• EVERYONE!

The Bottomline is One Number

Food Safety Is More Than Sanitation

• Production Behavior:
  – GMP, product to specification, ingredients, wrapping, etc.
  – Operate equipment appropriately.
• Maintenance Behavior:
  – Equipment is maintained to specification.
  – Building is environmentally sound: positive air pressure, no gaps, hygienic design, and more.
• QA Behavior:
  – Monitoring ingredients, process, finished product, etc.
• Food Safety Behavior:
  – Sanitation, change overs, allergens, pest management, etc.
Take the Time to Step Back

• What information is being gathered manually?
• What is data is already being gathered?
• What data isn’t getting to people or processes that value it?

You don’t have to be a hippie to be holistic.

A Lot of New and Great Tech is Available

• Sensors – from many manufacturers
• The ability to share and store data
• Artificial Intelligence
• Mobile Devices

Making it Real

Get past the marketing terms:

– Sensor = A thing that measures something (literally hundreds or thousands of them available)
– Cloud = The server is in someone else’s datacenter
– Artificial Intelligence = Pattern Matching (really fast using a lot of data)
– Edge Computing = Server in your building sends data to the cloud (because the internet really isn’t that reliable all the time)
– Blockchain = Shared Data and Transactions that supposedly can’t change once they are entered.
– Form & Report Builder = Data entry – It’s your problem, good luck

What to Consider

• Review your Plant
  – Where is “Lack of Knowledge” hindering efficiency?
  – Where is Data being gathered manually?
  – Where is Data recorded manually (on forms, screens, etc.)?
• Review the logic
  – Where is there value in existing protocols?
  – Will updated or new protocols add value?
• Pick your priorities
  – What will best improve your operation?
  – What can be used multiple places (synergies count)?

Goals:

• Increase Sales
• Lower Cost
• Mitigate Risk
Definition of Success

- You must determine what a successful result looks like.
  - This is critical before starting any project.
  - Sounds obvious, but unless clearly defined, not everyone will be on the same page.
  - Be specific about what is automatic, what requires human intervention, where data goes automatically, etc.
  - Be clear about how the measures will provide a positive impact to your operation. Include all effected departments before starting the project.

Protocols & KPIs

New Technology / Business Processes...Not All Positive?

- A proven example of something every company needs:
  - ERP rollouts: 50% fail with many over budget, canceled or lawsuits.
- Tangible vs Intangible
  - When buying equipment the goal is very clear, the results easily provable.
  - Most IT projects require a “cultural disruption” and a change in process before realization of results, even with clearly defined goals.

Vs.

IoT and Automation Projects

- Data = The measurements from the sensors and systems.
- Information = What you can do with the Data. The More Actionable the better!
- Automation = Intelligent flows between tasks, data, systems using any number of tools.
- Alerts = Emails or Text Messages triggered by rule-based data thresholds.

Making Sense of What to Automate

https://xkcd.com/1205/

https://xkcd.com/3265/
Opportunities

• Food Safety Documentation
• Corrective Action Requests
• Maintenance Work Orders for Sanitation
• Addressing Root Causes of Consumer Complaints
• Manpower (Resource) Management
• Inspections
• Non-Compliance Alerts and Escalations
• Automation of Reporting
• Dashboards

Continuous Improvement

The OODA Loop (back again from 2019)

Example: Environmental Sensors

• Food Safety
• Maintenance
• Production

Example: RFID on Vemag Carts

• Track Vemag Carts to ensure proper cleaning
Example: Assignment Completion Automation

- Supervisor Emailed Status

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Example: Communication Between Systems

- Sanitation Inspections generate Maintenance Work Orders
- Maintenance Inspections generate Sanitation Corrective Actions
- Maintenance Emergency Repair generate Sanitation “Clean and Sanitize” Documentation

Example: Food Moves

- Sifter Tailing Checks
- Documentation
- Remind, Enforce and Escalate

Thank You!

Any Questions?