

IoT in the Brewing Industry

**Great bourbon, beer, & wine is all craft and tradition...
...so how can IoT help?**





Primary Benefits



**Reduction in Product loss
(decrease costs)**



**Higher consistency in
production**



**Production of more high-
quality products**

Our story

begins with a small bourbon distillery that wanted to take a small step into IoT.

- **The distillery has an existing temperature monitors in each warehouse.**
- **They install additional wifi temperature monitors. < \$50 / unit**
- **They install a wifi router in each warehouse. < \$100 / unit**
- **They contract with Grail, a complete solution provider (legacy and new data collection, secure website, alerting system, visual analytics, machine learning) to deliver a custom monitoring/alerting system.**



Background & Data

Business Problem

- The distillery sells several bourbon products. Essentially a standard and premium grade, in **2, 6, & 12 year aging's**.
- The master distiller knows that the bourbon stored in warehouse E yields better bourbon than the other warehouses, but only in the higher racks. **This is their premium grade.**
- Some savvy customers have been complaining that sometimes the premium grade is not better than the standard grade, and that sometimes the standard grade is excellent.

Data Collection

- **Temperature of various locations in every aging warehouse.**
- **The location of every barrel**
- **The source batch of every barrel**
- **Tasting/grading history of every barrel**
- **A calculated temperature profile for every barrel**

Reports

- Temperature history of higher racks in warehouse E. **This is the premium grade of temperature profile** (*existing premium grade barrels*).
- All standard grade barrels with temperature history matching premium grade temperature profiles. (*Current standard grade barrels that can be upgraded to premium*).
- All barrel locations with same temperature history matching premium grade temperature profile. (*Locations and capacity for premium grade barrels*).



Summary statuses are mapped to every warehouse for a high overview of performance



Selecting a warehouse shows temperature + metrics for each sector



Irregularities are monitored and reported via SMS texting and a mobile dashboard to leadership and key stakeholders

Key Components



Alerts

Temperature Monitoring

Alerts configured for hot, cold, and possible fire situations

Possible fire alerts would be sent to 911 immediately

In one instance, a fire was contained to one warehouse sector because the FD knew exactly where to go



Data Collection

Consistent Production

Temperature analysis combined with product location

Staff know which warehouse along with certain conditions produces the best product

Custom mapping and data visualizations allows for repeatable solutions and products every season



Understanding Your Business

Custom Solutions

Flexibility to work with any system and staff

Monitoring of metrics that align with your short-term and long-term goals

Empowering leaders through automation of their systems. Allowing them to 'dream big'

Overall Results

From Ongoing Reporting

- Several hundred existing standard grade barrels were upgraded to premium grade.
- Availability of premium grade bourbon for shipping increased without increasing production.
- Capacity of distillery to age premium grade bourbon is increased without capital investment.
- The flavor consistency of standard grade and premium grade bourbon was increased.

When a Fire Occurred

- The fire was put out faster due to custom alerting.
- The temperature profile of individual barrels was determined to find exactly which barrels were 'ruined.' Minimizing loss and maintaining quality.

Questions?

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