

Food Waste

"food waste just happens". In the United States, food waste is estimated at between 30–40 percent of the food supply. This figure corresponds to 133 billion pounds and \$161 billion worth of food per year.

Wasted food is the single largest category of material placed in municipal landfills and represents nourishment that could have helped feed families in need.

Additionally, water, energy, and labor used to produce wasted food could have been employed for other purposes.

Our Solution

We believe the largest reason for food waste are a desire for freshness and a fear of food poisoning combined with invisibility about the true state of the food. The cure for food waste is visibility, specifically visibility on the freshness of perishable foods.

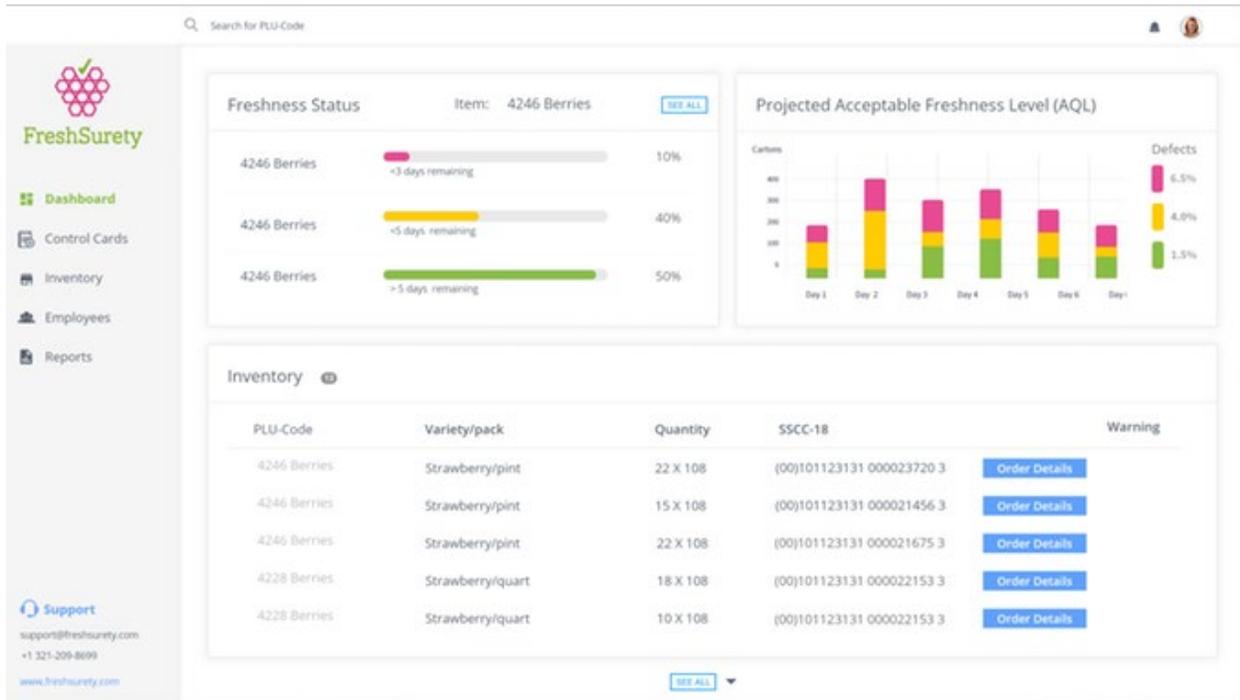
The scientists and engineers at FreshSurety grew tired of designing weapons to destroy the planet decided to put their skills to work in helping to preserve our earth. Therefore, we took what we knew, started working with food economists and built a new hardware platform that senses the freshness of unpreserved foods using the same mechanism as nature does, the sense of smell.

Our system is based on a Software Defined Spectrometer which detects the chemicals naturally given off by unpreserved food products, (it is sensitive to below one-part-per-billion). Most important, it is inexpensive enough to monitor such products in the supply chain on a fresh food item by item basis. We report the Condition of the food product, days Remaining life using Artificial Intelligence analysis of certain Targeted Chemical actors. Also, our system alarms if Microbial Contamination is detected based on its actual measured state.

Competing solutions based on time & temperature incorrectly label bad food as good 84% of the time, worse than a coin toss. Effective quality control in the fresh food supply chain is impossible with this high error. Fully trained, FreshSurety's algorithms correctly label bad food as bad 99.3% of the time and a producer risk "mislabel good as bad" only 0.35% of the time at a 95% confidence level. This system reduces food waste by over 30% for Supply Chains over 5 days long.

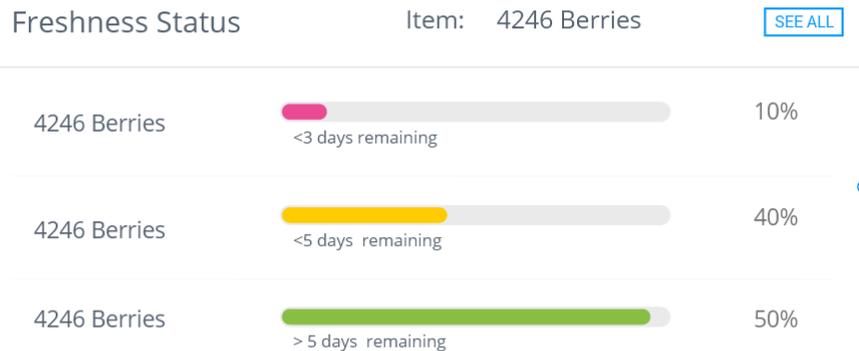
Because of increased supply chain visibility perishable food managers can make an informed choice about their inventory reducing food waste!!! Passing the word that a solution to food waste exists will help!

The Freshsurety Dashboard



FreshSurety introduces a new Exclusive Tool: Freshness Status

Example: A berry producer in California has an order for 22 pallets of strawberries to be delivered to Florida (5-7 days trip). A look at the Dashboard Freshness Status shows that 50% of his stock will make the trip (green strip) and 50% will not (yellow & red strip). The order should be



filled with the > 5 days remaining stock. Without this tool the produce supplier would blindly fill the order resulting in spoiled product arriving at the customer and more food waste.

FreshSurety introduces a new Exclusive Tool: Average Freshness Level Vs. Time

Example: At a Distribution Center produce managers have selected a policy to maintain an Average Freshness Level of 40 cartons (non-conforming/bad cartons) per 1000 cartons. Task: the Distribution Center must fulfill orders for 200 cartons with

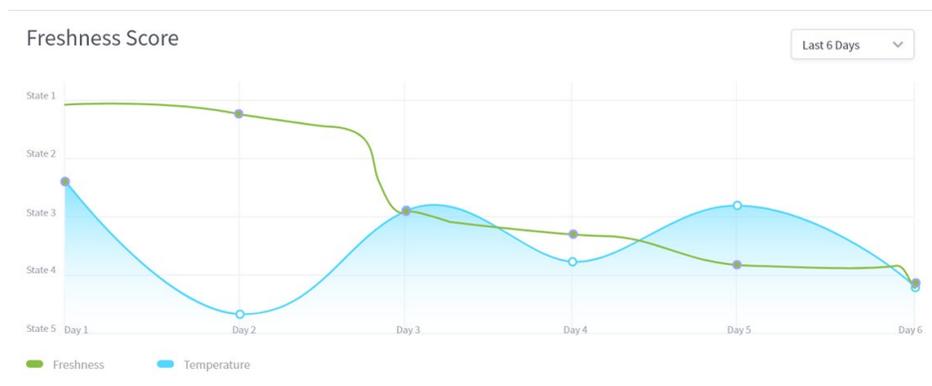
Average Freshness Level (AFL)



the established above Average Freshness Level. Since only 100 cartons will be available on Day 1 with the established quality level or better (green & yellow) the Distribution Center must wait another delivery - Day 2 to finish the orders for 200 cartons due to lack of stock with desired quality. (On Day 1, 100 cartons, in red color meaning that berries quality do not match the established quality/freshness level.) Without this tool produce managers would blindly fill the order resulting in poor quality product to the customer and more food waste.

FreshSurety introduces a new Exclusive Tool: Freshness Score

Example: At the same Distribution Center where produce managers have selected a policy to maintain an Average Freshness Level of 40 cartons (non-conforming or bad cartons) per 1000 cartons. An incoming



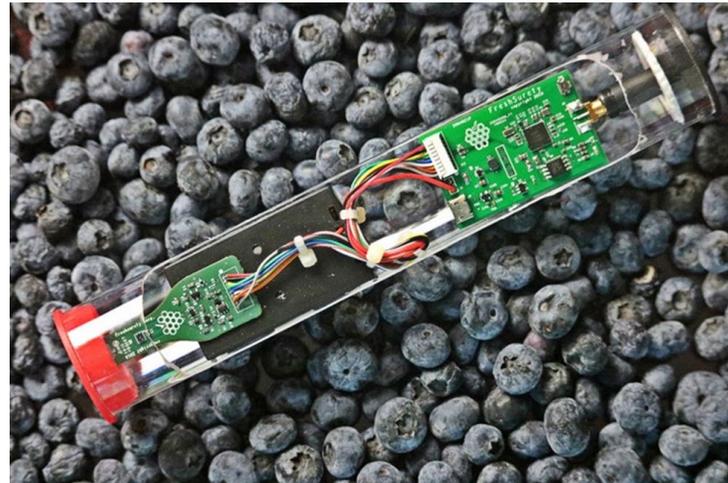
truckload of strawberries with this Freshness Score is at the dock.

Its Freshness Score is predicted to get drastically worse in 3 days causing the Average Freshness Level for the entire stock of strawberries to violate the Distribution Center policy. The produce managers now have the supply chain visibility to choose:

1. Reject the load and reorder
2. Alter policy and accept the load
3. Accept the load and use stock from this load until day 3 to maintain policy
4. Accept the load at a modified price.

Wonder how we do it?

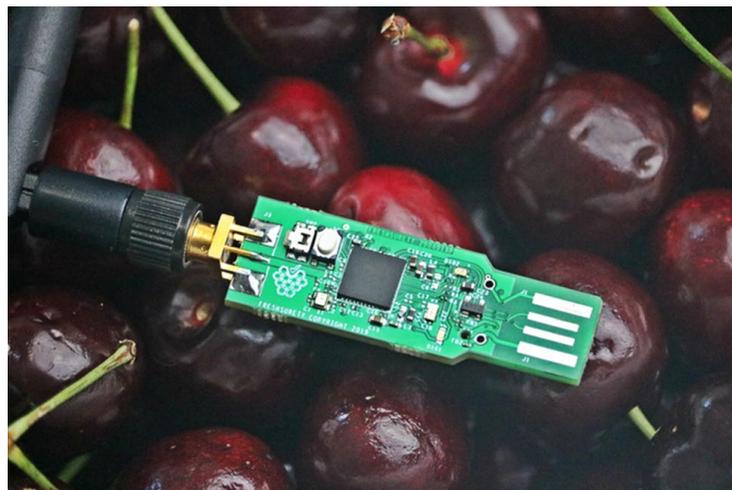
Our system automatically tracks perishable product, predicting freshness which helps managers make the right decisions and alerts if microbial action or other problems are detected. Our patent pending wireless battery powered Software Defined Spectrometer is designed for very high rate production at a low cost. We take this Gas Sensor data, temperature and water vapor data and use it to create a code for all sensors on a pallet or truck at any point predicting the future 6 days We then run the code through our algorithms to determine freshness and detect certain compounds that indicate problems



The sensor itself is 200 mm by 37 mm and weighs 76 grams

The control and analysis software is being tested in pilot applications around the world and we already have the world's largest machine learning data sets for fresh food and using these sets we have developed freshness "codebooks".

To get the data back to the cloud we also developed this Cloud Border Router which can plug into any Linux based computer. It simultaneously connects over 300 spectrometers to the cloud. It's the size of a USB stick.



For more information call us at 321-209-8699