Punch your wine, and kick back.

Problem

For winemakers, measuring fermentation progress is time intensive and inefficient. Thus, winemakers seldom take these measurements, often only once a day. Thermal runaway, infection, and other problems can occur between daily measurements, all of which can destroy an entire fermentation’s worth of wine (100L to 4000L capacity). Additional measurements could detect these problems early, and allow winemakers to salvage problematic batches of wine.

Solution

Punch floats in the fermenting wine and extends a suite of sensors downward. With the data collected, Punch calculated fermentation status and predicts potential problems with the wine. The winemaker receives real-time updates, and can then take preemptive or corrective actions if necessary.

Winemaking 101

Winemaking consists of three steps. First, the grapes are harvested from a vineyard and mashed into juice. Second, the grape juice is placed in fermentation tanks, where yeast is introduced to convert the sugars into ethanol. Finally, the wine is filtered and aged before it is ultimately bottled and put on your dinner table.

System Overview

Punch consists of a monitoring device for each fermenter, a central hub, and a web service. The monitoring device relays its data to the central hub via Bluetooth Low Energy. The central hub then pushes this information to the web service for processing and analytics. The web service acts as a convenient portal for users to observe and review the progress of their fermentations. Additionally, the web service can send real-time alerts notifying the user if a fermentation needs attention.