Deliverable B - Needs Identification and Problem Statement

For the In-line System

Category Grouping	User statement	User Needs	Criticality Ranking
Accuracy	We'd like the device to be constantly reading the sample SG value every 10-30 seconds	System needs to read specific gravity measurements every 10-30 seconds	2
	We would like the device to display the results of the specific gravity value for our employees	System needs to display accurate specific gravity values	2
	Often times, yeast can build up on the specific gravity and disrupt the accuracy of the results	Device needs to be resistant to yeast build-up	3
Functionality	The device will sit in an in-line system between 2 tanks to which the diameter of the pipe is 1-½"	Device must fit in a 1-½" piping system between two tri clamps	2
	The device has to read the specific gravity value under a gravity driven flow without the use of any pumping device	Device needs to allow for gravity driven flow	4
Safety	The material for the in-line system must comply with food safety standards	Material has to be food grade (silicon, stainless steel)	1
Cost	speaking financially with his business partner, the company prefers a heavier upfront cost rather than a subscription cost	Device needs to have upfront cost versus monthly subscription costs	5

For the Fermentation Tank System:

Category Grouping	User Statement	User Needs	Criticality Ranking
Accuracy	Often times, yeast can build up on the specific gravity and disrupt the accuracy of the results	Device needs to be resistant to yeast build-up	3
	The system data must be saved to a computer while showing the SG vs time curve and table results	System needs to display specific gravity values in both table and graph format in a centralized unit	2
	The device must ensure the data is saved accurately as this information will be used to recreate similar batches	Device needs to be consistent to recreate the same batches in future uses	2
	The device needs to be able to store all recorded data of SG vs time forever for future uses	Data needs to be forever stored and documented	2
Cost	The team is willing to spend $25,000 in total (16 tanks)	Device needs to be cost-effective	4
Functionality	It is preferable that the device can be easily removed from the tank for necessary cleaning	Device needs to be removable during washing period of the tanks	3
	The device needs to be in constant working condition for at minimum 2-3 weeks during fermentation	Device needs to run for at minimum 2-3 weeks during fermentation process	5
	The device will be connected to the 3” port on the side of the fermentation tank	Device needs to fit in the 3-inch port	2
	The device must measure the SG value at least once every hour but preferably once every 5-10 minutes	Specific gravity needs to be measured at least once every hour	2
Safety	The material for the in-line system must comply with food safety standards	Material has to be food grade (silicon, stainless steel)	1

Problem Statement: Beyond the Pale needs an accurate and sanitary method to measure, display and store the specific gravity, in a time-efficient and self-regulating process.