EMPATHIZE

Malt Dust Problems: (needs)

- ➔ Barley is handled many times before we receive it at the brewery
- ➔ Depending on the crop year, malt can be more prone to dust (called friability)
- ➔ Too much dust overwhelms our malt cleaning system
- ➔ When that happens, the system can be clogged with dust or .
- ➔ We get too much dusts in our brewhouse which creates other problems
- ➔ How much? We only measure what we discard. We estimate our discharge around 3%.

Need Statement List:

1. Monitor dust in the silos and in line.
2. The system will not be clogged with dust or other.
3. Add programming to PLC to alert when there is large amounts of dust in the system.
4. Estimate the discharge around 3%.

Establish Relative Importance of Needs:

User needs (Ask Bob more questions to get more needs)

1. The user needs a cost effective system to clear out dust
2. The system needs to be smarter (can work with abnormal conditions)
3. The system should have little maintenance (easier to manually clean)
4. The user can operate the system with ease
5. The system needs to be able to stop the process safely

	Cost Effective	Intelligence/ Efficiency	Safety	Ease of Usage/Maintenance	Size
Importance (On a scale of 0-5, 5 being the most important)	5	4	3	4	2

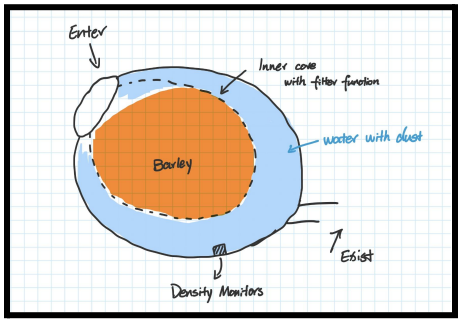
Gather Raw Data From Users:

(dust pump) brewery case filter, measurements of the pump in zoom meeting presentation

-Truck blows around 2000 kg of malt per min

Personal Ideas for Sensor System:

1. Adding a capacitive level sensor at the silos to detect dust before it gets to the tuning fork level sensor in the case filter.
2. Adding a sprinkler system so the dust stays wet and measure maintenance by weight (sprinkler suppression system)
3. Add a (liquid density monitor or flow rate monitor) in the cleaning device, when the density of the liquid reaches a certain level, the drainage port will open automatically to avoid clogging of the system.



PROBLEM STATEMENT:

The user requires a cost-effective, low discharge, and low maintenance cleaning system with an intelligent dust sensor for safe operation and easy use.

Similar Products

Options for products:

Sensors (along the silos) , cleaning device (density sensor), water sprinkler suppression system, Central Dust Collection Systems, Local Dust Collection Systems, Portable Dust Collectors, Industrial Vacuum Cleaners, Dust Extractors

Technical Benchmarking Current Products

Yes, there are several dust cleaners that are currently being used in breweries. Some common types include: Central Dust Collection Systems: These are large-scale systems that capture dust from multiple sources and filter it before releasing it into the atmosphere.

Local Dust Collection Systems: These are smaller systems that capture dust from specific processes or equipment in the brewery. **Portable Dust Collectors:** These are compact, mobile units that can be moved to different areas of the brewery as needed. **Industrial Vacuum Cleaners:** These are heavy-duty cleaners that are designed to remove dust and debris from a wide range of surfaces in a brewery. **Dust Extractors:** These are specialized units designed to capture dust generated by specific processes, such as grinding or sanding.

Each type of dust cleaner has its own specific features, benefits, and limitations, so the best type of dust cleaner for a brewery will depend on the specific needs and requirements of the brewery.

User Benchmarking

To benchmark a dust cleaner for a brewery, consider the following factors:

Effectiveness: Evaluate the cleaning performance of the dust cleaner in removing brewery dust.

Maintenance: Assess the maintenance requirements and costs of the cleaner, including filters, parts replacement, and downtime. **Safety:** Review the safety features of the cleaner, including dust explosion protection, overloading protection, and automatic shut-off. **Usability:** Compare the ease of use of the cleaner, including setup, operation, and maintenance procedures. **Cost:** Evaluate the total cost of ownership of the cleaner, including initial purchase price, ongoing maintenance, and energy consumption.

Compatibility: Ensure the dust cleaner is compatible with the specific requirements of your brewery, including the type of dust, volume of dust, and size of the brewery.

Who Are The Users?

In a brewery, the following individuals or teams may work with a dust cleaner:

Maintenance team,Operations team, Health and Safety team, Purchasing team, Quality Control team, Management team

These individuals or teams may work together to ensure the dust cleaner is being used effectively, efficiently, and safely in the brewery.