

Wet Scrubber Coffee Roaster Filtration System

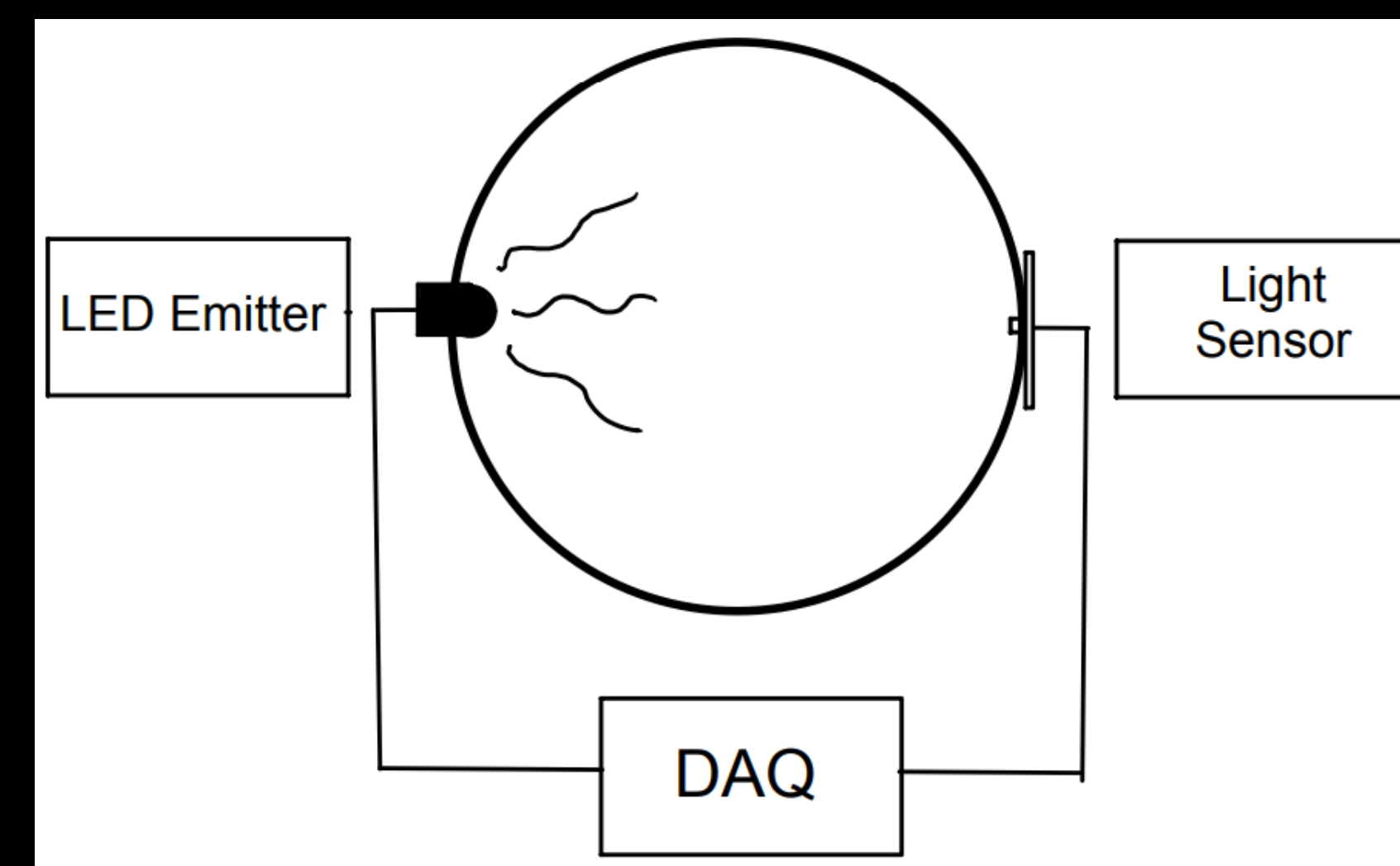
Sponsor: Diedrich Roasters
Advisor: Dr. Steven Beyerlein

Testing Apparatus

Smoke Generator – simulates smoke output of a coffee roaster using wood pellets



Opacity Meter – uses reflection of light to measure opacity of flow



Test Results



- Opacity meter did not function as expected
- Scrubber filtered smoke but still released steam
- Future development will include a vapor trap

Problem Definition

The coffee roasting process releases large volumes of smoke, particulate and odor that are unfriendly to neighbors of roasters. Current solutions exist which mitigate the emissions from coffee roasters to EPA standards, but these solutions are typically expensive and unnecessary for small-scale roasters that do not need to adhere to such standards.



Project Goals:

To economically reduce smoke, particulate, and odor emissions from Diedrich Roaster's IR-5 and IR-12 models.

Coffeemates



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Our Solution



Design Features

- Pre-filter collects large particulate
- Vapor spray collects small particulate and cools exhaust stream
- Post-filter collects condensed water with trapped particulate
- Recirculation pump filters water and allows for an independent, closed system
- 9 atomizing nozzles provide fine atomization for effective particulate trapping

