DesignOTT Engineers Inc.

Team F3

Address:

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Members:

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Problem Statement:
A need exists for CNL to be able to assess how well different materials hold up to erosion during a two-to-four-week span in harsher environmental circumstances, in a way that is safe and repeatable.

Motivation:
Expensive and large-scale systems in the CNL facility can be forced to stop by the failure of just one part. They have faced this issue before and come to this class for innovative solutions. We believe we have met and exceeded their needs when you consider the budget allocated to us.

Safety is the number-one priority for the client and for us as well. We maintained conditions that pose no harm to humans and installed a kill switch to be used in the case of emergencies.

Filtration

Choosing to implement a dual-layer filter was an idea that came from the user benchmarking we did at the beginning of the project. It was determined that the small and large particles resulting from erosion should be analyzed separately.

Circulation

The selected method of erosion is to use the kinetic energy of water to wear away at the sample. The motor torque is high to keep it rotating the water at a steady speed. The load will be high because the goal is to move as much water around the sample as possible.

Compact Designer

Tinfoil is the insulation for the cooling system rather than styrofoam since it's easily recyclable. The small-scale design uses only the minimum volume of water required: this is a two-fold benefit to the environment.