

Engineered Design and Development of an Automated Compact Greywater Treatment System

Project Brief

LAERO is seeking the support of an electrical engineer in designing, developing, and prototyping an automated form of the studio's compact greywater treatment system, **Cycleau**, particularly for stages utilizing energy-consumptive components.

Cycleau is a modular five-stage greywater system designed to retrofit beneath a household-scale kitchen or bathroom sink for wastewater recycling. By capturing greywater for on-site treatment, Cycleau can both reduce the impacts of sewage pollution on local aquatic ecosystems while providing a point-of-use water treatment system that reduces household risk of exposure to municipal water contaminants.

Automating System Components

Several stages of Cycleau's modular construction include mechanisms which require energy to operate. These include three 15 cm ultraviolet bulbs, a Venturi injector for advanced oxidation, and a water pressure pump for efficient membrane filter treatment. To effectively construct a prototype eligible for water quality treatment and concept validation, it is necessary to design for the operation and automation of these components and of the system as a whole.

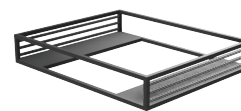
This project will involve designing the circuit board and wiring necessary for powering the components listed above, as well as implementing the appropriate sensor equipment to signal component operation in response to chamber water levels. Work will begin by first drafting technical blueprints and later executing two to three iterations of a working system prototype for concept testing. Contributors will be credited on the scientific patent for the technology, which will be filed upon concept validation.



COAGULATION



BED MEDIA
FILTRATION



MEMBRANE
FILTRATION



ULTRAVIOLET
IRRADIATION



ADVANCED
OXIDATION



Project Logistics

This project will last approximately 6 - 8 months, from September 2022 through March - May 2023. A research stipend of 1500 euros will be provided to contributors. All materials and testing resources will be provided for by the studio. To express interest in the project or to inquire with additional questions, please contact Noemi Florea at noemi@laero.org.