Duke Center for WaSH-AID
WATER, SANITATION, HYGIENE AND INFECTIOUS DISEASE

The Reclaimer

Today, 3.6 billion people lack access to safely managed sanitation. Traditional wastewater treatment requires significant, costly infrastructure investments. By 2050, a 30% increase in global water demand is anticipated; yet despite increasing water scarcity, urbanization, and aging infrastructure, globally, we prefer flush toilets. To meet these challenges, we have developed **the Reclaimer**: a compact, onsite wastewater treatment technology for buildings and homes that requires no water or sewer hookup and enables treated wastewater to be re-used in flush toilets.

KEY FEATURES

- Continuous, automated operation
- <10 minute per flush processing time
- Designed to treat blackwater to ISO 30500 standards.
- No water or sewer hookup required.
- Scalable
- Energy usage: 20-30 Wh/L
- Life expectancy: 10 years (estimated)
- Annual maintenance for filter replacement
- A complete sanitation solution when paired with solids digestion or containment.

PERFORMANCE

The Reclaimer is designed to treat between **500-1,000 L/day**, approximately **80-160 uses/day**.

PROCESS

The Reclaimer is designed to receive settled and/or coarsely filtered blackwater (>99% of toilet waste by volume) and treat it with a four-stage process:

1. ULTRAFILTRATION
Removes suspended solids
Automated backwash

2. GRANULAR ACTIVATED CARBON
Removes soluble organics

3. ZEOLITE
Removes ammonia

4. ELECTROCHEMICAL OXIDATION
Removes pathogens

USE CASES

The Reclaimer can be scaled to meet demand for wastewater treatment in individual and multi- family homes, buildings, dormitories, communal ablution blocks, informal settlements, refugee camps and mobile treatment units.

The technology measures 1m (w) x 1m (l) x 2m (h).

STAGE OF DEVELOPMENT

- First and second-generation prototypes have undergone >1 year of lab and field testing.
- Technology has been licensed by a company in India.
- Demonstration projects planned for 2024-2025.
- Seeking manufacturing partners to develop local supply chains.

CONTACT

Brian Stoner, PhD
Duke University Center for WaSH-AID
stoner@duke.edu
https://washaid.pratt.duke.edu

SUSTAINABLE DEVELOPMENT GOALS