



Reinvent the toilet challenge

There are 2.5 billion people worldwide who do not have access to safe and affordable sanitation. A new solution is needed to treat human waste for the places where flush toilets are not an option. Scion is aiming to build a new toilet

working with collaborators from around world.

A sustainable, cheap to use (less than US\$0.05 per user per day) and 'off the grid' toilet that is safe for humans and the environment is the goal.

Scion's novel technology approach

Wet oxidation is a technology that uses oxygen, heat and pressure to breakdown materials. Toilet waste solids can be destroyed and pathogens completely killed at temperatures ranging from 150 to 300°C and pressures between 5 to 200 atm.

Scion's approach is to miniaturise this powerful technology and integrate it with partner technology to build a complete system with safe outputs. Nutrient recovery and effluent that meets ISO 30500 standard for air emission, liquid and solids output and odours will be part of the total system.

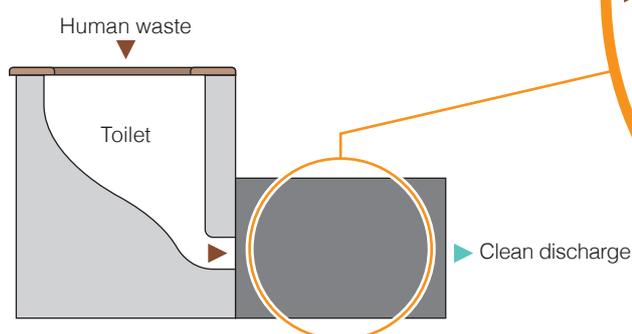
Polishing

Polishing is the final effluent treatment stage before wastewater discharge. The polishing step removes any remaining contaminants.

Microbial fuel cells, TiO₂/UV photocatalysis and purple phototrophic bacteria for nutrient recovery are the polishing technologies that are being evaluated with our collaborators.

Progress

A working prototype has been built to test the new technologies. New reactors and designs can be tested



in the lab then and once mature, they can be integrated into the demonstration toilet.

The next stage is industrialisation of the design to enable manufacturing evaluation and field testing.

Our collaborators

University of West England (UWE) and Swansea University

More information

Watch the Scion Toilet Challenge video https://www.youtube.com/watch?v=fM2lW8bK5_4

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About Scion

Scion is the New Zealand Crown research institute that specialises in research, science and technology development for forestry, wood and wood-derived materials, and other bio-material sectors.



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