

# Self-Disinfecting Appliances

A novel device that can be fitted to home-care appliances to generate hydrogen peroxide or bleach, effectively producing a 'self-cleaning' appliance.

## Proposed use

Our invention is an electrochemical system capable of 'smart' dispensing of inorganic oxidants locally, particularly useful for cleaning applications: it can be used for the generation of oxidants for disinfection purposes, e.g. toilet cisterns, sterilisation, removal of odours. Other applications include the decontamination of surfaces, objects and water, and the generation of oxidants on demand.

## Problem addressed

Inorganic oxidants are widely used chemicals in disinfectant and cleaning applications. However, oxidants can be a problem to store due to safety, inventory and shelf life considerations. Therefore, it is advantageous to make and use them locally. A leading cross-disciplinary team of chemists and chemical engineers from Imperial College London have set out to meet this need.

## Technology overview

Our technology is an electrochemical flow reactor that generates inorganic oxidants at rates controlled by the applied electric current. As it is produced, the oxidant can be deployed directly in the quantity needed, thus eliminating the need for storage problems (inorganic oxidants have limited shelf lives). Electronic control of the various components of the reactor are integrated into a single system.



Figure 1 | The device located in various domestic appliances. Left: Dishwasher. Right: Toilet

## Benefits

- **Environmentally friendly:** Eliminates the need for packaging, storage and transport associated with commercial supply of household disinfectant.
- **Safe:** Chemicals dispensed at point-of-use (in a toilet) in the precise dosage (<1%), meaning the risk of accidental exposure to children & pets is very low.
- **Convenient:** Device small enough to be fitted and deployed in a cistern. The device is fully integrated with existing mechanisms for flushing a toilet.
- **Cost-effective:** Can be used in public toilets and sea-faring vessels.



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## Intellectual property information

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