



**SMART WATER RECIRCULATION SYSTEM
FOR EFFICIENT HEATER OPERATIONS**

Making Every Drop Count

Picture this. You step into the bathroom, turn on the tap and wait several seconds for the water to heat up before starting your bath. This scenario is familiar to many of us. In conventional water heater systems, a significant amount of cold water is wasted while we wait for the water to reach the desired temperature, leading to unnecessary water wastage.

Having identified this gap, the team created the Smart Water Recirculation System to minimise water wastage when the heater is in use. The system is designed to optimise water usage by recirculating cold water back to the heater instead of letting it flow out of the showerhead. Once the water reaches the pre-set temperature, a check valve opens, releasing the water at the desired temperature.

Innovators' Inspiration

A significant amount of water is wasted during showers while waiting for the water heater to heat up. This inspired us to design a kit to convert a conventional water heater into an instant one, reducing cold water wastage. We conducted trials and tests to fine-tune the design, applying our knowledge of material selection, fabrication and practical skills in piping, valves, electrical systems, and hydraulics. Despite challenges and set-backs in balancing the heating efficiency and energy consumption, we stayed focused, especially as feedback from our social circles was positive with many expressing interest in installing the system at home. We are proud to be able to apply our skills to address a real-world issue."

~ Tan Boon Keng Brennan

What's So Special

- System recirculates cold water back to the heater instead of allowing it to drain away.
- Helps households cut down on water and electricity costs with less water wastage.
- Supports the Singapore Green Plan 2030, saving up to approximately three litres of water per household daily. This translates to 15 million litres of water saved nationwide every day, accounting for about 27% of the national reduction target.
- System can be implemented for other activities such as dishwashing, face washing and toothbrushing.
- Has strong commercial potential for homes and facilities that require pre-heated water for operations, especially in cold countries where warm water is essential for daily activities.

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