

Project Smart Geyser

South Africa's electrical infrastructure is at a crucial crossroads. Municipalities face ageing power grids, recurring blackouts, and disruptive loadshedding, highlighting an urgent need for improved grid resilience. This challenge presents an opportunity for a just transition towards clean, renewable energy.

Plentify has developed an intelligent geyser controller - HotBot - that retrofits onto existing electrical water heaters and uses artificial intelligence to enable flexible load management of any fleet of water heaters.

Project Smart Geyser is a collaboration between the GIZ South African - German Energy Programme (SAGEN), Plentify - through funding from EEP Africa, and the City of Cape Town (CoCT). The project has deployed 500 geyser controllers in selected homes across the CoCT and Hessequa, and run an intelligent geyser control program for a year to demonstrate the feasibility and impact of geyser load demand management.

During a one year period, the ability of HotBots to provide three services namely load reduction, maximum demand reduction and load building was analysed. The project has successfully demonstrated the following across the fleet of Hotbot controlled geysers:

- Improved energy efficiency by up to 30%
- Reduced peak load by more than 80%
- Reduced maximum demand by more than 50%
- Enabled solar PV systems more than 2x the capacity with the same utilisation rate
- Achieved the above while ensuring that users get hot water when they want it