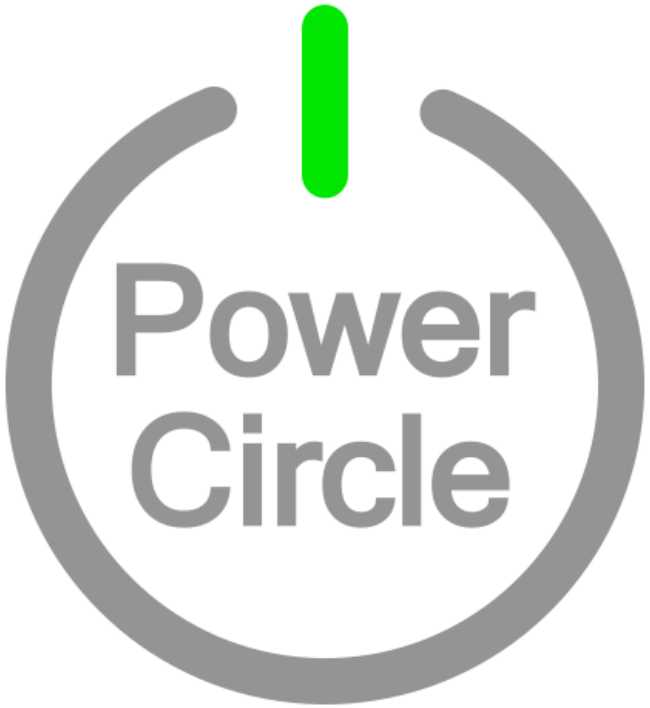
Presentation to Thornhill Development Trust

Innovative Energy Solutions for Thornhill

1st December 2025

Who we are

- Power Circle Projects Ltd is a social enterprise that develops, manages and, where required, arranges funding for low carbon energy projects. With a focus on smart local energy systems.
- Our Mission is to enable local energy users to access low carbon energy at scale in a way that is affordable, fair and breaks down social barriers.
- We also provide consultancy services linked to our Mission



Context for the Study

- Thornhill household questionnaire survey to be sent out to residents
- Desire to look at new solutions to cut energy costs and carbon
- Options we have looked at
  - Octopus Zero Bills
  - Thermify HeatHub
  - Biaco electric boiler
  - Solar PV and battery

Octopus Zero Bills

- Offers a zero energy bill for at least 5 years – subject to fair use limit: c20% above ‘the expected consumption for a home of a similar size’ use above this will be charged at the Flexible Octopus tariff rate. Homes with very large consumption may be excluded
- Requires home to be assessed as suitable and solar PV, battery and heat pump to be installed
- Octopus manages the system and retains all export and grid services income – this is what makes the zero bill possible
- Only for houses and bungalows at present
- Can be attractive but some Thornhill homes may not be suitable


octopus energy
ZERO BILLS
No energy bills for 5 years
with our
Zero bills homes

Thermify Heat Hub

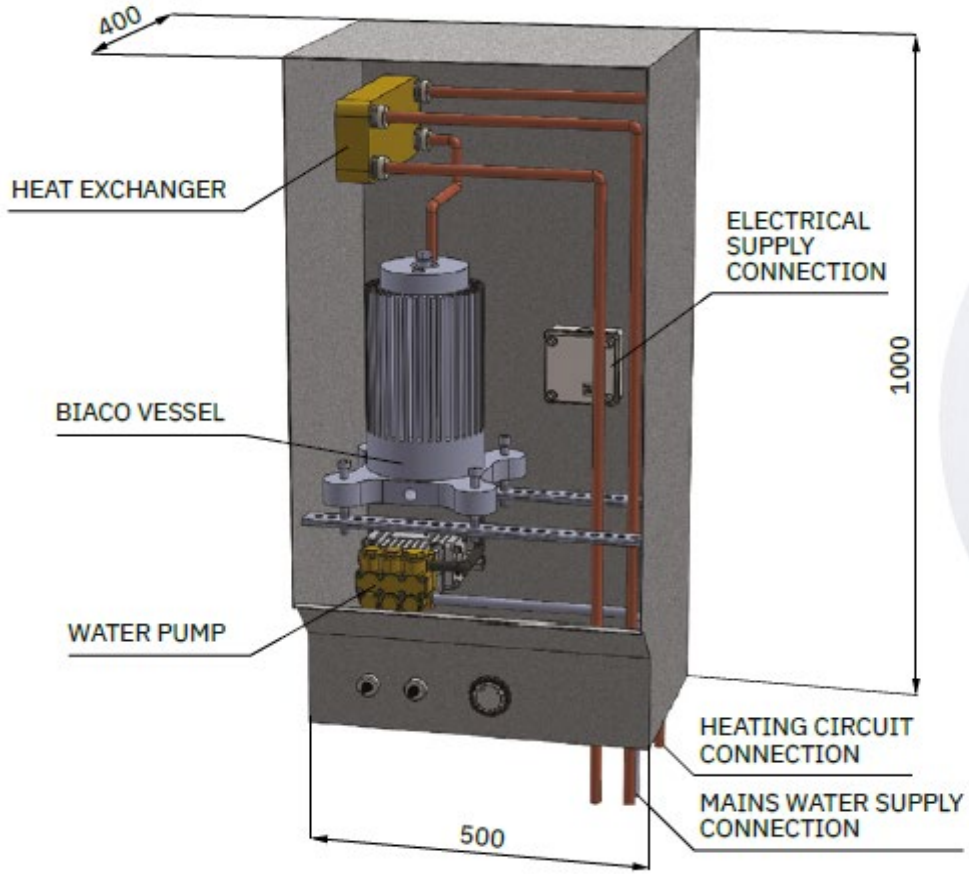
- New heating solution providing heat from mini data centre at each home. Thermify sells data services to its customers
- Thermify pays for its own electricity and broadband
- Most income for Thermify comes from its data sales
- Low cost low carbon heat, with a zero volumetric charge – you can use as much heat as you need, subject to system capacity
- Provides high temperature heat. Reduced or no need to change radiators.
- Recommended energy efficiency level – typical EPC C or better
- Suitable for houses - can have two units for large houses
- 100 installs under SHIELD programme now, Rollout 2028/29


thermify
thermify
cloud

Biaco electric boiler

- New technology producing high temperature heat. Reduced or no need to change radiators.
- Needs water and wastewater connection as well as electricity
- Suitable for both flats and houses, small or large
- Current efficiency COP4, aiming for 5 – this means 4 or 5 units of heat produced for each unit of electricity consumed
- Efficiency similar to best ground source heat pumps, better than air source heat pumps
- 25kWth and 50kWth modular units are in development
- Trials in larger buildings now. Rollout planned for 2028/29

25 kW boiler concept design



Solar PV and battery

- These can provide very useful benefits on their own and can complement the heating options we are discussing. They are a requirement in the case of the Octopus Zero Bills option
- For other options, there is scope for the householder to earn revenue from both export and provision of grid services as well as making better use of solar PV and low overnight tariffs
- Battery can be installed inside or outside the house
- HES guidance to avoid solar panels on the principal elevation (if applicable)

CO2 Savings

- Octopus Zero Bills. ‘aims for zero carbon emissions’
- Thermify Heat Hub. ‘assessed as providing a 90%+ reduction’
- Biaco Electric Boiler. ‘When powered by green electricity, the system is zero carbon’
- PV and Battery. Property E. Installer estimate: 2 tonnes of carbon emission reduction per year

Grid impact

- SSEN has identified the need for significant infrastructure investment to meet widespread heat pump adoption
- SSEN emphasizes the use of flexible technologies manage higher peak demands and avoid extensive physical reinforcement costs
- All solutions reviewed involve use of flexible technologies – for Thermify and Biaco this depends on smart heat and/or electrical storage
- Thermify at scale may have a lower grid impact than the equivalent data processing capacity in centralised conventional data centres
- All of the options would reduce the grid impact of the transition to net zero compared with simply switching from a Gas/LPG/Oil boiler to a heat pump.

Applicability of solutions in Thornhill

- Octopus Zero Bills. Limited to houses and by need for PV. Some homes may also be too large / unsuitable
- Thermify Heat Hub. All houses could be suitable – subject to sufficient insulation. Possible scope in some flats.
- Biaco Electric Boiler. All houses and flats could be suitable
- PV and Battery. PV could be suitable, avoiding front elevation on listed/ conservation buildings (if applicable). Battery could still add value with no PV.

Follow up

- Contact Thornhill Development Trust to take part in the Survey or express interest in helping with the study

Contact

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