

# EcoHome Lab: Radbot

Smart Radiator Valves



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# Problem: Climate Change, Space Heating

- Carbon emissions contribute to climate change
- In UK ~10%+ of all carbon emissions from domestic space heating
- Maybe 50% of that is unnecessary
- One huge source of waste: heating empty rooms, eg bedrooms during day
- Another: complex / expensive controls that fox users
- Not everyone has reliable always-on Internet



# Solution: Soft Zoning, Radbot

- Treat each room/rad/TRV as a soft heating 'zone'
- Set back temperature when vacant and likely to be so for next hour or so
- Set back further when more sure, preheat when occupancy predicted
- DON'T require programming or connectivity or attention
- (Reasonable evidence that autonomous measures persist better)

Occupancy detection is driven by light (in various ways), use of controls and other things (development continues).

Size of temperature setback is risk-weighted.



# Brief History

- ~2009 David MacKay discussions re SEWTHA
- At DECC, what was best carbon bang for buck?
- Late 2012 meeting, home heating incl zoning good
- 2013 OpenTRV project
- 2018 Vestemi commercialisation to try to reach >>1bn rads!
- Tests (Energy House) and trials (ROWR and ECO): yes, it works

Now:

- Sales, sales, sales (every Radbot can save ~0.1tCO<sub>2</sub>/y)
- Cost reduction, continuous improvement (h/w and datasci)

## *Small-Scale Smart Heating*

What would be 'smart' circa 2012 for our homes, schools, community centres and shops?

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2012/10/30

<http://www.earth.org.uk/note-on-smart-heating.html>





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radbot

# SAP, GHG, ECO3: Alphabet Soup!

- Where would we be without TLAs and ETLAs? B^>
- Industry awards and key accreditation... **SAP**
- Standard Assessment Procedure for home Energy Performance Certificate
- SAP score allows use under Green Homes Grant
- Coming: Energy Company Obligation deemed scores for ECO3 programme



# How Does It Work?

- Just like a mechanical TRV, simple display, dial clicks
- Plus boost button!
- Occupancy/vacancy detection
- Prediction and 'usual at this time' 7-day-ish memory
- Sensors: light, temperature, humidity, use of controls
- Outputs: motor valve control (+haptics!), LED, radio
- Some patent-pending cleverness too...

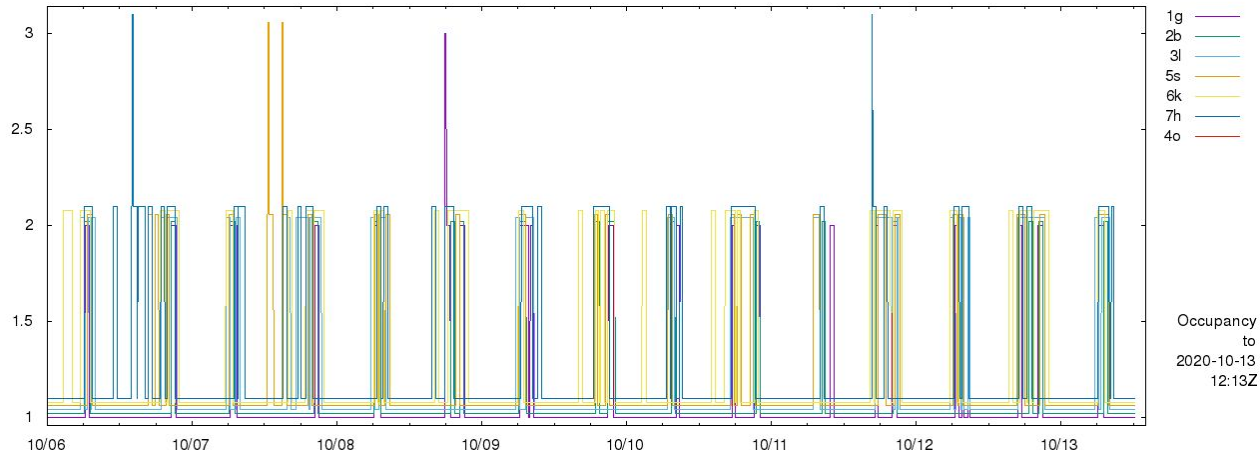


- 60% savings in bedrooms, up to 30% realistic in suitable homes



# Some Secrets for Devs and Tinkerers!

- Radbot 2 exposes serial connection (4800 baud, 8n1) for CLI
- Key and ID can be set via the CLI (Command Line Interface)
- JSON stats receivable by OpenTRV stats hub and boiler controller



# Summary

- 8 years in the making: in stock!
- Ready for Green Homes Grant and ECO3
- Aim is to save megatonnes of CO2, affordably and simply
- Also aim to help reduce fuel poverty
- Supports tinkering



# Get in touch, buy Radbots, cut carbon!

[www.radbot.com](http://www.radbot.com)

[www.vestemi.com](http://www.vestemi.com)

[github.com/opentrv](https://github.com/opentrv)

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