

Translating monitoring data into input data for model calibration & Future house/people/systems

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Current work – model calibration



Real building (left)
simulated (right)



Internal layout of
the building

Monitoring data

- Passive infrared (PIR) sensors
- Window & door monitoring for open/close
- Hot water volume and temperature
- Gas flow rate
- Mains, circuits, and appliance plug load, upward of 15 monitored points per home
- Space and system temperatures

Input files for model calibration

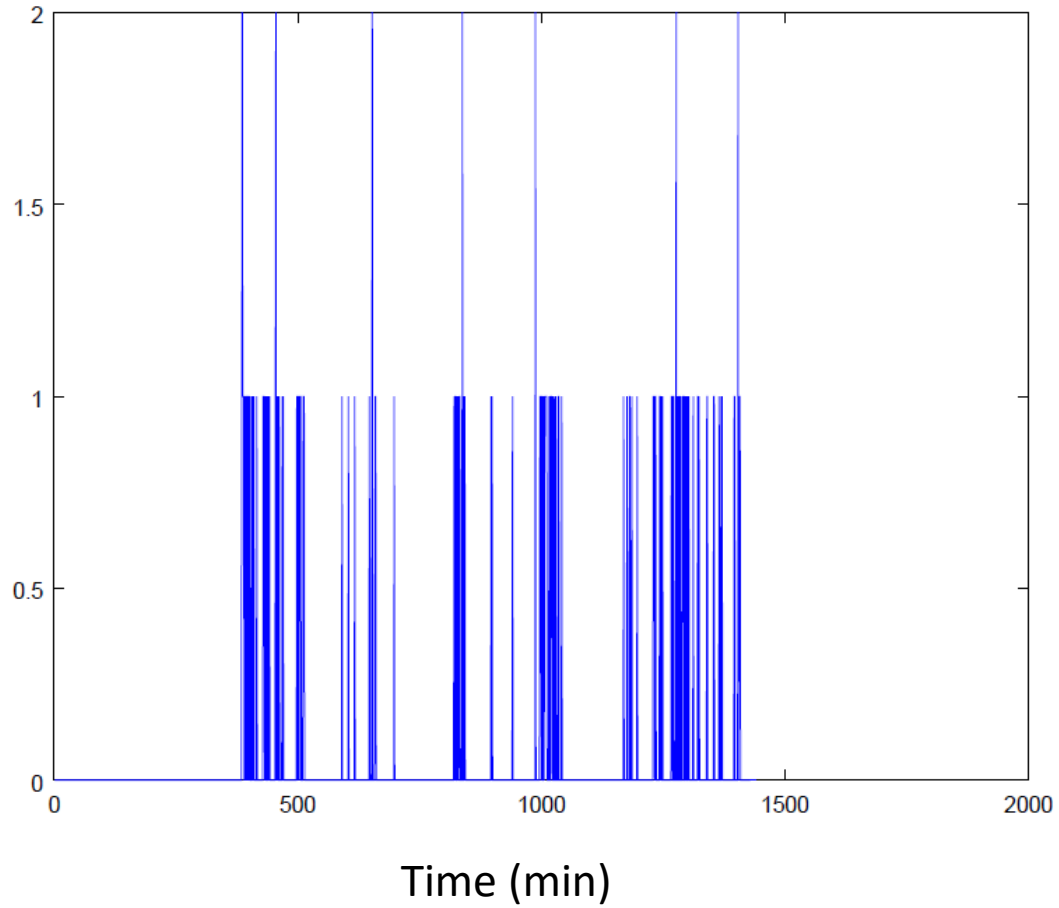
- Ventilation
- Occupancy schedule
- Heating set point temperature
- Heating schedule
- Hot water
- Appliances + lighting

PIR, window and door sensors

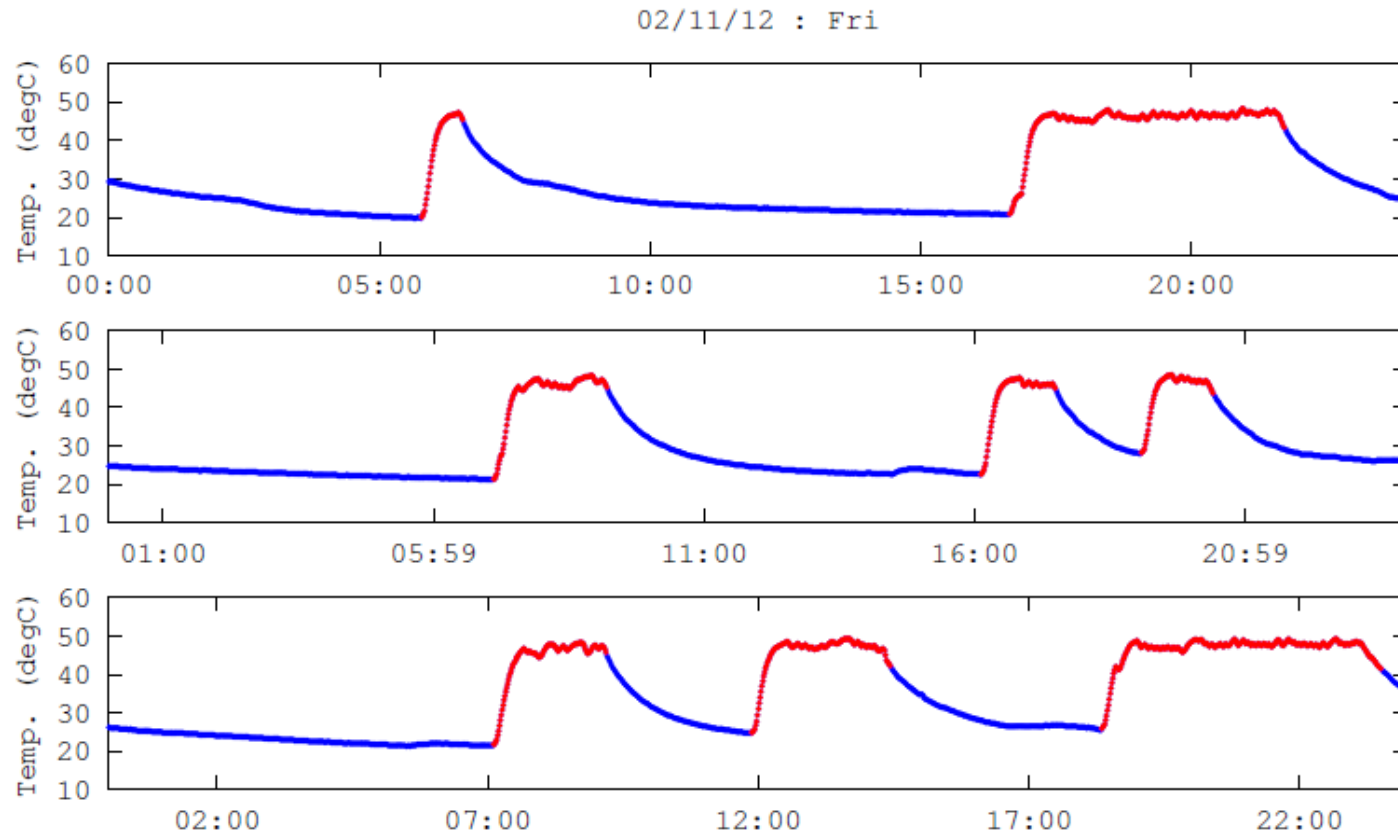


Living room PIR

2012-11-02

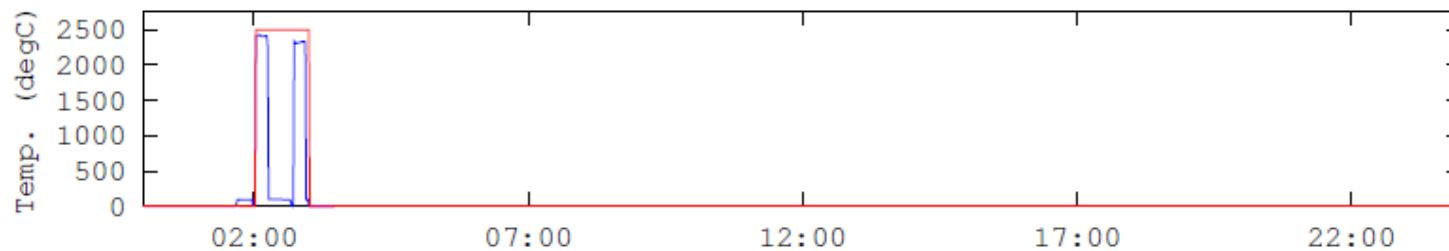
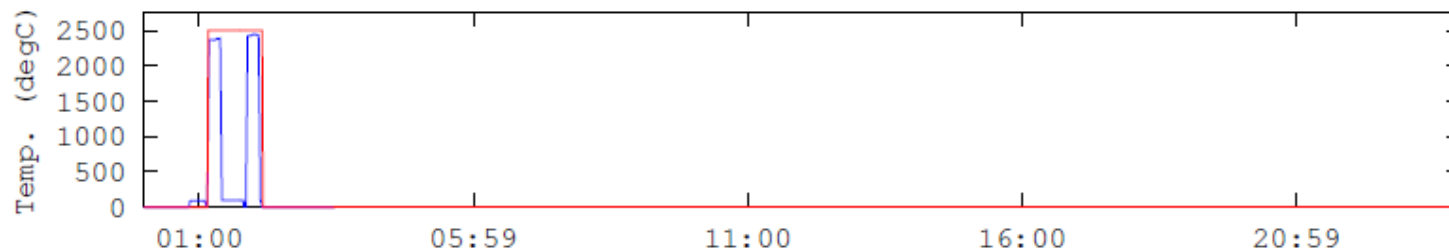
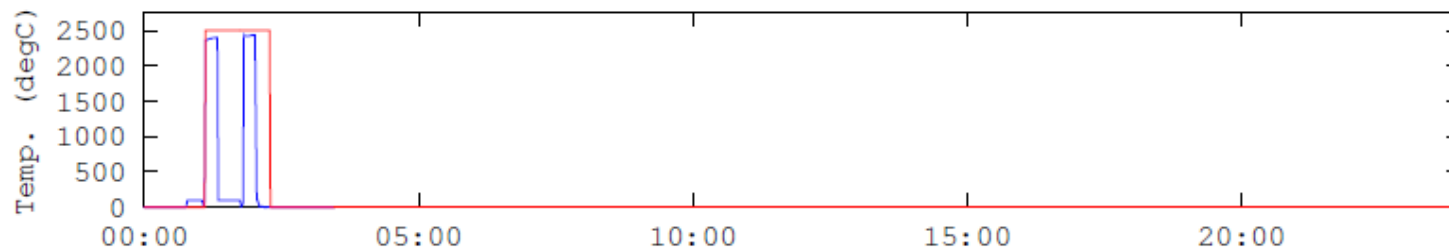


Boiler on/off detection



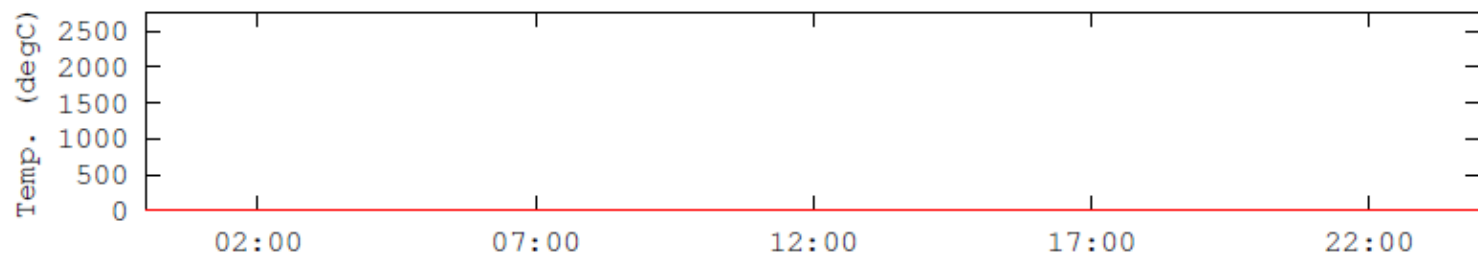
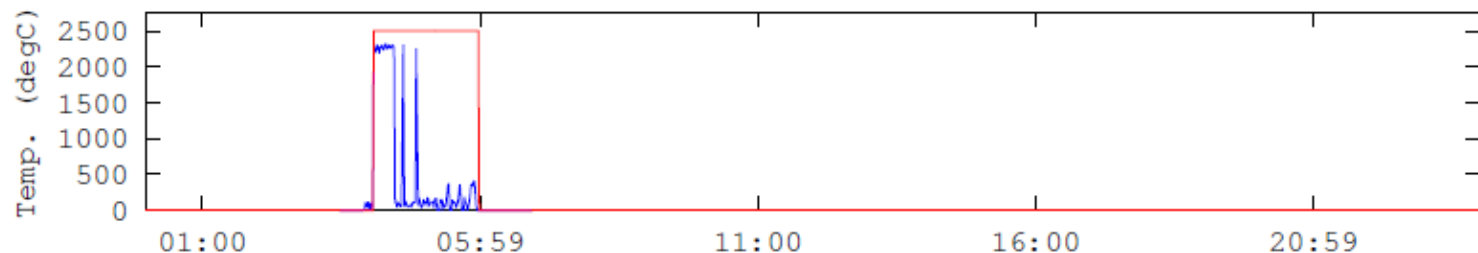
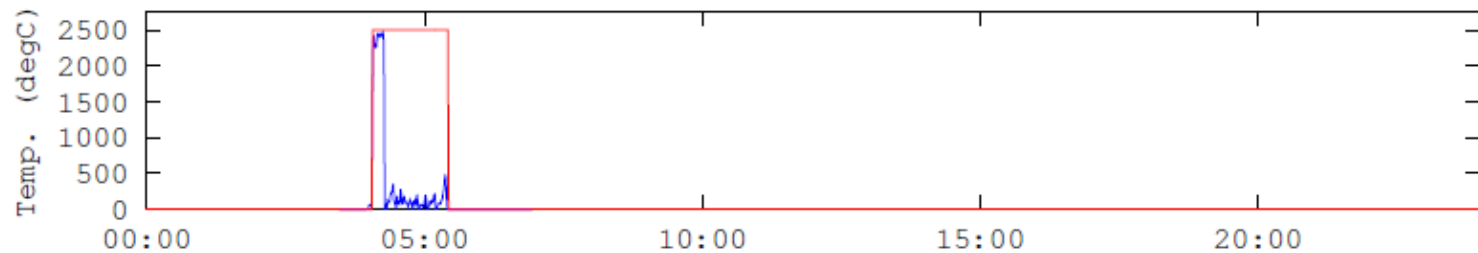
Dishwasher detection

02/12/12 : Sun



Washing machine detection

03/09/12 : Mon



Into the future

- Aim: to evaluate the potential 'stresses' on hot water provision in future homes

Future scenarios

- Building fabric upgrade: now, likely upgrade, passive house standard
- Hot water demand profiles: high, medium, low consumption profiles
- Systems: heat pumps, solar thermal, PV, resistive heating, thermal storage (water, PCM), battery

Thank you

