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Modelling and Monitoring Five Energy Retrofit Houses in South Wales

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Highlights:

- Combines computer energy simulation and field measurements to analyse the seasonal energy performance of five whole-house energy retrofits located in south Wales, UK.
- Presents the annual energy, CO₂ and cost savings associated with combining energy efficiency measures, building integrated solar PV, and battery storage.
- Presents the costs of retrofitting with an emphasis on affordability.
- Estimates the in-house energy use of battery storage and associated costs and cost savings.

Abstract:

With around 1-2% annual replacement of the UK's housing stock, housing retrofit must play a major role in reducing future energy use and CO₂ emissions. This paper presents a whole-house approach for energy retrofit for five houses located in south Wales. This 'systems based' approach combines reduced energy demand, renewable energy supply and battery storage. The paper describes a combination of energy modelling, using the building energy model HTB2, and field measurements to analyse the performance of the houses before and

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