

# BUILDING PERFORMANCE DIGEST

## Making buildings better

Welcome to the **Building Performance Digest**. In this regular newsletter we highlight some of the issues that arise once buildings have been designed, constructed, commissioned and occupied. Many are typical of the kinds of problems addressed by the **MSc Advanced Building Performance Evaluation**.

### MSc Advanced Building Performance Evaluation (ABPE)

This Masters programme covers a broad range of strategies and methods to carry out holistic assessments of building performance and identify solutions to post-occupancy issues.

#### The team

##### Course leader:

Dr Gabriela Zapata-Lancaster.

**Contributors:** Dr Hiral Patel, Prof Christopher Tweed, Prof Wouter Poortinga, Emmanouil Perisoglou and external guest lecturers and tutors.

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#### Get involved

If you want to highlight building failure problems you have encountered, let us know. We are always keen to include a range of energy and environmental related problems in the programme.

#### Contact us

If you are interested in studying this programme, please email [architectureadmissions@cardiff.ac.uk](mailto:architectureadmissions@cardiff.ac.uk)

#### Website

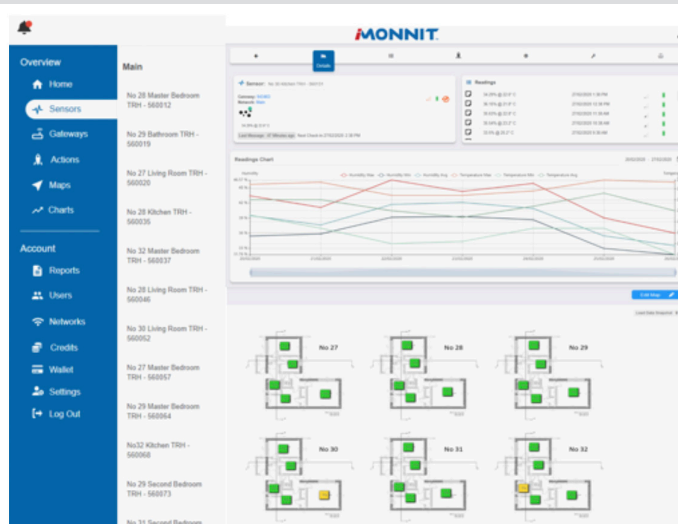
[www.cardiff.ac.uk/architecture/courses/postgraduate-taught/msc-advanced-building-performance-evaluation](http://www.cardiff.ac.uk/architecture/courses/postgraduate-taught/msc-advanced-building-performance-evaluation)

## MONITORING BUILDINGS' HEALTH

How do we quantify building performance?

**Answer: Monitoring is a powerful tool to evaluate the performance of a building and reveal its identity and secrets**

This month's theme is about using the right monitoring tools to understand and quantify building failures. Building monitoring is a holistic approach that involves quantification of changes in the environment, building fabric, building systems and occupants' behaviour. If the energy bill is high, appropriate monitoring will assist to identify the reasons and design solutions.



**Data is power** At the Welsh School of Architecture, we have an established research track-record and state-of-art equipment to evaluate building performance. We engage the public, drive policies and enhance the market through our research. The research teams in the school are collecting data from thousands of sensors by using high-end tools from Campbell Scientific, Eltek Ltd, Gemini and HOBO. MSc ABPE students use award-winning Monnit remote monitoring and wireless sensor system that allows easy setup and programming as well as flexibility in data analysis and visualisation.

# RESEARCH ON BUILDING PERFORMANCE AT THE WELSH SCHOOL OF ARCHITECTURE

Our teaching is closely linked to research in the School. Here's a sample of our research activity.

## Funded projects

Low Carbon Built Environment. Research team has secured £2.5 million to take forward the implementation of affordable low carbon technologies in the built environment in Wales.

[\(Read project information\)](#)

Welsh School of Architecture supported low-carbon refit of Swansea bungalows in collaboration with the local council. The team has designed, co-funded and monitored the comprehensive energy refurbishment.

[\(Read the project report\)](#)

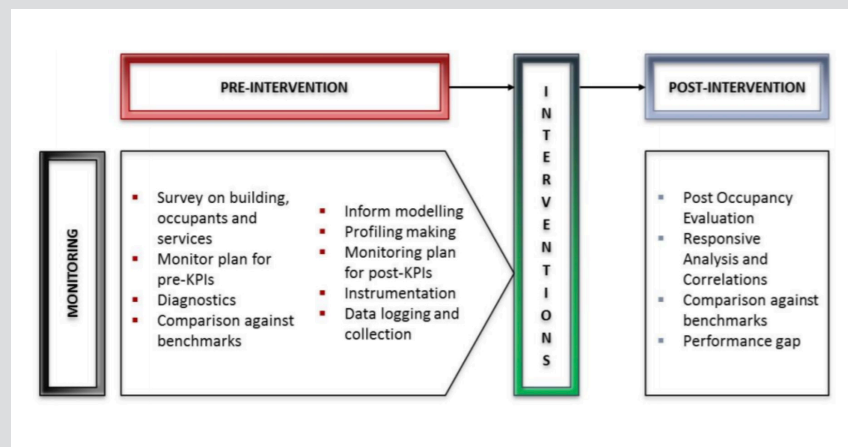
## Selected publications

Jones, P. et al. (2017). Five energy retrofit houses in South Wales. *Energy and Buildings* 154, 335-342. [\(Read the article\)](#)

Perisoglou, E. et al. (2019). Evaluation of building and systems performance for a deep domestic retrofit. Presented at: *Energy Efficiency & Renewables in the Digital Era (CISBAT)*, Lausanne, CH, Sep 2019, Vol. 1343. IOP Publishing. [\(Read the article\)](#)

Guerra Santin, O. and Tweed, A.C. (2015). In-use monitoring of buildings: an overview and classification of evaluation methods. *Energy and Buildings*, 86, 176-189. [\(Read the article\)](#)

Monitoring informs modelling Monitoring can support retrofits in the pre-intervention stage to facilitate the decision-making process as well as evaluate building performance in the post-intervention stage. Monitoring reduces the uncertainty of suggested building solutions and enhanced dynamic modelling by providing real measurements and evidence. [\(Read the article\)](#)



## STORIES FROM THE WEB

Here are a few selected articles we found about building performance that may be of interest to you:

### How a family has saved £700 a year on energy bills

[\(Read the article\)](#)

Home owners, researchers, policy makers coming together to reduce energy consumption and reap cost-savings. This retrofit project paves way forward for decarbonising housing stock in Wales.

### Can you run your house on a battery?

[\(Watch the video\)](#)

Solar batteries let you store up power for when you really need it. TESLA Inc, a clean energy leader, provides an easy to use remote monitoring and control system to have full access to your buildings electric generation, storage and use from everywhere.

### Climate-smart shopping destination

[\(Read the article\)](#)

Swedish shopping mall Väla is set to become energy self-sufficient. Energy consumption is the single biggest cost to the commercial area, and substantial energy savings have long been a high priority for the property owner. Desigo, the digital operating and monitoring system from Siemens, is assisting in reaching the energy goals.

### Building Performance Evaluation: Findings from 50 non-domestic projects

[\(Read the article\)](#)

The report looked at 50 leading-edge, modern buildings, including supermarkets, offices, schools and health centres. It found that these buildings were routinely using up to 3.5 times more energy than their design had allowed for.

Read the previous newsletter [here](#)