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Data Article

High-resolution dataset for building energy management systems applications

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ABSTRACT

Modelling and optimization of energy management systems (EMS) require different data types for operation and validation. In this article, a multi-purpose dataset is provided for EMS applications. It includes PV measurement data for the PV generation and prediction algorithms associated with EMS systems. Weather data has also been measured at the same location for the optimization of PV prediction algorithms and other applications such as building model simulations. Moreover, the dataset contains detailed measurements of a seminar room where not only temperatures have been measured, but also user feedback for comfort assessment. All documented measurements have been gathered at the same location in Munich, Germany.

Specifications table

Subject area	*Energy*
More specific subject area	*Renewable energy generation, energy management systems*
Type of data	*CSV files with different measurements (PV system, weather, occupancy)*
How data was acquired	*Data was acquired using two techniques (direct inverter reading, sensors attached to Raspberry Pis or Arduinos)*

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Data format	*Raw data*
Experimental factors	*No*
Experimental features	*Very brief experimental description*
Data source location	*Munich, Germany (Theresienstraße 90, Building N8)*
Data accessibility	*The data is publicly accessible on* http://www.smartup.ei.tum.de/aktuelle-messungen/download/

Value of the data

- Available PV measurements are necessary for testing demand-side management algorithms
- Weather data at same location is available in order to assess heat demand of buildings, COPs of heat pumps etc.
- Smart seminar room data is valuable to evaluate the comfort of the occupants based on ambient temperature and heating system behavior
- Having all the data measured at high resolution in the same exact location makes it an ideal candidate for EMS applications

1. Data

All the data have been collected at this location: Technical University of Munich, Theresienstraße 90, 80333 Munich, Germany. On [1], live readings can be monitored and downloaded with different temporal resolutions for different periods.

PV Measurements:

Available PV measurements provide the following data:

- AC power
- AC voltage
- AC current
- Frequency
- DC power
- DC voltage
- DC current
- Energy generated today
- Energy generated throughout the system lifetime
- Inverter temperature

Smart Seminar Room

The room measurement sensors provide the following data:

- Temperatures at two locations (near windows, near doors)
- Humidity
- Four heating system valve actuator positions
- Number of occupants
- Daily feedback from the occupants on the room comfort

Weather Station

The weather station provides the following data:

- Temperature