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AI applications for energy storage in historical buildings



Case study description

City Hall in Gävle

- Built 1784-1790 (Historic office building)
- Usable floor area ca. 2100 m²
- Three floors, an attic, and a basement
- District heating connected
- Electricity driven cooling unit of supply air
- Supply and exhaust ventilation system



The available data for Rådhuset in Gävle

- Indoor temperature (temperature set-points)
- Weather conditions (Outdoor temperature & solar radiation)
- Building thermal mass, U-values and thermal bridges (Heat loss coefficient)
- Window glazing and shading properties
- Ventilation flow rate
- Schedule and number of occupants (approximate estimation)
- Schedule and number of appliances & lighting (approximate estimation)

The aim: DH supply control (peak shaving of DH demand)

Development of an AI model which can predict the DH demand in advance based on the weather prediction and internal loads and store the DH in the building envelope in advance to colder periods

Ps. There is already a Building Management System installed in the building , which monitors the internal temperatures and controls the heating elements.

Thank you!

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