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Building performance simulation of ‘t Centrum project in Westerlo, Belgium

Version 2.0

Claeys, Louise; Attia, Shady, 2022, "Building performance simulation of ‘t Centrum project in Westerlo, Belgium", https://doi.org/10.7910/DVN/UG4OWS, Harvard Dataverse, V2

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Description

This dataset represents a building energy model for carbon-neutral office buildings located in Belgium. EnergyPlus has been used to model energy use such as heating, cooling, ventilation, lighting, and process loads in buildings. Antwerp weather file was selected as the closest and data-rich airport weather file to Westerlo. Antwerp falls under the Köppen-Geiger classification of temperate oceanic climate with no dry season and warm summer. Offices are typically heating- and cooling-dominated with an average of 2300 Heating Degree Days (HDD) and 45 Cooling Degree Days (2016–2020, base temperature 15 C HDD and 24 C CDD). Antwerp meteorological weather data for 2016–2019 were requested from the Belgian Royal Meteorological Institute. The characterization of the building properties and occupant profiles was based on the input used for the Belgian EPB dynamic simulation model that has been used for energy simulation in this project. The energy performance assumptions comply with the Flemish energy performance regulations for 2019, including insulation, installation, ventilation, and overheating requirements. The building is an all-electric zero energy building with three glazed facades. The ground floor is glazed with vacuum glass, and the upper floors are triple glazed. The building relies on a mechanical ventilation system with heat recovery. Six

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Subject

Engineering

Keyword

zero carbon, building, energy efficiency, energy performance

Related Publication

Al-Obaidy, M., Courard, L., & Attia, S. (2022). A Parametric Approach to Optimizing Building Construction Systems and Carbon Footprint: A Case Study Inspired by Circularity Principles. Sustainability, 14(6), 3370.

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