

Toward Net Zero

Your Guide to Designing High-Performance Buildings



QUICK FACTS

Cities consume over two-thirds of the world's energy and account for more than **70%** of global CO2 emissions**



55% of the world's population lives in cities, and that is expected to increase to **68%** by 2050*

Buildings generate **40%** of these emissions***

DID YOU KNOW?

The 2030 Challenge responds to climate change by setting goals to reduce greenhouse gas emissions. The report states that operations in all new buildings and major renovations will be carbon neutral by 2030.[^]



Advancing BIM projects with energy analysis integration



Building performance simulation at design and other stages of projects helps reduce energy costs and environmental impact while enabling design decisions that impact operational expense.

Leveraging the right software can help you accelerate building design toward net zero emissions

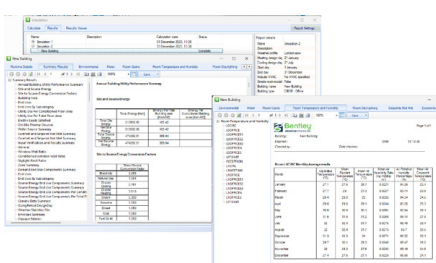
OpenBuildings® Energy Simulator, a standard feature of **OpenBuildings Designer**, Bentley's all-in-one building design software, allows engineers, architects, and designers to integrate lighting, thermal, and solar analysis into their workflow.



Here is how OpenBuildings Energy Simulator can help you design high-performance buildings

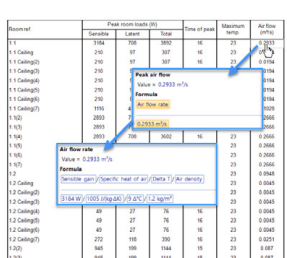
ENHANCE COMFORT

Perform whole building energy analysis using industry-standard EnergyPlus for dynamic simulation



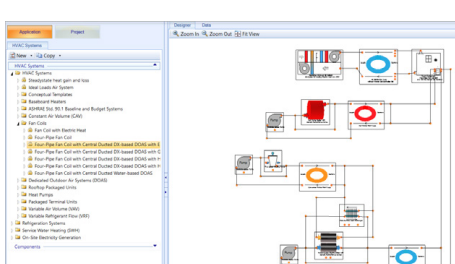
MODEL BUILDING PERFORMANCE

Calculate HVAC, cooling, and heating requirements using industry-standard building load calculations (e.g. CIBSE Gain).



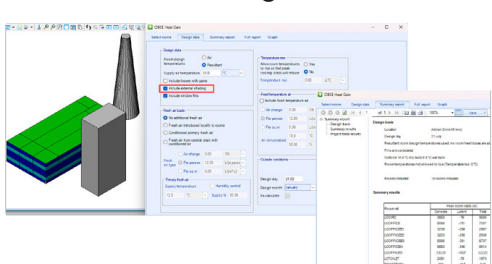
ACCELERATE DESIGN WITH PREDEFINED TEMPLATES

Reference a catalog of predefined standard HVAC system templates, or import existing EnergyPlus systems, and create custom HVAC systems using the EnergyPlus detailed approach or a simple tabular input workflow.



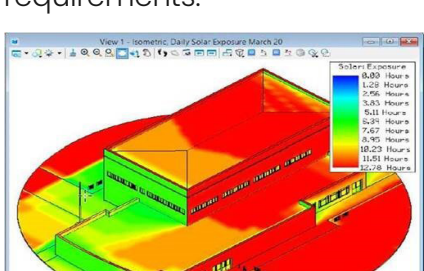
OPTIMIZE ENERGY PERFORMANCE

Model surrounding buildings to simulate the effect of their shade on the design.



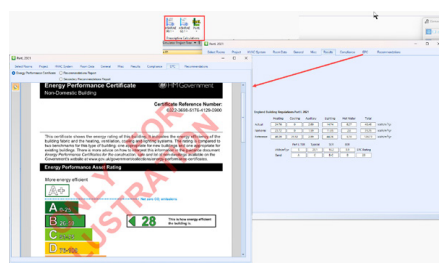
PERFORM SOLAR ANALYSIS

Model solar path and calculate solar exposure to analyze photovoltaic and solar capacity and visualize shading requirements.



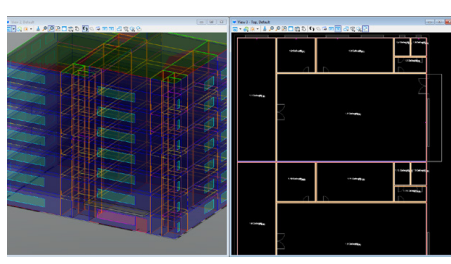
MEET BUILDING REGULATIONS

Calculate, design, and satisfy building regulation requirements such as UK Part L and ASHRAE Standards 90.1 and 62.1.



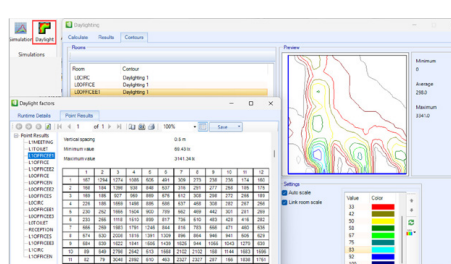
ACHIEVE SEAMLESS DATA EXCHANGE

Utilize the Analytical Space Model function to import architectural models from OpenBuildings Designer or directly import models from the Hevacomp Design Database.



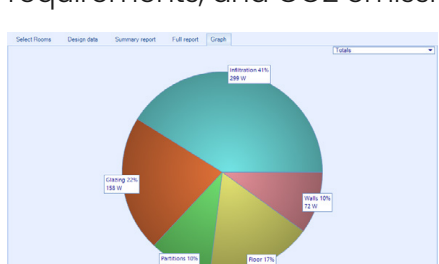
IMPROVE SUSTAINABILITY

Integrate daylight factors, calculated using the industry-standard Radiance engine.



CREATE SIMULATION REPORTS AND COMPARE SCENARIOS

Includes heating and cooling loads, LEED compliance, annual energy use, equipment sizing requirements, and CO2 emissions.



ACCELERATE DESIGN ALTERNATIVES

Automate and accelerate design iterations with GenerativeComponents®, a computational design capability of OpenBuildings Designer. Efficiently create and manage complex geometry.

Learn More About OpenBuildings Energy Simulator



SOURCES: * UNDESA ** C40 Cities *** USGBC ^ Architecture 2030

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