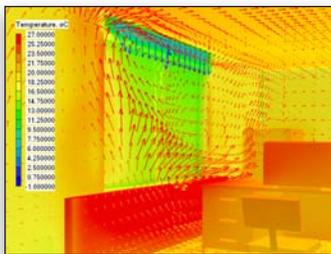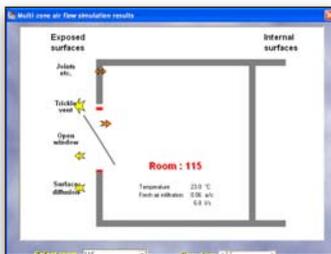**Bentley**
Sustaining Infrastructure

Bentley Hevacomp Simulator V8*i*

Intuitive Interface to Industry Standard EnergyPlus™ Energy Simulation

Air Flow Visualization

Multi-Zone Air Flow Simulation

Weather Data

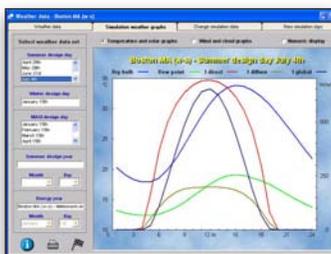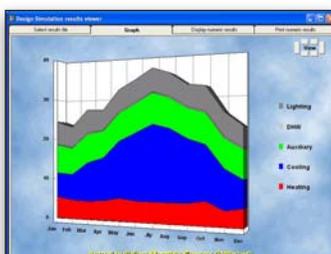*Design Simulation Results Viewer*

Bentley Hevacomp Simulator V8*i* provides a quick and easy way to perform building energy analysis using Dynamic Simulator with EnergyPlus.

Provides 3D Modeler in Design Database

Bentley Hevacomp Simulator V8*i* offers consultant and design contractors, building services design and MEP professionals a tool that is easy and quick to use for building energy analysis using Dynamic Simulator with EnergyPlus. Using the 3D modeler in the design database, projects can be fully simulated in EnergyPlus. EnergyPlus is fast emerging as the global standard for dynamic simulation. It is used for all building load and energy calculations, plant energy calculations and passive design simulations.

Increasingly, engineers are required to carry out more complex analysis, such as over-heating frequency, mixed mode ventilation and CFD analysis. To meet this demand, Bentley has developed a Dynamic Simulator package, that enables simulation to be carried out using the same project data engineers have set up to use with simple load calculations. This means simulation studies can be carried out without re-entering project data.

Extensive Roof and Floor Modeling Program Available

With Hevacomp software, a building is set up by tracing the internal perimeter of each room, and adjacent surfaces are automatically detected as partitions. Databases of constructional elements are used. An extensive roof and floor modeling program enables simple or complex roofs to be traced from DXF files. Walls and partitions are automatically trimmed vertically to fit the roof, and rooms above and below target rooms are detected. This enables a full 3D model to be produced for little more effort than required for a simple 2D tracing.

Once the building has been set up, building simulation, linking to EnergyPlus, can be performed to examine room heat losses and gains, summer overheating, peak design months, overheating frequency, and building energy. The package will also produce 3D external shading graphics and internal solar penetration graphics, showing moving sunshine patches within rooms.

Summer overheating frequency can be simulated using CIBSE summer design weather data, and hours of overheating can be obtained from cumulative frequency results to check against U.K. Part L code requirements. Natural infiltration can be examined by defining flowpaths and opening windows. This enables complex natural and mixed-mode ventilation systems to be examined, including controlled opening of windows.

Includes Database of over 7,000 Locations

Hevacomp provides an extensive Meteonorm weather database of over 7,000 locations worldwide for annual energy simulation. A detailed profiling and scheduling module is available so users can set up required plant, gains, occupancy and temperature schedules. Typical schedules for a large range of buildings are provided, compatible with U.K. Part L requirements.

A plant simulation module enables engineers to simply define HVAC systems such as radiators, warm air, constant volume a/c, VAV, fan coils, room a/c units, etc. Central plant items such as boilers, chillers and cooling towers can also be defined. Databases of common plant and equipment are provided. From a brief HVAC set of data, the package will automatically set up all the required HVAC components, water and air networks and central plant. Although simple to set up, complex systems can be defined, which are not limited to Compact HVAC components.

Moreover, plant sizing can be carried out, using summer and winter design days, producing plant and equipment sizing schedules. In addition, annual energy consumption can be computed, together with fuel cost and CO_2 consumption.

Bentley has an alliance with CHAM (U.K.) so that results from Dynamic Simulator can automatically be used to carry out CFD analysis, enabling room air movement and temperature studies. Hevacomp software provides an extensive object library so that users can place items such as furniture and people in rooms to see the effect on air movement.

Find out about Bentley at: www.bentley.com

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Bentley Hevacomp Simulator V8*i* At-A-Glance

Dynamic Simulation with EnergyPlus
- Easy interface to powerful engine as well as an emerging industry standard
- Detailed analysis of complex buildings and systems
- Confidence in engine with significance support and backup

Extensive Weather Databases
- Over 2900 locations worldwide
- Confidence that project location data is available

Localized Weather Databases
- Local databases available
- Locally sourced databases are included where required

Overheating Calculations
- Assess low energy designs and comfort conditions
- More accuracy from analysis of low energy designs

Overheating Frequency
- Annual summer temperature calculations can identify overheating risk
- Minimize overheat days per year

Predefined HVAC Systems
- Predefined standard HVAC systems are included
- Significant time is saved using predefined systems for standard designs

User Defined HVAC Systems
- User defined HVAC systems from a simple interface with a graphical mimic
- Full flexibility to defined actual systems for shaded designs

Plant and Building Simulation is Fully Coupled
- Room demand is affected by HVAC equipment within the space
- Fully coupled simulation allows plant energy calculations to be executed in coordination, rather than two separate calculations
- More accurate plant energy analysis

Built-in Part Load Curves
- Part load efficiency curves for all plant items
- More accurate results as plant efficiencies will vary throughout the year
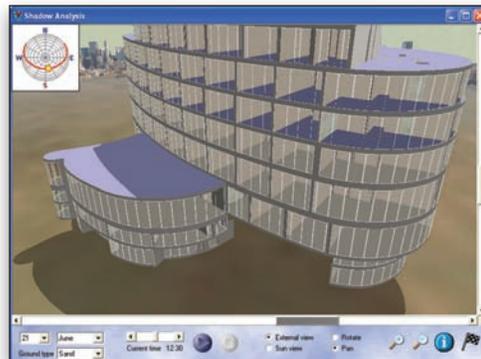
Renewable and Low Energy Systems
- Define renewable systems such as wind and solar
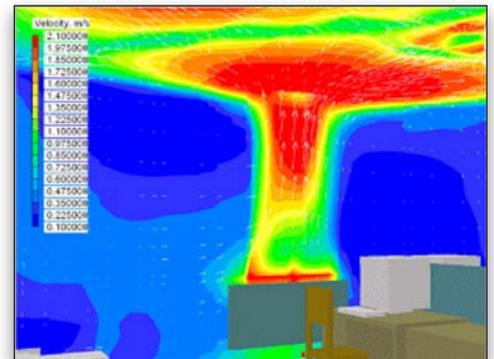- Design low carbon buildings

Biomass Systems
- Biomass boilers can be setup
- Design low energy designs

Passive Design
- Full control over windows, natural and mechanical ventilation strategies
- Detailed analysis of low energy and passive designs

Shadow Analysis

Airflow Analysis Using CFD