

FURTHER INFORMATION

Passivent Products and Services

Passivent offer a wide range of products and services to provide energy efficient ventilation for today's modern buildings. The range of products includes full natural ventilation strategies, mixed mode ventilation, natural ventilation with heat recovery, and natural daylight products.

Quality Assurance

Passivent products are designed and manufactured under a BS EN ISO 9001 quality management system, giving an independent audited assurance that the products will fulfil their intended purpose.

Environment

Passivent conducts all business processes under a BS EN ISO 14001 environmental management system, giving an assurance that all activities are carried out having minimal impact on the environment.

Technical

Passivent Technical Services offer a free design service, designing each system for a specific application depending upon the requirements for the type of building.



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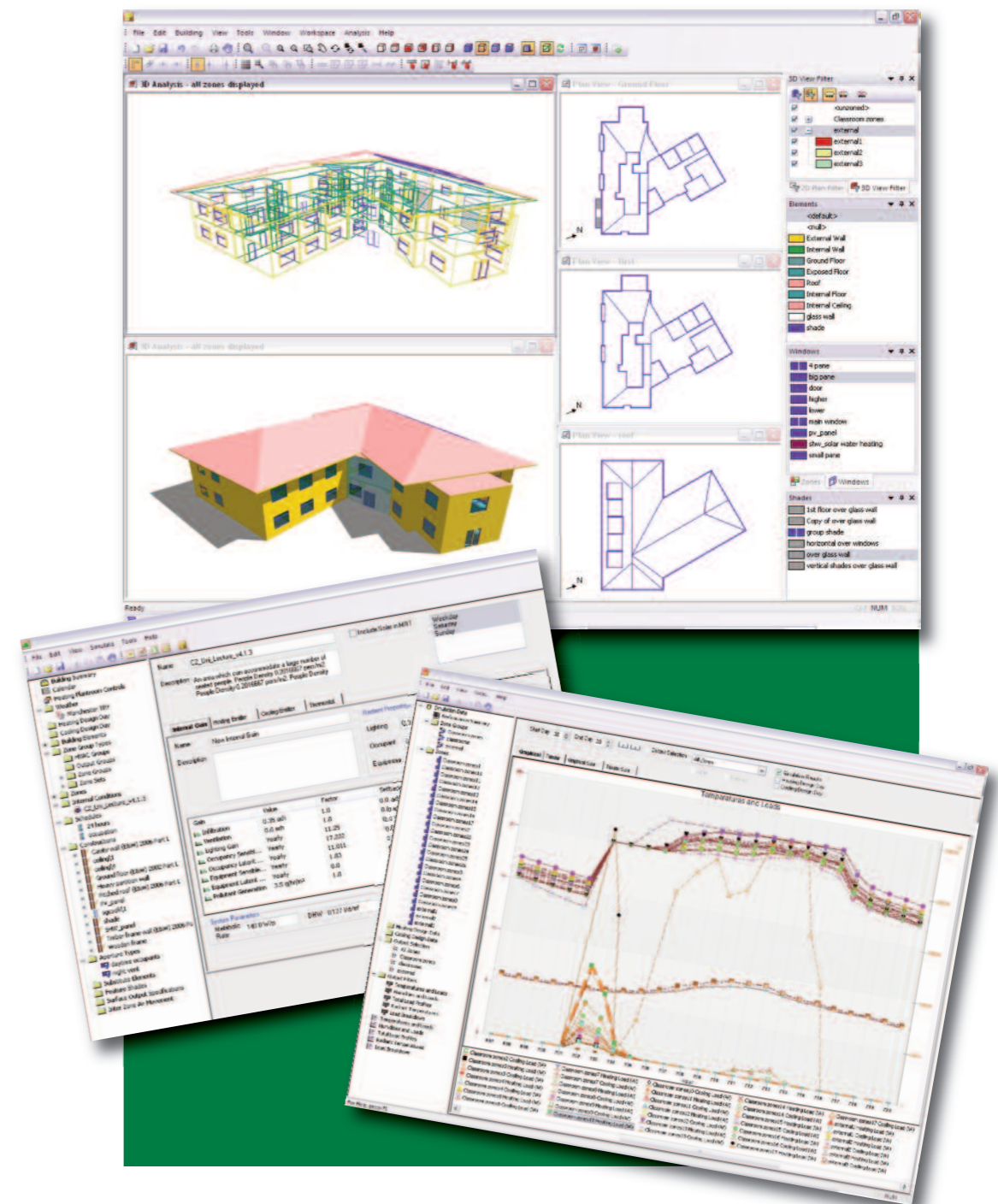
Passivent Limited maintains a policy of continuous development and reserves the right to amend product specifications without notice.



A member of the Building Product Design Group



ENVIRONMENTAL MODELLING SERVICES FOR BUILDINGS



Produced by Ted Hastings/Rackley Design 4467

ENVIRONMENTAL MODELLING SERVICES FOR BUILDINGS

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Passivent's Environmental Modelling Services provide computer-modelled environmental predictions for internal spaces in buildings.

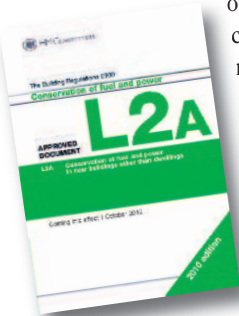
The services form an invaluable design tool for natural ventilation and daylighting strategies, highlighting where systems designed will or will not work in reducing the risk of overheating and maintaining CO2 levels within guidelines.

Benefits:

- Provides detailed computer analysis of the internal environment, and enables the prediction of temperature, airflow, CO2 concentrations and daylight levels.
- Assured compliance with Building Regulations Part L and CIBSE Guidance.
- Customer peace of mind with extensive Professional Indemnity insurance cover for the design.
- An invaluable aid to design for optimum comfort with minimal energy use and minimum CO2 emissions.
- Allows the optimum and cost engineered ventilation system to be designed.

Building Regulations

The Building Regulations Part L and Approved Document L2A give specific measures to control excessive internal temperatures within spaces, given as a measurement that the temperature should not exceed a set value for more than a target number of occupied hours per year. The required analysis, to prove whether the building meets the requirements or not, is only carried out via computer environmental modelling. Most buildings, to achieve compliance with part L are required to have thermal modelling conducted.



Range of Services

Thermal modelling is a requirement of most buildings in order to prove their ability to meet the requirements of Building Regulations. Passivent are able to offer insurance-backed thermal modelling as part of a full natural ventilation design package.

The design process of a natural ventilation system comprises different elements; the dynamic thermal model makes up only one part. To get to that stage it is necessary to assess the amount of air that can be let into the building, via a Bulk Airflow calculation. This states how much fresh air is allowed into the building through the natural ventilation components. This information can then be used to undertake a peak airflow calculation. This is an essential part of the design process as it provides an early indication of whether the building will meet or fail regulations, and can allow the design to be amended if required before committing to a full dynamic thermal model. The bulk airflow value will have a significant effect on the peak temperature value. Better performing products can allow less product to be used to meet the requirements; this can reduce the overall cost of the ventilation.

The Passivent Offering

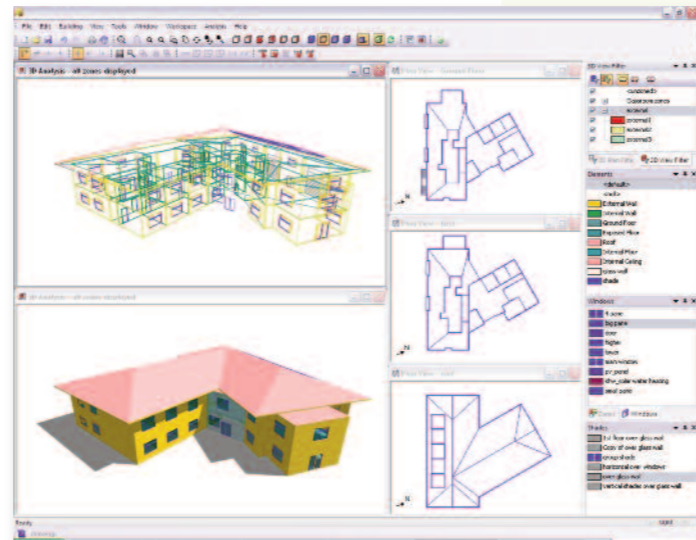
Working as part of the design team Passivent can provide full design of the natural ventilation system, including a 12-year design warranty and an insurance-backed thermal model, proving compliance with regulations. By working as part of the design team, ventilation designs can take in to account other factors such as building fabric, orientation and shading, allowing a project-specific design to be created. This is optimised for each building and can reduce the cost of the whole project.

Combined Expertise

Passivent's thermal modelling offering is provided in conjunction with EDSL and the approved Tas software.



Tas Software also incorporates the Passivent AirScoop and SunScoop builder modules, which allows for the inclusion of specific Passivent product performance, allowing for cost engineering of projects where product performance of different natural ventilation components is not the same.



Dynamic Thermal Simulation (DTS)

Used to establish the thermal and bulk airflow performance of a building.

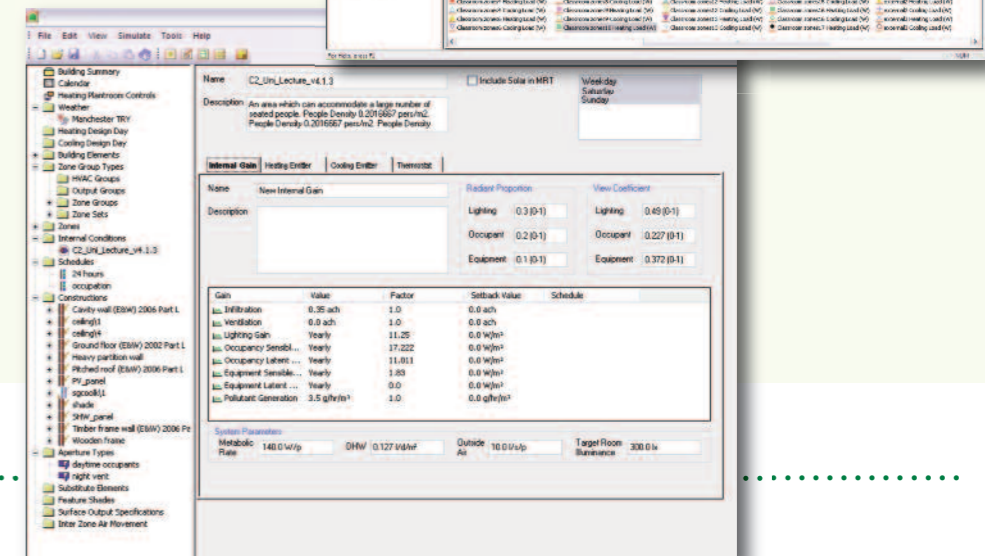
- The entire building envelope is modelled geometrically, together with the fabric of the rooms according to specification and drawings/data provided.
- All heat sources (occupants, computers, lighting etc) can be added to the model for accurate predictions.
- The effects of surrounding buildings, specifically wind and solar shading, can be modelled along with the effects of different glazing specifications and shading strategies.
- The simulation is run to consider a particular period of the year (typically May to September) at one hour intervals. This allows overheating criteria to be analysed on an hour by hour basis.
- Forecasted data sets can be produced, facilitating 'future-proof' buildings.
- The simulation can predict, but is not limited to, bulk air flow rates (air changes per hour), internal CO2 concentrations, and hours when prescribed internal peak temperatures are exceeded.

- Simulations can be run using specific control algorithms so the building operates as intended when built, which gives a true representation of the actual operating strategy.

Computational Fluid Dynamics (CFD)

Airflow modelling used to establish the detailed ventilation performance and thermal analysis of a building.

- The modelling indicates the quality and efficiency of the proposed ventilation strategy from which recommendations can be readily drawn.
- Predicts spatial information including fresh air distribution, temperature, CO2 levels, neutral pressure level, air velocities and draughts.
- Indicates how compliance with regulations can be achieved, and through visual images gives confidence that the design will function as intended.
- Guidelines prescribe maximum temperatures and CO2 levels at 'seated head height' – CFD can model conditions at specific locations.
- Demonstrates how the ventilating flow regimes develop, and so can predict the likelihood of reverse flow/down draughts from stacks; thus it can be used to formulate control strategies or to modify designs accordingly.
- Uses Passivent specific product data within the AirScoop builder, to allow the most energy-efficient, cost-effective ventilation systems to be designed.



Daylight Modelling

Climate based software used to establish the daylight illuminance and solar heat gain within a building.

- Details how daylighting and direct solar penetration illuminate the space.
- Recommendations can be made for solar shading requirements, type of glazing, size and number of windows etc.
- The modelling technique is based on real climate data thereby providing realistic predictions of how effectively natural light will illuminate a space, and how much solar heat is likely to penetrate the building and challenge a cooling strategy.
- External factors such as other buildings, obstructions and reflections are considered.
- Enables Passivent natural light systems to be introduced into designs and the associated reduced energy consumption to be estimated.

