Environmental Design Solutions Ltd

EDSL Tas

UPDATE

Tas and Hevacomp under the Bentley BIM umbrella

BIM Model

Energy Certificates

Analytical Space Model

Tas Spaces/Zones

Bentley Tas
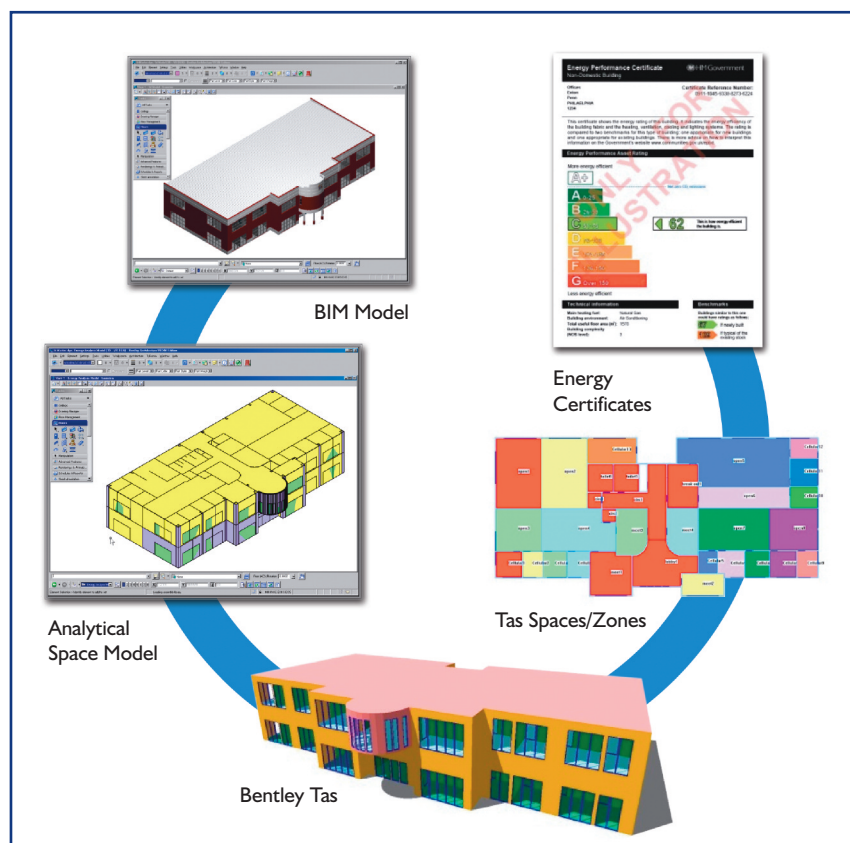
Reusing bim data for energy analysis

Bentley Systems Inc. have agreed a worldwide distribution agreement for EDSL's Tas building simulation software. This gives EDSL Tas global outreach, further expanding its global presence and market share.

Bentley have also acquired Hevacomp building services design software.

Bentley have combined the market leading strengths of Tas and Hevacomp, the UK's leading building analysis and design tools, to give them a global solution. The UK is one of the most demanding countries in the world for regulation on reduction of CO_2 emissions in the built environment.

Data exchange facilities between Tas and Hevacomp maximise design productivity, whilst ensuring design quality.

Bentley's Energy Performance Series easily integrates with existing 2D workflows and brings detailed building analysis and simulation to Building Information Modelling (BIM). All of the products work with MicroStation, AutoCAD and interoperate with Bentley Architecture, Revit and other BIM programs, facilitating collaborative streamlined workflows.

Bentley Releases U.S. and Canadian Versions of Robust Energy Performance Series for 'Green' Building Design.

www.bentley.com/eps

Who are EDSL now?

Tas Building &
Plant Simulation Software

20 years in the market.

Users in 20 countries.

The team is a mix of top flight engineers, physicists, mathematicians and computer scientists.

State of the art, efficient software technology, following a £1m development investment for a complete re-write, which was completed in 2006.

First class technical user support from a dedicated team of experts.

Software compliant with building regulations, Part L2 & EPCs and ASHRAE (LEED) standards.

SI and Imperial units

Highly regarded building simulation consultancy service, delivering quality and economy.

EDSL Tas

Environmental Design Solutions Ltd

13-14 Cofferidge Close, Stony Stratford
Milton Keynes MK1 1BY

Tel: +44 (0)1908 261461
Fax: +44 (0)1908 566553
Email: info@edsl.net

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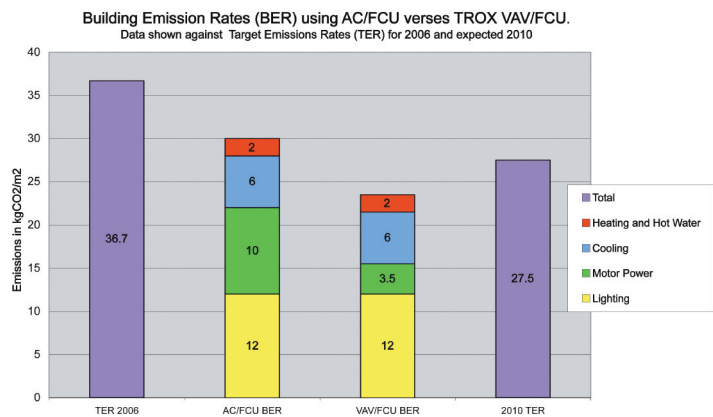
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TROX VAV ec motor fancoils

Performance data incorporated into Tas plant simulation software

TROX VAV ec motor fancoils performance data incorporated into Tas plant simulation software.

Based on detailed laboratory testing and monitoring undertaken by TROX, EDSL have developed simulation procedures that reproduce the measured performance. The impact on calculated CO_2 emissions for fan energy use is significant. For an efficient building design, moving from standard fancoils to TROX VAV fancoils with ec motors can reduce total building CO_2 emissions by about 20%. This has important implications for Part L2 compliance and EPC rating for air conditioned buildings. TROX looked for a simulation based tool to try and quantify the benefits of its technology. They found that Tas was the only accredited dynamic simulation software that used component based hourly plant modelling, for fans, coils and controls etc, rather than SBEM seasonal efficiency ratios and generalised auxiliary energy numbers for fan and pump energy. Tas is able to model in sufficient detail to allow the true benefits of innovative and new equipment technology aimed at lowering CO_2 emissions.

Building Emission Rates (BER) using AC/FCU verses TROX VAV/FCU.
Data shown against Target Emissions Rates (TER) for 2006 and expected 2010

Emissions in kgCO2/m2

|	TER 2006	AC/FCU BER	VAV/FCU BER	2010 TER
Total	36.7			27.5
Heating and Hot Water		2	2	
Cooling		6	6	
Motor Power		10	3.5	
Lighting		12	12	

The CO_2 emissions graph shows the performance of a new office design (that featured in the daylight section opposite) using standard AC fancoils or TROX VAV fancoils. The standard fancoil design is lower than the current 2006 target, but would not meet the expected 2010 target. The TROX VAV fancoil option betters the expected 2010 target.

Revit 2010, Tas is ready!

As part of its commitment to interoperability, EDSL have released a comprehensive gbxml based import of 3D geometry and spaces from Revit 2010.

Geometry data may be imported into the Tas 3D model for further detailing and/or evaluation of design revisions. The Tas 3D model is more intelligent than other 3D models and helps to 'heal and forgive' small errors that occur in the Revit gbxml output, which can cause major problems in less capable products.

Alternatively, the geometry data may be passed directly into the simulation module. This is the original intent for gbxml. It overcomes issues of complex geometry being passed from one 3D model to another. Shadow calculations take place in the Tas simulation model. This represents an excellent access route to simulation for older 3D CAD models.

Revit gbxml

Tas 3D model
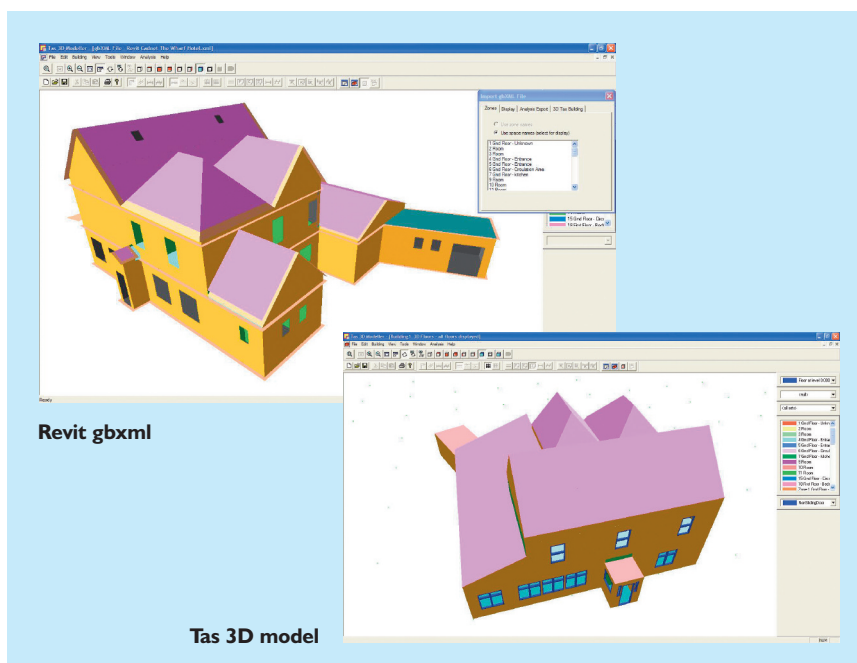
EDSL Tas
Consultancy Services

We undertake Tas building simulation based consultancy for clients on general design for room loads and plant sizing, daylight and natural ventilation and plant and control analysis.

EDSL staff are accredited Energy Assessors under the CIBSE Low Carbon Consultant register and undertake Part L2/EPC compliance calculations and lodgement.

The quality of the Tas analysis brings benefit to Part L2 and EPC performance, as outlined in the TROX VAV ec motor modelling.

Tas requires little more data than SBEM, but is far more efficient at data input. Tas consultancy services are, therefore, very good value for money. High quality analysis and fast turn around.

Optimising daylight availability and solar shading

Compliance with any of the international standards for building performance requires efficient use of daylight to reduce lighting energy use. This must be balanced against the need to avoid excessive solar gains.

Tas is able to provide daylight simulation, which can handle the simplest to the most complex of building geometries. Daylight distribution in spaces is important for BREEAM and LEED accreditation. Daylight factors on the working plane may be used, in conjunction with hourly climate data to calculate hourly variations in internal daylight illumination. This, in turn, may be used to test the efficacy of a range of daylight based lighting control scenarios, from simple on/off to photocell dimming.

In combination an extensive range of simple to apply, shading features may be modelled, along with window shape and glass type to optimise daylight penetration and minimise solar gains.
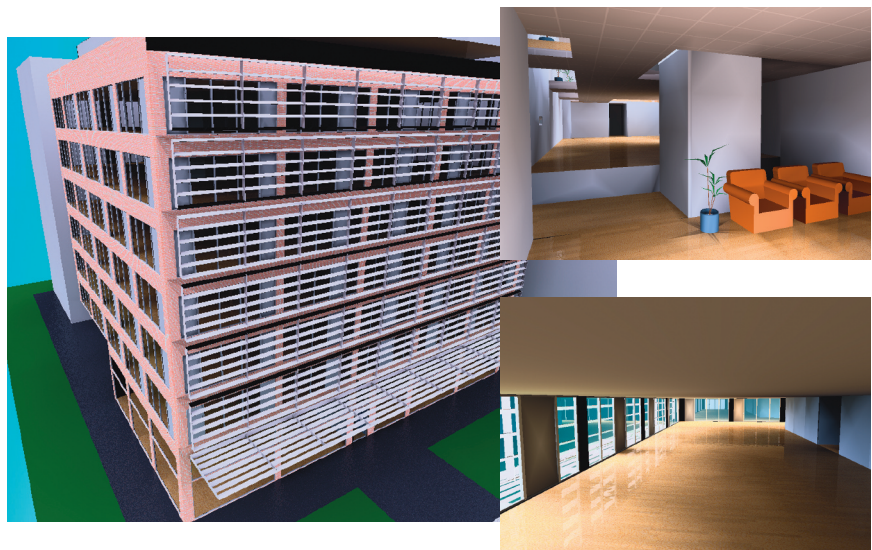
Natural ventilation and mixed mode design

Successful natural ventilation design is a challenging task. Tas has a uniquely efficient, broad and robust capability for natural ventilation studies.

Consistent with EDSL's ethic of providing the best possible quality of analysis, Tas includes laboratory tested and monitored performance data for the range of Passivent ventilation systems.

The project featured is Roundhouse School, Derby, the design for which was undertaken by Hilton Building Services Ltd.

Included in the design are Passivent Airstracts with axial boost fans. The school is designed to operate using passive stack and wind driven ventilation for most of the time, with the boost fans assisting during periods of hot weather.

Air is drawn into the classrooms via wall ventilators and windows, through into a central courtyard/atrium and out through the roof ventilators, which contain the boost fans.

The design complies with BB101 on all three of the summertime temperature criteria.

Good quality design for naturally ventilated buildings requires good quality analysis. Tas is the most capable design tool for passive performance evaluation, giving your schemes the best chance of avoiding the risk of overheating.

Typical window group

Inlet vent

Roof windows

1250mm x 1250mm Airstract units
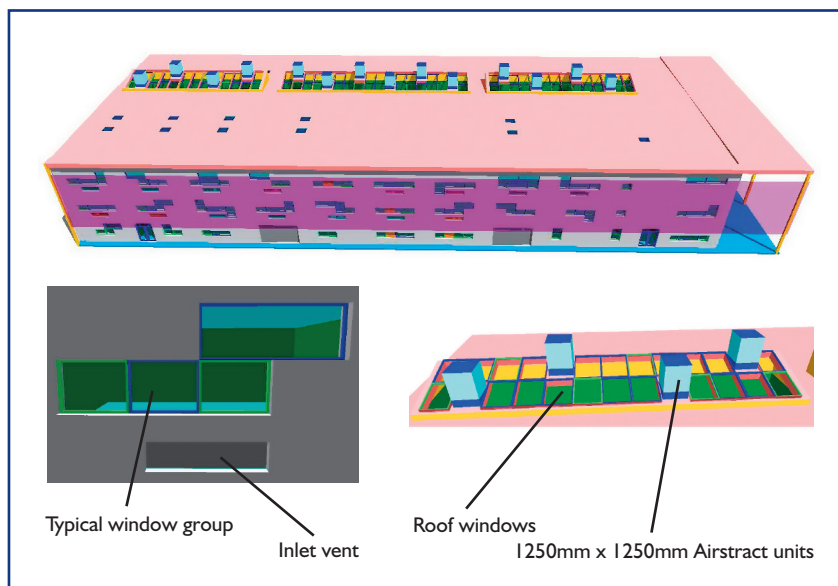
Our commitment

The EDSL Tas promise to users of alternative, accredited, simulation software.

We can

● Halve your software overheads

● Double your productivity

● Improve the quality of your analysis

● Provide quality technical support

● In addition, we will train two people for the price of one

Ask us to prove it to you

Tas Building Simulation Software   www.edsl.net

What our clients say...

"We have been using Tas for almost 20 years and it is a great comfort to us to know that the results predicted by the software have been matched by reality.

Alan Fogarty, Environmental Partner, Cundall

"We have been using Tas now for well over 10 years and we have found it to be a very robust piece of software, allowing us to deliver even the most geometrically complicated projects on time and within budget"

"DTM analysis is now an essential tool for the environmental engineer allowing us to examine in detail current energy legislation and the resulting design impact they have on our buildings"

Matt Kitson, Sustainability Director Hilson Moran

BAM Design has been using Tas as our building energy modelling tool for 10 years.

It has the quality of analysis and robustness we need to be confident that the buildings we design will be high performers when handed over to the client.

Tas is used initially to check the validity of the overall design concept.

A major advantage in our design process is that many of our design calculations are available within the same Tas model which makes our workflow efficient.

Our designs always consider opportunities to adopt passive techniques and early engagement is key to ensuring that the Architecture is working efficiently, and that natural daylight optimisation is maximised.

We carry out life cycle analysis to determine strategies for renewable energy, for which Tas informs us on annual energy contribution and CO_2 emissions.

Tas further allows us to determine space loads and the output data leads to selection of plant and ancillaries.

On completion of our designs, the final stage allows us to carry out building regulation compliances including Part L and EPC Certification.
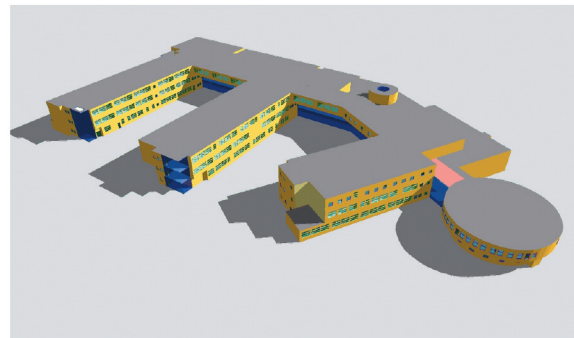
Stephen Burford, Director, BAM Design

BAM - Design Study

St Peters School, Glasgow
BAM Construction UK

Day 178 Time 08:00

The three classroom wings are cooled by natural ventilation with radiant panels for heating (very space efficient) served by condensing gas boilers.

The main spine has gyms, dance, assembly hall and dining hall, which are heated and cooled by under floor systems serviced by ground source heat pumps with heating and cooling COPs of ~5.

Efficient lighting with daylight dimming controls.

Tas Building Simulation Software