IESVE Software Solutions

The leading integrated suite for accurate whole building performance simulation
IESVE Software Solutions

A flexible, integrated system for performance assessment that brings productivity and excellence to every aspect of sustainable building design.

IESVE is one of the only tools that can provide integrated daylight, thermal and mixed-mode ventilation analysis in great detail, which allowed us to test the integration of all components across the year.

Linda Morrison
Building Performance Team Leader,
Ambient Energy
IESVE Software Solutions

Used by leading sustainable design experts around the globe, IESVE is the most comprehensive integrated suite of performance tools on the market. Its fast, accurate, sub-hourly, thermal simulation can model new and existing buildings of any size and complexity. It is an intelligent response to climate change.

Global Compliance
LEED, BREEAM, Green Star, DGNB and GSAS. The list of green building rating systems is long and growing steadily across the globe. Plus, building regulations in many countries now incorporate an energy performance requirement. IESVE offers a wide range of approved guided tools and analysis capabilities which make achieving these popular systems easy and cost effective.

Integrated Modelling
The first class suite of IESVE analysis tools all share one central integrated data model. Saving time and facilitating integrated analysis you can adjust and hone the model without duplication. Also, share results and input data amongst applications to refine and inform simulations. Import models, or build directly within the IES ModelIT application.

Extensive Reporting
The IESVE suite allows you to easily visualise and communicate results at a highly detailed level. Our results analysis and reporting capabilities are about more than just aesthetics. They offer extensive, clear and diagrammatic technical information and visualisation, including model based visualisation.

Unique Customisation
Python Scripting (PS) allows you to create your own customised scripts, automation and reportage. Reduce time spent on tasks through automation and define workflows & Navigators that are bespoke to your needs.

Analysis Capabilities
- Energy/Carbon
- BREEAM
- LEED
- Green Star
- Lights/Glare
- Daylight Harvesting
- Solar Penetration/Shading
- Sun Path Tracking
- Climate/Bio-Climatic
- HVAC Modelling & Sizing Load Calculations
- Passive Design
- Hybrid Strategies
- Renewable Feasibility
- Natural Ventilation
- Thermal Comfort
- CFD Airflow
- Cost/Value
- Occupant Movement
- Fire Evacuation
- Lift Design
- Operational Modelling
- Parametric & Model Optimisation
- UK & Ireland Compliance
- US & Canada Compliance
- Global Compliance

Early Stage – Detailed Design

The IESVE performance platform for architects, engineers and contractors, allows cross-team collaboration. Its power embeds performance KPI assessment across the entire building lifecycle.

With IESVE, CBT was able to drive sustainability through performance analysis by acting as a central hub to the engineers, energy consultants and commissioning agents.
Alfred Wojciechowski
CBT Architects
Solar
Direct & Diffuse Gains, Shading, Right to Light, Sun Path
Low-Carbon Strategies
Passive, Mixed Mode, Renewables, Innovative Technology

Energy & Carbon
Dynamic Simulation, Thermal Mass, Heat Balance, Internal Gains

Climate
Passive Design, Water

Rating Systems
BREEAM, LEED, WELL, Green Star, GreenMark, DGNB, LOTUS, BIM Integration

Model Building
Load Calculation & System Sizing
Typical, Innovative, Custom HVAC, Systems

HVAC
Typical, Innovative, Custom HVAC, Systems

Software Solutions
IESVE

Value/Cost
Capital Expenditure, Life Cycle Costs, Environmental Impact, One Click LCA

Light
Daylight, Artificial Lighting, Visual Comfort, glare

Airflow
Ventilation Rates, CO2 Levels, Thermal Comfort, Exterior Wind Effects

Operation
Model Calibration, Retrofit, Performance Optimisation, Measurement & Verification, Commissioning, Post Occupancy

Regulations
UK & Ireland, IECC, Title 24, EPaCT, Canada NECB, France, Australia, New Zealand, South Africa, Singapore, Malaysia, Hong Kong

EGRESS
Fire evacuation, Occupant Movement

Load Calculation & System Sizing
Accurate Calculations straight from 3D Geometry, Envelope, Internal Gains & Location

IESVE
Software Solutions

Parametric & Model Optimisation
Reduce simulation time, test more scenarios, quickly achieve optimal design

Operation
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Building Performance Assessment Tools

Model Building

The single central 3D data model at the heart of the system provides geometry and data shared by all tools. Unrivaled BIM interoperability.

ModelIT
- Contains information on geometry, materials, occupancy, climate and equipment
- Enables you to create a 3D analysis model from scratch
- Alternatively, import CAD data into the system in 3D or 2D

BIM Navigator
- Step-by-step process for importing models via gbXML and IFC
- Integrated best practice and modelling guidance
- Visual model check and automated error identification & healing options

gbXML model merge functions to make updating models easier

gbXML export of IESVE calculated CIBSE/ASHRAE Loads back into BIM model

Regulations

Ensure compliance against global regulations using 3D solutions. Specific applications provide automation and unique built-in Quality Assurance (QA) functionality.

- UK & Ireland (Part L/Part F/Section 6 & 63, EPCs/RERS, Domestic & Non-Domestic)
- US/Puerto Rico (IECC)
- US (DOE EPAct)
- US (California Title 24)
- US (Architecture 2030)
- Canada (NECB)
- Australia (Part J/NABERS/CBD)
- New Zealand (Part H1)
- South Africa (XA3 of Part XA)
- France (RT 2012)
- Singapore (Green Mark)
- Hong Kong/Malaysia (DTTV)

Rating Systems

Measure against global rating systems. Specific applications provide automation and unique built-in Quality Assurance (QA) functionality.

- LEED (USA/Canada/India)
- BREEAM (UK/Cy)(l)
- WELL (Global)
- Green Star (Australia/New Zealand/ South Africa)
- Green Mark (Singapore)
- Estidama (UAE)
- OSAS (MENA)
- LOTUS (Vietnam)
- DCNB (Germany)

Solar

Harness the power of the sun and analyse how it affects your building – inside and out.

SunCast
- Control solar gains taking into account the sun’s path and solar penetration
- Assess the shading/right to light impact of surrounding buildings & terrain
- Test internal and external solar shading devices
- Generate animated, visual, graphical and numerical output for colleagues, clients or planners

Light

Ensure good natural daylight and visual comfort, reduce lighting gains, and test how your lighting designs will look and perform.

RadianceES
- Detailed 3D visualisation of daylight and electric light levels
- Maximise daylight, minimise glare and incorporate electric lighting designs
- Place sensors and record accurate daylight levels for dimming controls
- Apply dimming profiles to lighting gains in ArchiSim to quantify energy reductions

Flux
- Analyse light levels for defined lighting schemes, and calculate luminaires required
- Undertake daylight harvesting / dimming control assessments

FluxDL
- Daylighting only capabilities of FluxPro
- Perform point-by-point analyses to get daylight levels within a room and assess against thresholds

LightPro
- Design detailed lighting schemes and link to FluxPro and RadianceES simulations

Airflow

Simulate complex airflow without in-depth expertise. Produce graphics and animations to visualise and communicate results.

MacroFlo
- Assess natural ventilation strategies at a macro level (bulk-airflow)
- Simulate thermal stack effects and wind-driven indoor airflows
- Combine with ApacheHVAC for analysis of mixed-mode operation
- Must be used in conjunction with ApacheSim

MicroFlo
- Ensure optimum ventilation and thermal comfort at the building, room and sub-room level
- Assess natural ventilation strategies at the micro level

Operation

Import, manage and interrogate real building profiles and use them in VE simulations.

IES-ERCOC
- Simulate buildings using real metered data, down to 1 minute time-steps
- Create operational models for ‘what if’ testing of retrofit options
- Aid in delivering Soft Landings
- Undertake Post Occupancy Evaluations
- Undertake Monitoring Based Commissioning
- Make use of the mandatory Metering required by LEED V4
- Deliver Next Generation M&V using enhanced energy model calibration
- Undertake BREEM Energy Prediction & Verification
- Create libraries of benchmark data to help close the Performance Gap

HVAC

Size and model conventional, advanced, and building-integrated systems, plants & controls in detail.

ApacheHVAC
- Simulate detailed typical & innovative HVAC systems with minimal effort
- Simulate simultaneously alongside building thermal analysis
- Pre-defined HVAC Wizard & System Prototypes saves significant input time
- Detailed analysis of HVAC energy saving measures
- Combine with MacroFlo for analysis of mixed-mode operation & achieve close coupled results
- Advanced air side modelling flexibility for ventilated double skin facades and more
- Component based HVAC system mimics the control of a detailed system
- Must be used in conjunction with ApacheSim

ApacheLoads
- Calculate heat and cooling loads based on the ASHRAE Heat Balance method
- Links to SunCast and ApacheHVAC

ApacheCalc
- Calculate heat loss and gain calculations based on the CIBSE Guide

EGRESS

Ensure people can travel easily within your building and evacuate safely and quickly.

Simulex
- Simulate occupant movement & avoid bottleneck
- Keep people moving freely & avoid bottlenecks
- Simulate occupant movement & avoid bottleneck
- Generate animated, visual, graphical shading devices
- Assess the shading/right to light impact & avoid bottleneck
- Control solar gains taking into account the sun’s path and solar penetration
- Link to FLUCSPRO for analysis of mixed-mode operation & achieve close coupled results
- Undertake Post Occupancy Evaluations
- Simulate multiple design scenarios and combinations of building design inputs
- Standalone tool – the VE can still be used whilst any parametric study is being performed

Value/Cost

Undertake efficient multidisciplinary value and cost studies.

CostMap
- Prepare customised capital cost estimates

LifeCycle
- Take into account operating costs and tariff analysis
- Integrate performance-led optimisation into your projects at a much earlier stage
- Automatically runs multiple Apache simulations and learns from each new iteration, discarding the worst results, while keeping the best
- Keep going iteration after iteration until you have honed in on the optimal solution
- Optimise against any two building-level variables e.g. occupancy weighted comfort, mean comfort, total energy, carbon emissions, seasonal efficiency, lighting/ heating gains
- Standard ‘worksheets’ allow non-expert users to access the tool readily
- Fully customisable bespoke ‘worksheets’ can be created and shared internally to deliver quality and repeatability for all users

Parametric Tool
- Create and automatically run a series of Apache simulations; no need for manual parameter changes
- Simulate multiple design scenarios and combinations of building design inputs
- Standalone tool – the VE can still be used whilst any parametric study is being performed
- Integrate performance-led optimisation into your projects at a much earlier stage
- Change one or more input parameters across internal gains, set points, humidity limits and the majority of ApacheSystems
- Further reduce time taken to set up individual scenarios by combining or linking simulations
- Standard ‘templates’ allow non-expert users to access the tool readily
- Templates can be edited, created and shared across companies for quality and repeatability
- Completely customisable, even down to the results produced to as to reduce amount of storage required

Standards & Methodologies

IES tools meet the following approved international standards and can undertake the following methodologies.

**Standards**
- ASHRAE 140: 2001/4/7/14
- BEST TEST
- CIBSE TM33
- EU EN13791: July 2000

**Methodologies**
- ASHRAE 90.1 Performance Rating Method (PRM): 2004/07/10/13/16
- ASHRAE 90.1 Energy Cost Budget Method (ECM): 2010/13/16
- ASHRAE 55 Calculation Procedure
- ASHRAE 62.1 Calculation Procedure
- CIBSE Guide A/ISO 7730 Calculation procedure
- UK National Calculation Methodology (NCM)

# Unrivalled Interoperability

Integrating Performance Analysis into the heart of the design process, IES offers an unrivalled interoperability with other CAD design and analysis tools.

- Revit Architecture & MEP
- SketchUp Free & Pro
- IFC
- gbXML
- DXF

**Tool** | **Interoperability**
---|---
Revit Architecture & MEP | Dedicated Plug-in Toolbar
SketchUp Free & Pro | Dedicated Plug-in Toolbar
IFC | IFC Import Function
gbXML | gbXML Import/Export Function
DXF | DXF Import/Export Function

Overall the integration between Revit and IESVE made modelling run a lot quicker and smoother. It really helped us to work together better, sharing our knowledge on both platforms.

Ross Thompson
Senior Sustainability and Energy Engineer, CBG Consultants

The functionality offered by IESVE is extremely useful. MacroFlo, in particular, is vital for modelling natural ventilation strategy and ApacheHVAC offers much better modelling capabilities for custom HVAC systems than other software.

Riley Boice
Principal, Focal Engineering

To achieve a passive building requires a combination of smart strategies integrated from the early stages of the project. IESVE proved to be a very effective tool in this analysis, particularly when compared to other software programs. It can test various bioclimatic strategies incorporating the building form and orientation, solar shading, natural and cross ventilation, thermal mass, lighting and materials.

Xavier Valladares
Director, ECOfstudioXV

# Join World Leading Sustainable Design Experts

Start Using IESVE Today

Examples of leading International companies which use our software include; AECOM, Arup, Atkins, Aurecon, BDP, Broadway Malyan, Buro Happold, Foster + Partners, Gensler, Guttmann & Blaevoet, Mott MacDonald, Stantec, Syska Hennessy, WSP Group and WYG.

Want to see what IESVE can do? Join our free live web demonstrations

Hear directly from one of our experts about the capabilities of IESVE and pick up some useful tips and tricks along the way in one of our free live web demos. Our web demos are hosted monthly and last approximately 1 hour. You’ll have the opportunity to ask any questions at the end of the demo, all from the comfort of your desk or your own home! www.iesve.com/software/web-demo

Take a 30 day free trial

Experience the power of IESVE for yourself and try it out for free for 30 days. You’ll have access to our full software suite to allow you to explore the sustainability capabilities. www.iesve.com/software/trial

Get the most out of IESVE with our Training Solutions

IES offers a variety of training solutions to suit your individual needs, with free introductory videos to help you get started, public Face-to-Face courses to cover the basics or tailored On-Site courses that can take place in your office. If you would prefer to learn at your own pace, we offer On-Demand packages allowing you to choose which applications you want to learn about, and online Lunch-N-Learns delving deep into specific topics in just 1 hour.

Take a look at our website to find the right option for you www.iesve.com/training or email our Training Team training@iesve.com to discuss a tailored package.

Free support

Your software licence also comes with free email and telephone based technical support. Plus access to user guides, videos, user forums and online help files.

The VE has taken our ability to value engineer HVAC systems to a new level. The sophisticated way the ApacheSim, ApacheHVAC and SunCast modules integrate together enabled us to gain a better understanding of the building loads, which helped us reduce HVAC costs while actually improving the comfort of the building.

Eugene Siterman
Managing Director, VE Solutions Group

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Xavier Valladares
Director, ECOfstudioXV
GET A QUOTE NOW!
Contact our expert sales team to discuss your requirements and get a personal tailored quote!
Ask about our special offers,
email: sales@iesve.com