INTEGRATED ENVIRONMENTAL SOLUTIONS

OPTIMISE PROJECT

Partners

INTEGRATED ENVIRONMENTAL SOLUTIONS

AECOM

Loughborough University

Davis Langdon
An AECOM Company

ARCHIAL

CIBSE

Mott MacDonald

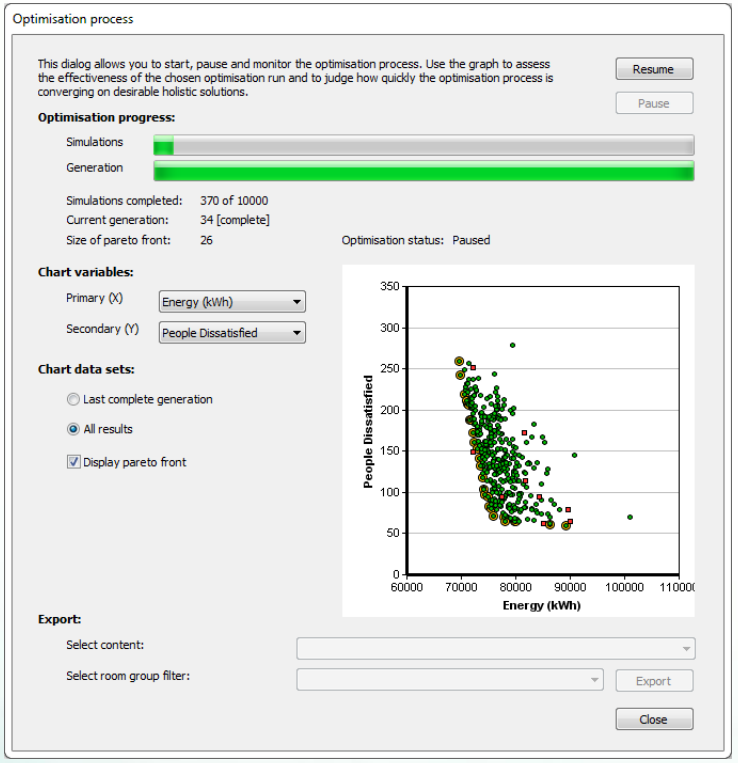
Technology Strategy Board
Driving Innovation

The need …

To find alternative and optimum design solutions, but critically …

To identify the trade-off between conflicting real world goals and the sensitivity of such goals

… and to integrate costs & compliance to inform real world decision making

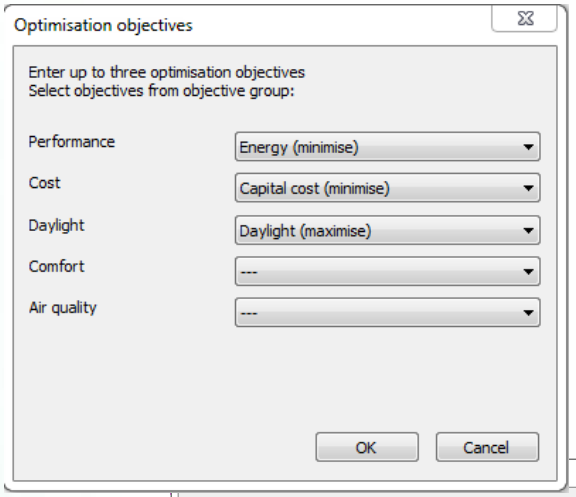


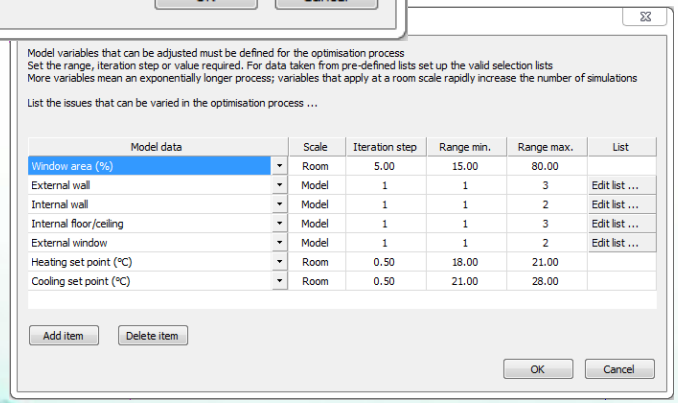
Key points

The tool is a multi-objective optimiser

Objectives include cost inc. energy tariffs (lifecycle coming), energy, carbon, daylight, comfort, Part L compliance etc.

It allows multiple input variables that can be focused on specific areas



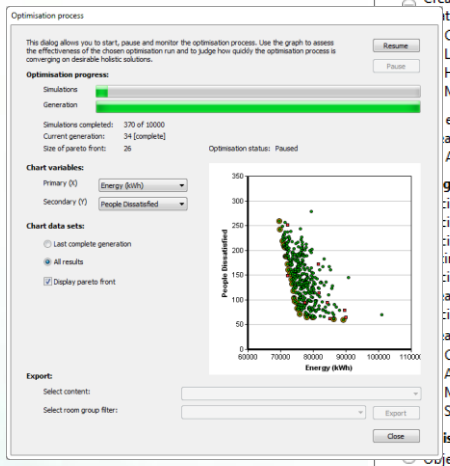


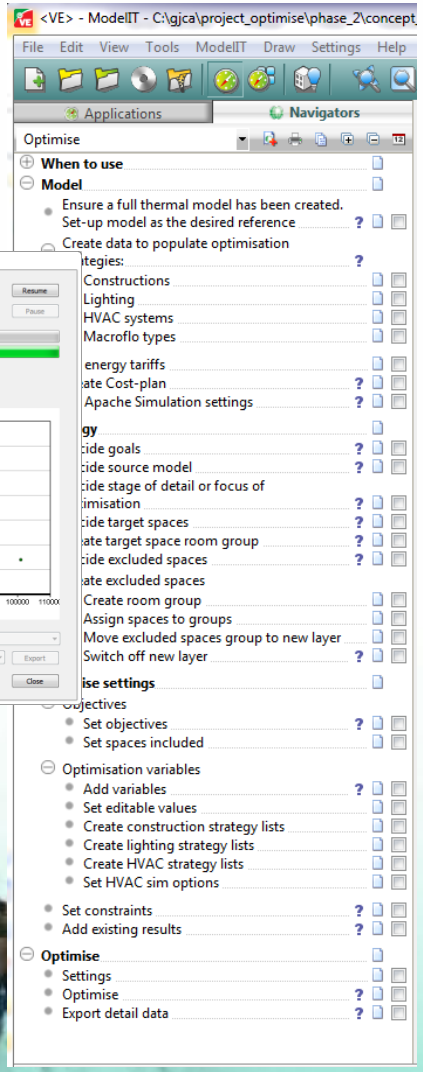
Key points

Inputs include glazing area, construction materials, building orientation, HVAC systems / ventilation strategy, lighting, set-points, renewables etc.

The tool uses a genetic algorithm with constraints & is Navigator driven

The tool can be used on broad concepts and focused studies





Example

INTEGRATED ENVIRONMENTAL SOLUTIONS

Philips & Somfy automated blinds / day light dimming study

The Project

The main focus of this product validation project was to analyse the Somfy - Philips 'light balancing' system and to examine its potential impact on energy savings.

In order to better understand the 'light balancing' dynamic shading and lighting control system and to explore its potential benefit on the heating, cooling and lighting energy demands, a range of shading controls comprising both manual and automated blind controls and a set of lighting controls including manual, occupancy-sensing and dimming controls were explored based on an office building model created in the IES Virtual Environment for 5 different climatic locations - Abu Dhabi, Paris, Beijing, San Francisco and Singapore.

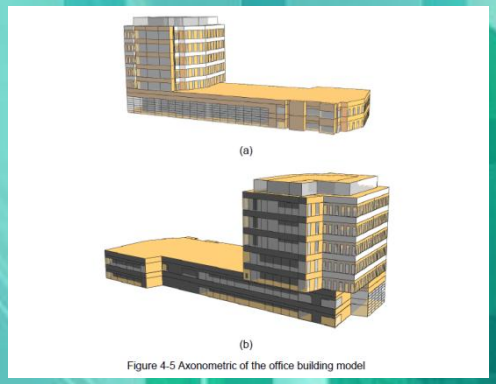
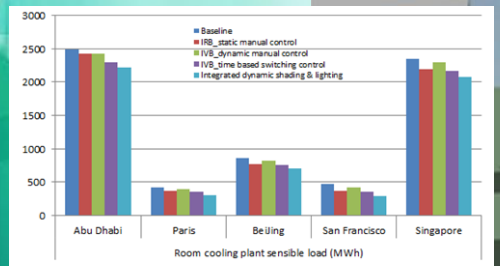
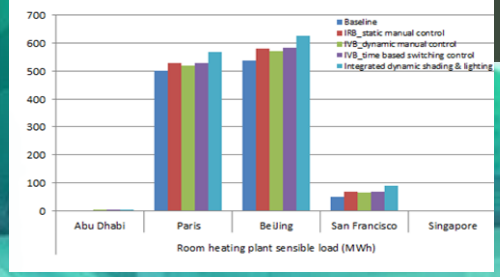
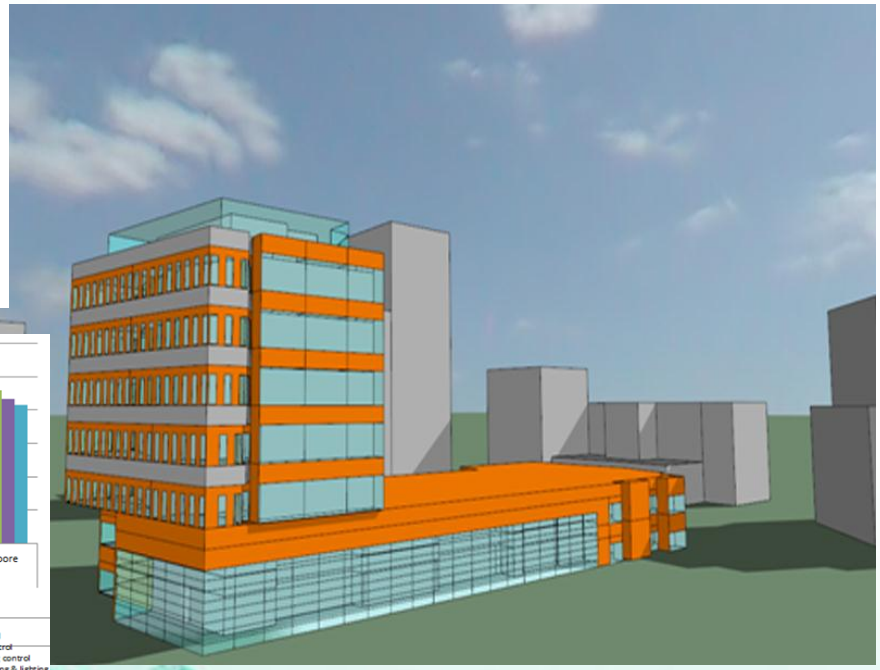


Figure 4-5 Axonometric of the office building model







Comment

The tool has been extensively tested and verified by the partners

The tool is being used on commercial projects and there is interest by large clients / projects globally (inc. China)

A smaller parametric tool has also been created using part of the technology and was released to users in June 2013