

## Building envelope modelling

### Building Envelope

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Designing a good building envelope is fundamental in the delivery of a sustainable and comfortable building. It acts to protect the occupants from the outside climatic conditions, creates a visual connection to outside and is the barrier through which all heat transfer into, and out-of, the conditioned space occurs.

Optimising the building envelope to the local environment can help to:

- Reduce solar gain into the space
- Reduce unwanted heat transfer both into and out-of the space
- Increase internal daylight levels
- Reduce the artificial lighting level requirements
- Reduce HVAC plant requirements
- Improve external views for building occupants
- Use thermal mass to provide user comfort

### Building Envelope Modelling Services Offered

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Viridis E3 offers a broad range of 3D modelling and analysis that has been designed specifically to both assess, and assist, in the design of energy efficient building envelopes.

Key areas of modelling and analysis that we offer include:

- Optimisation of building orientation in the context of the site and surrounding structures to reduce thermal loads and promote the use of passive systems within the building
- Analysis and optimisation of the facade fabric performance, including transparent and opaque materials and window coverings, in reducing solar heat gain into the space and limiting unwanted heat transfer between the indoor and outdoor environments
- Thermal performance analysis of facade types including double skinned facades and vented cavities
- Assessment and optimisation of external shading configurations to reduce solar heat gain while maintaining good visual connection to outside
- Daylight penetration assessment for the increased satisfaction of occupants and reduction in artificial lighting requirements
- Section J advice and guidance in relation to the building envelope
- Assessment of HVAC cooling and heating load requirements associated with the performance of the building envelope

### Contact Details

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