

Low Energy Engineering

Complete and Integrated Design Consultancy Service

Gale & Snowden has found from experience that the integration between architects, building physicists and mechanical engineers at the concept stage, right the way through the design and building process and working as a true team is the optimal way to achieve a building that actually performs in use compared to what is theoretically possible.

Gale & Snowden offers energy engineering and systems design including renewables, as well as a multi-faceted low energy consultancy service. This is usually an integrated approach considering architectural elements such as passive shape and form, fabric elements, facade engineering as well as energy engineering.

Low Energy Mechanical and Electrical Systems Design:

Full ACE Mechanical Engineering services for all RIBA work stages including feasibility, concept, design, on-site, hand-over and commissioning:

- Domestic hot water systems (DHWS).
- Cold water services (CWS).
- Rainwater harvesting.
- Highly efficient heating plant.
- Heat distribution - under-floor heating, radiators, air heaters.
- Variable speed pumping systems.
- Variable volume ventilation systems (CO₂ / PIR controlled).
- Mechanical Ventilation with Heat Recovery (MVHR).
- Ground to air (earth tube) ventilation systems.
- LV electrical systems - low EMF design and non-PVC.
- Low energy lighting systems - daylight dimming / PIR control / LEDs.
- Controls systems - strategies for commissioning and efficient operation.

Troubleshooting and refurbishment:

Existing buildings can suffer from poor performance such as under-heating, overheating, inadequate control, fresh air issues and stuffiness, mechanical plant faults, hot and cold water problems. This can be due to a variety of reasons ranging from poor initial design, incorrect commissioning procedure, poor maintenance, changes in use, age etc. Gale & Snowden troubleshooting and refurbishment service includes:

- Initial assessment and condition surveys.
- Monitoring and testing of comfort conditions and plant.
- Options reports.
- Detailed design solutions.
- Commissioning and handover.

Renewable Energy Engineering:

The service:

- Renewable energy development studies for schemes.
- Pre-planning feasibility studies.
- Energy modelling assessments for a range of different renewable energy strategies.
- Site assessments and managing pre-site testing for suitability.
- Systems design.
- Multi-integrated design - linking thermal stores into solar panels, heat pumps and wood burners.
- Commissioning and handover.

Renewable energy systems:

- Centralised biomass systems - pellet, wood chip and log boilers.
- Small scale wood burning stove systems - sealed combustion, highly efficient with or without back boilers.
- Solar hot water panels - flat plate, evacuated tube.
- Photovoltaic panels (PV).
- Wind turbines.
- Hydro and water turbines.
- Heat pumps - earth, air and water.

Team experience:

- Woodchip boiler system for Trelowarren Estate and schools in Derbyshire.
- Pellet boiler for estate in Cornwall.
- Many projects designing and integrating small scale log burner systems with back boilers. Some have been linked into thermal stores with other energy systems feeding them such as heat pumps and solar panels.
- Log burning boiler system for RHS Rosemoor.

- Heat pump systems - 30-borehole hospital scheme, 6-borehole large estate scheme, various horizontal slinky schemes for homes. Micro air source hot water system for large estate.
- PV and solar panels on a wide range of schemes including schools, homes and community centres.
- Development of zero carbon sports and community centre using PV, heat pumps, solar panels and wind turbine.

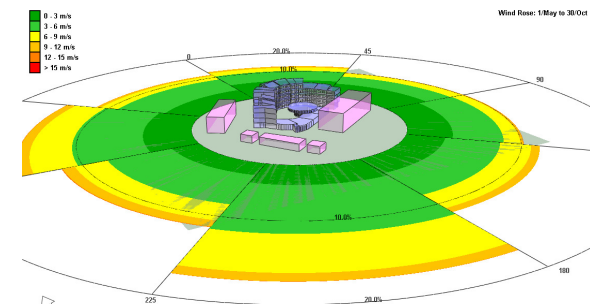
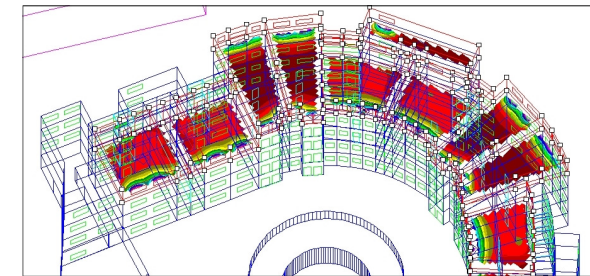
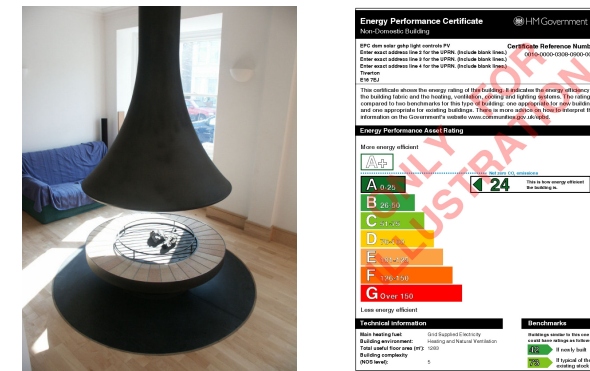
Low Carbon Energy Assessments and Carbon Modelling:

Fully conversant and experienced in the Part L1 and L2 of the energy regulations for buildings, our service consists of:

- Domestic On Construction SAP (Part L1A) assessments and Energy Performance Certificates (EPCs).
- Non-domestic level 3 and level 4 (Part L2 A) assessments using SBEM and Energy Performance Certificates (EPCs).
- Non-domestic level 5 (Part L2A) assessments using the DSM dynamic simulation method and DSM Energy Performance Certificates (EPCs).
- Fully conversant in carbon modelling and thermal modelling of buildings ranging from buildings with simple energy systems to buildings that have complex energy systems such as hospitals.
- Carbon modelling as part of pre-planning feasibility studies.
- Low to zero carbon energy assessments and strategic advice.
- Low carbon life cycle analysis.
- Low energy feasibility studies.

Energy Assessments and Monitoring for Existing Buildings:

- Energy and engineering surveys of existing buildings and plant.
- Low energy strategies and feasibility reports for existing buildings.
- Energy monitoring for existing plant and buildings.
- Life cycle analysis.



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