tga | Consulting Engineers



Capability Statement

Delivering innovative, efficient, and sustainable Building Services Engineering solutions

Who We Are

TGA Consulting Engineers Limited operate in an integrated team with the Building Performance Engineers working directly together with Mechanical and Electrical Engineers (together with BIM Technicians and Specialist Lighting Designers where required). TGA work nationally with offices in 5 locations.



Our Approach

- Take time to build a good working relationship
- Be clear from the start about what we think you need
- Be open, honest, and work in partnership with you
- Keep you up to date with our findings
- Deliver your project successfully

Our Sectors

- Commercial
- Education
- Healthcare
- Heritage
- Industrial
- Leisure
- Multi Residential
- Public Sector

Services & Capabilities

Our Building Performance teams add value to all our projects, but we can also offer individual services as required on a project. Our integration with the Building Services teams also allows us to have Mechanical and Electrical Engineers on hand when required, ensuring we provide deliverable design solutions.

The Building Performance Services & Capabilities can broadly be categorised as follows:

- Building Performance Modelling
- Net Zero Carbon
- Rating Systems
- Low & Zero Carbon Technologies

The following pages expand on these further.

"Although we can ensure your building complies with the required legislation, we can also do much more!"

BP

SL

MEP

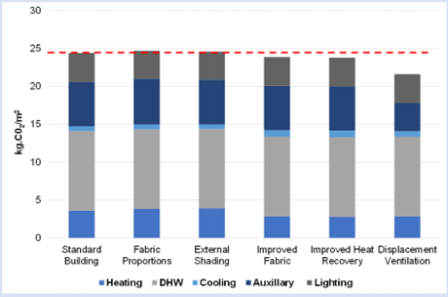
BIM

Building Performance Modelling

Compliance Modelling

With certified energy assessors using the latest accredited software, we are highly experienced in guiding designs towards achieving this mandatory standard. We can advise clients on their options with respect to improving building fabric, efficient services, and on-site energy generation, through a robust 'energy hierarchy'. We have the skills and tools necessary to ensure the design is optimised to save energy, carbon and money.





Passive Design

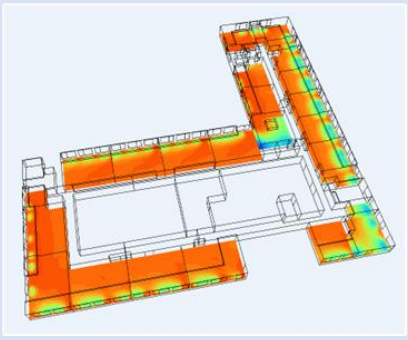
Dynamic Thermal simulation can be performed right from the early stages of the building design to improve the passive performance of the building. The optimum passive design strategy requires a careful balance between several parameters including solar gain, overheating and daylight.

Thermal Comfort

Due to a focus on building fabric energy efficiency and projected rising ambient temperatures in the future, overheating potential is an ever-increasing issue affecting both new and existing buildings. As such, analysing and mitigating overheating risk is at the forefront.

We analyse buildings for their overheating risk using modelling with current and future weather data, to assess how well buildings will operate in the future and to identify areas where improvements are required.



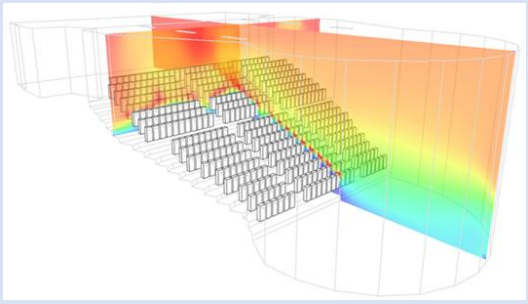


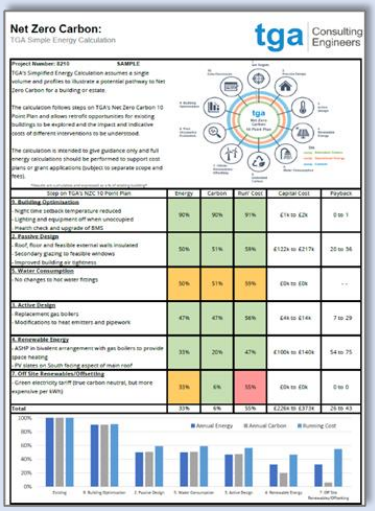
Climate Based Daylight Modelling

Daylight analysis can be performed to optimise window sizes and locations and the impact of any shading used to prevent overheating. Using the dynamic thermal model the impact on lighting and cooling energy demand and consumption can also be explored.

Air Quality & Air Movement

Improved energy efficiency can sometimes lead to problems with air movement and/or indoor air quality. We can quickly assess the impacts of design choices using CFD analysis and bulk air flow modelling.





TGA Simplified Energy Calculation

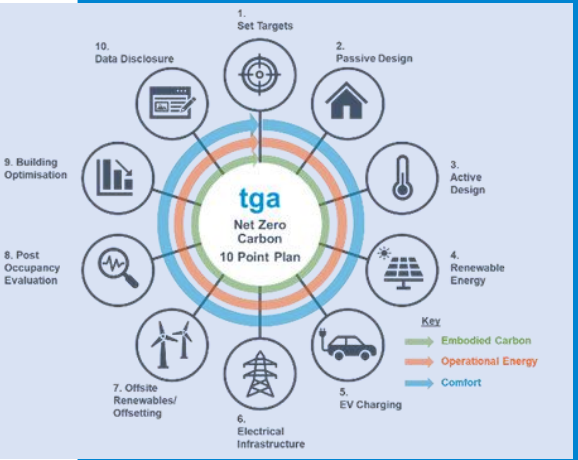
TGA's Simplified Energy Calculation allows TGA's Net Zero Carbon 10 Point Plan to be implemented at the early stages of a project (or even before a project is realised).

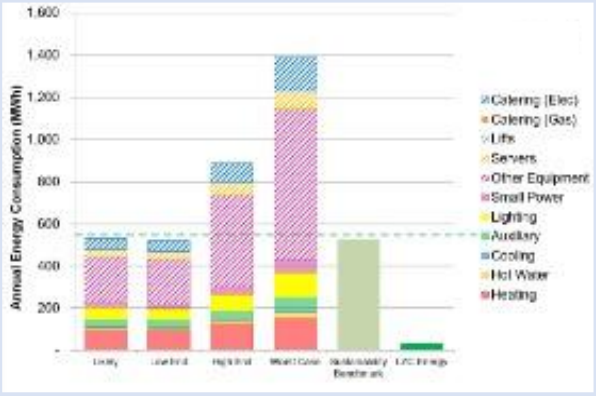
The aim of the calculation is that it is a relatively quick process (for a simple building it could be around a day to survey, plus a day of calculation per building – which will then give the output). More complex buildings can also be assessed, as well as multiple buildings being combined to represent an estate and sitewide strategy.

Net Zero Carbon

TGA Net Zero Carbon 10 Point Plan

Our aim on projects is to create a pathway to Net Zero Carbon following the principles of TGA's Net Zero Carbon 10 Point Plan. This approach understands that a project may not be able to implement all measures straight away but provides a framework to ensure all opportunities are considered as they arise, future proofing any work undertaken.





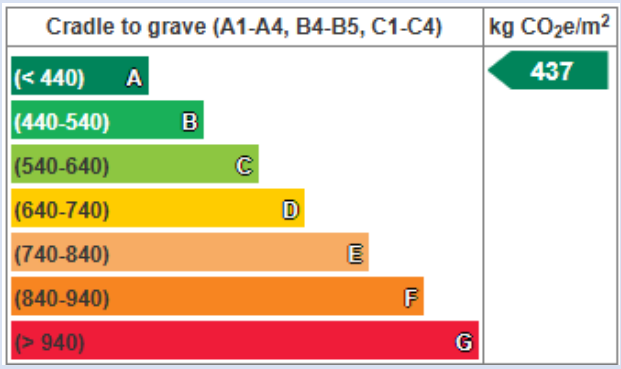
Operational Energy

We have developed a bespoke tool (following the CIBSE TM54 methodology) to predict the operational energy at the design stage, whilst identifying the key parameters that need to be controlled during operation.

The tool can be used to understand the impact of both design changes and building operation on the predicted energy consumption of the building from the concept stages through to operation.

Embodied Carbon

We are skilled in whole-life carbon analysis, finding ways for clients to reduce the carbon footprint of their projects whilst making cost and efficiency savings. This involves analysing (using One Click LCA software) the embodied carbon of all components used in a project their raw materials, source, maintenance and replacement cycles, lifespan and treatment at end of life. This is then analysed alongside the operational carbon footprint of the project to enable carbon hotspots to be found and acted upon.



Rating Systems

BREEAM

BREEAM is a performance-based assessment method and certification scheme for both new and existing buildings. The primary aim of the BREEAM process is to mitigate the life cycle impacts of buildings on the environment in a cost-effective and robust way.

We are certified as a BREEAM Assessor and Accredited Professional. Through the BRE global certification process, we can measure, evaluate, and assess the performance of buildings against best practice in an independent and thorough manner.

BREEAM Advisory Professional

Our BREEAM Advisory Professionals provide strategic sustainability advice throughout the design and construction process, helping project teams to translate BREEAM requirements into practical, coordinated and deliverable design solutions.

We work collaboratively with clients, architects, contractors, building-services engineers and specialist consultants from the earliest project stages. This ensures that sustainability objectives are clearly defined, opportunities are identified early and the actions required to achieve the target BREEAM rating are incorporated into the project programme, design development and procurement strategy.

Passive House

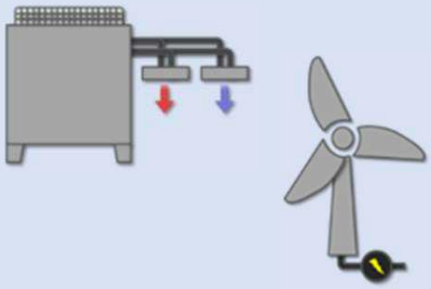
Passivhaus certification is often considered as an exemplar and leading international standard for producing high-performance and high-comfort buildings, that are suitable for current and future Low and Zero Carbon (LZC) technologies.
We are certified as a Passivhaus Consultant, who work and collaborate with the winder design team, using the Passive House Planning Package (PHPP), to facilitate and verify the design of buildings to achieve Passivhaus certification.

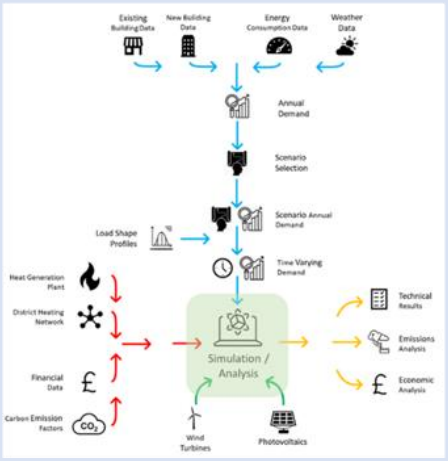
Low & Zero Carbon Technologies

We wouldn't call ourselves Building Performance engineers without having substantial experience and understanding of low and zero carbon technologies (LZCTs), and/or renewable energy technologies.

LZCT Feasibility Studies

We conduct feasibility studies to assess the viability of employing a wide range of technologies. This is both to reduce the impact of a proposal on the environment and to ensure that it is the most applicable solution possible to the scheme.





Tools & Dashboards

We have developed a wide range of tools and 'dashboards' in house to assess both the financial and environmental viability of a range of LZCTs. This ensures that the right ones are employed for the scheme, and according to the prevailing local policy objectives, client aspirations and building regulations.

Analysis

We employ specialist modelling programmes to analyse project specific design proposals in greater detail. Examples of this include:
GLHE Pro- used for designing ground loop heat exchangers for use with ground source heat pump systems.
PV Sol- a solar software design tool for simulating photovoltaic system performance

GLHEPRO

PV*SOL

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