MECHANICAL & ELECTRICAL BUILDING SERVICES CONSULTANCY

ACTS

What we do

For 20 years, ACTS has successfully delivered mechanical and electrical engineering consultancy, and associated services that bring buildings to life. We have become trusted advisors to many leading organisations, given our expertise in energy and sustainability, as well as in mission critical engineering. We provide a multi-disciplinary engineering consultancy service, which combines the application of value with knowledge, and partnership with quality.

Total integration

Our clients receive totally integrated engineering and building service solutions on each of our projects. Every project is allocated a director who will remain involved from the initial feasibility study or survey, throughout the project, to the end of the defects liability period.

Collaboration for the future

We share our client's vision and develop robust relationships founded on trust. Relationships may start with one-off projects, but invariably develop into longstanding constructive partnerships. The aim within ACTS is to deliver added -value to the design process. We strive to exceed our client's expectations on each and every project we undertake. Because of this culture, our clients enjoy working with us and have no hesitation in coming back to us again and again.

Quality delivery

A pursuit of excellence is at the heart of everything we do. We continuously train our staff to enable them to attain the technical, management and creative expertise at the leading edge of engineering. We offer a consistently personal service, totally committed to the success of the assignment. Our breadth of experience and quality of personnel ensure a balanced response born out of flexible thinking to meet our clients expectations and deliver a successfull project.

Services

ACTS are design consultants, operating in the mechanical, electrical & IT fields providing coverage to the whole of the UK from our headquarters in Glasgow.

Our range of skills and services embraces the design of traditional building service elements to low carbon systems, and we can offer professional advice on the incorporation of energy efficient lighting, air conditioning and low and zero-carbon technologies.

In line with European Best Practice, we incorporate sustainable construction techniques, where possible, to meet the appropriate environmental and social standards including Section 6 and Part L of UK Building Regulations.

Clients

Aegon
Aviva
BUPA
Clydeport
Cooperative Group
Defence Estates
Forth Valley College
General Electric
Glasgow School of Art
Goodrich
Marine Coastguard Agency
Napier University
NHS Scotland
Peel Ports
Rolls Royce
Royal Conservatoire of Scotland
Scottish Court Service
Scottish Natural Heritage
Scottish Prison Service
South Lanarkshire Council
Standard Life
University of the West of Scotland
Volvo

- Air Conditioning
- Heating
- Ventilation
- Solar Thermal Energy
- Photovoltaic (PV) Systems
- Wind Power
- Combined Heat & Power (CHP)
- Biofuel Boilers
- Ground Source Cooling
- Ground Source Heat Pumps
- Surveying of M&E Installations
- HV/MV Transmission & Distribution
- LV Switchgear & Distribution
- LV Lighting & Power
- Standby Generator Installations
- UPS Systems
- Fire & Security Alarms
- Analogue & IP CCTV Systems
- Earthing & Lightning Protection

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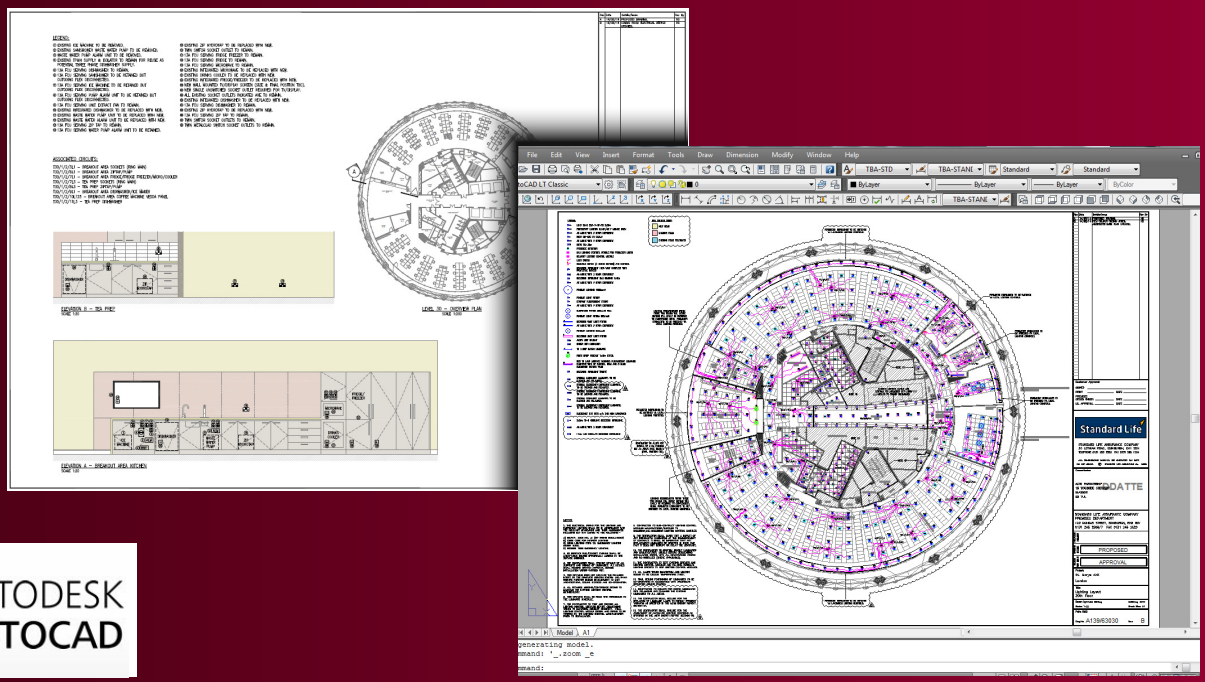
Solutions

Our Engineers are trained and fully competent to use industry leading software such as Autodesk AutoCAD, Building Information Modeling (BIM), Integrated Environmental Solutions (IES), Bentley Hevacomp Mechanical Designer and Relux and DIALux lighting design.

Approach

Our approach is to design ‘with accuracy’ based on calculations that exhibit repeatability and reliability. We operate using design software that allows for a high degree of accuracy and transparency in our calculations. This enables us to select plant and equipment which is appropriately sized for the application. We do not rely on over-sizing of plant and equipment to compensate for a lack of understanding of the load and energy requirements for a building. The confidence we have in our ability allows us to innovate with accuracy, allowing for appropriate and best value solutions at all times.



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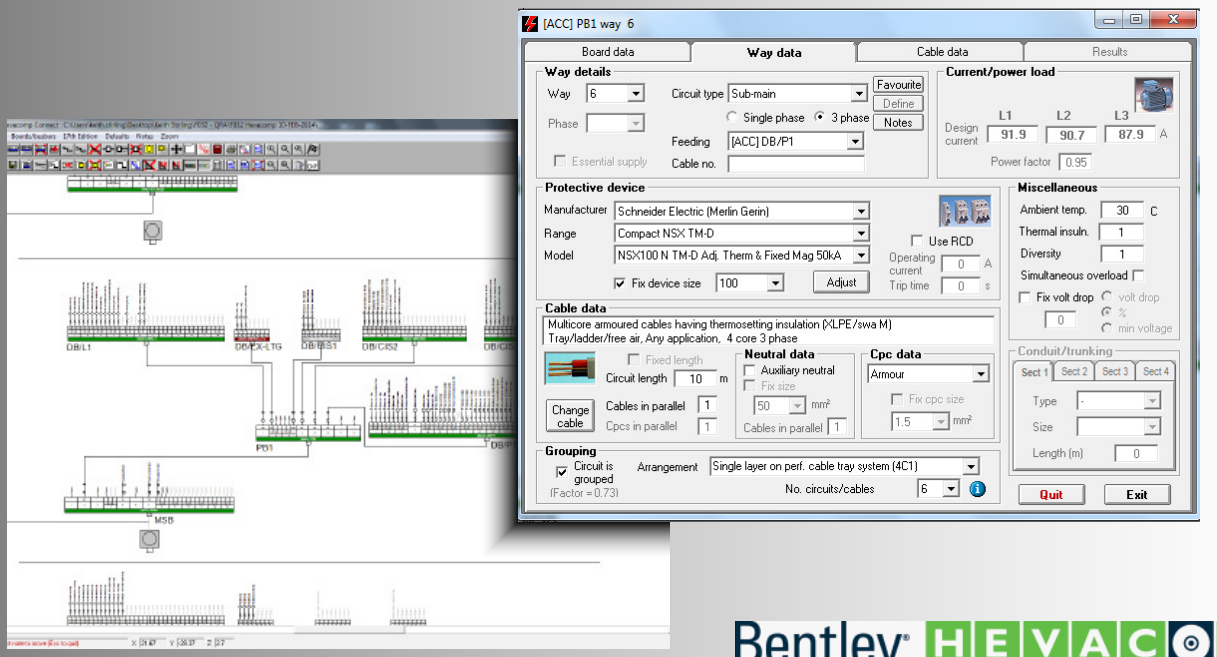
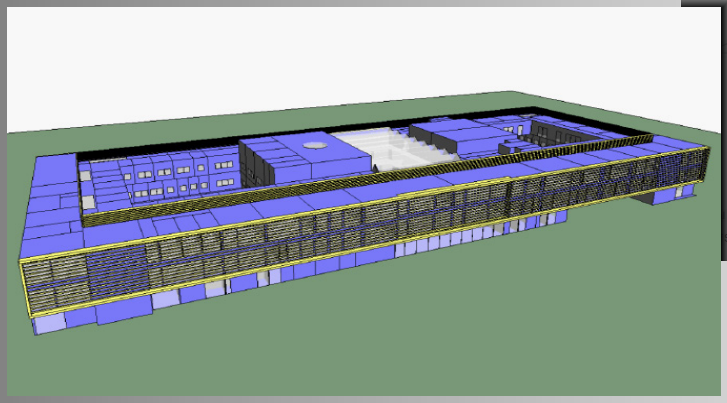
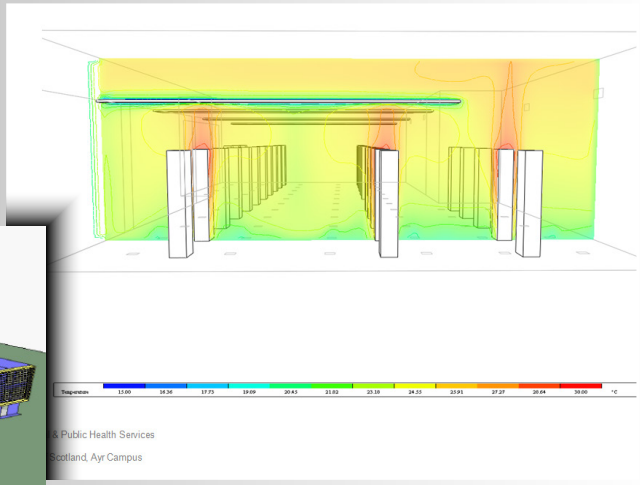
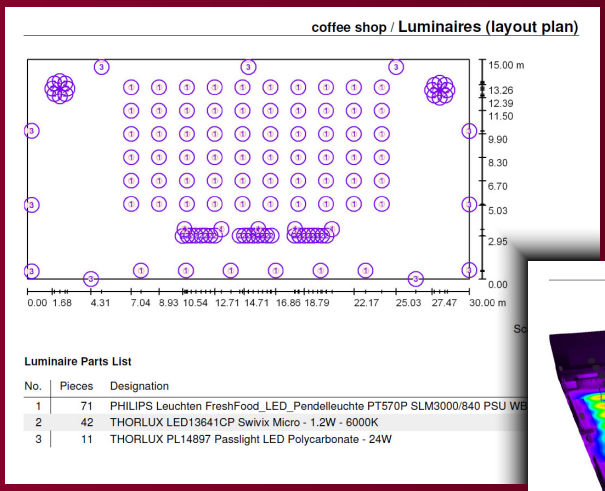
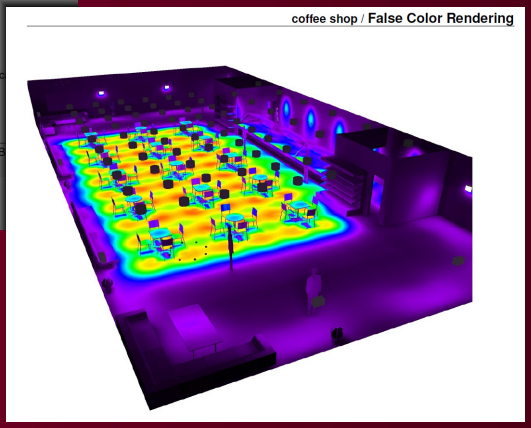


Bentley HEVACOMP









BREEAM

ACTS are licensed BREEAM assessors. Our background and understanding building services, energy and sustainability enables us to be highly effective BREEAM assessors and advisors. We will provide a road map to success for the BREEAM process identifying areas where the most cost effective credits can be gained.

Building Information Modelling

Our engineers are trained and experienced in the BIM process. We integrate confidently within the design team and actively support early collaboration to inform stakeholders of the design vision and project decisions to deliver optimised engineering systems.

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Sports & Leisure

Physical & Recreational Training Facility - RM Condor Arbroath

The P&RTC Project was undertaken to provide the Royal Marines base in Arbroath with a facility capable of delivering physical and recreational training requirements to all dependant units.

The building consists of a main indoor multi-function hall, climbing wall, dojo, squash courts, gym, and showering and changing facilities.

The building maximises natural daylight via transparent, daylight-diffusing wall panelling along the length of the main hall and dojo. The multi function hall and dojo was naturally ventilated by the use of a diaphragm wall system.

The building utilises gas as the primary heating source and has a combination of natural and mechanical ventilation. In addition, the gym area is provided with comfort cooling.

University of the West of Scotland - New Campus, Ayr

A new 18,000m² building on a green field site. The building was constructed adjacent to the Grade A listed Craigie House, within extensive woodlands. The building incorporates a diverse mixture of accommodation including performance space, rehearsal studios, TV studios, radio studios, music recording studios, classrooms, offices, laboratories and sports complex.

Low-energy, low-carbon design, while achieving high levels of occupant comfort were the main objectives for the services design. This was achieved by a variety of methods in the diverse accommodation at UWS. The majority of the floor plate is ventilated and comfort cooled using displacement ventilation. The comfort cooling in rooms with higher internal gains was supplimented with passive or active chilled beams.

The main heat source for the building is biofuel boilerplant, backed up by conventional gas boiler plant, located in a remote energy centre. Cooling is delivered by roof-mounted free -cooling dry-air coolers, backed up by ultra efficient turbocor chillers.

Education

NR20 noise levels were achieved in the radio and recording studios using VAV fan coil units.

IES modelling techniques were used extensively to inform the building design including solar-shading analysis for the brise soleil and computational-fluid-dynamics simulations to test the displacement ventilation and chilled beam design.

A range of sustainable and energy efficient measures were incorporated into the design which contributed to the BREEAM Excellent rating for design and procurement.

The works comprised the design, specification and inspection of heating, ventilation, comfort cooling, public health, lighting, electrical services and vertical transportation.

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Defence Estates

Typhoon Relocation Project - RAF Lossiemouth

ACTS have worked on various projects for the Ministry of Defence for the last 15 years. Bases we have worked on include Lossiemouth, Leuchars, Faslane, Coulport, Condor and Kinloss.

We have been an integral part of the design team for the Typhoon relocation works at Lossiemouth. The overall scope of the project has comprised the refurbishment and extension of six buildings and construction of five new builds. We were responsible for the M&E services design for the Installed Engine Test Facility (IETF), Typhoon Propulsion Support Facility (TPSF), Quick Reaction Alert (Interceptor) North (QRA), refurbishment of Hardened Aircraft Shelters (HAS) and other air and ground crew support facilities.

All of the new build projects have been designed to achieve DREAM Excellent, the MOD's equivalent sustainability measure to BREEAM.

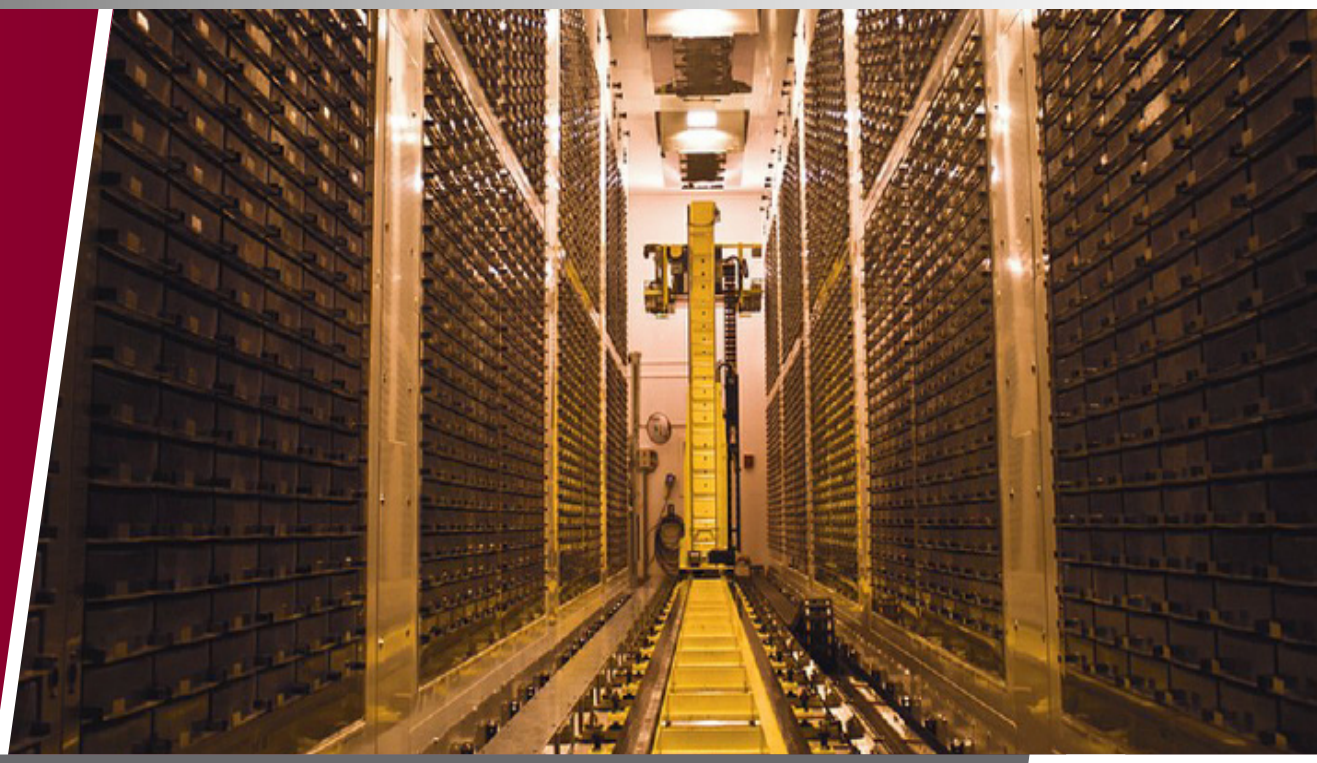
The scope of the M&E services design, in accordance with the MOD's requirements included the diversion of cross-site services, High Voltage (HV) and Low Voltage (LV) distribution, lighting and emergency lighting, small power, fire alarms, data communications, LTHW heating, mechanical ventilation, BMS controls, air conditioning, public health and fire fighting facilities.

UK Biorepository - Milton Keynes

UK Biobank is a major national health resource, established with the aim of improving the prevention, diagnosis and treatment of a wide range of rare illnesses. Over many years, this has built into a powerful resource to help scientists discover why some people develop particular diseases and others do not.

The Biobank Repository UK enhanced and expanded their existing DNA storage facility to a larger site located in Milton Keynes. The new site was formally Hewlett Packard's purpose -built cheque-cashing centre. ACTS was commissioned to produce the M&E design to suit the new use of the site. A highly resilient services & electrical supply infrastructure was developed which included generator back-up, UPS and harmonic filtering of the supply. The existing infrastructure was employed as the first line of defence to ensure that the 50,000 DNA samples would be secure within the ultra-low-temperature storage system. In addition, there was the formation of a number of process laboratories, which also needed to be power resilient to protect samples and equipment.

Healthcare



Throughout the building, all equipment was protected by a large scale INERGEN fire suppression system. The existing VESDA fire sensing apparatus was retained and modified to suit the building's new configuration. This offered the earliest detection and auto-extinguishing techniques which were a critical requirement on this project.

Several of the laboratories required clinical standard mechanical services, which included low velocity air delivery, comfort cooling, fume extraction, compressed air, vacuum and ultra pure water distribution.

The new facility has the potential to revolutionise the process and storage of DNA samples for research programmes. Millions of human samples, both legacy and future, will be stored in a secure facility which will also undertake next generation DNA sequencing of samples.

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Marine & Industrial

Peel Ports - Liverpool2

One of the UK's most ambitious investment projects, Peel Ports Liverpool2 project is a new deep water container terminal, under construction at Royal Seaforth Docks in the Port of Liverpool.

The project incorporates 17 Hectares of newly created land mass recovered from the River Mersey and an 854-metre-long quay wall to form the new container terminal. The eight Megamax ship-to-shore (STS) cranes will be capable of handling two 380m vessels simultaneously whilst 22 Cantilevered Rail Mounted Gantry Cranes (CRMG) distribute containers around the terminal and onto vehicles for transportation. State-of-the-art technology will be incorporated to control crane operations and vehicular movement to/from and around the new terminal. A new 30MVA electrical supply will be delivered to and around the wider port at 33kV and a new 11kV and 440v distribution network will be installed around the new terminal to support the cranes, refrigerated containers (reefers), control systems, terminal lighting, CCTV and Wi-Fi.

ACTS continue to provide a managerial and technical role in respect of the procurement, design, development and installation of all HV, LV, comms and specialist engineering technology to Peel Ports on this exciting project.

Co-operative Group - Alsager Store

ACTS were appointed to carry out the detailed design and specification for the Co-operative's flagship store in Alsager. The building was designed to achieve a BREEAM rating of Very Good.

The design incorporated the use of free heat technology to recover the waste heat from the refrigerated cases and reintroduce to the store.

To assist the Co-operative in achieving their aim of reducing greenhouse gas emissions, low global warming potential (GWP) propane chillers were installed.

The store also benefited from daylight-controlled LED ambient and display lighting throughout the 14,000ft^2 sales floor.

Retail

ACTS have worked with the Co-operative over the last 20 years. During this time, we have undertaken the M&E design of numerous stores and distribution centres throughout the UK.

ACTS developed a suite of M&E design briefs and technical specifications for the fit-out and new-build projects. The documents provide a framework for consitent quality and best value services installations throughout the Co-operative estate.

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Commercial

30 St Mary's Axe - London

ACTS has been involved in numerous fit-out contracts at the iconic 30 St Mary's Axe building (The Gherkin) which is located in London's Square Mile.

Previous projects involved the complete refurbishment of tenant occupiable spaces typically on a floor-by-floor basis to suit the individual tenants requirements. This ranged from new lighting and LV power design through to upgraded HVAC services.

It was essential that our involvement as part of the project design team was to offer our client a seamless transition from design to practical completion. This was achieved by working closely with our client to understand their exact needs, liaising with the building's landlord to ensure all aspects were in compliance with the strict standards they set out and ensuring regulatory building warrant approvals were achieved timeously.

ACTS is continually involved in projects at this prestigious location resulting from both successfull execution and client satisfaction on previous projects.

BUPA - Mugdock House

A new build project where ACTS were engaged to provide detailed design for an ultra modern 64 bedroom care home in Bearsden. Provided within the home is a cinema, hair salon and attractive sensory gardens which have been included to enrich the lives of the residents. The home has been purpose built to provide the highest standards in residential care and includes modern dining rooms and spacious lounges which provide perfect places for residents and visitors to meet and socialise.

ACTS engineers developed the building services closely with the client. The building benefits from the integration of low zero carbon technology, such as air source heat pump, solar thermal hot water systems and low energy LED lighting. The air source heat pump and solar thermal installation qualified for the Renewable Heating Incentive (RHI) scheme.

Residential Care

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Performing Arts

Royal Conservatoire of Scotland, Speirs Locks Studios

Phase 1 completed 2012, phase 2 completed June 2014. A redevelopment of industrial units to provide superior-quality ballet rehearsal studios, flexible dance and drama studios, large scale TV studios, gymnasium, teaching and workshop areas.

To assist the architect in achieving his aim of high-quality, day-lit and naturally-ventilated dance spaces, computer modelling techniques were used extensively to inform the design at each stage of development.

Due cognisance had to be taken of the higher-than-normal room temperatures required for ballet rehearsal spaces, minimum of 25°C, in the heating design. This presented a challenge in limiting summer overheating which we overcame by using larger rooflight opening areas.

ACTS have a successful history of implementing low and zero carbon (LZC) technologies within our project designs. We have experience in the design and monitoring the installation and commissioning of LZC technologies, such as:

- Biomass and biofuel boiler plant
- Solar thermal hot water systems
- CHP plant
- Wind turbines
- PV
- Ground and air source heat pumps

Our approach to LZC technologies in the built environment is to minimise the load requirements of a building, then to maximise the efficiency of the plant and systems, prior to evaluating the LZC requirements. This ensures any installed LZC technologies are appropriately sized, minimising the capital cost and maximising the potential payback.

Renewables

ACTS will not only provide expert guidance to meet and exceed the required standards of energy efficiency, but also help you benefit from government schemes aimed at increasing sustainability.

Our engineers will work closely alongside your business to evaluate its needs and requirements, helping lower overall tariff rates, give advice on more structured longer-term contracts and move your energy to renewable sources.

Where it is not possible to use renewable energy, we can investigate carbon- management strategies that can be implemented to offset the carbon use of your energy in a cost-effective way.

The services that we offer allows clients to make an informed decision about a key area of their business expenditure and will provide a trusted link between the energy supplier and client.

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