

# THE NORTH WEST SKILLS ACADEMY CITY COLLEGE, BIRMINGHAM



a practical minimum, the next stage in the evolution of the College's academies was to incorporate renewable energy into the design.

Throughout the project, the client was keen to integrate renewable energy technologies into the building as much as possible so that the building could be a showcase project and a real focal point for local community.

These renewable energy devices and sustainable technologies include:

- 2no. 1.5kw Swift wind turbines mounted on a feature mast structure at the front of the building providing approximately 8,000kWhr of electrical energy per year.
- 98.8m<sup>2</sup> of Photovoltaic panels with a peak capacity of 12.48kWp, and estimated to provide 8,200kWhr of electrical energy per year.
- 10.8m<sup>2</sup> of Solar HWS panels with an expected energy return of 3,900kWhr to hot water per year.
- 35m<sup>2</sup> rainwater storage tank providing an estimated 80% of water for flushing purposes per year.

In addition to these, the standard M&E services were selected to be as efficient as possible within the budget and design constraints:

- Fully condensing heating boilers with modulating burners; direct weather compensation of boiler flow temperatures.
- Fully condensing DHWS boiler (to top up solar hot water), standalone from heating system.
- Supply and extract ventilation equipment incorporating either cross plate or thermal wheel heat recovery devices.

- Variable volume radiator heating circuits with inverter driven pumps, TRV's on all radiators.
- Inverter driven speed controls to most ventilation equipment.
- High efficiency lighting incorporating high frequency and digital dimmable ballasts.
- Interior lighting controls comprise daylight linking and presence detection with manual off facility.
- Exterior lighting controls comprise BMS centralised time-clock control and photocell switching.
- Gas, water and electricity sub metering with BMS logging and out of range warnings. BMS energy data will also be used for 'Carbon Footprinting' of the building

The performance of the internal environment is key to ensuring occupancy satisfaction and comfort. TAS modelling was undertaken to assess the ventilation availability and peak summertime temperatures within the building as measured against BB101 design criteria. The modelling found some enhancements were required to the glazing and opening window areas to ensure compliance and these were incorporated into the design. The modelling also revealed advantages in exposing the thermal mass of the floor slab soffits to the space and in combination with night time purge ventilation could further reduce peak temperatures. This is to be employed to the classrooms within the building shown to be most prone to over heating.

Externally further sustainability features were employed including SUDS drainage to all roads and parking areas. The landscape architects reintroduced native species of plants to the site and incorporated a 'living wall' of sedum along the boundary. ■



## PROJECT TEAM

- Architects:**  
Hugh Byrd Associates
- M&E Consultants:**  
Cundalls
- Structural Engineers:**  
Structural Design Partnership
- Main Contractor:**  
Morgan Ashurst
- Landscape Architects:**  
Moore Environment
- Photos:**  
Anthony Lawlor

In October 2007 Birmingham's North West Skills Academy was opened. The 3,270m<sup>2</sup> College houses workshops, teaching and learning space for construction industry and automotive training. The building is the latest academy by City College, Birmingham and is the most advanced, of a series of energy efficient academies (see *School Building Issue 17, 2007*). Having reduced energy demand to

