CEW AWARDS 2012

Regain Building – LOW/ZERO AWARD

## INTRODUCTION/OVERVIEW

The County Borough of Blaenau-Gwent covers some of the most deprived communities in Europe and the council is strongly focused on local regeneration. One key development is The Works in Ebbw Vale – a £250 million project to deliver high-quality community and educational facilities, business and commercial space and sustainable new homes on the site of the former Corus Steelworks. The £1.27 million Regain building is part of this development – a new 500m$^2$ 'business incubator' housing eight small business starter units, jointly funded by the Heads of the Valleys and EU Interreg IV B programmes.

Regain stands for Reducing the Effects of Greenhouse gases through Alternative INdustrial management, a collaborative European project with partner buildings in Belgium, France and Scotland. It aims to achieve excellence in sustainable design through sharing sustainable building information between countries and across projects. By treating the Ebbw Vale building as a research project, drawing on lessons learned at the other pilot schemes, the project team was able to explore sustainability issues in much greater depth. The result is a highly sustainable, aesthetically pleasing building whose key features can be replicated at a wide range of sites.

## PROCESS

The project was procured under a Design and Build contract with the contractor's team developing the design from RIBA stage D. During the design development process, the contractor, Kier Western, held regular team meetings with Blaenau-Gwent County Borough Council (BGCBC) and forged a single-team ethos embracing client, consultants, contractors, subcontractors and suppliers. The Works' project office and its consultant team were also closely involved.

The importance of using data analysis to drive initial design decisions was established at the outset. The design was heavily influenced by analytical data form Cardiff University School of Architecture's Centre for Research into the Built Environment. This enabled the design of the glazing and building envelope to be optimised to maximise heat retention, and solar gain while minimising overheating. It was also a specific design principle to acknowledge the significant impact that maintenance requirements have on the sustainability of a building and to design minimise these requirements. This led the team to challenge certain established beliefs regarding sustainable design.

Passivhaus principles are widely regarded as the gold standard in sustainable design, but the team concluded that a core Passivhaus feature – mechanical ventilation with heat recovery – is not always appropriate. The need for specialist equipment and high-performance systems requiring accurate calibration can make maintenance complicated and expensive. In order to minimise maintenance requirements and energy costs, the team decided to keep the design low-tech and simple, using readily available materials sourced locally and enabling maintenance to be carried out by local contractors.

## RESULTS

Construction commenced in March 2011 and completed in October 2011. The result is an extremely sustainable building which came in under budget, and where the need for sustainability has not compromised aesthetics. The entire team of contractors, consultants, client representatives and subcontractors bought into the aspirations of the project and worked hard to realise the original vision with virtually no compromises.

The building is well insulated and ventilated naturally, with high levels of natural daylighting and intelligent sensor-operated controls. An air source heat pump, located opposite the building, provides heat energy for the underfloor heating, and is expected to achieve an 80% saving in fuel costs compared to a gas boiler. A large array of PV panels offset the energy for the pump, and in summer solar thermal panels will provide all the domestic hot water.

Recycled and recyclable materials have been used throughout, including recycled fill and aggregate for concrete and recycled glass for countertops. Products have been specified with a view to longer term recycling opportunities including flooring and wall construction.

The building has achieved an EPC A rating and should gain a BREEAM Excellent rating. It attained an excellent score when measured against the performance of the other pilot Regain buildings using the international SBTool assessment methodology. The building is expected to achieve energy consumption of 19kW/$m^2$ – a 24% improvement on the performance stipulated in the current building regulations. Ongoing performance monitoring will demonstrate which products and technologies perform well in practice and help validate or challenge the results of the building modelling tools used to evaluate design options.

The project is expected to have a significant influence on the sustainability and low carbon agendas. In particular, the greater understanding of the profound effect that long term maintenance has on sustainability could affect the industry's approach to design in the future. The message of the Ebbw Vale Regain building is that zero maintenance facades, coupled with interiors designed for simple, minimal maintenance, proved to be the most sustainable solution.