

The blocks are completely weather-proof and structurally sound after the concrete has been poured and cured. Various external wall finishing systems are available:

- Exterior render is the easiest to use. A reinforcing mesh and base layer are employed, and a modified render is applied with the same expansion coefficient as the EPS.
- A traditional brick face may be constructed. Styrostone has developed a special foundation block to be used at ground level. The brick face is tied to the concrete core through the outer skin of EPS and spaced using the embossed markings on the blocks.
- Brick slips applied on modified render are easy to install.
- Tiles, slates and weatherboarding are fixed using timber battens, anchored to the concrete core.

Interior walls can receive the same finish as the exterior walls, although dry-lined plasterboard is the preferred option. Installation of furnishings, fixtures and fittings is not problematic, but for heavy items it may be necessary to use long fixings designed for concrete that will reach the concrete core. However, it is unnecessary to dry-line with EPS thermally insulated plasterboard with a thickness of 30–40mm to satisfy Building Regulations, as the 50mm thick interior skin of the blocks forms an integral part of the system. Basements should be waterproofed with a compatible bitumen and polythene membrane. During the flooding in parts of The Netherlands and Germany in 1997, a number of buildings constructed using the system were affected. However, after the waters receded, it was discovered that the buildings dried out more quickly than traditional structures, as they were constructed entirely from concrete. Basements, if adequately waterproofed and designed, were completely dry.

The Styrostone system is an efficient method of construction with proven performance over a long period. The concept is extremely simple and based on EPS, a cheaply produced, familiar material, and it is surprising that it has not been adopted earlier in the UK. As the proposed changes to the Building Regulations may stimulate an increase in the use of concrete for a variety of applications, it is possible that this small-scale development in Hythe will represent the start of a new era in UK construction practice. ■

Expanded polystyrene – the Dutch experience

Bill Holdsworth,
Energy and Environmental Engineer

In the Netherlands, a major exporter of EPS permanent formwork to the UK, a number of different forms of the product have been developed that cater for a range of different projects, ranging from house construction to large-scale construction projects.

Owing to the introduction of the Euro, there has been an escalation in house extensions by people trying to use up their old ‘black’ Dutch guilders. With most of the land consisting of sand, excavation for new extensions has been easy. In Malden, on the Dutch-German border, I undertook my own design-and-build project. Foundations were dug for side ‘party walls’ and a slab to support a solar (passive) glazed Serre extension. After being given a drawing, a local supplier brought prefabricated thermally insulated polystyrene interlinking slabs complete with downstand and upstand thermal bridges. These were laid on a pvc membrane on the ground sand. The concrete layer with chases for heating pipework already formed was then laid. Finally screed, floor tiles and weathered fixings for the vertical glazed framework were quick and easy to install. The thermal conductivity figures, in accordance with Dutch standards, are currently far in advance of UK practice.

Major contractors such as Beton Son NV, associated with Taylor Woodrow, have moved further into precast concrete component manufacture. However, for in-situ work, expanded polystyrene-insulated formers are the general rule. An interesting and artistic aside is that the system has been used by sculptor and painter Liesbeth Berkers for over 20 years. In her garden, she has many large sculptures made from the material with no appearance of degrading over many years’ exposure. In quite a few schools, municipal buildings, commercial institutions and private collections are wall panels, dividers and other architectural examples where drills and saws have been used to form the material into reliefs and traceries, which have been described as of Aztec proportions.



Figure 1: An example of Liesbeth Berkers’ extraordinary sculptures, produced using EPS formwork.

Reference

- 1 MOSS, R., ARORA, S and CHANA, P. BRE Information Paper IP9/98 *Energy efficient concrete walls using EPS permanent formwork*, Garston, 1998, 8pp.