The structure and most commonly used materials and finishes for sustainable desig...

Design, Interior Design

This is a report analysing the structure and most commonly used materials and finishes for sustainable design. Taking into account the materials and finishes in a sustainable interior design project.

When we talk about sustainable design and its approach to the materials used we can look at recycled, renewable materials and energy conserving products. This will not only result in healthier environmentbut also can lower operating costs and produce higher productivity. Interior designers need to be ableto promote the use of these sustainable technologies within their designs looking at ways in whichspaces can be adapted to suit climate change and carbon emissions.

Sustainable designs also take into account the ecological impact combining various aesthetics foroccupants and the planet. When looking at projects we can also think about the use of energy within that environment. Using materials that are safe and nontoxic or recycled. Products that last longer or are locally sourced.

Introduction

The project we will be looking at is BedZED this is UKs first large scale, mixed use sustainablecommunity based in South London. We will look at the most commonly used materials and finishesfor this project to work out how and why these were used. This is an award-winning development making huge reductions in water, climate and greenhouse gasemissions.

BedZED was designed by the architect Bill Dunster. I will also be taking a look at some of his work tosee how he incorporates some of these theories into the projects he is involved with.

BedZED The project

Why was Bedzed Built?

BedZED eco village was built to reduce costs and carbon foot print. The purpose was tocreate sustainable living for private, social housing and commercial units using ecofriendlymaterials. Being one of the first of its type, majority of ideas and thoughts thatwent into this happened on site whilst the build took place. It was built at no extra costto any normal build all the materials were sourced from local areas using local builderswithin a 35 mile radius. To understand the layouts and design every element of the way people lived andworked was analysed.

On site to keep the carbon footprint low commercial properties where built at the baseof the complex. Many people work from these units so there’s no need for distancecommuting. Shops and other amenities are close by and within walking distance. Ifthere is a need to use a car a small collection of electric shared cars can be booked. Again, these are all charged on site by the power collected through the solar panels.

At the time (2000-2002) many of the ideas were new and no laws werein place for such projects. In 2016 the law changed stating that all newprojects must adhere to certain Environment legislations. Some of the other benefits and products used at BedZED are

Insulation and ventilation

The walls of the building are made up of 30cm of insulation and have a high thermal maskreducing heating costs by approx. 25%. Fresh air is taken in through the duct’s ant the top of thebuilding and enters through a hole in the bottom of the room to allowing the air to circulate.

Heating

All the buildings are south facing on this complex which traps the heat from the natural sunlightthere is no need for extra heating systems or air con. Simply opening windows and doors can release unwanted heat or move the heat around. For the use of electrical appliances and hot water a central system burns chippings which have been collected.

Electricity

On the roof and windows solar panels have been added. This energy is collected and stored. Thison average reduces electricity bills by 40%. The electricity created is then used for things like outside lighting and charging the electric cars. The remainder of this is then put back into the grid.

Water

Also on the roof are a collection of plants and shrubs these help collect water which is then stored in containers underground and filtered through to each apartment. Bill Dunster the Architect behind this project was committed to low carbonbuilding and development. He used pioneering technology at the time ofthe project and he had worked on several schemes before this one.

Using all tried and tested methods

A typical zero carbon housing systemwithin ZED consists of

- Laser cut galvanised steel powder coated structural ring beam with C16 UK timber studs. UK fabricated OSBstructural boards so one floor could be built every two days and he chose to use all the timber sourced from theuk.
- Super insulated concrete foundation slabs were used and are suitable for most ground conditions.
- The roofs are BIPV solar roofing systems they include a loft conservatory and battery storage systems. This limitedexports to 3kw. There will be no need to upgrade the infrastructure.
- Super insulated cladding with heat recovery and ventilation was used on the walls with triple glazing in thewindows. The entire building would generate enough electricity run a house and car with these systems.

BedZED Evidence

When we look at the evidence to support the products used many other architects used similarideas and materials and some of this go right back to the Roman times.

Examples

1. The Greeks positioned their structures, so the sun’s rays were captured and used as a heat form.
2. The Romans then built aqueducts to distribute renewable water.

3. Frank Lloyd Wright designed structures to blend in with its surroundings.
4. Rolf Disch took full advantage of solar energy building buildings. Using glass and solar panels forheat and electricity.
5. Andrea Kantelberg has developed a particular brand of luxury interiors. There are many more architects and designers that use sustainable design elements to help themachieve sustainable living.

When we look at available products to purchase many companiesare now adhering to sustainable items and the way they aresourced. Many companies will explain where they get theirmaterials from and how they are replacing these materials wetake.

Specialised companies now have all the relevant technical dataand product details with product downloads showing relevantenvironment information. We can now purchase everything from building materials used tocreate a living space to the accessories within that area and mostof these are zero rated completely recyclable. Paints, furniture, fabrics & textiles, floors, wall coverings etc.

Conclusion

It appears that BedZED have used the best materials the most up to data technology the best designers and manufacturers possible for a project of its time. This carefully well studied scheme is now several years old. The studies shown by Sue Riddlestone (Director and co-founder of Bio Regional) give a clear outline and its finding to conclude residents have reduced their carbonfoot print by half and they have a better quality of life. Some area are

still being worked on so they hope to improve this further. All in all I do feel this project was a great success.