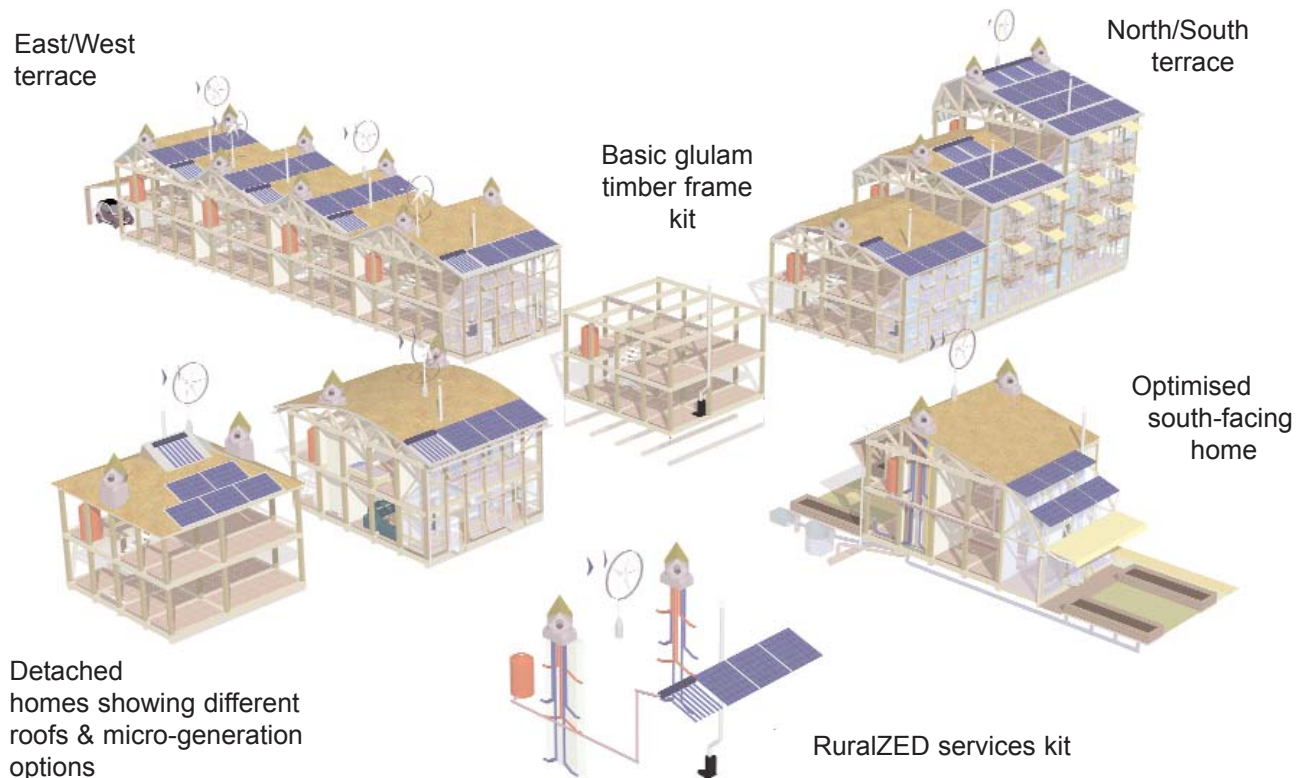


RuralZED

Bill Dunster architects ZEDfactory Ltd designed the RuralZED system to combine lower cost construction with the qualities typically associated with rural living, such as light, air and space. Whether you choose a detached house for the country or a terraced urban block, homes are built to the same specification. RuralZED house types are based on a timber-frame kit. Buildings are super-insulated and have an internal lining of dense concrete for thermal mass, giving low-carbon, low-energy performance without the need for mechanical cooling. There is a south-facing version with double-height conservatory 'sunspace', or an East-West version with/without a sunspace. Units can be upgraded to a full Zero (fossil) Energy Development (ZED) specification with the addition of appropriate micro-generation technologies (e.g. PVs, solar collectors, wind turbines) either during construction or at a later date.



Features:

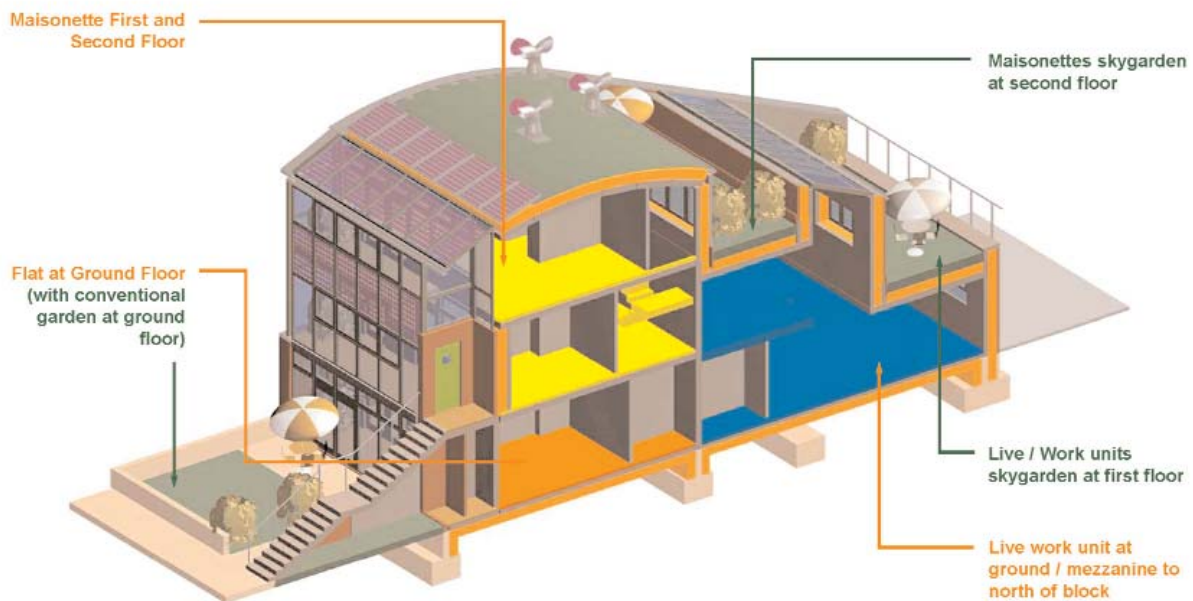
- Low-cost housing, designed to use Modern Methods of Construction to minimise construction time and maximise build quality
- Densities to 50 homes/ha for 2- or 3-storey terrace
- Wood pellet boiler for heating and hot water
- All units have built-in connection points to take upgrades to a full ZED specification
- Units have a natural ventilation system using wind-driven cowls with heat recovery
- Supplied with water-saving and energy-saving white goods and fittings
- The indicative 'built cost' for a mid-terrace unit is approx. £1100/sq.m. or £120,000+VAT
- The timber frame kit is available separately for DIY at £65K+VAT
- VAT can be recovered on 'new builds'.

Options include:

- Designed for microgeneration, so every home can be self-sufficient in energy. Renewable energy solutions including micro wind turbines and PhotoVoltaics (PVs) for electricity, and solar collectors for hot water
- Communal wood pellet boilers and pellet stores
- Choice of roof shape (pitched or curved), roof covering (sedum roof, tiles, or aluminium standing seam) and facades (brick, render)
- Provision of shared amenities such as village green, sports field, club house, nursery and doctor's surgery - where these are part of a wider scheme development or masterplan
- A lift can be fitted internally in most sunspace areas for Lifetime Homes mobility
- Eco kitchen and bathroom options.

ZED-in-a-Box

The ZED-in-a-Box house type was designed as a high-density urban block of terraced homes, with green space for all. Constructed of brick and block, with super-insulation and airtight thermal mass, it maximises solar gain through its south-facing conservatory 'sunspaces'. It is designed as a full Zero (fossil) Energy Development (ZED) equipped with photovoltaic panels, natural ventilation, sedum roofs and rain-water harvesting.



Features:

- High density at 50-120 units/ha
- High amenity with private green space for every home
- Design shown above comprises 3 separate units in a single envelope:- a 2-storey maisonette (yellow) with sunspace, a ground floor flat suitable for disabled access (orange), and a live/work unit (blue area)
- Full ZED specification
- Natural ventilation system using wind-driven cowls and heat recovery
- South-facing conservatory and double-glazed windows means stable daytime temperatures of around 20°C
- Indicative cost for mid-terrace design at £1250/sq.m. approx. £120,000+VAT per unit, i.e. £360,000+VAT for complete block shown.

Options include:

- Other combinations of housing units, e.g. 3-storey townhouse and 'loft' unit with mezzanine
- Renewable energy solutions including wind turbines for electricity, solar collectors for hot water, and wood pellet boilers (communal or individual) for heating and hot water
- Choice of roof covering (sedum roof or aluminium standing seam), and facades (brick, render, stone, timber cladding)
- Designed to fit within an urban village - shared amenities such as communal green, sports field, club house, nursery and doctor's surgery can be provided if required as part of a scheme
- A lift can be fitted internally in most sunspace areas for Lifetime Homes mobility
- Eco kitchen and bathroom specifications

ZED-in-a-Box townhouse

The ZED-in-a-Box townhouse can be built in a terrace, as a semi-detached or as a detached home. Constructed of brick and block, the fabric is super-insulated and airtight, and uses dense concrete as thermal mass. The design maximises solar gain through south-facing conservatory 'sunspaces'. **The standard is equipped with photovoltaic (PV) panels, natural ventilation, sedum roofs and rain-water harvesting.** These measures reduce the requirement for energy, and mean, for instance, that radiators are not needed and using renewable energy sources is cost-effective and practical. The result is Zero (fossil) Energy Development (ZED) performance.



Figure showing some optional configurations: This scheme is on a sloping site, with large external deck spaces at ground floor level. There is a mix of 2-storey townhouses, and a 3-storey block of 1- and 2-bed flats (which could have been 3-storey townhouses). These homes have solar collectors, wind cowls, an aluminium standing-seam roof, and a communal wood pellet boiler and store serving 17 homes.

Features:

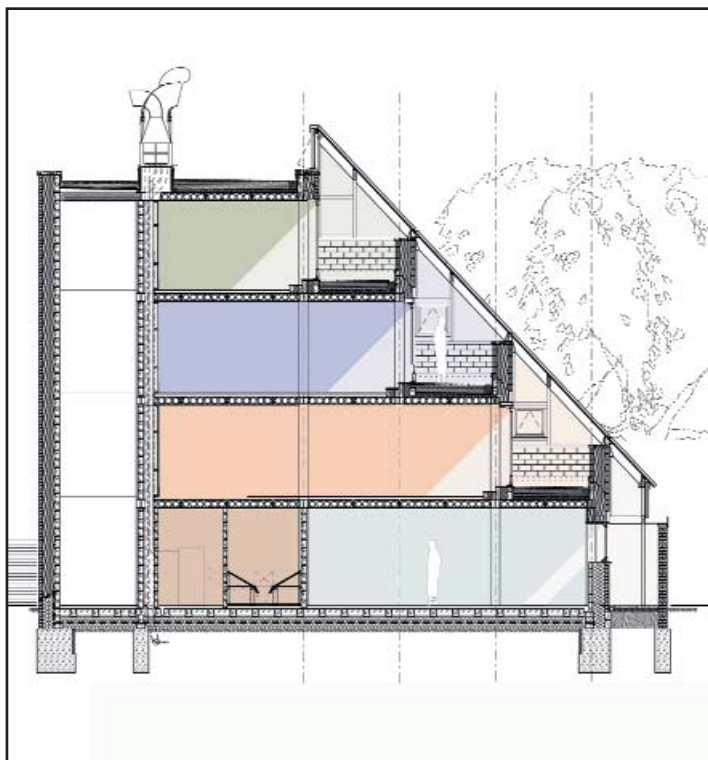
- Densities up to 50 units/ha in a terrace block
- 2- and 3-storey versions
- Full ZED specification - PVs, sedum roof, rain water harvesting, basic wood pellet boiler
- Natural ventilation system using wind-driven cowls and heat recovery
- South-facing conservatory 'sunspace', triple - glazed windows, and thermal mass mean stable daytime temperatures of around 20°C
- Unit layout and unit size are 'Housing Corporation plan compliant' - see www.housingcorp.gov.uk/server/show/conWebDoc.1058
- Indicative cost for mid-terrace design is approx. £1250/sq.m. or £150,000+VAT for 2-storey terrace unit.

Options include:

- Renewable energy options incl. wind turbines for electricity, solar collectors for hot water, and feature wood pellet burners with visible flame and back boiler for heating and hot water
- Other combinations possible e.g. apartment blocks, maisonettes, and live/work units - as part of the ZED-in-a-Box housing system
- Choice of roof covering (sedum roof or aluminium standing seam), and facades (brick, render, stone, timber cladding)
- Designed to fit within an urban village - shared amenities such as communal green, sports field, club house, nursery and doctor's surgery can be provided if required as part of a scheme
- A lift can be fitted internally in most sunspace areas for Lifetime Homes mobility
- Eco kitchen and bathroom specifications
- Balconies on north side.

Mini Solar Block

The Mini Solar Block was designed for small urban sites. Each floor can be defined separately as an apartment or live/work area, or all floors (or combinations of floors) can be combined as a single home. Standard construction is an airtight structure of brick and block, using dense concrete for thermal mass, and super-insulation. The design maximises solar gain through south-facing conservatory 'sunspaces'. Photovoltaic (PV) panels are an integral part of the south-facing glazed facade.



Features:

- A 4-storey urban block with an outdoor space on each floor
- Blocks have windows on 3 sides so cannot be joined as a terrace (use Urban Solar Block instead). Densities are around 30-120 units/ha depending on internal arrangement of units
- A continuous PV array forms the roof of a small sunspace on each floor
- Natural ventilation using wind-driven cowls with heat recovery
- ZED spec. construction with airtight fabric, thermal mass and super-insulation. Combined with south-facing and double-glazed windows gives stable daytime temperatures of c.20°C
- Communal wood pellet boiler for heating and hot water
- Indicative built cost for whole building is approx. £1500/sq.m. or £400,000.

Options include:

- Connection points on flat roof to block, specified at design stage, provide an easy upgrade path to full zero-carbon specification, including wind turbine for electricity, and solar collectors for hot water
- A choice of external cladding, e.g. brick, render, terracotta block (photo shows buff version), and stone
- Eco kitchen and bathroom specifications
- At design stage, a lift could be fitted in the stair well for Lifetime Homes mobility
- The ground floor unit can be configured as a separate commercial unit.

Urban Solar Block

The Urban Solar Block was designed as a high-density combination of apartments and duplex units over 5-storeys. The optimum block arrangement is 7 bays wide (the diagram shows 1 bay). Standard construction is an airtight structure of brick and block, using dense concrete for thermal mass, and super-insulation. The design maximises solar gain through south-facing conservatory 'sunspaces'. Photovoltaic (PV) panels are an integral part of the south-facing glazed facade.



Features:

- A variety of unit types is accommodated in a standard optimised block of 7 bays (38mx36m)
- High density at 120-160 units/ha
- Every home has a sunspace and private outdoor terrace/garden
- The single bay shown above comprises 4 units:- a 2-storey maisonette (blue); a duplex suitable for disabled access (pink); a studio apartment (light blue); and a 2-bed apartment (yellow)
- Underground parking with 1 space per home
- ZED specification construction with airtight fabric and thermal mass
- South-facing and double-glazed windows means stable daytime temperatures of c.20°C
- Communal wood pellet boiler per bay for heating and hot water
- Indicative cost for mid-bay approx. £1500/sq.m. or £420,000+VAT (ave. unit at £130,000+VAT).

Options include:

- Built-in connection points to provide an easy upgrade path to full zero-carbon specification, including wind turbines and PVs for electricity, and solar collectors for hot water
- Natural ventilation with wind-driven cowls
- A choice of roof covering (sedum roof or aluminium standing seam) and external cladding (brick, render, terracotta block, stone)
- Shared amenities such as village green, sports field, club house, nursery and doctor's surgery can be provided as part of a community development
- Eco kitchen and bathroom specifications
- A lift which can be fitted internally in most conservatory areas for Lifetime Homes mobility
- Adding a 6th floor to build a penthouse unit with a lift for the whole block.