Introduction

Riksbyggen housing is part of City of Tomorrow Bo01 in Malmö. It is designed according to the high standards on energy use and sustainability of this project (see also *Bo01* area description)

Bo01: the City of Tomorrow
Bo01 – The City of Tomorrow is a European housing expo with as main theme “The city of tomorrow in the ecologically sustainable information and welfare society.” An urban district in the western harbour of Malmö will be developed with 800 apartments exhibition. The district aims to present the implementation of a sustainable society in a densely built area and to be driving force in Malmö’s development towards environmental sustainability. Together with the City of Malmö an environmental and architectural quality program has been developed.

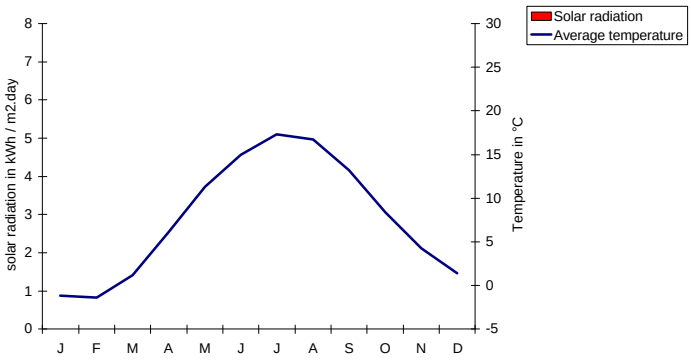
Energy concept: 100% locally renewable
The energy concept for the area is based on the principles of:

- Minimised energy consumption
- Renewable sources of energy
- Balance between production and consumption of energy within the district over a course of a year
- High level of individual comfort

Sun, wind and water are the basis for energy production. Sweden's largest urban solar energy project is implemented in the area. Energy and sewage systems work together through heat extraction and biogas production.

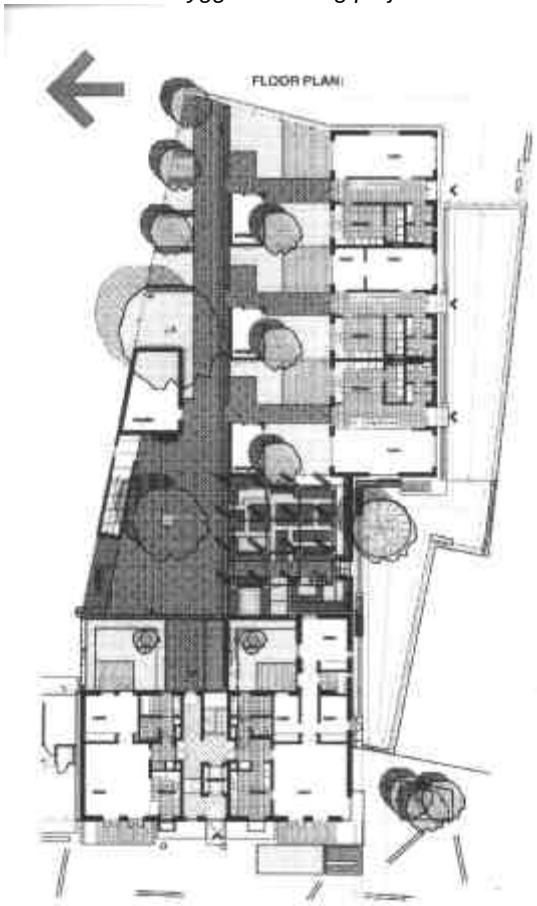
Owner/Developer	*Riksbyggen, Malmö*
Type of let	*Tenant ownership*
Architects	*Greger Dahlström, FOJAB architects, Malmö,www.fojab.se*
Building Constructor	PEAB AB, Malmö
Environmental assesment (GBC)	*Byggforskningsrådet*
Website	*www.bo01.com*
Publication	*Sustainable Building, Issue 1-2001*
Contact	*Bo01@Bo01*

Regional and Urban Level



Type of climate	*sea climate*
Altitude (m)	*0*
Latitude	*56°41' N*
Longitude	*12°51' E*
Average ambient temp (°C)	*7.7*
January	*-1.2*
July	*17.3*
Degree days (base 18°C)	
Global irradiation (kWh/m²)	
Sunshine hours (h)	*1,928*

Nr. 4 is the Riksbyggen Housing project.

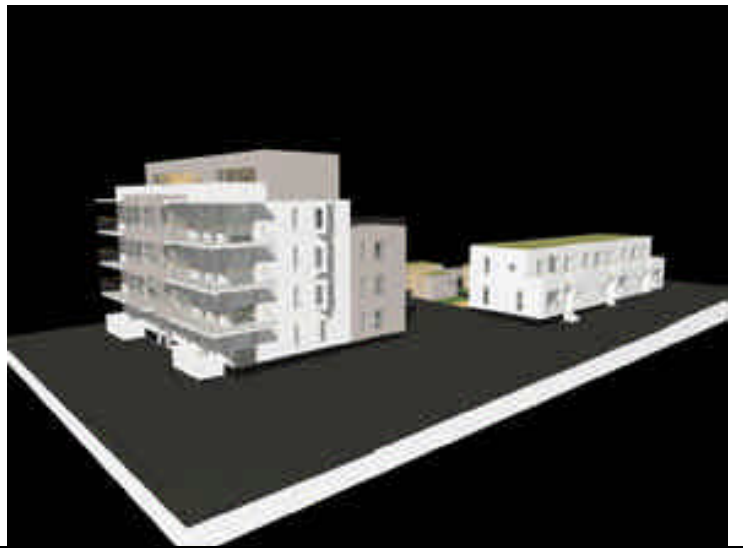


Bo01: The City of Tomorrow is a big housing project in the former harbour area close to the centre of Malmö. It involves 800 homes and the total floor space is 120.000 m2. Environmental considerations are apparent not only throughout the planning but also the management and future redevelopment or demolition phases. Apart from public transport, attention has been paid to a good bicycle system, all houses have bicycle storage and good and save routes are provided in the urban planning. Energy sources for both electricity and heat are from within the area and based on wind power, solar collector and heat pump, which give no emissions in the energy production-phase. Solid waste will be sorted into six fractions, while organic waste and organic wastewater are used for production of biogas.

Riksbyggen project

Riksbyggen encompasses 8 apartments and three two-storey houses occupying half a block, situated by a quayside walkway along the waterfront. The eight apartments range from two to five rooms at an area of 80 respectively 147 m2. They all overview the sea from the living room and kitchen. Some have oriels. The largest apartments at the top comprise two floors. The stairway is glazed towards the courtyard.

Block and Building



The building has a concrete structure, plastered facades and a green roof. All floors, apart from entrances and bathrooms, are wooden.

Environmental loading
Riksbyggen housing is based on the guidelines of Bo01 in the matters of creating a sustainable ecological housing with a good and long-term property management and with a great deal of comfort and security. The managing of the house is resource-saving and energy-efficient without anyone forgoing on comfort.

A saving of 50% on energy- and 10% on water-use is reached. A design for deconstruction has been made.

Material use is according to Bo01 Guidelines (see Best Practice Example *Bo01).* From the GBTool Assessment is turned out materials are not consciously designed for re-use and not always coming from sustainable sources.

Environmental measures taken are a.o.:

- No CFC's and HCFC's are used in the building
- Each dwelling has individual adjustable ventilation with heat recovery.
- Acoustics are according to Swedish standard.
- The ground floor can be used for different functions.
- Individual measurement of hot water, heat and electricity will be displayed both in the dwelling and in the technical central system.
- Parking is provided in a garage below the building.

ICT in the houses
ICT is used to measure, steer and regulate different sub-systems; homes have opportunities to follow their own and the district's energy consumption:

- Each home is able to monitor its use of water and energy.
- The building is prepared for future telecom installation.
- The area's broadband network enables residents to check exact departure of the busses and to receive the latest recycling results and access other environmental information.
- A special Eco TV channel will be launched on the Internet to document, inform and encourage and generate debate.

Project Data

	Project case		Reference case	
Construction Construction costs (€)	*2001*			
Urban plan Area (ha) Floor Area (m² gross floor area) Floor Area Ratio	*80 to 147 m2*			
Transport Distance to car park Distance to public transport Frequency of public transport Bicycle storage Telecommunication	*yes* *broadband internet, energy-monitoring and public transport information*			
Waste separation Construction and demolition waste Household waste Design for deconstruction	*6 fractions* *yes*			
Building Materials Construction Facades Roof Window frames Internal walls Recycled materials	*LCA based choice* *concrete frame, masonry* *plastered / boarding* *green* *no*			
Insulation Ground floor area (m²/bldg) Roof area (m²/bldg) External wall area (m²/bldg) Window area total (m²/bldg) South (m²/bldg)	**area (m²)**	**U-value (W/m²K)** triple glazed	**area (m²)**	**U-value (W/m²K)**
Ventilation system Infiltration Exhaust Heat recovery Air exchange rate, heating season	*passive* *passive and mechanical* *yes*			
Back-up systems Space heating Domestic hot water Cooling Electricity production Ventilation	**System** *water-based* *normal* *no* *collective*	**energy source** *collective heat pump* *solar power + wind + biogas*	**system**	**energy source**
Energy data Space heating Space cooling Domestic hot water Electricity (total) lighting fans + pumps small power	**(kWh/m²) target total: 105 kWh/m²** *60* *0*		**(kWh/m²)** *120,3*	
Solar systems Passive Active PV	*glazed stairways* - *yes, collective*			
Water Supply Toilet system (4, 6, 9 litres) Shower Bath Sewage Rainwater collection Grey water system	*10% reduction in use* *on garden*			