



ENPIRE
ENERGY IN URBAN PLANNING
AND IN RESTRUCTURING AREAS

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ALBERTSLUND CLIMATE PLAN

RENOVATION OF THE BUILDING STOCK

PROJECT SETTING



Albertslund Climate Plan Renovation of the building stock

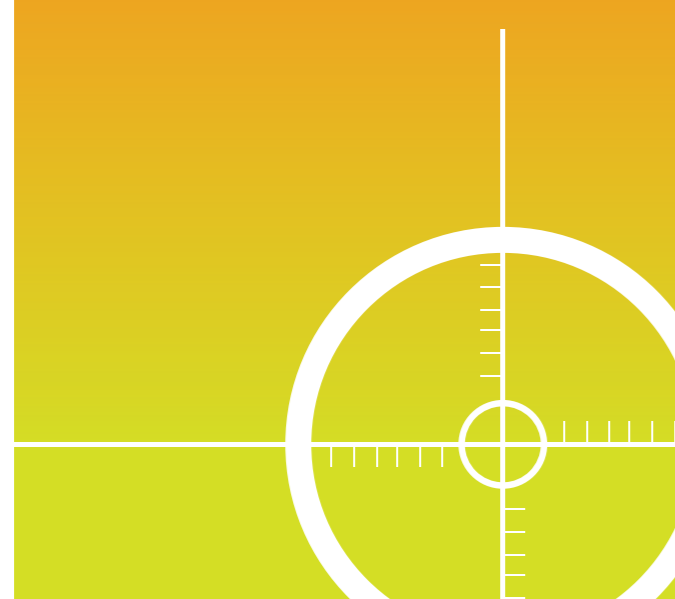
Albertslund
Municipal of Albertslund is situated 15-20 kilometres West of Copenhagen. Approx. 30.000 inhabit the municipal on an area of 23. sq. km. The urban areas of Albertslund was planned and build 1960-1975 and most of the housing stock is from that period. The Green areas were as well planned and shaped in the same period. 61 % of the housing stock is social rental (the average for Denmark is 21%) and the rest nearly owner occupied.

Regeneration

Albertslund is known as a modern municipal, with culture life, good infrastructure with modern schools and institutions for children and a lot of green areas and focus on sustainability. Most people living in Albertslund moved to the area in the 1960-1970, and one of the challenge is to attract a new generation to the area. Most of the housing stock has to be renovated and the municipal wants to use the opportunity to upgrade the housing stock to the future demands. Together with housing association (BO-VEST) and tenants organisation and the National Building Fund (Landsbyggefonden) they have approved to an ambitious renovation. This plan involves large number of organisations and companies on the building market.

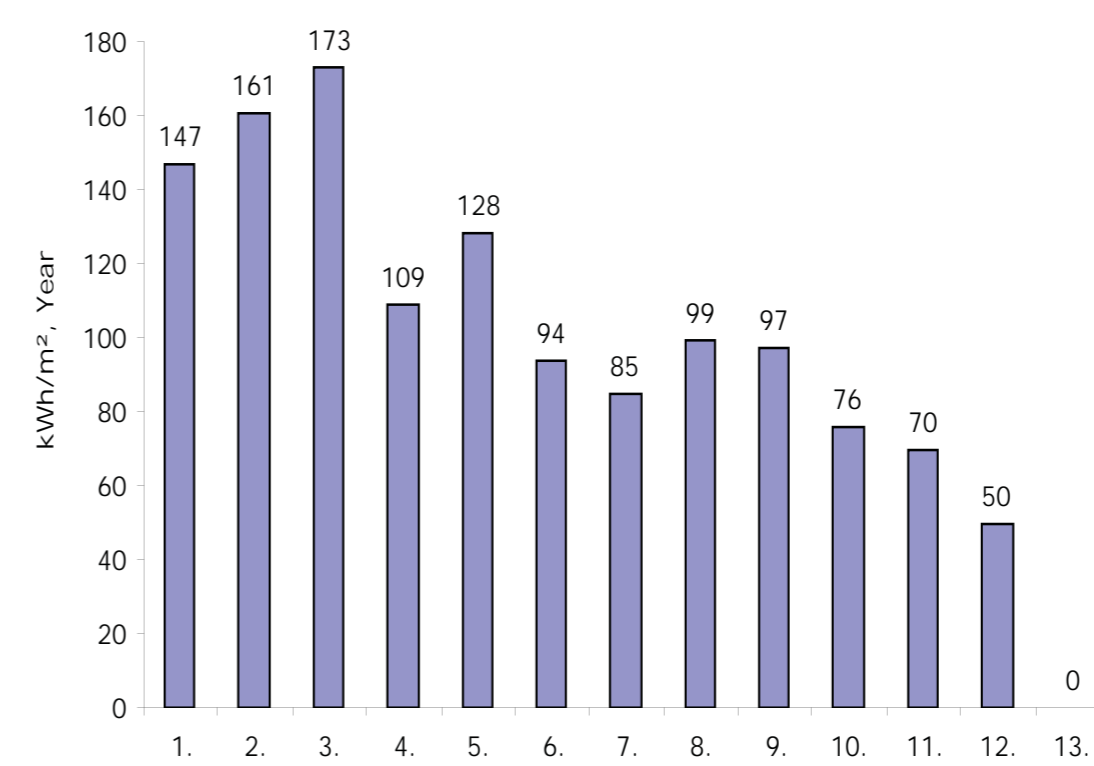


AMBITIONS & AGREEMENTS

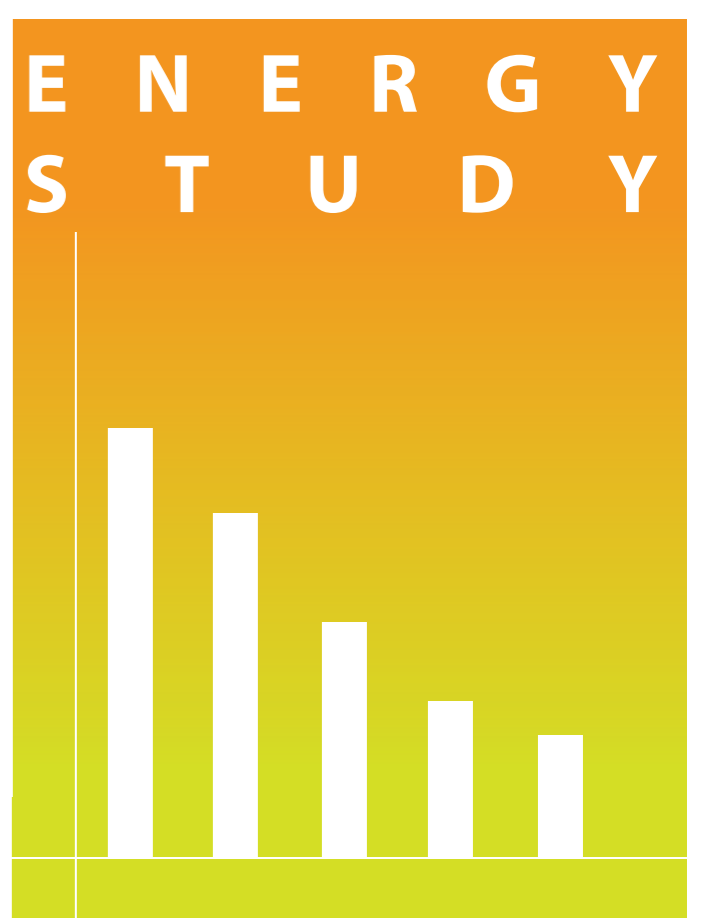


Climate Plan 2009 - 2015

The Municipal has approved on a climate plan involving all areas: Local Authority, Housing, Business Community and Transport. The objective is a 25% CO2 reduction in 2015 with an offset of CO2 emissions in 2006, which is a reduction of 52,000 tons CO2 and 1.73 tons per inhabitant. Housing has a share of third which equals 18,000 tons reduction. In Albertslund South 1,500 social dwellings has to be renovated to passive house standards (the national low energy class 1 or better demands). At BO-VEST, and in the municipality, there is a big interest to optimise the renovation approach and include a low energy renovation design with improved indoor air climate which is combined with an optimised energy supply solution which includes renewables like solar heating and PV used in local building integrated power roofing designs, and where the district heating losses are reduced considerably so they have a reasonable size compared to the need for heating and domestic hot water, (max. 30% of this).

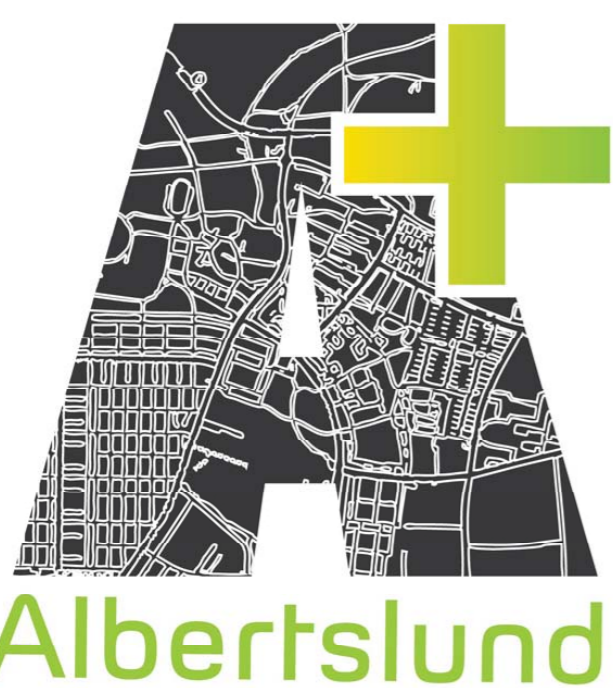


- Existing energy use.
- Item 1. including exhaust ventilation to ensure good indoor air climate.
- Like 2 but including extra roof window.
- Standard renovation (improved insulation and BR2008 energy windows).
- Like 4 but without energy quality control (reference).
- Solar DHW (2, 5 m²) positive economy year 1.
- HRV positive economy year 1.
- Improved insulation. Positive economy year 22.
- 3 layer windows. Positive economy year 6.
- PV panels (7m²). Positive economy year 6.
- Low energy class 2 (air tightness, HRV, solar DHW). Positive economy year 2. 45% saving compared to standard renovation.
- Low energy class 1 (item 11 + 3layer windows, improved insulation, automatic summer ventilation). Positive economy year 16.
- Possible zero energy design with 8 m² PV panels. Positive economy year 16.

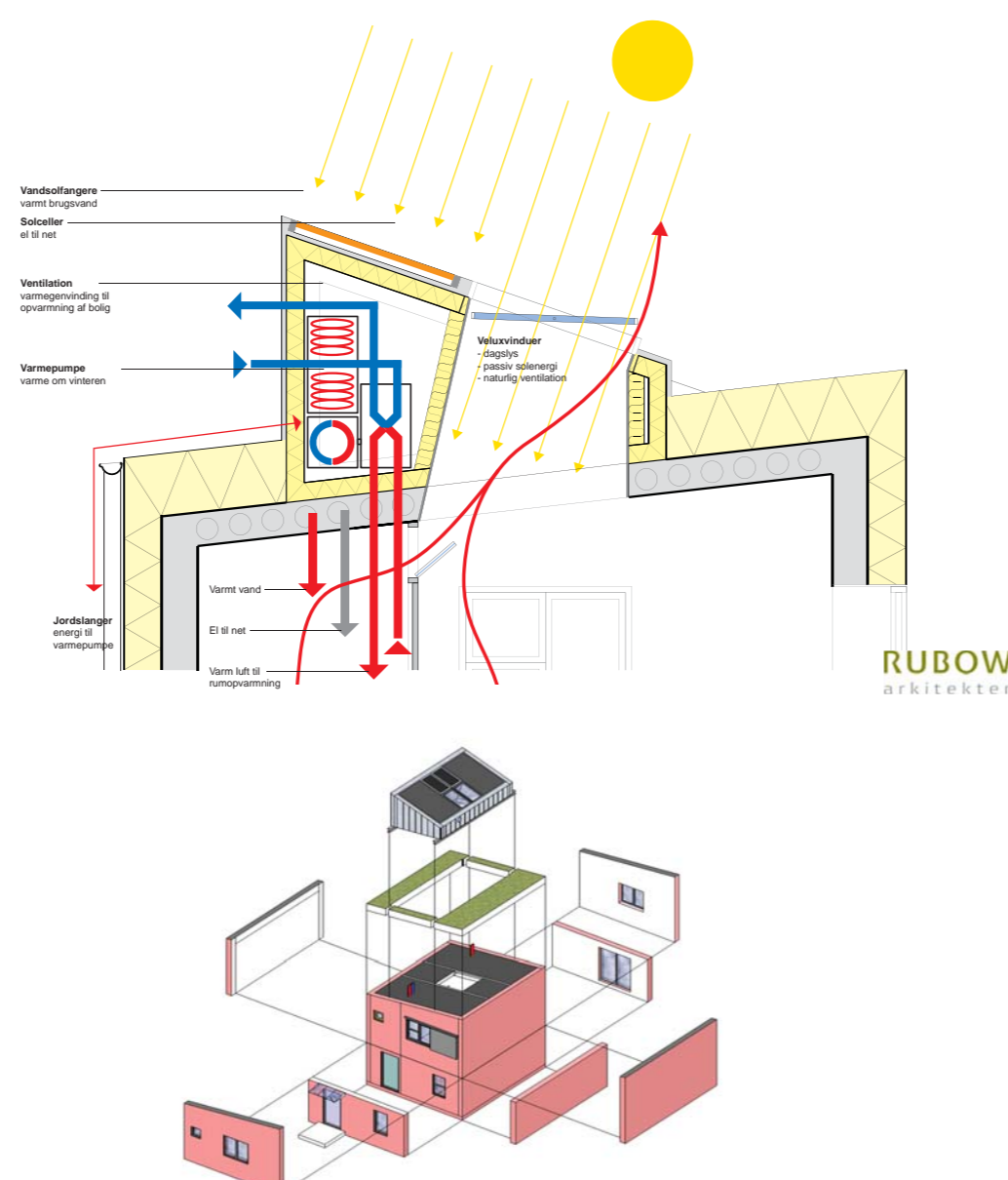
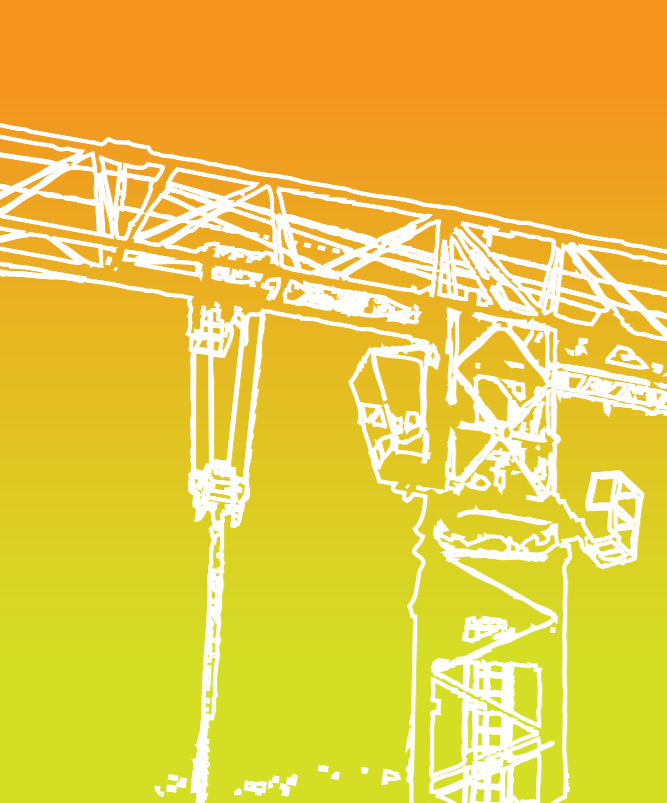


By help of the BYG-SOL /Ascot tool energy measures has been identified. The tool help identifying which energy saving package is the most efficient and most economic for retrofit as well as for new build housing projects.

The tool and a publication for it can be downloaded from the website www.cenergia.dk and from www.solarcitycopenhagen.dk in Danish and it is being translated to English at present.



REALISATION



Prefabrication

Several pilot projects has been launched and there has been developed different kind of prefabricated solutions. The theory is: "The buildings were realised in a industrialized process and it has to be renovated the same way". There has been developed a solar prism which integrated daylight, solar thermal collectors and photo voltaic, and at the same time it can move installation from the living space and give space for the heat recovery ventilation system. Prefabricated façades and roof elements is as well a solution in the coming renovation. It will optimize the building process, reduce costs and secure high quality.

LESSONS LEARNED



Make partnerships between relevant actors: For ex. tenants, utilities, housings association and public authorities. Involve the producers of building materials and contractors and go for high ambitions. Make it a learning project for every body. Organization, financing and the political process – is fare more important than technique.

