

## Field Trips

### 4 Passive House Building Projects and 7 refurbished houses

#### Lærkehaven 2 & 3 in Lystrup by Aarhus

32 houses from 2010  
 Builder: Boligforeningen Ringgaarden  
 Architect: schmidt/hammer/lassen architects  
 Engineer: Birch & Krogboe A/S  
 Passive House Concept: Birch & Krogboe A/S & Søren Pedersen.

32 row houses certified as passive houses. Here you find architecture of a high quality in combination with environmental considerations and sustainability. The project is supported by the foundation Realdania as a part of the EU-supported project: "Sustainable Housing in Europe".

#### H2-College in Herning – Passive houses & hydrogen energy

66 Students' Apartments  
 Builder: Boligselskabet Fruehøjgaard  
 Architect: Aarhus Arkitekterne a/s  
 Engineer: Niras A/S

The first full-scale project in Europe with hydrogen technology and built after passive house standard. The apartments are supplied with renewable energy from hydrogen and fuel cells.

#### Refurbishment of single family houses near Aarhus

Four single family Houses: a prototype house, a senior house and two family houses.  
 Builder: Realea A/S

#### Prototype House

Architect: Pluskontoret A/S Arkitekter m.a.a.,  
 Engineer: Moe & Brødsgaard A/S

#### Example house

Architect: Ravn Arkitektur,  
 Engineer: Rambøll Danmark A/S

Refurbishment of four typical Danish family houses into more healthy and energy efficient "example houses". The purpose of the refurbishment was to show how much the energy consumption can be reduced in a traditional house of the seventies with a budget lower than the price for a new low energy house. Since the tenants have moved in, Aalborg University has measured the consumption and the indoor climate in order to prove whether the improvements have affected the energy consumption as well as the occupants' experience of the indoor climate.

#### Energy-intensive house in Hjørring - transformed into passive houses

Builder: Parvenu ApS  
 Architect: Bjerg Arkitektur a/s  
 Engineer: Frandsen & Søndergaard K/S  
 Suppliers: Rockwool A/S, Rationel Vinduer, Nilan, LK Dafa, and Xella

3 energy-intensive and characteristic houses from the 1920s, 1930s and 1960s are refurbished into passive house standard.

#### EUC Nord i Hjørring

Builder: EUC Nord, Hjørring  
 Architect: Bjerg Arkitektur a/s  
 Engineer: Grøntmij Carl Bro

The first realised passive house school building in Denmark in a significant architectural design. Refurbishment of existing premises and a new 1200 m<sup>2</sup> passive house building.

#### The Comfort Houses near Vejle

Eight family houses by different advisory teams.  
 Builder: Komforthusene A/S, represented by Saint-Gobin Isover a/s / Middelfart Sparekasse / Zeta Invest

#### Architects/ Engineers

- Møller Nielsens Tegnestue/ Ellehauge & Kildemoes,
- Jordan + Steenberg/ Cenergia Energy Consultants ApS,
- Aarhus arkitekterne as/ Tri-Consult ApS,
- bjerg arkitektur as/ Erasmus & Partnere Rådgivende Ingeniører AS,
- Arkitektfirmaet C. F. Møller AS/ Tækker Rådgivende Ingeniører A/S,
- aart as/Rambøll Danmark A/S,
- Westergaard Arkitekter M.A.A. AS/ Hundsbæk & Henriksen A/S,
- +M Arkitekter as/Esbensen Rådgivende Ingeniører A/S

Denmark's ever largest development project within single family houses with extremely low energy consumption. A project that breaks the limits of traditional sustainable single house building and shows that energy optimization doesn't need come at the expense of visionary architecture. Aalborg University has measured the consumption and the indoor climate.