



AiH - Co-operative Society in Hjortshøj

"Andelssamfundet i Hjortshøj"

Update by Judit: 2012 & Anne 2014

Association: AiH is an association, which is open to membership to everybody.
Membership fee: 300 DKK/ year
Members: About 200 adults. Most of them are living or plan to live at the Co-house groups of AiH.
Contact Address: Petersborg, Gammel Kirkevej 116A, 8530 Hjortshøj, Denmark.
Location: North of Aarhus, 15 km from the main central train station. (3rd zone of Aarhus)
Transport: Local train or bus No. 58 (both from Aarhus main train station).
Established: 1986. **Area size:** 22 hectares

Co-house Groups: **There are 8 Co-House Groups:**
Co-house Group 1: 10 families in twin houses
Co-house Group 2: 20 families in row houses
Co-house Group 3: 11 families in single houses and one twin house
Co-house Group 4: 26 families in row houses
Co-house Group 5: 17 families in row houses
Co-house Group 6: 16 houses in row houses - people with disabilities
Co-house Group 7: 12 families in single houses
Co-house Group 8: 11 families in single houses

Common Buildings: There are 4 Common Buildings and an Exhibition & Office Building:
▲ Common Building for Group 1 and 2: *"Snail House"*
▲ Common Building for Group 3: *"Oval House"*
▲ Common Building for Group 4: *"Sunhouse"*;
▲ Common Building for Group 5 *"The fiver"*
▲ Common Building: *"Petersborg"*. Offices include: association for Villagelife (everybody can be a member).
▲ Rehearsal room for musicians in AiH

Residents: About 130 families: about 300 adults and children.

Lifestyle: AiH aims to be an example of a holistic way of living with sustainability as a keyword in respect to both ecological, economical and social aspects of life. This approach is visible in many ways in our daily life, examples are:

- ▲ Houses are built with an aim to be environmentally sustainable (e.g., rammed clay, earth blocks, wood, paper insulation, solar collectors, ovens, paint from linen oil etc)
- ▲ Examples compost or separation toilets
- ▲ Collected rainwater is used in some of the common washing machines
- ▲ Collected urine is to be irrigated to the willows after 9 months of storage
- ▲ Collected grey water is evaporated in a energy-willow plantation
- ▲ Organic farming, with animals like cows, goats and pigs
- ▲ Optional joining of organic vegetable-growing group
- ▲ Optional joining of a car-sharing Association (two cars)
- ▲ Optional common dinner some days a week
- ▲ Fewer people have cars and more people use bicycles and bicycle trailers
- ▲ Building company (Økotech) for environmentally sustainable construction
- ▲ Energy Association providing hot water from a wood-pellet and a wood chip burning boiler (Cogeneration of Heat & Power with a sterling motor, installed in 2007-2009)
- ▲ Common social events and arrangements (New Year, harvest celebration, art workshops etc.)
- ▲ Cultural evenings and days with music, dance, story telling both for adults and children
- ▲ Michels's Eco-green shop, organic ice cream
- ▲ Biodiversity care
- ▲ Gymnastic for different age groups, dancing for children, yoga.

Guided Tour: • Guided Tour for Groups by appointment. Available in Danish, English, Spanish, Hungarian. Typical Tour costs 1,000 DKK. (150 EUR). Lecture with computer projector is also possible.

International Contact on sustainable energy: International Network for Sustainable Energy
INFORSE: Gunnar Boye Olesen (also contact to AiH Energy Association)
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Sense of Community - We have an aim for a balance between personal freedom and the needs of feeling to live in a community. We try to develop conditions, which enhance a sense of community among people of all ages and from different backgrounds. There are engineers, school and kindergarten teachers, biologists specialized in dry lands, edible mushrooms and rain forest, carpenters, social workers, professional circus clowns and an actress of a child theatre.

There are a lot of children living in AiH. They participate in the social events, and are playing a lot with each other. They can freely run and play around in the car-free areas. Moreover, they enjoy to help taking care of animals, picking up eggs, cutting grass, planting, weeding and harvesting. The children often invite their friends from the local kindergarten and the school.

Examples of cultural community events are: the longest, and the shortest day of the year, New Year, summer fest, music festival, child carnaval, harvest and Christmas market.

AiH has a size, which makes it easy to recognize how shared responsibility and mutual participation in the work is a necessity for the well being of the community. It integrates many types of work, and internally manages as many functions of daily life, as it is able to. Common houses provide space for common activities such as celebrations, meetings, discussions and common dinners. Most activities operate on a partially shared economy as a step towards recognizing all work as being of equal value.

Ecology - In support of ecological awareness, within and outside the AiH, our production and consumption are adjusted in all areas - by taking into account of work methods, choice of tools, resource consumption, waste production, and by buying organic food products, if there is a choice. In Denmark, including the local super market, there is a big selection of organic food products like milk and milk products, bread, greens, fruits, meat, and even beer and wine.

Resident Democracy - AiH is an association, which aims to achieve its goals through the principles of democracy and of co-operational organization. AiH has a board, a chairperson, annual and monthly meetings, where the decisions are made. The structure is based on principles of a "resident democracy". The members are linked to a co-housing group, and to the established associations e.g. car sharing, energy, vegetable farming and other activity groups. All the linked associations also have separate boards, chairpersons, annual and monthly meetings where decisions are made.

Current Structures - A total of 22 hectares (ha.), owned by Aarhus town municipality, is available for this project. We have leased 0.2 ha. for our building company (Økotech) and 0.5 ha. was bought for the 1st co-housing group of 10 families. The 1st group built their twin houses in 1991-1996. The 2nd co-housing group of 20 families rent the houses from a Social Housing Association (Lejerbo) who bought 0.7 ha. These row houses were built in 1995-1996. There are 11 families in the 3rd co-housing group who bought 0.5 ha. and started to build their houses in 1998. By 2004, some ten of them are ready. The 4th co-housing group built 26 row houses for renting, which are owned by a Social Housing Association (Ringgaarden) who bought 0.7 ha. The houses were ready in the beginning of 2002. The 5th co-housing groups' row houses were ready in the beginning of 2004 (Andelsbolig).

Many of the activities in AiH are organized as co-owned associations or co-activity groups. Among others are:

- Organic farming with animals
- Energy forests of willows (2 ha.)
- Organic vegetable growing group for own use
- Separate organic gardens
- Building company, (Økotech) doing paper insulation, making unburned clay bricks, importing separation and compost toilets, and offering lectures, workshops, and consultancy
- Energy Association providing hot water to the houses from a wood-pellet, and a wood-chip boiler, co-generation plant under building
- Car-sharing Association (20 persons share two cars)
- Several working days throughout the year when we are building common facilities (e.g. playground, common houses) or taking care of the common areas
- Steering groups where people can organize e.g. cultural events, common eating etc.
- Each co-housing group is structured as a separate unit with their own association, activities etc.

Clay Walls - The 1st co-housing was fascinated by clay and its possibilities in house building. They traveled to France and learned the method of rammed earth walls (50cm thick) using scaffolding system. The clay had to be rammed every 6-8 cm. Unfortunately, this method was not legally standardized in Denmark, so they had to build a 2-floor house (present office building) to prove the safety of this construction method. After the approval of the authorities, three twin houses were built from clay, using this method.

Later on, a Dutch company (Oskam) offered its machine to make hydraulically compressed earth-bricks. Afterwards, these bricks were used to make dividing walls inside the houses. The keeping outer walls were then made from wood and gypsum plates.

All clay used is of local origin from AiH's area. The brick-making machine was placed in AiH and mixed the clay with sand. Some of the bricks used at bathrooms are also mixed with cement. The most popular method is painting water based cellulose glue on the surface. Some people mixed it with color, some like the clay surface natural color.

The use of unburned clay means a large reduction in energy consumption for house building, and since unburned clay dissolves easily, this technique will also improve recycling. The clay gives a good indoor climate. The clay walls regulate the humidity in the house and good for storing heat.

Insulation – The insulation in the walls (20-25cm) and at the ceiling (30-35cm) are using alternatives to rockwool.

In the co-housing group 1, 2 and in many houses of group 3, the insulation comes from granulated recycled paper, proofed with boron salt to protect it from fire hazards, dry rot, fungi and vermin.

At the rammed-earth walls, the walls got a wood net from outside and the granulated paper was sprayed onto the surface mixed with sprayed water, thereby giving it a paper mashie consistency. The insulation was covered with waterproofed paper with holes.

At the houses with wood structures, the granulated paper insulation was sprayed in between two gypsum plates through holes of about 8 cm of diameter and in the ceiling as well. In the beginning, the granulated paper insulation "paper wool" was imported. Today, there are two companies in Denmark, which produce it.

In co-housing group 4 and some houses of group 3, flax is used as insulation. This is more expensive than paper insulation, but group 4 got support for the price difference because they also participate in a research project on flax as insulation.

In all houses, after the insulation comes an air gap which is covered by wood. If the wood is thuja it does not need painting, whereas pinewood needs treatment with linenoil to make it all weather proof.

The foundations were generally made of light concrete blocks. For floor insulation, flamingo plates were used in most places. New features is using seashells, which is a byproduct and therefore it has only the cost to transport it.

Paint - The wooden outer walls are either painted with paint cooked by ourselves or paint based on linenoil bought in town. The homemade paint is a so-called "porridge" paint, which is based on an old recipe with linenoil, resin, rye flour, and whole milk.

Eco-Toilets - To help minimize wastewater, some of the households have either a separation, vacuum or compost toilet. The basic idea is to collect the waste and re-cycle it as compost as an alternative of building up and maintaining huge sewage cleaning systems and pipes.

All three types of toilets separate the urine from the faeces. The urine is collected and kept in an underground tank for 9 months. Then it is used to fertilize the willow plantation or the willow evaporation basins.

The faeces are treated differently for each type of toilet: The separation toilet mixes the faeces with water that goes to the communal sewage system. The vacuum toilet collects the faeces in an underground tank, which is emptied by the town council on a regular basis. The aim is to be able to treat and compost the faeces within AiH in a few years. The compost toilet collects the faeces in an in-house container, which is normally located in a cellar. The container may have different size. Some has to be emptied every third month, some has three chambers and is rotated and only emptied annually. A ventilator in the toilet secures an odorless process.

These toilets are imported from Sweden and Finland by Økotech.

Waste Water - Rainwater is collected in underground tanks and used for washing clothes as well as for watering the gardens.

The grey water of the 3rd group is evaporated in 3 willow evaporation basins (2 of them are closed, and 1 is open, altogether 4 ha.). In the bottom of the closed basins there is a membrane stopping the water to leak away. The willows is cut gradually every fourth year and used as fuel. This concept requires that people only use biodegradable soap, washing powder etc.

Kitchen and House Waste - We compost our kitchen waste at each house and at the common houses as well. The resulting compost is used in the gardens. The chickens eat the remains from cooked food.

Also, we sort and collect papers, and glasses in containers provided by Aarhus town council. There are also recycling locations in the town to place bigger waste, hazardous waste, furniture and clothes.

Biomass - A 180-kW wood-pellet fuelled boiler supplies the central heating for almost all houses. The boiler has an automatic alarm system, which calls in six houses. In addition, many houses in the first and third co-housing group have also wood-burning stoves. In 2003, an additional wood-chip fuelled boiler was installed, which will work as co-generation plant with a 35-kW Sterling motor, producing both heat and electricity. The Sterling motor has been under installation since 2007. The investment is financed 50% by a loan, and 50% by a support from the Danish Energy Agency.

Solar Energy -

Solar collectors to produce hot water: In the houses of the 1st, 3rd, 7th, 8th co-housing group, the solar-collectors on the top of the roofs provide 15-20 % of the heating of the houses. On the roof of 2 houses there are roof integrated solar systems using Aidt Miljø type black plastic tubes, normal water and extension tank. The 4th co-housing group has an ARCON type 80-m² solar collector on the top of their common house. The 2nd and the 5th co-housing group have similarly big ARCON type solar collectors on the top of the row houses.

Solar architecture: The houses are "zone" oriented, meaning that there are less openings to the north, and rooms which don't particularly need heating, such as toilet, bedroom, and scullery are facing north. Facing south are rooms that require heating, like the living room, kitchen, etc. The windows have energy glazing ensuring a high degree of natural solar heating to maintain room temperature. The principle of the passive solar heating is utilized in the glass-covered balconies.

Solar PV panels to produce electricity: There is a 100-m² PV installation on the roof of the row houses of the 2nd co-housing group, and 4 other houses have PV installations. A PV installation provides electricity for the fences for the cows and other animals.

Agriculture

The farm supplies us with meat (chicken, goats and cows) and eggs.

Our organic farming is legally recognized by the Danish Organic Farming Association, and hence, all our products carry the Ø-tag. More over, the organic farming standard has been changed to Bi-Dynamic some years ago.

In addition, the optional organic vegetable farming group, presently joined by approximately 35 households, supplies us with basic vegetables such as potato, onion, carrot, cabbage, leaks etc. Meat and eggs are paid for per kg or per egg, whereas it costs about 1,250 DKK/person/year and 15-20 hours work of planting and weeding to join the optional organic vegetable farming group and in return one may harvest all needed vegetables for free.

Around the lake, there are apple trees, a small half-open woodshed, and a row of small gardens, where families grow their own "kitchen-garden", like spices, strawberries, fruit bushes etc.

There are plans to make the farm area nicer with small roads, signs and trees. The 2.0 ha. energy-willow forest area was decreased by 0.5 ha, and a so called "forest-kindergarten" is established where children can play, learn about nature.

There is a bee-keeping group, which produces honey.

Economics

The houses built in Co-house Group 1, 3, 7 and 8 have been financed by the peoples' own resources with loans from the mortgage institution Realkredit Denmark, and/or the Academics' Pension Fund, Gaia Trust and the Merkur Bank, which is specialised in investing in environmentally friendly projects. These institutes are generally financing 60-80% of the value of the houses. Even though many people do a lot of work themselves on their houses, building in an environmentally friendly manner is loaded with financial hardship in Denmark.

The houses built in Co-house Group 2 and 4 have been financed by bigger Housing Associations, which wanted to build houses in an environmentally friendly way.

Co-housing Group 5 has a cooperative financing structure. The environmentally friendly solutions were also more expensive at these houses than it is an average house.

Future Plans

AiH is a community, which aims to be an example of an environmentally sustainable lifestyle. We hope that people get inspired by the methods we use in house building, in gardening etc. AiH also got inspired by other Danish eco-villages like Hertha. The new development of integrating young handicapped people and establish bakery and shop mirrors this.

In 2012, there are about 400 people (including children), who live in the 120 houses and row houses. Recent developments are the new co-housing groups 6, 7, 8.

In 2012, the new development in that there is an activist coordinator of the initiative WIMBY (Welcome in My Background), which aims to smooth the integration process of the young people living in Bg6. There is Wednesday-Café, and bread baking already now.

We plan to establish workshops, a bakery, a shop and a new stall for the cows. There is a possible support from Realdania Fond to build these, if we are able to raise 2,2 million krone to buy a piece of land for this development.

We have discussed, developed, and formulated our "Vision" of how we imagine the future of AiH. This has been in several steps. There is also a "strategic group", which keeps eye on the "Vision".

The formulation of the "Vision" started many years ago, when we asked an architect group to make a plan in accordance with the "Vision". In that time we wanted to develop the land in the northern part for houses, and we to keep the land in the south for the agriculture, gardens, and recreation. This "Vision" has been presented to the local politicians to influence the Local Plan of Aarhus County for the next two decades.

We have tried to influence the decision-making processes by participating in different democratic forums, like hearings for Local Plans and participating in the arrangements of the "Association Against the Highway".