"Next Generation" 3rd prize 2008 Europe

Self-sufficient rural community, Paimio, Finland

Project data
Type of project: Architecture (housing)
Estimated start of construction: Not applicable

Main author
Name: Heikki Johannes Ritaluhta
Profession: Student
Organization: Oulu, Finland

City/Country: Oulu, Finland

Further author(s) & legal guardian(s)
Further authors: 1. Muntola, Heikki Juho Jalmari, Student, Oulu, Finland; 2. Jakonen, Mikko Jari Tapani, Student, Oulu, Finland

Comment of the Holcim Awards jury Europe

The project’s strengths lie in the promotion of biogas production from household and farming waste in order to provide a long-term viability for small agricultural households in rural areas. Sparse employment prospects in rural areas necessitates that young people abandon their home town environment or commute over long distances to work each day. The basic concept of this project fosters a sustainable way of living outside of the urban fabric by constructing new housing units that are built with local skills and materials that operate autonomously. An attractive design and ample floor space will offer additional potential for soft agro tourism and other small businesses. A considered and well-designed solution to address the globally increasing migration from rural to urban areas that maintains the otherwise abandoned and neglected landscape.

Project description by author

The competition sought innovative and sustainable ideas for developing the Finnish countryside. Our competition entry, "Naturally", is a study of a village community (10 to 15 households) and small satellite farms (5 households, one studied in detail) interacting with the area’s existing agriculture and farming industry (e.g. potato and tomato farm). Size of the community enables eg: self-sufficiency in energy production, basic services and creating employment while at the same time minimizing the need for commuting. The studied area is located in Paimio municipality on the west coast of Finland. It is situated close to the major Finnish city of Turku. Areas is ideal with good traffic connections (Turku, Turku-Helsinki highway, airport, seafront and Paimio town).

Abandoned or unused buildings of the area will be renovated and used for housing or storage along with newly built passive energy houses. All biowaste is transformed into energy at the local biogasworks minimizing waste transportation. Biogas has the most potential as a renewable energy resource of the Finnish countryside in future. Biofertilizer production produces ten times more energy than it uses. In our study community it is used to production biofuel and electricity. District heating as a by-product is used in the village houses and nearest farms. The existing farms use geothermal heating. All transportation is fueled by biogas and it is also used for highway usage.

The small farm studied in detail is situated on the shore of a small pond south-west of a forested hill. House and courtyard buildings together bound a sheltered yard. Cold winds from the north are blocked with fruit trees. Living room opens to the north are blocked with fruit trees. Living room opens to the courtyard and winter garden opens also to the pond functioning as a sauna terrace. The house is a modern application of a traditional Finnish house with its courtyard buildings. It functions individually or as a part of a larger village community. The house has three parts: living, 2 winter gardens, 3 maintenance, storage and sauna. All technical applications including electricity, plumbing and heating is centralized and operated from the masonry core. Stairs, sanitation and kitchen are also part of the core. Thus the plan is open and easily transformable. This reduces building costs and enables spatial changes. The naturally-heated winter garden works as a bordering element between living part and maintenance part and extends living spaces without enlarging heated space. Plants producing oxygen improve air quality inside and courtyard buildings are built in phases and according to need. This reduces energy consumption and lowers immediate building costs.

Relevance to target issues by author

Quantum change and transferability
Combining all appliances in the easy-to-assemble core enables everything around it (spaces, volume, openings and outside walls) to be changed. This is ideal for transferability which is further explained in phases and extensions. Spaces are defined by walls or just by furniture. Winter garden is a flexible energy saving addition to living and maintenance.

Ecological quality and energy conservation
Our proposal aims to enable a sustainable way of living outside of the city by turning household and farming waste into energy. The village exploits renewable energy resources by using biogas for fuel, electricity and heating. Houses are built in accordance to a passive energy concept. Resources are used preserving them eg: grey water (changed into bioenergy or filtrated). Employment inside the community reduces the need to commute. Considering competitions aim of vitalizing Finnish countryside land can be used efficiently. Wooden constructions is a local and ecological material. Wood is easy to maintain and it is renewable. Masonry core reduces the risk of water leaks and stores heat during the day and conveys it during the night. Houses are situated considering alignment with the sun and topography.

Economic performance and compatibility
Biogasworks shares are acquired purchasing a plot from the area. Shareholders get electricity, biofuel, and district heating (dividends). Energy-share can be consumed traded or sold. Operating and investment expenses are covered by selling biofuel. Use of energy efficient building techniques creates savings (life-cycle costs R&D). The community will minimize formative construction changes, and avoid waste taxes which may be implemented in the future. Buildings are built in phases. Thus investments and risks are significantly smaller. The core which can be manufactured as a factory-made element includes all technical applications. Also sanitation and kitchen are combined to the core. Design enables the building to be built on site or manufactured. Renting out auxiliary spaces creates extra income.

Contextual and aesthetic impact
Competition area is situated in the southern part of Finland within agriculture-oriented surroundings. Existing buildings in the area represent traditional Finnish rural milieu. New buildings are influenced by the existing ones and merge to surroundings with materials and form. The modern and sculptural design of the house makes it also possible to place it into an urban environment.