

SUSTAINABLE DEVELOPMENT: 100% SELF-SUFFICIENT BUILDINGS



After having covered some rather outrageous projects in this blog, let's focus on a more realistic undertaking. The project in question is a partnership for research and development that was signed in January by Bouygues Construction and the city of Grenoble ordering the construction of a block of multi-unit apartment buildings.

This experimental project, set to see the light of day in Grenoble in the coming years, will consist of ninety energy and water self-sufficient housing units that will also profit from a waste management and reuse system.

At least that is the aim of Michel Destot, deputy mayor of the city, and Yves Gabriel, CEO of Bouygues Construction, who signed a partnership for research, development, and innovation in order to create a prototype city block of apartment housing in the heart of the currently underway Presqu'île building project.

The concept, developed by the construction company along with the architect Denis Valode (Valode & Pistre Architecte) and dubbed ABC for “Autonomous Building for Citizens,” strives towards complete self-sufficiency for an entire building, or on a neighborhood-wide scale – without any connection to energy and water networks. Water and energy needs will be drawn directly from the surrounding natural environment. Bioclimatic architecture and a passive envelope design will both be implemented. Additionally, the building will feature low consumption amenities and a gray water recovery system. All of these features are set to be automated.

And what is the goal? The project expects to achieve energy savings of 20% and heating savings of 30% in comparison with the reported consumption figures of a similar apartment building.



Solar Panels and Turbines

The project calls for the use of renewable energy while optimizing existing methods such as photovoltaic and thermal solar panels, wind turbines, and water turbines. In winter, the designers intend for supplementary electricity and heat to be provided by co-generation systems. The co-generator will either be fuelled by biomass, or by hydrogen or biogas-powered fuel cells – which is more innovative but non-operational as of now.

Water Self-Sufficiency: Consumers Must Change their Habits

Initially, the program aims to reduce consumption through efficient installations and also by changing the habits of consumers.

The expected result? Savings should amount to 38%: that translates to an average of seventy-five liters of water consumed each day per person as opposed to the current 120 liter average.

Considering that the building is not serviced by the local water supply network, only water from precipitation will be used. This model is based upon an assumed quantity of twenty liters of water being collected each day for each person. The water will be used four times at varying levels of quality: ranging from drinking water, water for washing, water for appliances, and water for outdoor use.

Source: <http://www.globalsiteplans.com/environmental-design/architecture-environmental-design/sustainable-development-100-self-sufficient-buildings-in-grenoble-rhone-alpes-france/>