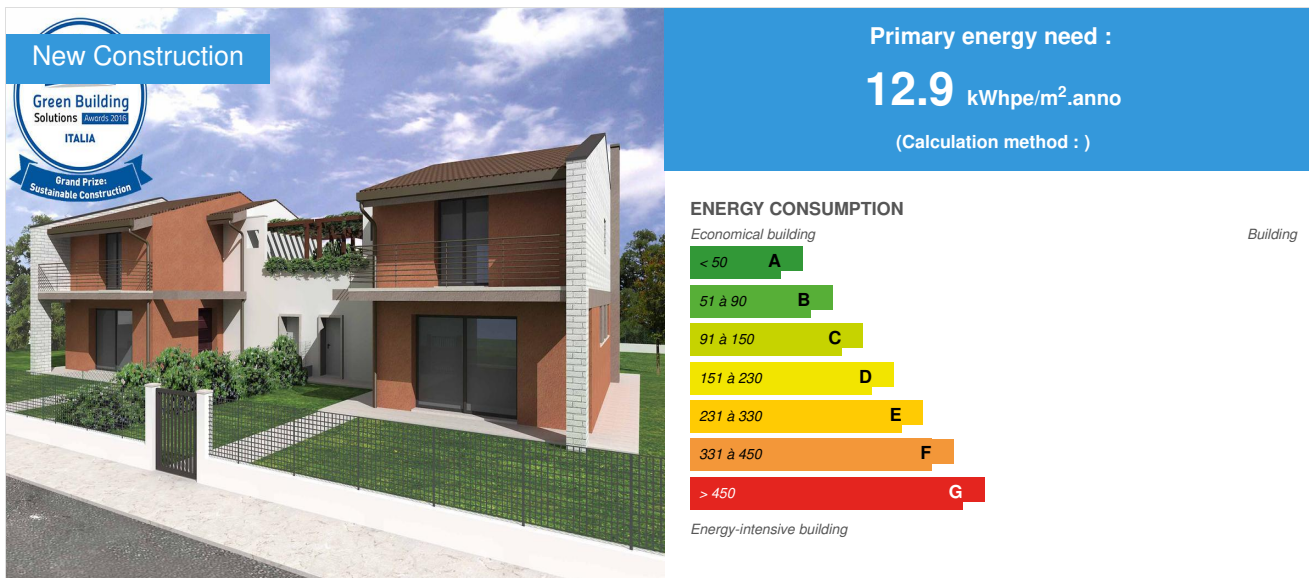


## House of clay "A + House"

by Associazione ARCHIBIODESIGN / 2015-09-15 11:27:54 / Italie / 10836 / IT



**Building Type** : Isolated or semi-detached house  
**Construction Year** : 2014  
**Delivery year** : 2014  
**Address 1 - street** : Lungargine Rovetta, 28 35127 PADOVA, Italia  
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 233 m<sup>2</sup>  
**Construction/refurbishment cost** : 280 000 €  
**Cost/m2** : 1201.72 €/m<sup>2</sup>

**Certifications :**



### General information

The project began as an applied research for the construction of a low-energy building in sustainable building certification. This is the construction of a demonstration PROTOTYPE with the purpose of school-yard for the validation of the integrated building system and monitoring of the expected results. The starting point is the design of a semi-detached building with low energy consumption (class A +), through the techniques of bio-architecture and eco-building, which could provide a repeatable model certificate. The expected average annual consumption is about 12.9 kWh / m2 for heating and DHW. Features: - high level of bioclimatic design; - all natural materials; - healthiness in the environments for the absence of VOC; - Excellent and consistent level of temperature and humidity; - building low environmental impact; - very low CO2 emissions during construction and operation; - attention to the health of those who live there, so high quality of life. The PROTOTYPE DEMONSTRATION SYSTEM "A + HOUSE" is monitored and visited at the PARCO FENICE DELLE ENERGIE RINNOVABILI - PADOVA - Lungargine Rovetta 28. The prototype provides a comparison between traditional building system and the system in Sustainable Construction "A + House" low consumption. Project promoters: A.T.I. "A + House" - Padova: - Construction Company Surveyor. Giovanni Carlo Basso Srl, Cittadella (PD); - Vettorazzo Costruzioni srl established in Padova; - Galiazzo Brothers Construction srl based in Ponte San Nicolò (PD); - Construction company construction AI Pozzo srl, based in Pozzonovo (PD). Intervention financed by ROP 2007-2013 - Veneto Region - part of ERDF AXIS I, Bando business networks DGR 1753 of August 14, 2012.

## See more details about this project

<http://www.archibiodesign.org/cantieri/body.pe?clistid=cantieri&cid=53>

## Data reliability

3rd part certified

## Stakeholders

### Stakeholders

Function : Developer

A.T.I. A+House - Padova

Function : Designer

Arch. Francesco Gramegna

info@fgbstudio.it, Via J. Crescini 104, Padova (Italy)

<http://www.archibiodesign.org>

Function : Construction company

A.T.I. A+House - Padova

### Contracting method

Build and sell construction

### Owner approach of sustainability

The construction of the demonstration prototype has allowed us to verify the actual feasibility of the system "Sustainable" identified and ascertain the technical realization and installation of materials and installations. The realization of the prototype was carried out by the promoting companies that are part of ATI by directly to their workers and technicians in collaboration and with the support of external consultants (Foundation Phoenix, Archibiodesign: arch. Francesco Gramegna) and specialist firms play a role for technology transfer. The construction of the prototype has been in effect an educational site during which businesses they were able to "learn" the use of new technologies planned for the "Form A + House" and compare actual costs in order to then validate the system. The prototype also allows to obtain comparable monitoring results and real (between the two identical rooms). Through the construction of the experimental prototype it has taken place, and will have a formative level in the future, possibility of: - Involving businesses and operators in the new form of sustainable construction of buildings; - "Touch" at any time the result of "constructive process model sustainable" and to personally compare the differences and advantages, the cost-benefit relation; - Organize teaching and training activities for businesses, artisans and professionals.

### Architectural description

The projects are designed with the intent to create a building through the techniques of bio-architecture and construction methods prescribed by the guidelines standards of Veneto Region for Sustainable Building. The architectural design is aimed to obtain orientation optimization, favoring the direct and indirect solar gain. The shape is designed to allow lighting of almost all four sides of the casing main body inhabited. The new construction work affecting a vacant lot on which it is possible to build a residential building on two floors. The building consists of a single block with two separate accesses, without in common use, and comprises two housing portions with respective garages, thus constituting a modular form in line. The prototype built consists of two separate small artifacts (ml. 5x6 hm. 3.2), with the same orientation and morphology and reproducing all the construction and bioclimatic characteristics of the detailed design of the repeatable living module. The two products have different features, one in a traditional building and one a search result in the sustainable system, the sustainable building is class A + and its consumption will be compared with each other artifact. The two rooms were used as classrooms.

## Energy

### Energy consumption

Primary energy need : 12,90 kWhpe/m<sup>2</sup>.anno

Primary energy need for standard building : 90,12 kWhpe/m<sup>2</sup>.anno

Calculation method :

CEEB : 0.0003

### Envelope performance

Envelope U-Value : 0,20 W/m<sup>2</sup>K

#### More information :

The masonry in elevation are composed of raw clay blocks sp. cm. 12, consist of a double wall sp. cm. 12 + 12 with a third cavity for containing the thermal insulation of the thick hemp panels. cm 16. The outer surface is plastered with natural hydraulic lime layer and final smoothing with plaster. Inside the wall it is covered with raw and final smoothing clay plaster. The two walls were laid so as to contain the bearing structure with wooden frames and were anchored with steel hooks to the same structure in accordance with the earthquake regulations.

## Renewables & systems

### Systems

#### Heating system :

- Heat pump
- Low temperature floor heating
- Solar thermal

#### Hot water system :

- Heat pump
- Solar Thermal

#### Cooling system :

- Reversible heat pump
- Floor cooling

#### Ventilation system :

- Natural ventilation

#### Renewable systems :

- Solar photovoltaic
- Solar Thermal
- Heat pump

Renewable energy production : 80,00 %

### Smart Building

#### BMS :

Home automation system for automated management of the equipment and the electrical switchboard with electronic media in manual mode, and programmable load control and management of localized climate control.

## Products

### Product

Geosana

Geosana

Associazione Archibiodesign +39 0498753913

<http://www.archibiodesign.org>

#### Product category :

The Geosana brick is made from a compound of clay, sand and various natural fibers, called Krioton.

Use of this product allows the respect of human and environmental health, allowing to achieve a high degree of well-being and quality of life.



Canaton

ton-gruppe

ton-gruppe +39 0471 888 000

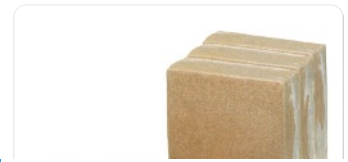
<http://www.ton-gruppe.it/>

#### Product category :

It is a insulation mat of hemp fiber-bonded three-dimensionally, additivated with cornstarch. The thermal conductivity varies between 0.039 and 0.040 W / mK and

densities are available for 40 or 100 kg / mc.

Panel totally renewable plant fibers with gray energy cycle (LCA) and minimum environmental impact and energy incorporated almost 0. Recyclable material or classified as biodegradable waste. No VOC emission.



## Costs

### Construction and exploitation costs

Reference global cost : 250 000,00 €

Renewable energy systems cost : 10 500,00 €

Reference global cost/Dwelling : 250000

Cost of studies : 35 000 €

Total cost of the building : 280 000 €

### Energy bill

Forecasted energy bill/year : 900,00 €

Real energy cost/m2 : 3.86

Real energy cost/Dwelling : 450

## Urban environment

suburban area of completion, already urbanized.

### Land plot area

Land plot area : 750,00 m<sup>2</sup>

### Built-up area

Built-up area : 26,00 %

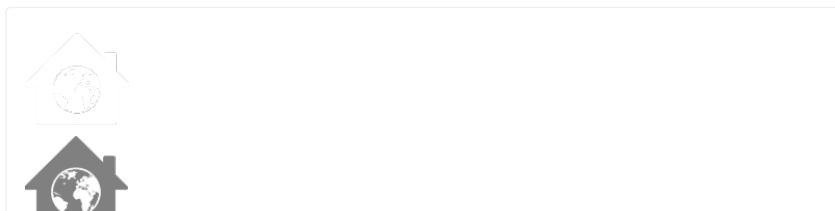
## Building Environmental Quality


### Building Environmental Quality

- indoor air quality and health
- acoustics
- comfort (visual, olfactive, thermal)
- energy efficiency
- renewable energies
- maintenance
- building end of life management
- products and materials

## Contest

### Building candidate in the category



  
Low Carbon

**SOLUTIONS** Awards 2016

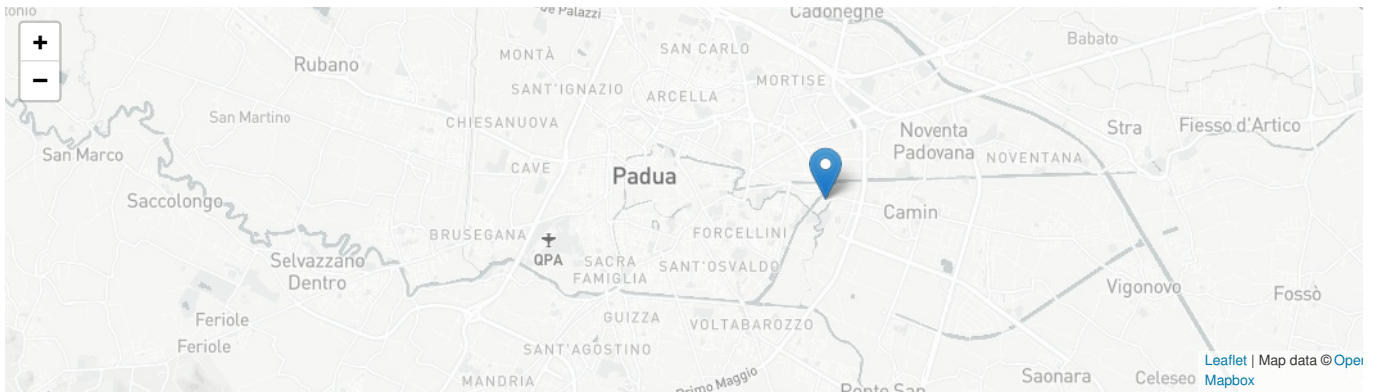
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Sustainable Construction Grand Prize



Users' Choice Award



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