



# 6<sup>th</sup> HEALTHY HOUSING AWARDS

2011/2012







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6<sup>th</sup>

HEALTHY HOUSING AWARDS

# PRESENTATION

## HEALTHY BUILDINGS FOCUSED ON PEOPLE

We live in a world of constant change; a fast, technological and competitive world where these characteristics are twofold, equally attractive and innovative as well as dangerous. This is where teaching plays a fundamental role, changing society through the training of conscious future professionals with transformative ideas.

In addition, when teaching in Higher Education joins initiatives such as the International Marjal Healthy Chair of the University of Alicante, this synergy is greater allowing us to create the future professionals who will change the world focusing on people.

Here is the crux of the matter. Focus on people is to generate healthy buildings. It is to create useful and real spaces where change, speed, technology and competitiveness positively reinforce the essence of that Architecture. This essence allows the integration of Architecture in the environment and its function to improve the quality of life of people, understanding their needs; in short, to «make sense».

Frank Lloyd Wright said that «There are so many different houses as people» and today, almost 120 years later this statement has more «sense» than ever. Therefore, this Chair becomes the perfect platform to show our students the importance of understanding the needs of people, taking into account their current and future expectations and how to maximize their quality of life through Architecture.

Yeah, that makes «sense».

Lola Andújar  
University of Alicante

6<sup>th</sup>

HEALTHY HOUSING AWARDS

# ACKNOWLEDGMENTS

The 6th Healthy Housing Awards are the product of the effort and dedication of all the students, teachers and contributors.

All the works compiled in this edition were made possible by all the participant students and the lecturers from the University of Alicante and the Hogeschool van Amsterdam.

Thanks are also due to the Fundación Marjal and the representatives of Grupo Marjal for their support.

# THE COMPETITION:

## REQUIREMENTS

The project requirements are free although the house must have all the rooms needed for its proper functioning. The built area must be around 200m<sup>2</sup>.

The plot must have 800 m<sup>2</sup> and the house must be placed isolated in the centre of it. The constructive systems applied in the project must have a high degree of industrialization and using prefabricated solutions mainly. Sustainable and healthy solutions must be considered. The proposal must include the plot-level gardening design, water areas and other uses. Alternatively, the proposal can design fifteen houses complex where the plot of the project is located, considering the above mentioned area, 800m<sup>2</sup>, for each plot.

The influence of the location in the final design of the building makes the Healthy Awards require projects to be sited on special locations. Views, orientation or proximity to special environments could be the factors that condition the choice of the and the building designed. Gardening and water facilities can be a design tool inside the project towards sustainable solutions.

The social group to whom the project must be addressed are European residents that use these houses for long periods, as a summer house for example, and it must be sufficiently flexible for receiving visits from familiars during the year.

Due to the international nature of this competition, all the proposals must be written in English.

## PARTICIPANT TEAM CHARACTERISTICS

Participants must work as a team, with a minimum of two members. Proposals developed by students working individually will not be accepted. Teams will consist on the following members:

1. At least one student of Architecture.
2. The participation of students from Technical Architecture, Civil Engineering or Building Engineering will be specially considered.
3. Students from other specialities, Informatics, Chemistry, Financial Studies, Sociology or Telecommunications can be accepted but this option is totally elective. Consultations done to specialists of these fields will be specially considered.



## DOCUMENTS TO PRESENT

The documents to present will consist on the architectural part of the project (Basic Project), location plan, plot plan, different level house plans, elevations, sections and perspectives. An estimated building cost must be presented. This budget is limited and the proposed solutions must be affordable by a middle-class owner.

The proposals must justify relevant aspects related to sustainability:

- Energetic Efficiency.
- Efficient water use.
- Domotics applied to sustainability.

Other documents not listed above can be included in the proposal.

All the documents needed to explain the proposal must be gathered in a maximum of three A1 panels fixed on a rigid support. A model will be specially considered.

## PRIZES

Two categories of prices are defined:

1. One prize of 1.000€ and a diploma to the project that better reflects design construction and sustainability.
2. Four prizes of 500€ plus a diploma for the best four finalist projects.

Projects intellectual property will belong to the authors. If the International Marjal Healthy Chair or Fundación Marjal would like to use any idea defined in the winning proposal or any other, in whole or in part, it will be always used under permission of the authors, signing an agreement, where the economic bases and responsibilities assumed by the team will be set out.

A final meeting in Alicante is planned to discuss the results with the participation of all the participant teams.

## PARTICIPANTS:

### UA:

BARRERES SANCHEZ, Beatriz

BARTULA, Aneta

BAUSA MARTINEZ, Carlos

GARCIA GADEA, Alejandro

GARCIA POVEDA, Juan

GARTNER, Alexander

HARMANCI, Baris

HEMMENDINGER, Clea

JIMENEZ BENITO, Agustín

KAURIN, Daniela

KREMITOVSKA, Sona

LUDWIG MUÑOZ, Cristian

MORILLAS ALVAREZ, Belen

RAMOS MIRA, Mary Pepa

SARI, Didem

SCHIAVINATO, Barbara

SELVARATMAN, Janakan

SHAKUR, Khair

SUBCZINSKI, Stefanie

TEJEDA TEJERA, David

VILLAR PASTOR, Jose Luís

VAZQUEZ LOPEZ, Marina

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VAGEBUUR, Timo

ALBADALEJO SOLER, Jesús

RÜZGAR, Yagmur

KREAWCZYNSKI, Michal

ADRIAANSE, Robin

LUBBERS, Maarten

MEIJER, Max

MADDER, Mick

TEJEDA, Pablo

WIJNS, David

JIMÉNEZ, Marina

VAN RAALTE, Raalte

VAN ROSMALEN, Ilse

COLOM JOVER, Francisco

SLYSZ, Izabella

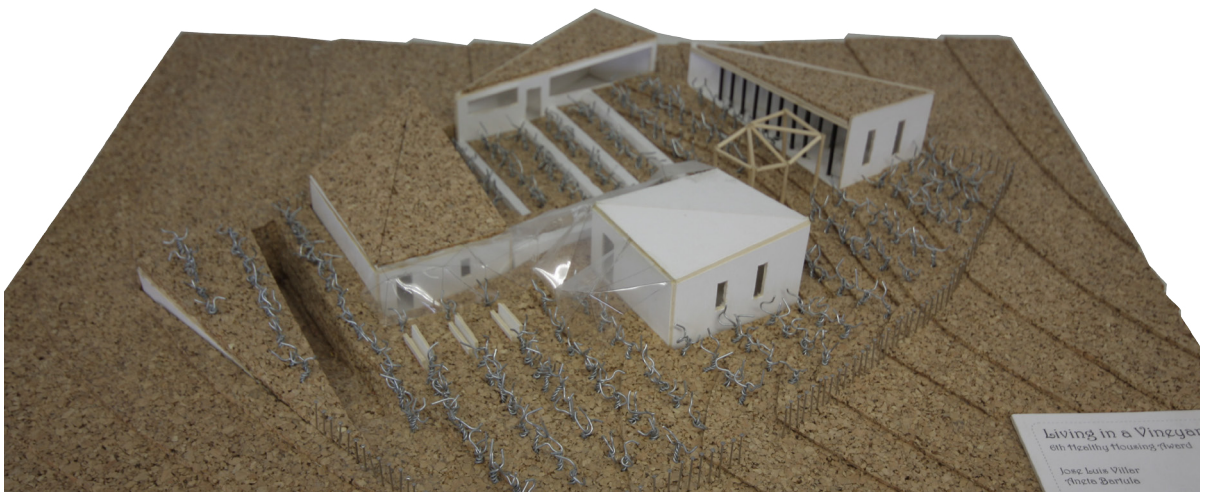
HEIJNEN, Stef

# LIVING IN A VINEYARD.

//1st PRICE

VILLAR PASTOR, Jose Luís

BARTULA, Aneta



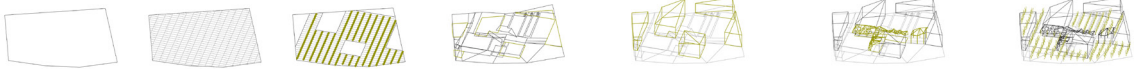
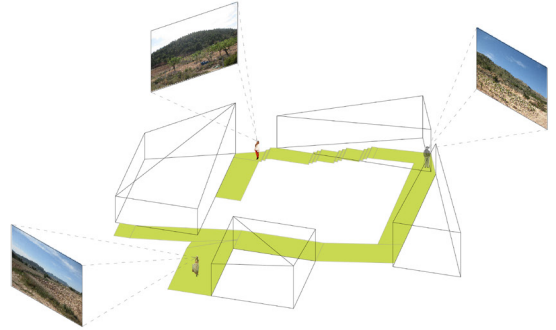
# Living in a Vineyard

6th Healthy Housing Award

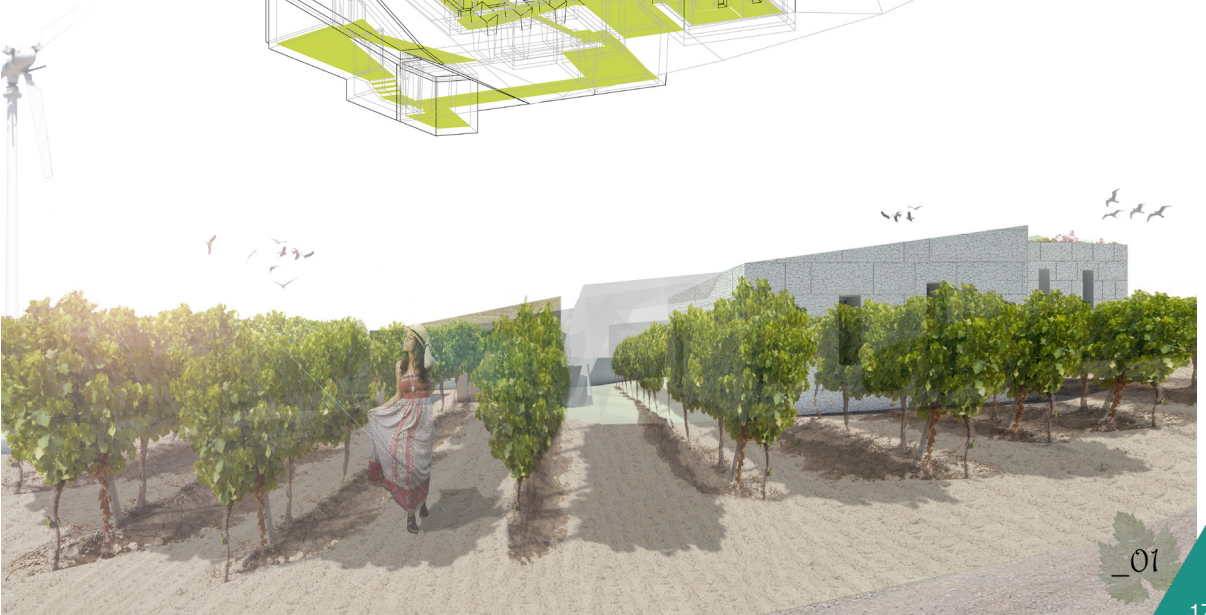
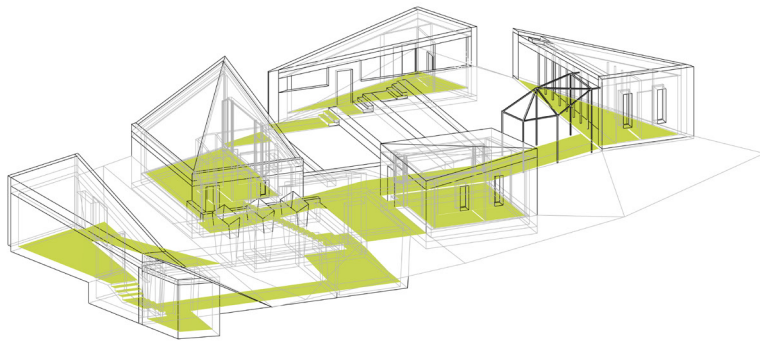
Jose Luis Villar Pastor  
Ángeles Bartula



The project tries to develop a vineyard in an 800 sq meters plot that allow the inhabitants produce grapes and wine for their own use. The house is located in Las Romeros, a town of 2500 inhabitants in the south-east of Spain, in the region of "Medio Vinalopó" in Alicante. The plot is situated 20m away from the city center in a very quiet place protected from the sun in the last hours of the afternoon: by a hill and open to the north and south sights.



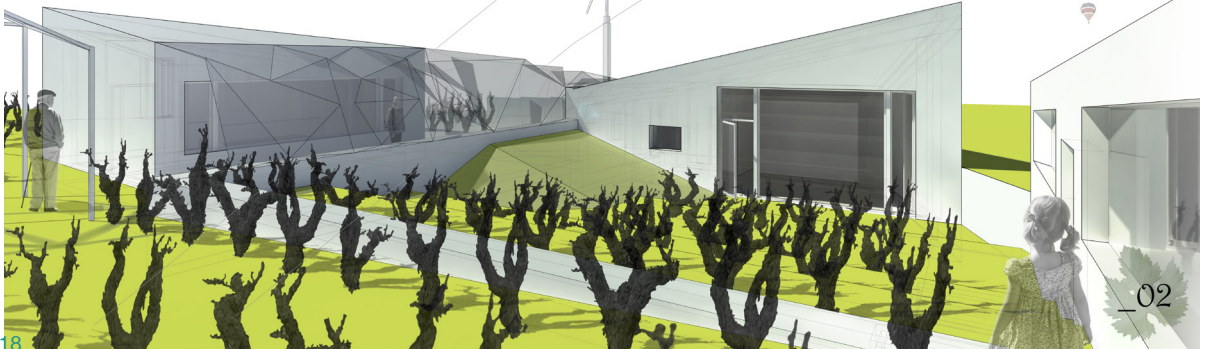
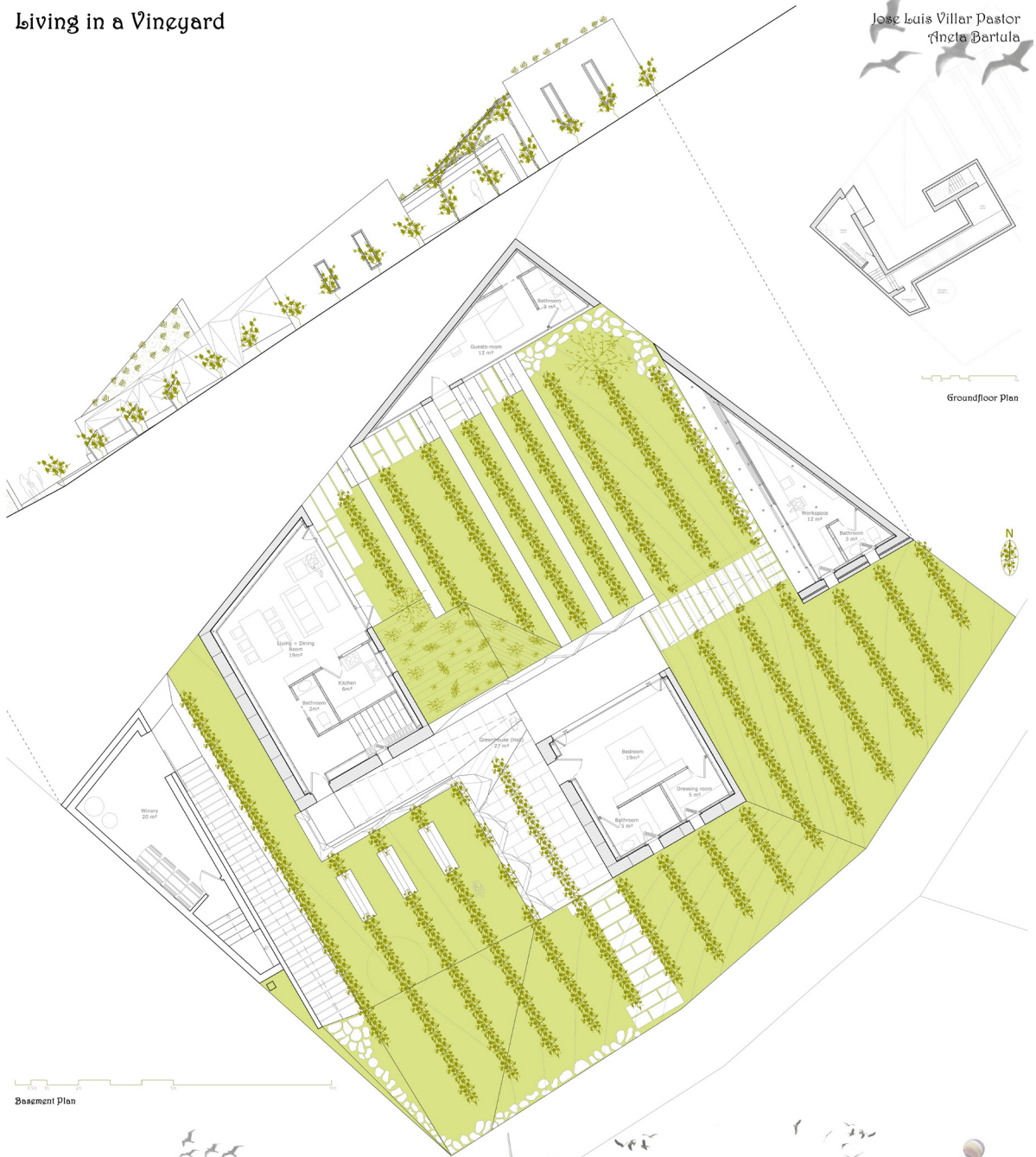
First we draw the lines of the vineyard, separating each line 2m and each vine (in its line) 1m. Then we make the holes in the vineyard to insert the different volumes containing the lines of the vines. In order to make the most of the sun we start changing the heights of the terrain and raising the volumes making the vines to receive the most sun per day. Depending on the situation of each vine we are going to develop different type of plants, and different ways to make them grown according to the shadow they receive and the space they have to let their roots develop. In the end we insert the greenhouse and eliminate the vines that don't let the people to walk through.





# Living in a Vineyard

Jose Luis Villar Pastor  
Áneta Bartula



# Living in a Vingyard

## 6th highly housing tower

Jose Luis Villar Pastor  
Aneta Bartula

02. Waterproofing - Water resistant cement (2 cm)
03. Waterproofing - Bituminous waterproofing in two layers (LBM SBS 40-PP + LBM SBS 50-PP) applied to the base
05. Waterproofing - High density polyethylene film
06. Waterproofing - Hydrorepulsive joint for concrete structures in high density polyethylene
09. Vertical Structure - Steel pillar HEB-120 protected against fire by vermiculite coating
11. Roof Structure - Slab in reinforced concrete (20 cm)
16. Foundation - Foundation slab in reinforced concrete (30cm)
17. Base for foundation - lean concrete (5 cm)
18. Thermal insulation - Rockwool insulation (4 cm)
19. Exterior wall layer - Gableon wall composed by baskets in galvanized steel mesh filled with remains of white marble 0'15 cm (30 cm)
20. Exterior wall layer - Gableon wall to hold composed by baskets in galvanized steel mesh filled with remains of white marble 0'15 cm (15 cm)
21. Gableon wall structure fixation - Square in galvanized steel Ballon
22. Gableon wall structure - vertical profile steel profile C in galvanized steel (5x5cm)
23. Gableon wall structure - Horizontal profile in galvanized steel
24. Gableon wall fixation - Anchor C Profile in galvanized steel to hold the gableon bases
25. Liner construction - Gableon reinforced with steel rebar
26. Slope for drainage system - lean concrete (10 cm)
27. Drainage - Perforated pipe in high density polyethylene (Ø 10 cm)
28. Draining material - Grava 25/32
29. Filtration layer - Non-woven bonded by needle punching Geotextil of 200 g/m<sup>2</sup> composed of polyester short fiber
30. Interior wall Layer - Double gypsum-cardboard panel (2,5 cm) fixed with screws to the substructure
32. Interior wall structure - steel profile LW in aluminum (2 cm)
33. Interior ceiling structure - ceiling steel profile W in aluminum fixed with screws and expansion anchors
34. Technical floor structure - wooden beam (5 x 5 cm)
40. Floor finishing - OSB Panels (2 cm) fixed to the floor structure with screws
41. Skirting board - OSB pieces (2 cm) fixed to the wall structure with nails
46. Beam Material - Portland Cement Mortar (4cm)
48. Beam Connection - Drainage element of recycled expanded polystyrene produced without CFCs
51. Plant layer - Vegetal substructure (thickness minimum 20cm)
52. Filling material - earth
53. Protection of waterproofing - dimpled membrane
56. Wooden beam - 5 x 7 cm
57. Adhesive material - mortar for stones
58. Pavement finishing - stone slab (4 cm)
59. Base for pavement - concrete (10 cm)
61. Skirting board - stone slab
62. Steel profile
63. Finishing panel of zinc wall
72. Interior Ceiling - Simple gypsum-cardboard panel (1,25 cm) fixed with screws to the substructure
74. Waterproofing - Simple bituminous waterproofing layer (LBM SBS 40-PP) applied to the base
75. Specialty Glass 4+4 joined with transparent PVB
76. Glass Support - Profile in steel
77. Skylight Structure - formed steel in cold steel (15mm)

The house is conceived from the contracting point. In this project the stone that is the main industry and economical resource in the town defines the image of the house. We decide to use the marble stone in different ways along the house: Polished in the east facade, that are thinner than the south walls that are conforming by gableons filled with stone; in the roof of the bedroom we use big pieces of stone that allow us working also the waterproofing going the stone a primer uncoloured painting. In the end we use the marble in irregular shapes as external pavements.

The triangular volumes have a concrete structure that solves structure and facade by holding from them thinner gableons. The main volumes are supported by a steel structure with concrete foundations dividing the function structure-facade.

We also use the gableons to contain the earth in the central space and in the ramps, offering constructive continuity between all the part of the house trying to create an image for the whole house.

The greenhouse is solved in glass supported by an structure in stainless steel that creates the heart of the house but in a clear way, allowing the sunlight cross the space in an inorganic way.

The holes in the volumes are solved reinforcing the casions with steel rubers joined making ladders of its height that can support the weight of the stone.

This reinforcements are located at least 3 cm inside the gableons in order to being hidden by the stones creating a continuous facade.

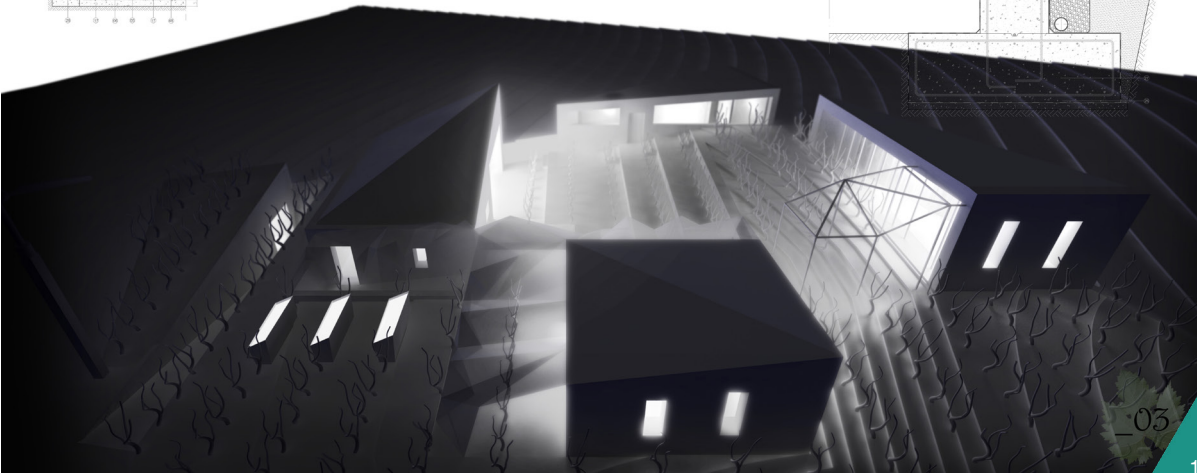
The waterproofing are solved using a waterproofing mortar layer inside the gableons, its the gableons have 50 cm width is enough wide solution to protect the house from the water, in the spaces in contact with the terrain the base turns into reinforced concrete.

The green roofs are supported by an structural support in reinforced concrete and the gableons in this case have only 15 cm with soil are sustained by an steel substructure welded to some sheets soaked in the concrete.

The earth is sustained by a drainage layer in polystyrene allowing us to draining sloping green roofs.

In the section we can see the groundfloor connection between the two cellars, one in which the family produces the wine and the space where the bottles are stored, connected with the kitchen-living module. With this solution we can maintain the best conditions of temperature and humidity for the production and conservation of the wine and offer us a free space of cooling in summer when we let the air enter into the living by creating an air current from the groundfloor.

This space is illuminated by skylights that grow form the earth as the vines that conform the house structure and focus light to the ground.



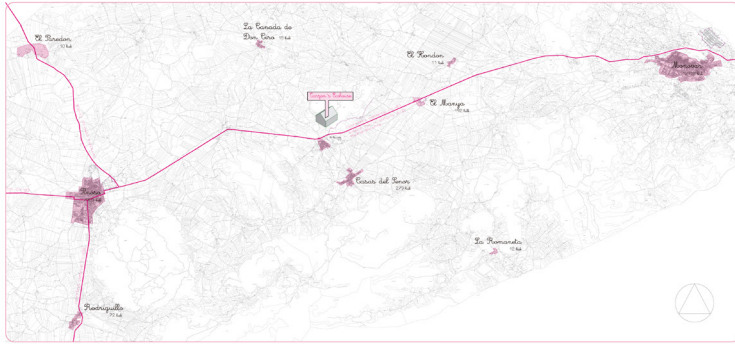


# TARZAN'S ECOHOUSE.

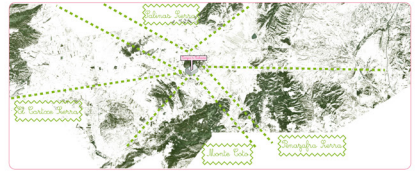
//MENTION

RAMOS MIRA, Mary Pepa

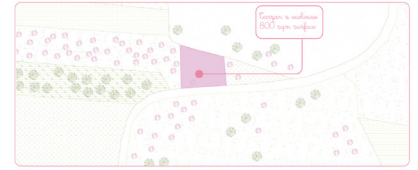




Location in the province of Alicante (Spain)



Views from Tarzan's Ecohouse (Chineset surroundings)



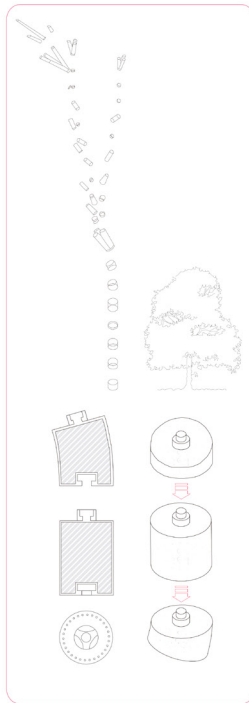
Tarzan's Ecohouse plot (800 sqm)



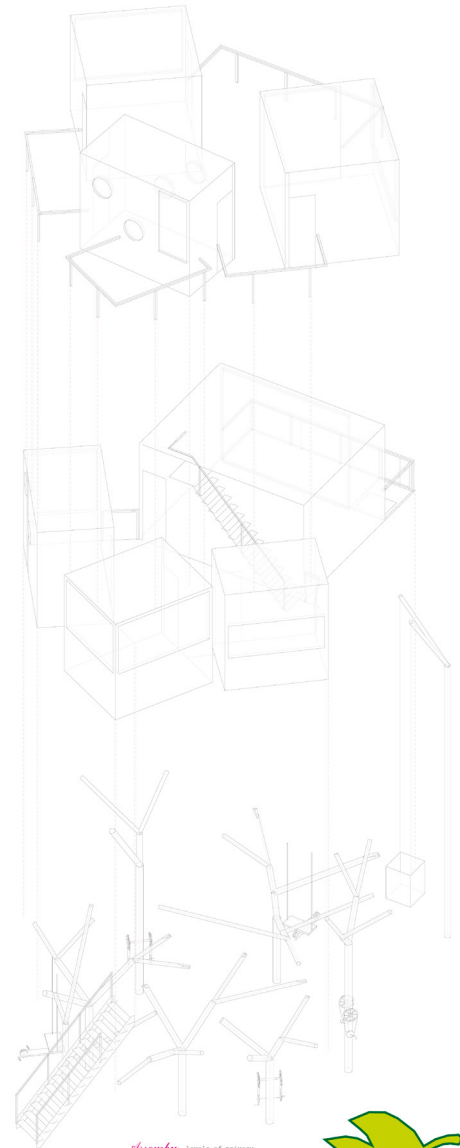
North elevation  
stairs access  
scale 1/75



South elevation  
elevator access  
scale 1/75



Detail of the structure



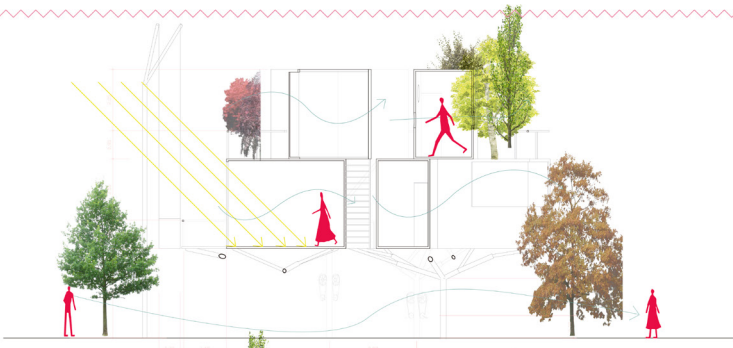
Assembly levels of privacy



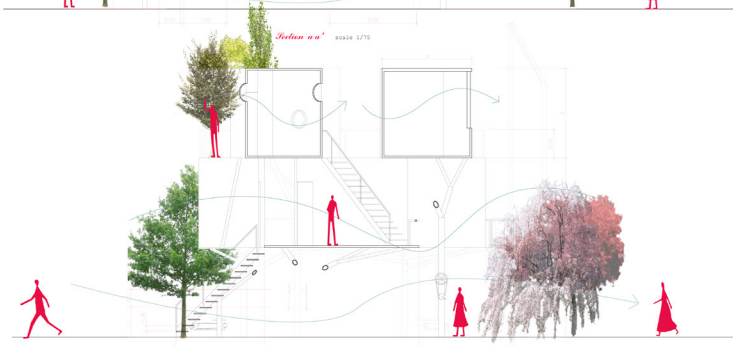
Tarzan's Ecohouse  
Mary Pepa Ramos Mira



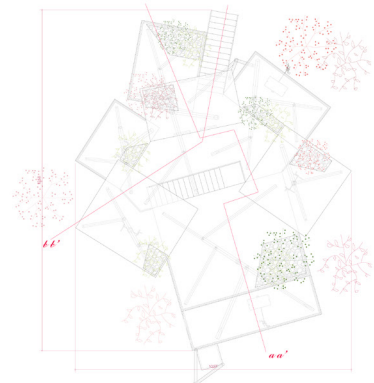




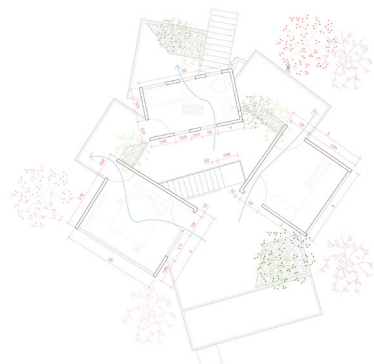
Section a-a' scale 1/75



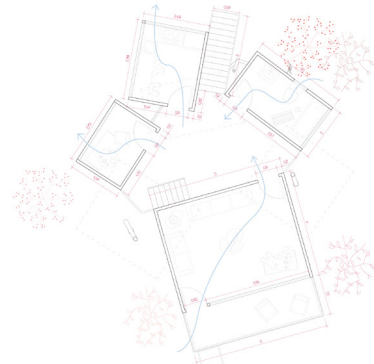
Section b-b' scale 1/75



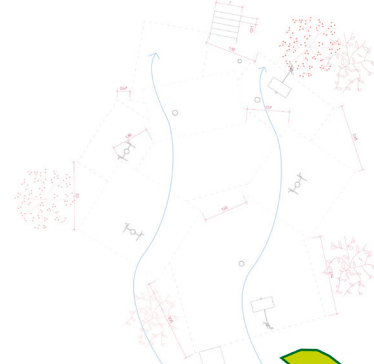
Basement Floor scale 1/75



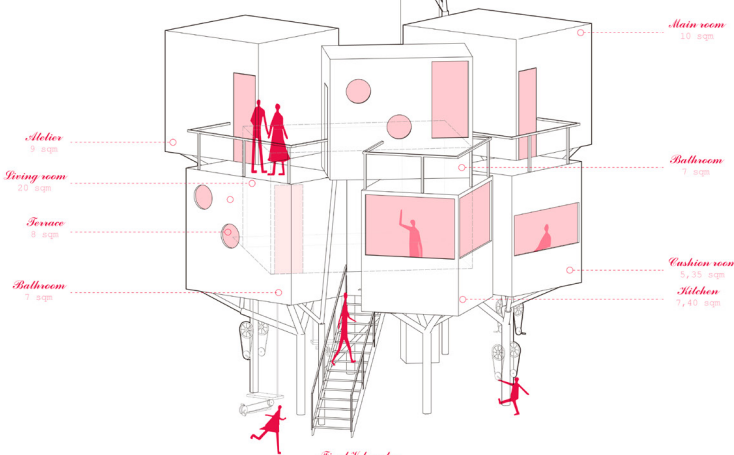
Second Floor scale 1/75



First Floor scale 1/75



Ground Floor



- Attics 9 sqm
- Living room 25 sqm
- Terrace 8 sqm
- Bathroom 7 sqm

- Main room 10 sqm
- Bathroom 7 sqm
- Cashion room 5,35 sqm
- Kitchen 3,40 sqm

Final Volume



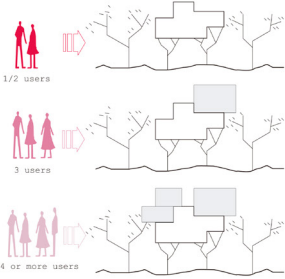
Tarzan's Ecohouse

Tarzan's Ecohouse  
Mary Pepa Ramos Mira





**Adaptability**



**Social sustainability**

**Adaptable for different users:**

The Ecohouse is thought for one elder person, or a couple. Therefore it has the modules needed to satisfy their necessities.

But if the number of people in the family changes, or they need more modules, the house is able to have more modules attached so it can adapt itself for the new situation.

The modules can be also removed, so the Ecohouse is also Socially sustainable because it changes with the life cycles of the family that lives there. So it is adaptable in more than one sense.

# Carzan's Ecohouse

Mary Pepa Ramos Mira

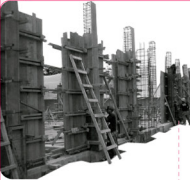
The posts in here explain the sustainability criteria that has been followed in the process of thinking and creating the Ecohouse. It has been designed to be adaptable for different users that change their families or lifestyles. It's mentioned to be built in a modular way and transported to the plot. But as a tree, it has its own trunk where it is supported, so it reduces the footprint on the environment. And it can be disassembled and assembled again, anytime and anywhere.

Apart from this building features, its orientation has to be with the more sunlight it can get and taking advantage of the main winds, so it favors the crossed ventilation.

Tarzan's Ecohouse recycles the grey waters of the house so they can be reused for irrigation of the orchard and close fields.

And as an innovation, as it is meant to be for elder people, it includes the gerontogymnastics, a way to exercise but producing energy to supply the house.

**Recycled materials & Prefabrication**



**Prefabrication**

**Economical sustainability**

The Ecohouse will be built in pieces, as it is modular, in the atelier, and be built in situ as each modul arrives. The structure will arrive first and afterward, with a crane, the first floor modules will be placed and when that is done, the second floor ones.

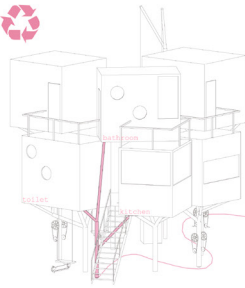


**Economic + environmental sustainability**

**Recycled materials**

FORMWORK will be reused from other building constructions and used as a formwork material in the buildings. It will be washed and painted for the structures.

**Grey waters treatment (Recycling)**



**Economic + environmental sustainability**

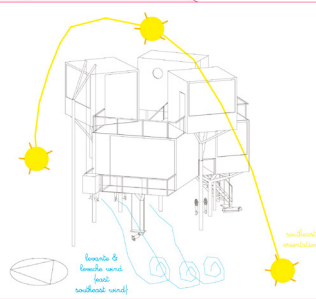
**Grey waters treated**

System for treating the waters that come from the sinks, showers or washing machines and used them for the irrigation of the orchard plants.

The small tanks act as a filter to debug the grey waters.



**Sunlight and crossed ventilation**



**Sunlight**

**South-east orientation**

The houses oriented to the south-east, so we get the maximum sun light and it gets warm easily.

**Crossed ventilation**

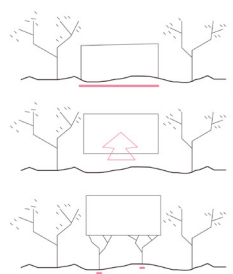
**South-east orientation**

We use the main winds, generate and improve to improve the ventilation of the house with crossed ventilation.

**The less footprint**



Living UP in the trees!



**The less footprint**

By bringing up the construction we leave the less footprint on the landscape. As well as the house will be built prefabricated, the building debris will be less.

**Environmental sustainability**

**Ecohouse - Energy!**

**Energy Production**



- Exercise bike 100/200 W
- Exercise wheel 50/100 W
- Photovoltaic cells 0.612T 50/100 W

**Energy Consumption**

- Mechanic transmission chains
- Pressure pump
- Power transformer
- Power Storage
- LED tubes..... 200W (1600 24W/12W/8W)
- Light bulbs..... 119W
- Moist..... 50W

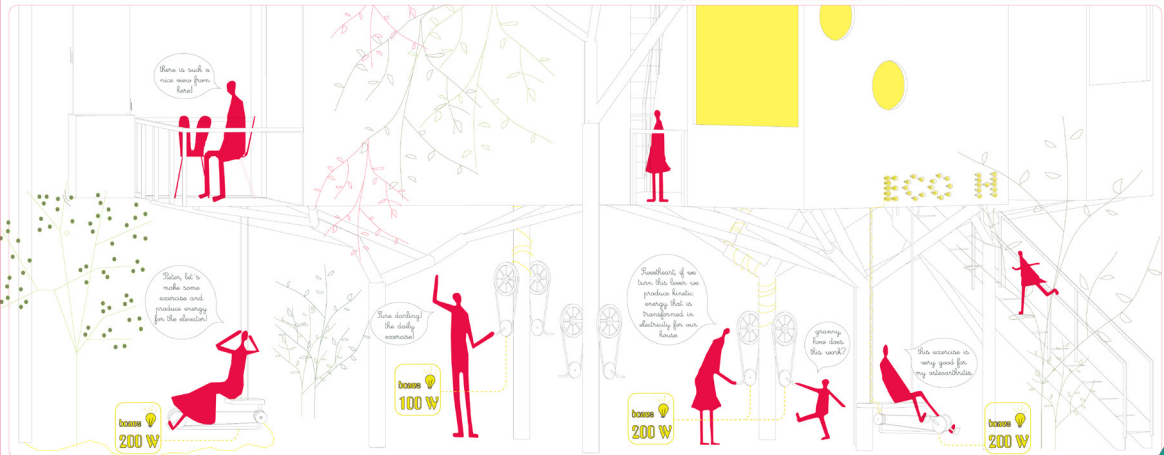
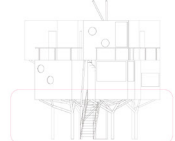
**Economic + environmental sustainability**

**Gerontogymnastics**

The gerontogymnastics are machines for physical exercise thought for older people.

Through this system, they can daily stimulate their joints and muscles, while generating their own energy.

Self sufficient



# AMY THE WINEHOUSE.

SHAQQUR, Khair

GARCÍA, Juan Antonio

SCHIAVINATO, Barbara



Singular Closures and Roofing Projects.  
 University of Alicante, Winter semester 2011/12.

Professor, Antonio Gallano Garrigós  
 Sponsor, Grupo Marjal

# Design of Singular Building skins Healthy Housing Award

## 1 Situation

The first thing we had to do was finding the right place, and in our case it was

The place near **Novelda**, exactly in the road that connects the city with **Aspe**, which is a town in the middle of **Vinalopó**. Immersed in rural life, the house can enjoy a beautiful landscape and enjoy the tastes and smells of ripe fruit.

we create a proposal that contains aspects relating to leisure, public space and winemaking tradition with aspects of production, all with aspects related to tourism.

This is again reviving the old values recovering territory already owned and the coastal tourism and urban planning have been devouring the territory remaining subdued. **The cultivation of vineyards and the changing landscape must be re-generated in place take center stage.**

### Why Novelda and Aspe ?

**Novelda** represents one of the major centers of the marble industry and its agricultural is based on the cultivation of plenty of vineyards, almond groves, olive groves, and fig plantations. The architecture in Novelda is inspired by **Gaudi** and there is a beautiful collection of buildings with historical value that combine the Islamic influence of the Moors.

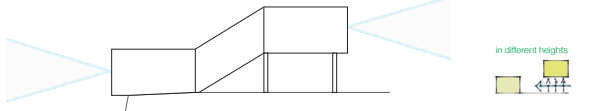
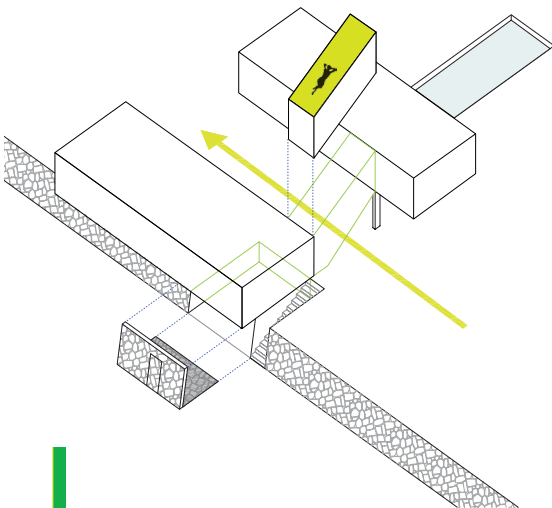
A few kilometres outside the town towards the North West is the spectacular **Mola Castle**. It sits atop a fantastic picturesque hill and can be seen from miles around. The fiestas that are held in Novelda are fantastic to observe. The main Fiesta, which is the Moors and Christians is usually taking place at the end of July. If you're into the nightlife there is always plenty to do here in Novelda. Or, if not here, then you can visit the nearby city of **Bendormir** or **Alicante**.

**Aspe's** geographical position, which as said before is located in the **natural corridor of the river Vinalopó**, is decisively influenced by its origin. The first human settlements as far as we know, go back to the Paleolithic remains found in la Cueva del Roll the "**Cave of the Roll**" and other areas. There are also plenty of archaeological findings from the Roman period. The town itself has a lot of beautiful architectural edifice is to see.

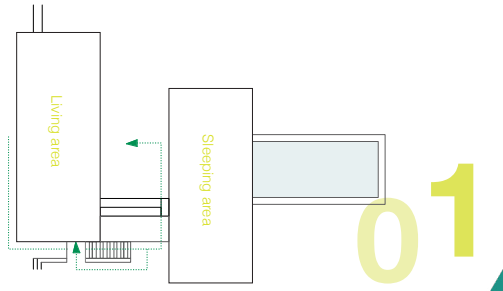
The old town has been beautifully pedestrianized. Like a lot of Spanish towns, the town centre is the centre of community life and it offers a peaceful blending of the old and the new style of Spanish architecture, a view into the real Spanish soul, and a natural place to allow your body to relax and your mind to roam free. If you're looking for sport, there is plenty to do in the region. **Aspe Golfing** has a lot to offer the golfing enthusiast with plenty of golf courses up and down the Costa Blanca.

## 2 Shape

Second step was to realise a form for the house that will be consistent with the place we choose. The shape, which we have chosen consists of two bodies placed at different levels.



Two different levels gave two different views



### 3 Healthy Solutions

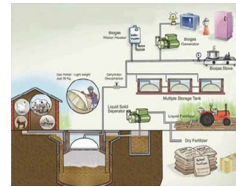
After we have found the right place and after we have determined the shape of the house, our next step was to investigate and explore the area in which the house should be settled. The most important aspect here was: How can we benefit from the nature that surrounds us here, the climate and the plants? How can these factors be combined with our project of healthy solutions?



**1 Vineyard.** The green economy, is an economic development model that takes into account both the need to create wealth and to reduce the environmental impact through the entire product cycle, from raw materials to production. This new economic model proposes a economic, legislative, technological solution and public education can reduce energy consumption, natural resources and environment's damage while promoting a sustainable development model. The vineyard produces not only grapes, but all the energy needed for the management of vineyard, winemaking and for the transport of wine on the market .we just need to avoid wasting all this energy. The vineyards of our territories contribute to maintaining the countryside and simultaneously help to safeguard the environment. It has been demonstrated that the cultivation of one hectare of vineyard favors the absorption of a significant quantity of CO2 from the atmosphere: Each year, about 3500 plants in one hectare of vines absorb a quantity between 6 and 15 tons of CO2 per year **3** Contributing substantially to the fight against climate change caused by greenhouse gases earth hitting. Just think that in Montalcino (Siena), a recent scientific study, conducted by major institutions and universities within the project PRIN Italian Ministry for Research, has estimated that a hectare of vines in the land of Brunello (specifically farm Col d'Orcia) escapes to the atmosphere about 6 tons of carbon per year. The measurements were made in the company Cold'Orcia in Montalcino (Siena) in a vineyard of Sangiovese planted in 1992. Raised in the counter (with planting distances of 3 x 1.2 m and density of 2,777 plants / ha ).



**2 Biogas.** the large amounts of AGRO-Industrial waste generated in Spain provide us with a significant ability to produce Biogas, which can then be used to generate electricity, injected into the natural gas network, or used as transport fuel. We have seen that most farmers perform a disposal of prunings through the use of a simple milling in order to crush and bury the woody biomass, and in some cases, it has been detected the combustion of waste disposal on the sidelines by the former. Studies showed that the amount of pruning obtainable from 1 hectare is an average of about 2 tons. It is expected to perform the collection of branches with harvester machine of small size so that these can easily switch between the rows with spacing of 250 cm. The weight of each bale produced by the machine varying between 25 and 40 kg. The storage will be performed outdoors in an open space crafted. The use of pruning and pomace as a fuel in energy conversion processes is obviously a source of the release of CO2 into the atmosphere which is the same as the plant absorbed in their growing cycle.



- Time of working, 7500 h/year
- diathermic oil boiler in the ORC group, 4.863 kW
- Boiler efficiency diathermic oil, 84 %
- marc available, 8.000 ton
- Hourly capacity of biomass, 1.770 kg/h
- Daily capacity of biomass, 42.470 kg/day

**3 Green Wall.** Draping a building with vegetation cools the exterior surface by reflecting solar radiation and by transforming absorbed solar radiation into water vapor via transpiration. As part of their research, the ecological engineers will measure the reflectance and transmittance of vine species used on green walls.

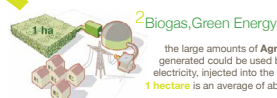


Student's Thesis Opens a New Opportunity for Ecological Engineering. This experiment follows the successful completion of Laura Schumann's Masters thesis, "Ecologically Inspired Design of Green Roof Retrofit," completed in August of 2007. Laura's work opened a new avenue for ecological engineering. "Her thesis showed that vine vegetation suspended above a building roof could have a significant effect on reducing building temperatures and on delaying storm water runoff," explains Tilley. The experiment found that a building covered with a full canopy had its maximum daily summertime inside temperature reduced by 5.9 °C (11 °F). Scaling the findings to a one-story, 2000 square feet Mid-Atlantic region building with a properly sized air conditioning unit would yield a decline in energy consumption during the summer of 10%. This energy savings could translate into a \$100 or \$200 savings per season, depending on other factors.



#### 1 Vineyard, Renovate Air

About 3500 plants in one hectare of vines absorb a quantity between 6 and 15 tons of CO<sub>2</sub> from the atmosphere.



#### 2 Biogas, Green Energy

the large amounts of Agro-industrial waste generated could be used by biogas to generate electricity, injected into the natural gas network. 1 hectare is an average of about 2 tons.

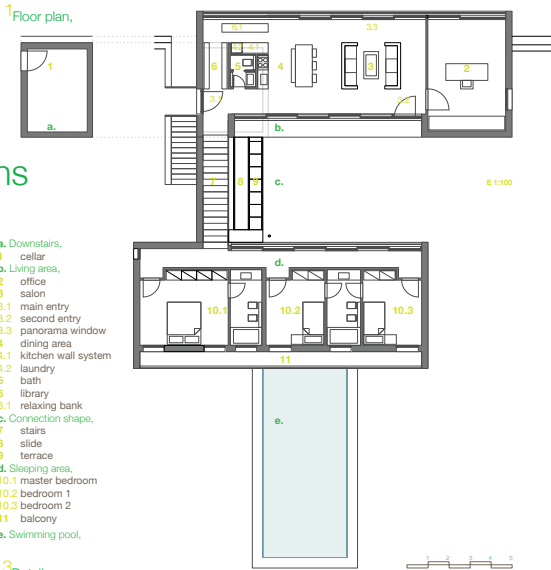
#### 3 Green Wall etc..., Design of the house

The house has got a property structure for protect the inside life from the weather conditions. The ecologic systems are, 1, air circulation, 2, green-wall and green roof, 3, power from biogas system, 4, air renovation.

02



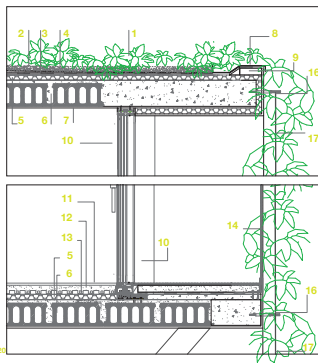
### 4 Plans



- a. Downstairs,
- 1 cellar
- b. Living area,
- 2 office
- 3 salon
- 3.1 main entry
- 3.2 second entry
- 3.3 panorama window
- 4 dining area
- 4.1 kitchen wall system
- 4.2 laundry
- 5 bath
- 6 library
- 6.1 relaxing bank
- c. Connection shape,
- 7 stairs
- 8 slide
- 9 terrace
- d. Sleeping area,
- 10.1 master bedroom
- 10.2 bedroom 1
- 10.3 bedroom 2
- 11 balcony
- e. Swimming pool,

### 3 Details

- 1 sun protection: vineyard
- 2 sun protection: grave
- 3 slope: lightweight concrete substrate
- 4 water protection: bituminous waterproofing membrane sprea
- 5 insulation: insulating wood fiber with plasterboard 6cm
- 6 prefabricated floor: prestressed concrete panels 20 cm
- 7 interior covering: white plaster 1cm
- 8 protectin and water canalization: metal flashing
- 9 slope
- 10 finish system: aluminum frame with thermal break sp 74mmwith double glazing 4+4/15/3+3, low-emissivity,
- 11 finished system: anhydrite radiant floor 1 cm
- 12 non-load bearing structure radiant substrate 6 cm
- 13 technology: radiant panel 3+3
- 14 finishes system: glass parapet
- 15 finishes system: glass CLAMP
- 16 finishes system: CROS CLAMP SPACER BAR 12 cm
- 17 finishes system: steel cable



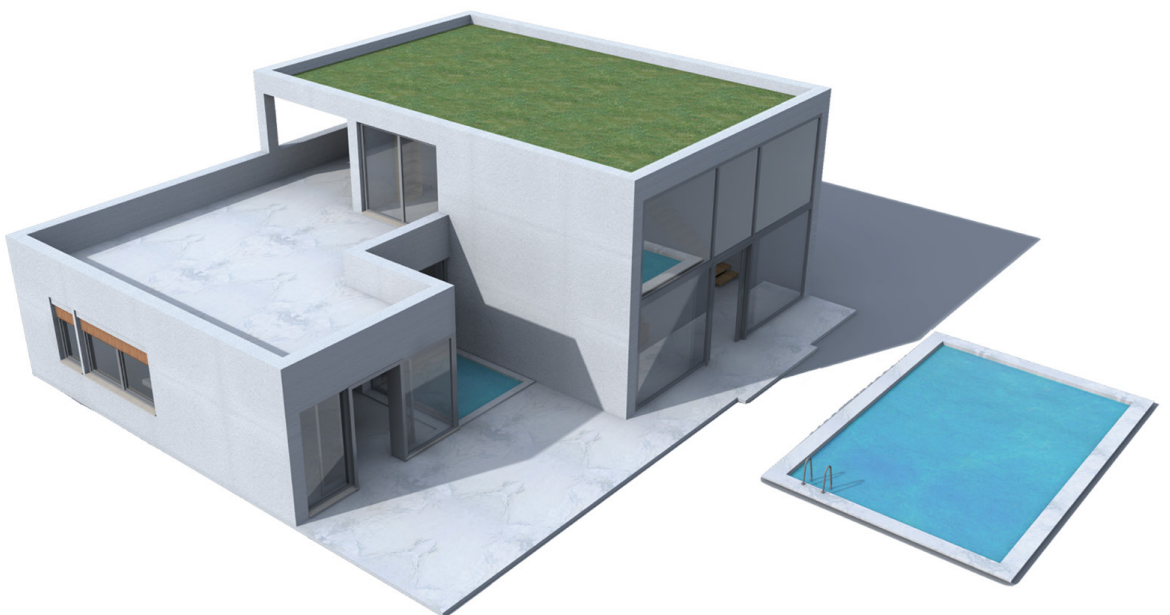
### 5 Perspectives

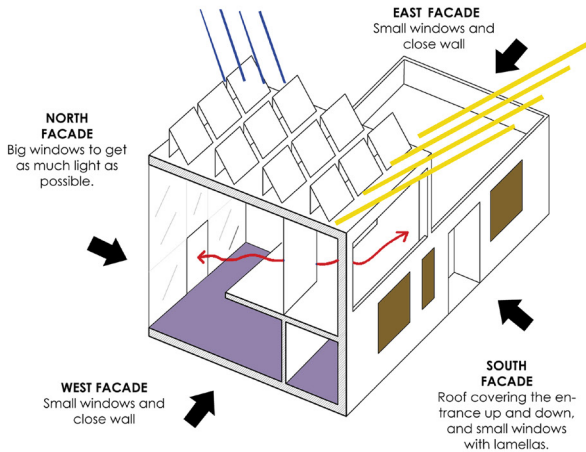


GAERTNER, Alexander

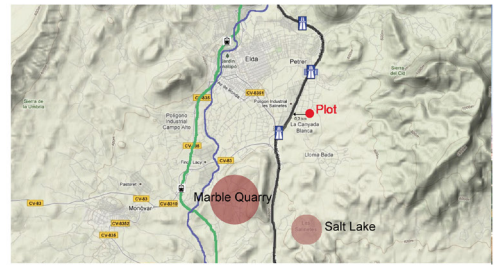
MORILLAS, Belén

SELVARATNAM, Janakan





Building Site / Surrounding - Petrer



Site location - Petrer

MODULATION & FLEXIBILITY



SOLAR PANELS

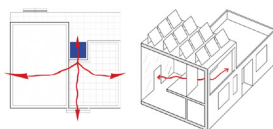
We use the highest roof for solar panels to save as much energy that we can and use it for water heating and for electricity.



Summer approx. 70°

VENTILATION

We create cross ventilation through the house and make the warm air going out from the ground floor to the up windows. We also introduce a small swimming pool to cool the air from outside to inside the building.



RECYCLING WATER SYSTEM

We recycle the rainwater for gardening.



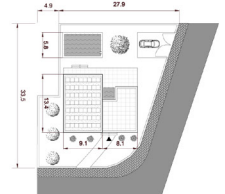
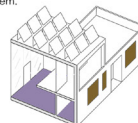
MATERIALS

1) heat insulation (slate) system	2) pcm effectiveness	3) pcm temp. dependence	4) pcm diagram	5) marble from novatec	6) pcm plaster - white

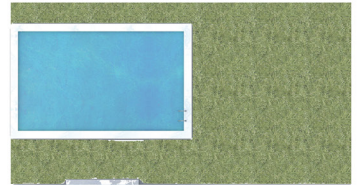
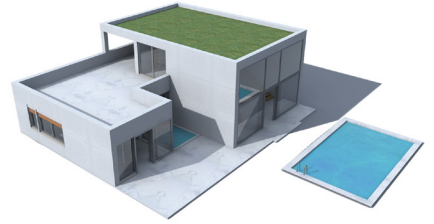


Building Site

We use marble in the ground floor because of the location (Petrer) and also for getting a cooler floor in summer. On the south facade we use lamellas to get the heat going into the building in winter and avoid it in summer closing them.



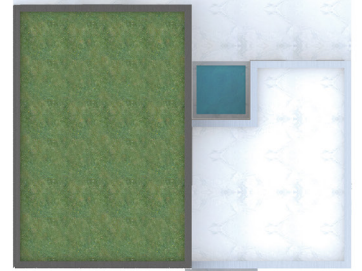




Ground Floor



First Floor

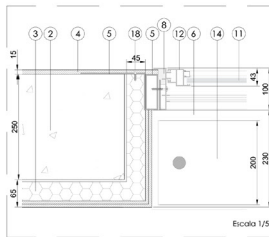


Top View Roof

LEGEND

- 1- Structure - prefabricated concrete wall 150 mm
- 2- Structure - prefabricated concrete wall 200 mm
- 3- Insulation and protection - heat insulated linkage system 5-30-15 mm
- 4- Protection - plaster with phase change material (pcmr) 15 mm
- 5- Windows structure - steel profile
- 6- Protection - aluminum plate
- 7- Insulation - XPS 50 mm
- 8- Insulation and joint - polyurethane foam
- 9- Regulation layer - mortar 15 mm
- 10- Suspended ceiling - gypsum board 15 mm
- 11- Windows - sliding window 100 mm
- 12- Windows frame - aluminum
- 13- Glass curtain wall mullion - aluminum 50 mm
- 14- Sun protection - aluminum lamella 200 mm
- 15- Waterproof layer - EPDM membrane
- 16- Floor protection - marble 20 mm
- 17- Floor protection - stone tiles 20 mm
- 18- Connection elements - metal screw
- 19- Stopped concrete layer - light concrete
- 20- Sand layer 20 mm
- 21- External protection - render layer 15 mm
- 22- Close window 160 mm

DETAIL 1



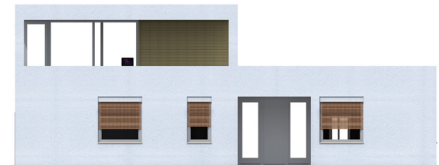
Escala 1/5



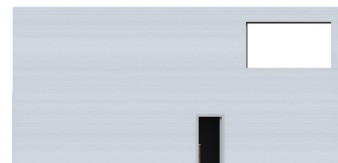
North Elevation



East Elevation

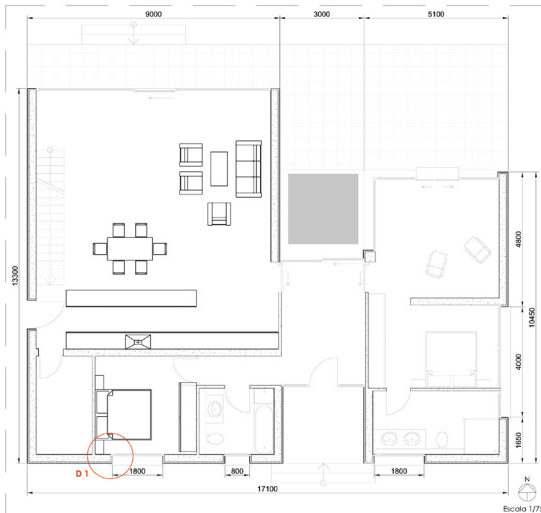


South Elevation



West Elevation

GROUND FLOOR PLAN



Escala 1/75





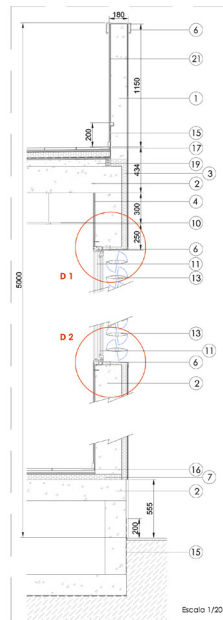
Section 1



Section 2

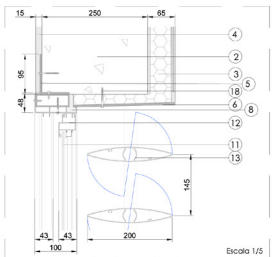


SECTION AA'



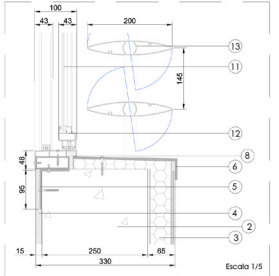
Escala 1/20

DETAIL 1



Escala 1/5

DETAIL 2

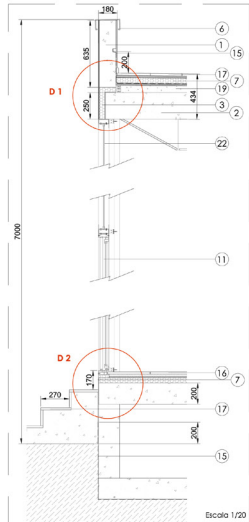


Escala 1/5

- LEGEND**
- 1- Structure - prefabricated concrete wall 150 mm
  - 2- Structure - prefabricated concrete wall 250 mm
  - 3- Insulation and protection - heat insulated linkage system 5-50-15 mm
  - 4- Protection - plaster with phase change material (pcm) 15 mm
  - 5- Windows structure - steel profile
  - 6- Protection - steel plate
  - 7- Insulation - XPS 50 mm
  - 8- Insulation and joint - polyurethane foam
  - 9- Regulation layer - mortar 15 mm
  - 10- Suspended ceiling - gypsum board 15 mm
  - 11- Windows - sliding window 100 mm
  - 12- Window frame - aluminum
  - 13- Glass curtain wall mullion - aluminum 50 mm
  - 14- Sun protection - aluminum lamella 200 mm
  - 15- Waterproof layer - EPDM membrane
  - 16- Floor protection - marble tiles 20 mm
  - 17- Floor protection - stone tiles 20 mm
  - 18- Connection elements - metal screw
  - 19- Sloped concrete layer - light concrete
  - 20- Sand layer 20 mm
  - 21- External protection - render layer 15 mm
  - 22- Close window 100 mm

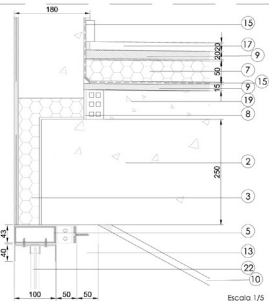


SECTION BB'



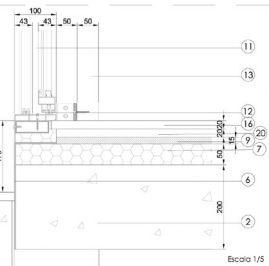
Escala 1/20

DETAIL 1



Escala 1/5

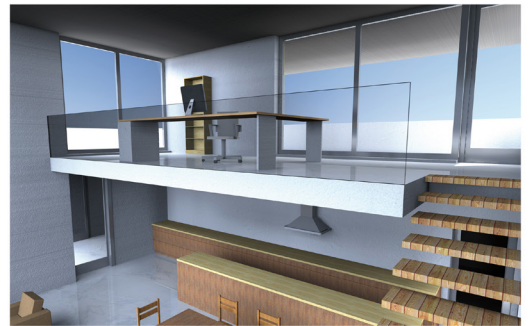
DETAIL 2



Escala 1/5

LEGEND

- 1- Structure - prefabricated concrete wall 150 mm
- 2- Structure - prefabricated concrete wall 250 mm
- 3- Insulation and protection - heat insulated linkage system 5-50-15 mm
- 4- Protection - plaster with phase change material (pcm) 15 mm
- 5- Windows structure - steel profile
- 6- Protection - steel plate
- 7- Insulation - XPS 50 mm
- 8- Insulation and joint - polyurethane foam
- 9- Regulation layer - mortar 15 mm
- 10- Suspended ceiling - gypsum board 15 mm
- 11- Windows - sliding window 100 mm
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- 14- Sun protection - aluminum lamella 200 mm
- 15- Waterproof layer - EPDM membrane
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- 17- Floor protection - stone tiles 20 mm
- 18- Connection elements - metal screw
- 19- Sloped concrete layer - light concrete
- 20- Sand layer 20 mm
- 21- External protection - render layer 15 mm
- 22- Close window 100 mm



ESTIMATED COST

House area : 150 m<sup>2</sup>  
 Plot area : 800 m<sup>2</sup>  
 Price per build m<sup>2</sup> : 800 €  
 Total price : 120.000 €

# WATERMILLHOUSE.

JIMÉNEZ BENITO, Agustín

HEMMENDINGER, Clea

KAURIN, Daniela





# WATERMILLHOUSE



## Choosing the site

We chose Elda for one of the best places, to design our house. The reasonable aspects for this decision are mainly following:

- Elda is close to Monovar
- Cultural aspects | possibilities
- Landscape | Environment
- River Vinalopó
- Surrounded by mountains
- Good infrastructure
- Highway
- Train station



## Choosing the plot

Besides the facts of the decision to choose Elda, that are mentioned before, we chose this special plot at the river, because for us it was the best opportunity, to fit the building in its environment with interesting elements: the river, the trees and the surrounded mountains. During this it was a good experience to adapt new methods about healthy and sustainable projects by using the existable environment and natural sources of materials.



## Concept

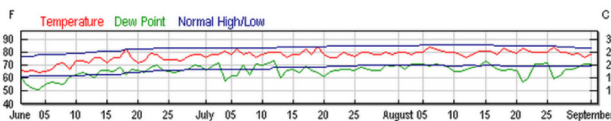
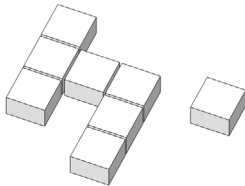
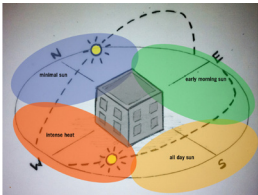
Our concept mainly exists of the uses above. We analysed the direction of the wind in summer and winter. Of course the important one, which we want to use, is the one in summer (south → northeast). By having one big opened living-part with a daily used kitchen and a livingroom and by making it possible, to open the south and northeast facade, we can afford a natural cooling by the use of the direction of the wind.

The sun and the orientation are also very important aspects to use or rather to protect of. In our project we do both. The rooms are placed according to their usage, so that they get sunlight at the correct time or be protected from heat at the day time.

The existing trees bring shadow-zones in the garden area to sojourn and protect also the inside of the house from heat. Aswell we used a vertical garden at the south walls to protect from the sun in summer and give possibilities to warm up the house in winter.

With the watermill and the river Vinalopó we find a constructive solution, how existing water in the river can be used to cool the house. At the same time the watermill becomes a mainpart of our designed building and the house gets attention and becomes something special.

The most used material in our house is concrete. Concrete walls are easy to prefabricate and can be used therefore for all dimensions. The walls in the south-direction are constructed in gabions, concrete and glass, which is justified by their special use. Gabions are also in the natural sources of the environment.



**Legend**

- A - Structure**  
 A01 - Pillar - [RN-120]  
 A02 - Jamb - [RN-120]  
 A03 - Beam - HEB-180  
 A04 - Beam - Reinforced concrete  
 A05 - Jamb - [RN-60]
- B - Partitions**  
 B01 - Sandwich panel - Pine plywood at the bottom  $\phi=10$ mm, extruded polystyrene  $\phi=80$ mm and phenolic plywood on top  $\phi=10$ mm  
 B02 - Plaster panel FOC  $\phi=15$ mm  
 B03 - Concrete wall  
 B04 - Plaster substructure

- C - Layers**  
 C01 - Bonding material - Cement mortar 1:6  
 C02 - Isolation - Extruded polystyrene  $\phi=40$ mm  
 C03 - Waterproofing - EPDM  
 C04 - Steam break - Polyethylene  
 C05 - Levelling layer - Gunitte concrete

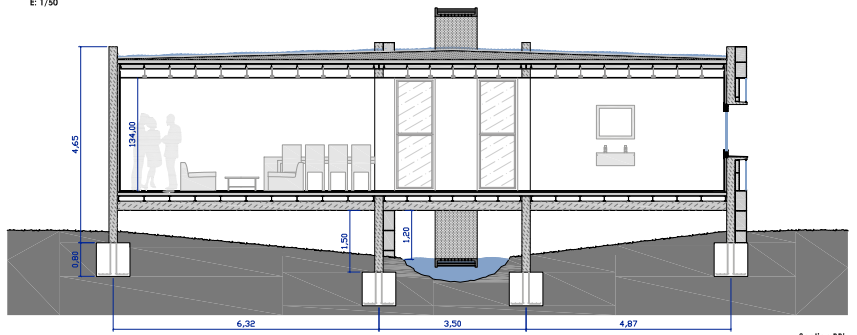
- D - Installations**  
 D01 - Water drainage system - PVC pipeline  $\phi=90$ mm  
 D02 - Water drainage system - PVC pipeline  $\phi=20$ mm

- E - Joinery**  
 E01 - Tempered glass with camera 6+4+6 mm  
 E02 - Window carpentry - Galvanized steel  
 E03 - Tempered glass with camera 8+10+8 mm

- F - Finishes**  
 F01 - Inside finish material - Ceramic tile  $\phi=10$  mm  
 F02 - Inside finish material - Plastic paint  
 F03 - Outside finish material - Galvanized steel  
 F04 - Inside ceiling material - Plasterboard  
 F05 - Outside finish material - Gabion wall  
 F06 - Roof finish material - Gravel  
 F07 - Veranda finish material - Woodboards  
 F08 - Pool finish material - Waterproof mortar  
 F09 - Outside finish material - Plaster

- W - Watermill parts**  
 W01 - Partimetal wheel - Wood  
 W02 - Stiffening structure - Woodboards  
 W03 - Spacers - Wood  
 W04 - Substructure - Galvanized steel  
 W05 - Small wheel - Galvanized steel

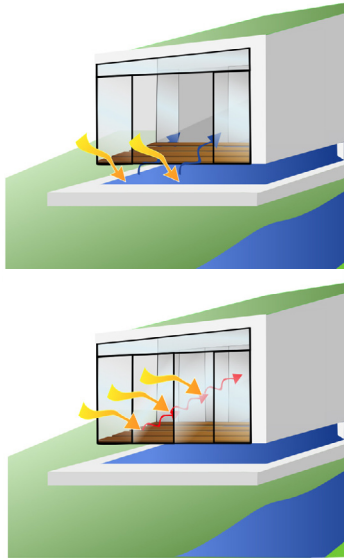
E: 1/50



Section BB'

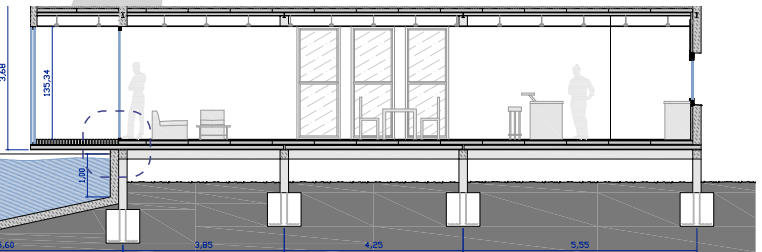
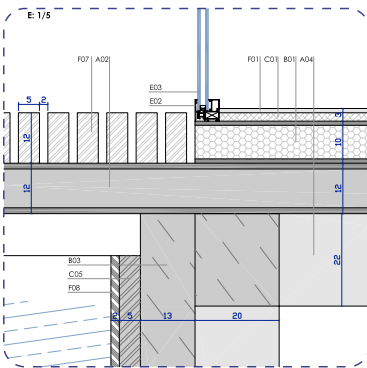
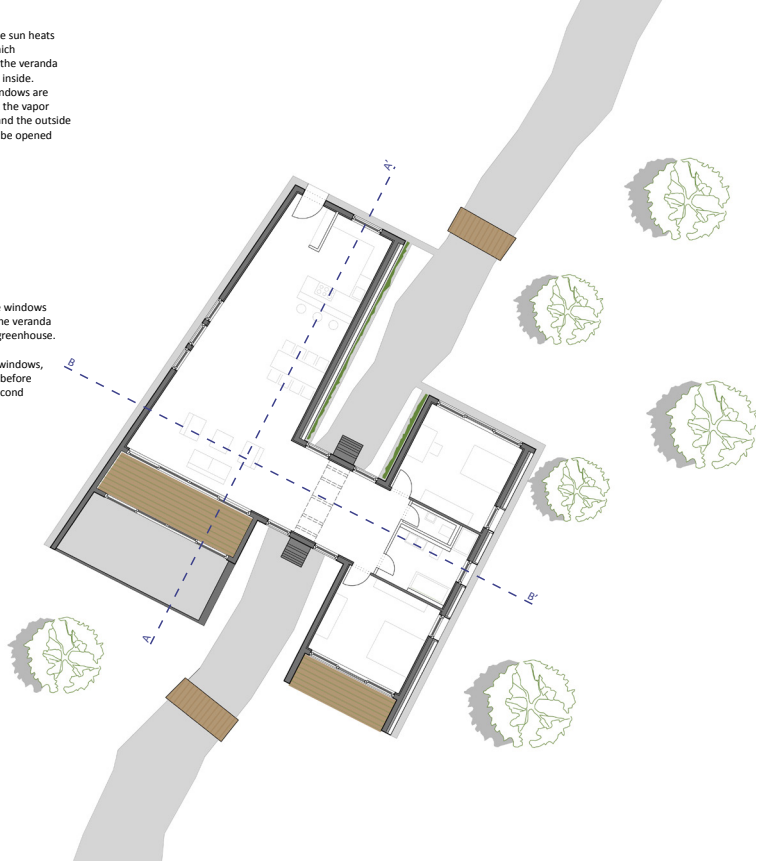


# How the pool works?



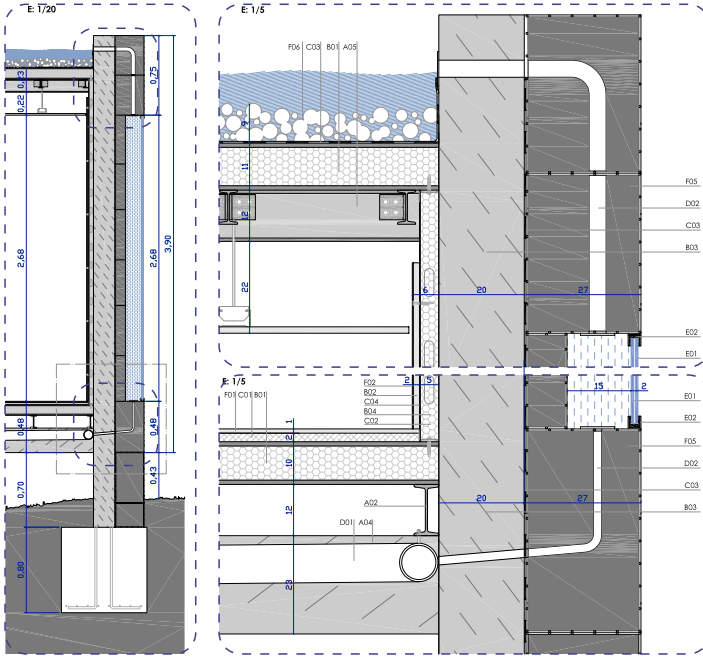
In summer the sun heats the water, which evaporates in the veranda and cools the inside. The inside windows are opened to let the vapor going inside and the outside windows can be opened too.

In winter, the windows are closed. The veranda works like a greenhouse. The sun hits the first windows, heats the air before hitting the second window.



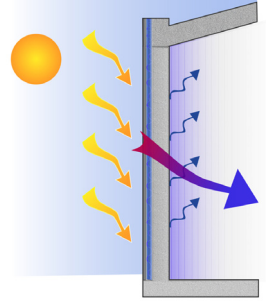
Section AA' E: 1/50



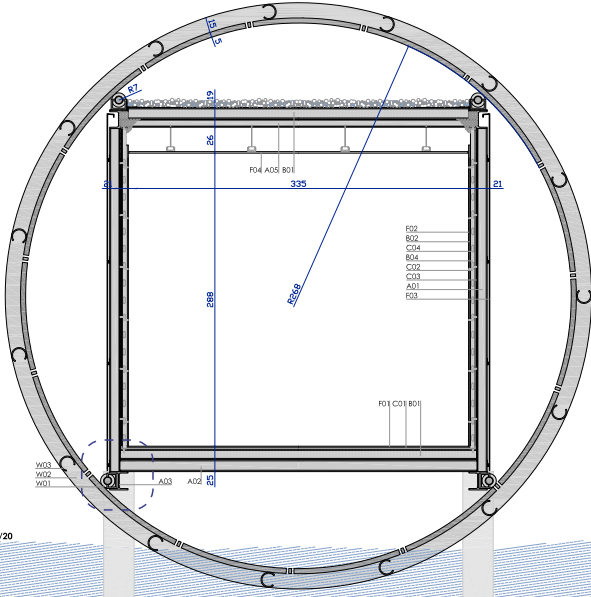
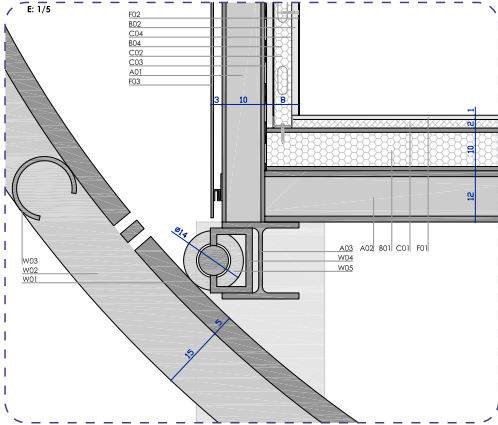
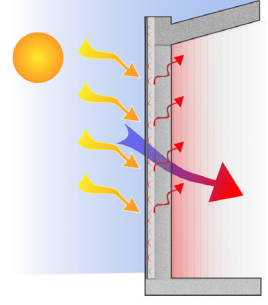


## How the waterwall works?

In summer the water circulates from the river to the watermill to the roof into the waterwall and over a catch pool back into the river. The continuous circulation causes, that the water can't be heated by the sun and as a result the wall can be kept cool.



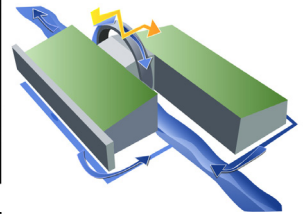
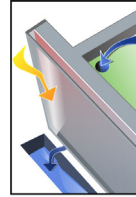
In winter there is no circulating water. That means the sun shines on the wall and heats it up in the winter months, when its needed.



## How the watermill works?

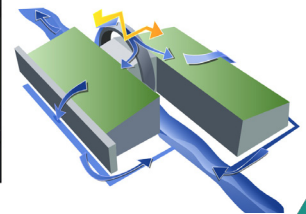
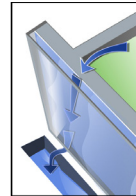
The utilization of the water from the river and the watermill is in summer:

- Cooling the house through the walls and the roof
- Producing electricity



The utilization of the water from the river and the watermill is in winter:

- Producing electricity



# THE WALL HOUSE.

LÓPEZ VÁZQUEZ, Marina.





# ANALYSIS & CONCEPT ----- HEALTHY HOUSE DESIGN ----- HOW IT WORKS



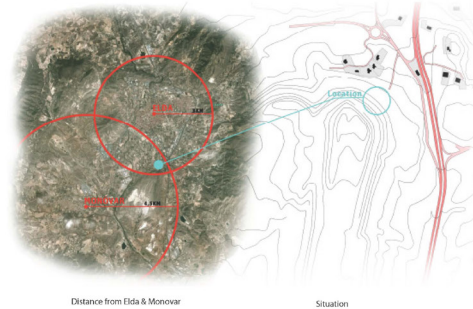
## Characteristics of the pensioner client from the North of Europe



**Introduction**  
 This project is about a healthy house design for pensioner people from North Europe. The design has to be sustainable and is a project of students from the Hogeschool van Amsterdam and the Universidad de Alicante.

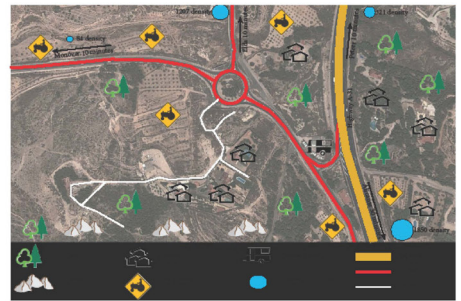
**Designed by:**  
 Erik Brusse from Holland  
 Casper van Deelen from Holland  
 Marina Vazquez Lopez from Spain  
 Wan King Yi from Holland

## Location



The location of the house south of Elda. If you look at the picture on the right you see that it's within 3 km from the center of Elda and 4.5 km of the center of Monovar. Our location is a very quiet place, but you can go to the city by car in 5 minutes. You can reach the highway in 1 minute.

The location is a green area with a few villas in the neighborhood. The plot is on the north side of the hill. This means that you have a great view to the North (to Elda) and shadow of the hill on the Southside of the project.



Function mix



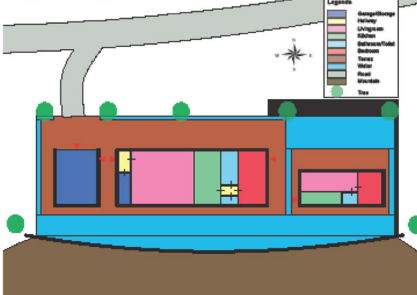
Panorama of the location on the hill



Panorama of the street and houses nearby

## Concept (Analysis of the Floor plan and Passive Systems)

### Analysis of the Floor plan



**Analysis of the floor plan**  
 The floor plan on the left shows the different functions. The building is separated in three parts: The garage, main house and guest house.

The garage is placed on the West to block the sunlight and has room for two cars.

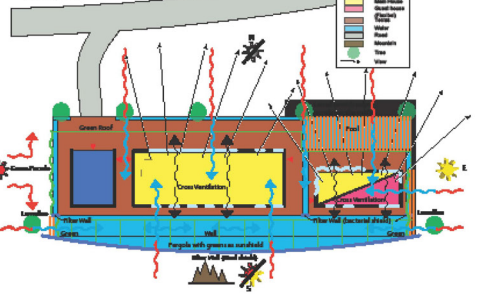
The main house is placed in the middle of the building. The entrance is connected to the left corridor, and the storage. Then you enter the shared living-room and kitchen. From here you can enter a hallway to the bathroom, toilet and bedroom.

The house on the right is multifunctional and flexible. It contains the guest house with a shared livingroom and kitchen, bathroom and bedroom. The facade on the North and West side can be opened to make a nice porch at the swimmingpool. This is the multifunctionality to be either a separate living space or open area.

Glass facades on the north side provide a great view to Elda and Petes. On the south side you see a well with between the house and the hill. Here we collect water from the rain which will be naturally purified. We use the wellwater for a gray water system, cooling/warming the floor and providing cool/fresh water for cross ventilation.

**Passive systems**  
 The floor plan on the right shows the different passive systems we want to use for our house. It shows the direction and the heat from each side. The North is a side with the least sun. The wind in the winter comes from the North. The air is warm so we planted trees strategically to provide fresh air in the building. The sun rises in the East. That means that the air in the morning is from the early sun (not very hot). We put lamellae on the East facade to block the sun and a tree in front to cool the air above the well. On the West facade we put a green wall to block the heat from the sun.

### Passive systems



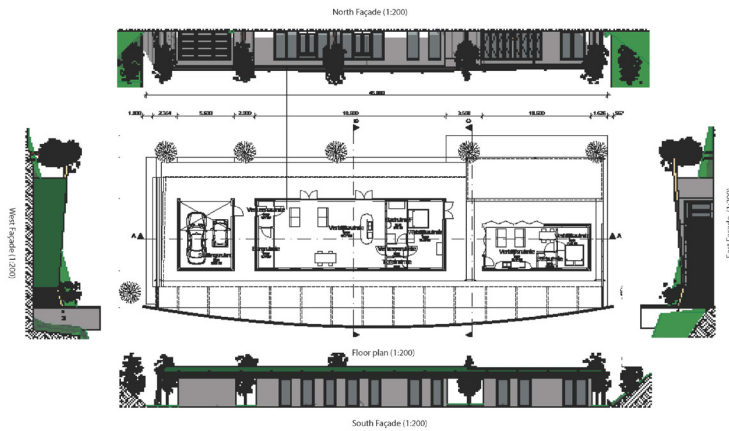




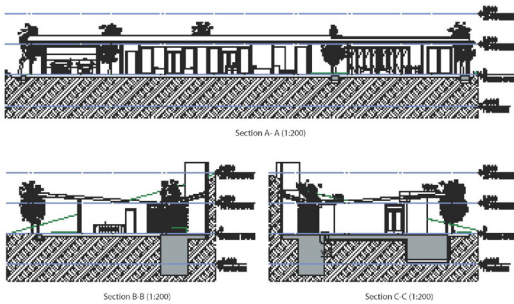
ANALYSIS & CONCEPT ----- HEALTHY HOUSE DESIGN ----- HOW IT WORKS



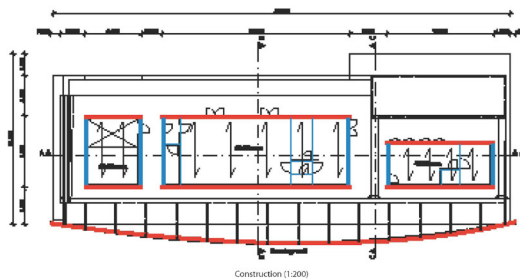
Floor plan and Façades



Sections



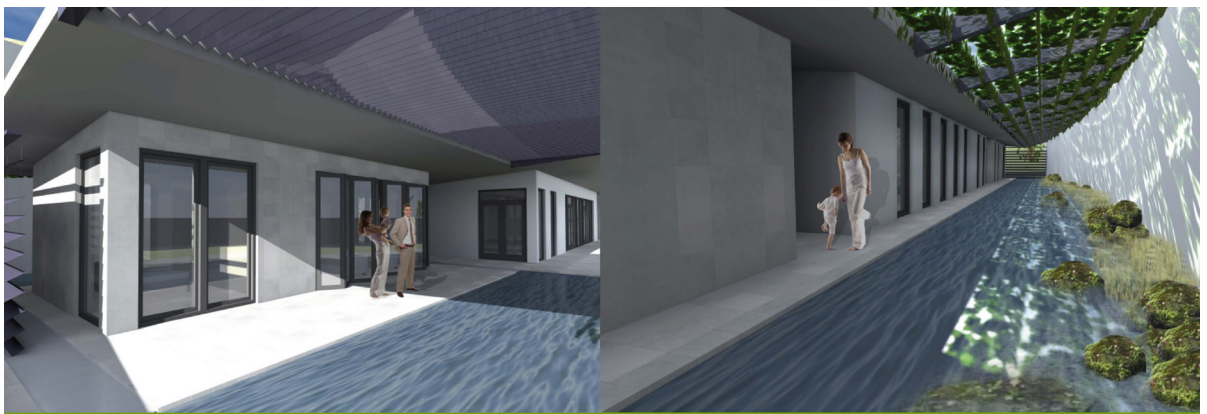
Construction



The construction walls are on the South and North side. They are about 7 meters apart. The curved wall on the South side is protecting the house from the rocks and mud. This is also a construction wall for the pergola. This with ivy plants covered pergola keeps the water in the well roof. The overhang of the roof on the North side is about 2 meters so can be supported by the constructive wall on the north side.





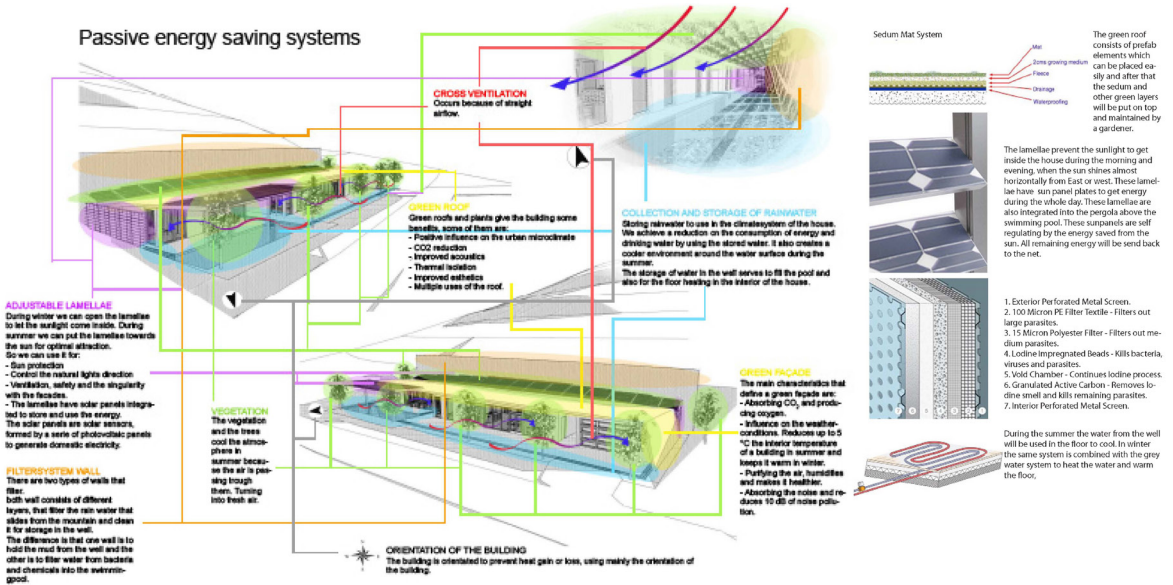


# ANALYSIS & CONCEPT ----- HEALTHY HOUSE DESIGN ----- HOW IT WORKS

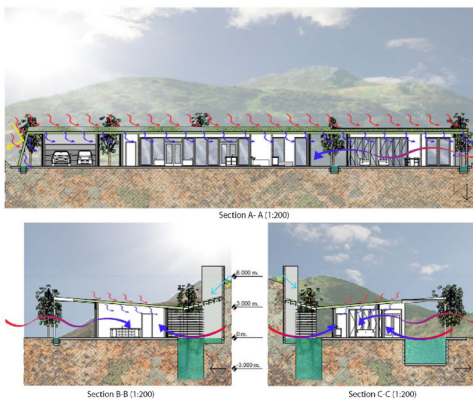


Passive energy saving systems

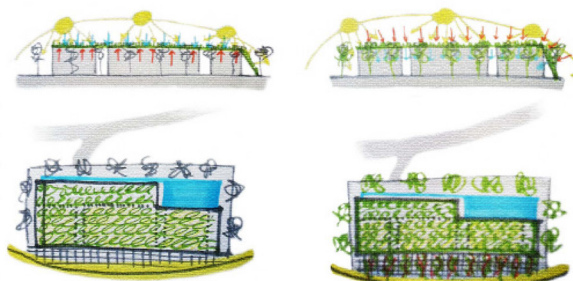
## Passive energy saving systems



Sections with passive systems



Winter/Summer situation



Wintertime

In the winter the green roof helps to keep the house warm by isolating the warmth.  
The plants that acted as a green wall in the summer (to stop the heating of the sun) lose their leaves during the winter, and let the sun come into the house. This helps to keep the house warm.  
The lamellae can be shut to keep the warmth inside as well.  
The walls consists of different layers (incl. air and isolation) to create a warm-hybridage. This will keep the rooms at a comfortable temperature.

Summertime

In the summer the green roof keeps the heat from the sun outside the house. The roof is orientated to the south and west (the hottest facades). The plants absorb the sunlight preventing the heat from getting into the house through the roof.  
The lamellae prevent the sunlight to get inside the house in the morning and in the evening, when the sun shines almost horizontally from East or west. These lamellae have sun panel plates to get energy during the whole day. These lamellae are also integrated into the pergola above the swimming pool. The Mountain on the south side protects the house from direct sunlight.

# SUNTRACKING HOUSE.

BARRERES SÁNCHEZ, Beatriz

BAUSA MARTÍNEZ, Carlos

SARI, Didem





# Suntracking house.

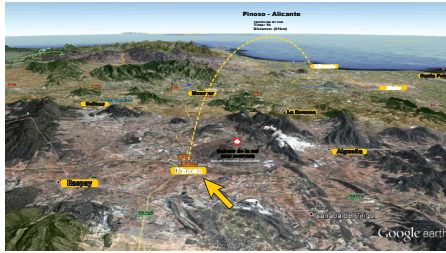
Sustainable housing project



## Make room for hiking! WELCOME TO PINOSO.

With this lemma we decided to choose Pinoso, in the middle of nowhere, 60 minutes away from Alicante. We believe that a better life could be possible far away from the cities, close to natural monuments as the ones we can find near here.

Our potential clients could be people between 1 and 99 years old who look for living unforgettable experiences close to the country side surrounded by amazing landscapes, full of natural history, and biodiversity.



### GEOLOGICAL INTEREST The salt and the gemstone route.



### THE TREKKING ROUTES.

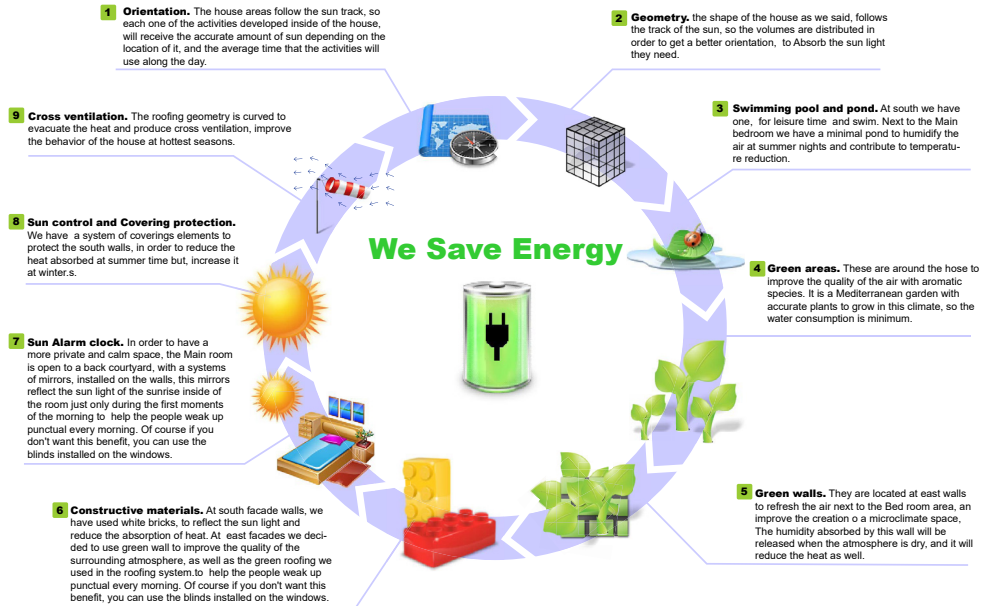


The "Generalitat Valenciana" has promoted hiking routes around this Natural monument even with organized visits, for tourist and curious people who wants to know more about this landscape. It has a didactic, scientific, and landscaping interest.

Pick up your Trekking boots and go discovering, the Pinoso natural Surroundings.

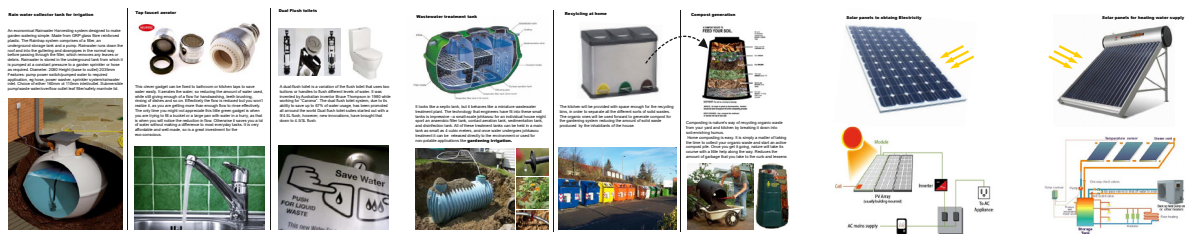
### Factors taken into account. (Passive systems)

Passive systems



Passive systems

### Factors taken into account. (Active systems)

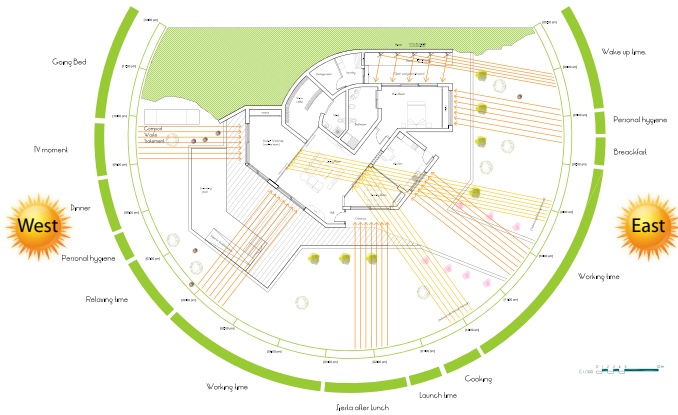


# Suntracking house.

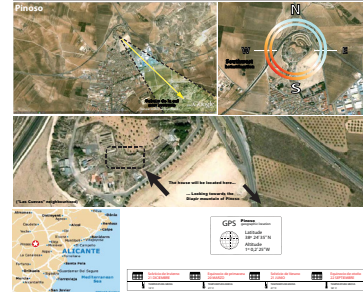
Sustainable housing project



## Activity Schedule. Space organization in order to catch the maximum Sun Light.



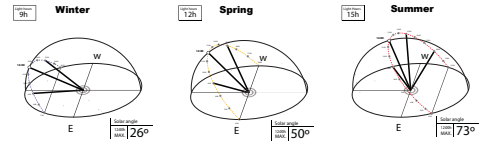
## THE CONNECTION



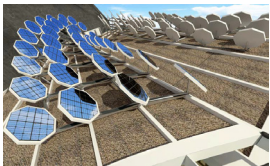
The angle of the sun, and how to control it.

Just only with the right position of the building we can switch the active systems up, for passive ones, in order to get the best conditions inside of the building, reducing on the whole, the amount of energy wasted. As we can see in the following diagrams the sun angle is lower at winter time, and it grows at summer time. It means that we need a sheltering system to protect from the radiation when the sun is at his higher angle and let it go through, at winter sunny days.

## AVERAGE SUN TRACKING AT PINOSO



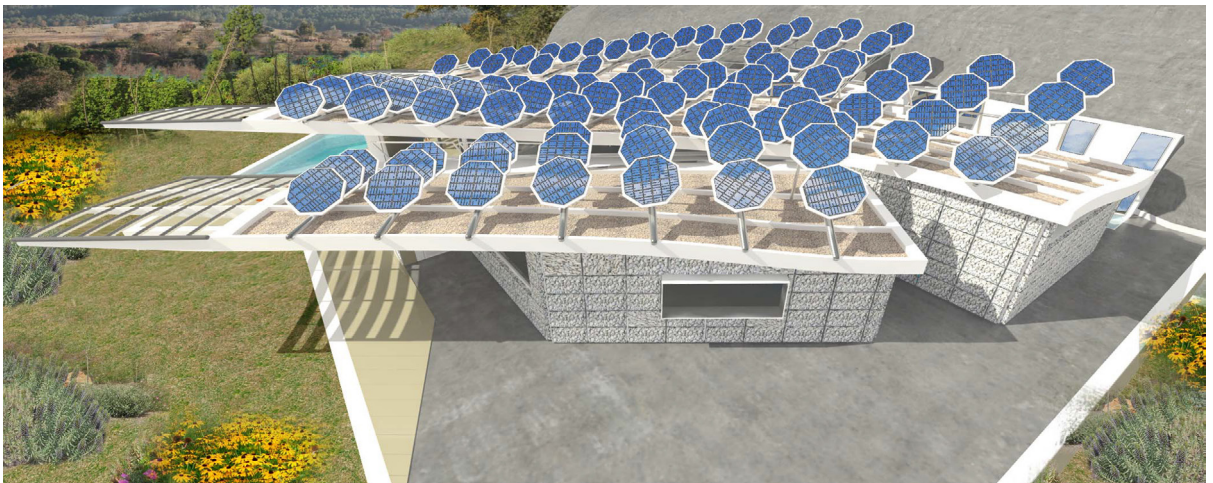
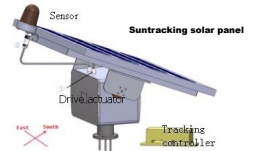
## Suntracking Systems



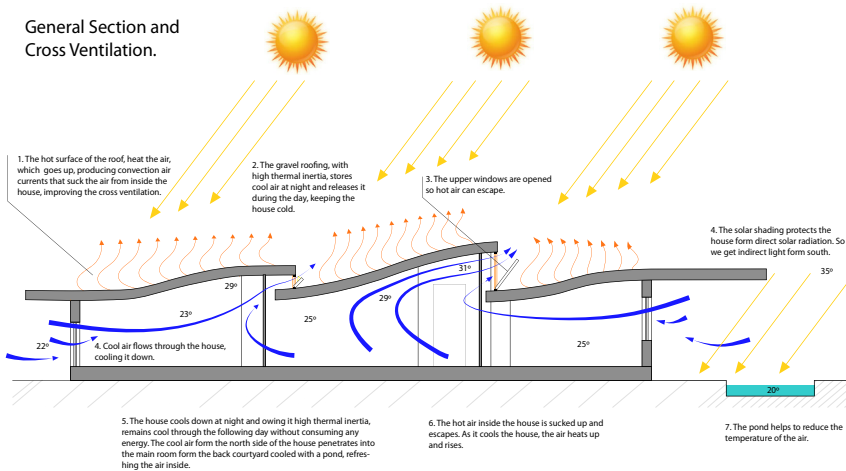
Suntracking panels.

We have replaced conventional solar panels, for articulated suntracking panels. They are twice expensive but the energy we could get with them is a 200% more than static panels. This sort of photovoltaic octagons, are always facing the sun, like sunflower fields. Located on the top of the roof, the shade they project helps to reduce the heating of the surface, reducing in a great percentage, the temperature inside of the house.

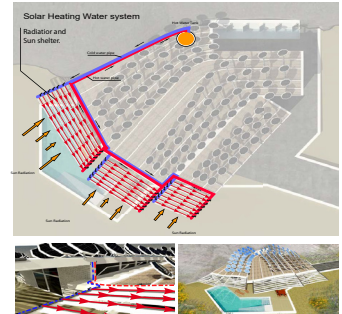
“They are always facing the sun”



## General Section and Cross Ventilation.



## Radiation Sun Shelter.



## Using the sun to heat the water.

As long as the sun is rising up, the hot water supply would be provided in a 70% percentage by this device we have created. The shelter we use to protect the south-west facade, is at the same time the support for heating water pipe system. The water is running in a close circuit all the time, increasing the temperature hour after hour, heated by sun radiation. When the sun is not so high the water flux stops, keeping the hot water inside the tank.



# Suntracking house.

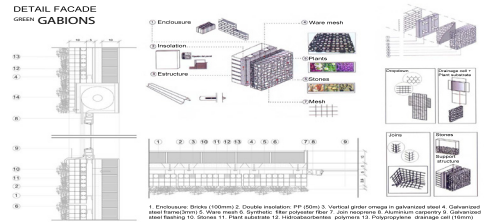
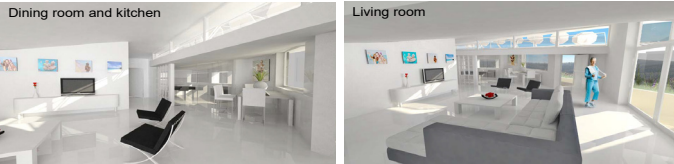
Sustainable housing project



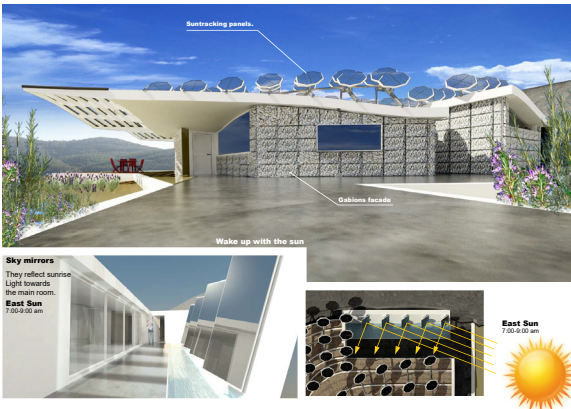
## Floor Plans.



## Floor Plans.



## East Facade



## South-West Facade



## THE POOL TEMPLE.

GARCIA GADEA, Alejandro

HARMANCI, Baris

TEJEDA TEJERA, David

SUBCZINSKI, Stefanie





# THE POOL TEMPLE

HEALTHY HOUSING AWARD 2012

Alejandro García Gadea | Baris Harmanci | David Tejada | Stefanie Subczynski

## SOCIAL

The temple pool idea comes as a Mediterranean prototype of a multi purpose space as well as a sustainable proposal to cool down the house.

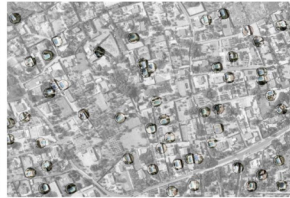
After the research of different offered cities located in the surroundings of Alicante, we figured out that pools are one of the commonest spaces in single family houses. We look at different countryside locations and all of them showed a massive amount of pools.

Therefore, we decided to couple Mediterranean activities that take place in the pool together with retired north European people necessities, coming across with sports, meeting and sunbathing among some of the embraced activities in our project. As we experienced in our life, a pool is not just a place for swimming, many activities could take place inside. From different sports like swimming, water polo or more common games with a ball, through sunbathing or why not, pool as a space for meet up someone, it brought us to the concept: "pool temple".

### THE POOL-HOUSE LOCATION IN ALICANTE



Countryside, Aspa (Alicante)

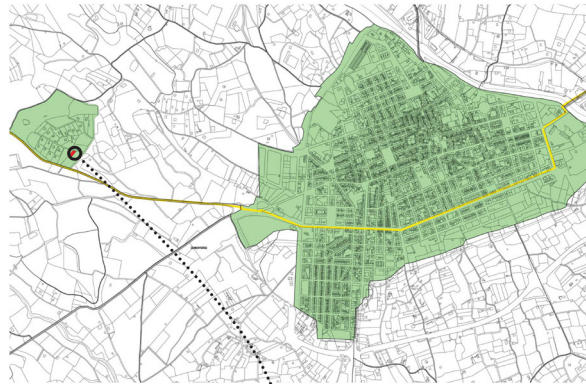


Countryside, Eche (Alicante)



Novelda Eche (Alicante)

### PROJECT LOCATION

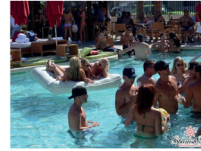


SITE PLAN 1.7500



SITE PLAN 1.2000

### SOCIAL ACTIVITIES



Pool and outdoor placed are the most appealing places for families in Alicante. They enjoy most of their summer time outside their houses.

Retired people love sunbathing. On the other hand, exercise is important for them so as to be energetic. Playing board games is found to be one of their major social activities.

We could consider the pool like a multi purpose place, wherein several activities take place. Indeed, this is exactly kind of space that we are interested in, a flexible and multi purpose architecture.



How can we fit all these activities in the same house?

Pool as an integrator of all retired people hobbies. Swimming pool is a great sunbathing area, elderly can also exercise and even play their board games.



En Problemaliden

# THE POOL TEMPLE

HEALTHY HOUSING AWARD 2012

Alejandro García Gadea | Baris Harmanci | David Tejada | Stefanie Subczinski

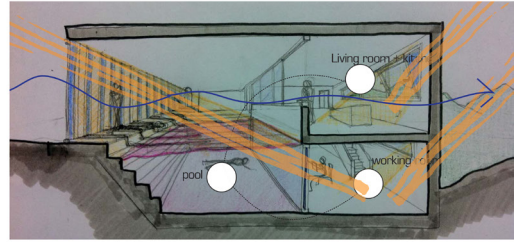
## POOL HOUSE

The main concept is the pool as a central part of the house, which is related to the day rooms in different ways. The working room has a perfect working atmosphere while the living room and the kitchen are more directly related.

Moreover we have created a transition from what is public to what is private, so that bedroom is quiet and owners do not have to get annoyed from what is happening in other departments. of their house. Finally has been considered the possibility to reuse the pool in winter as double high multi purpose room.



Architectural references

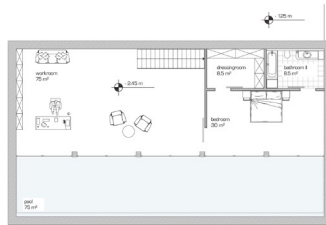


CONCEPTUAL SECTION

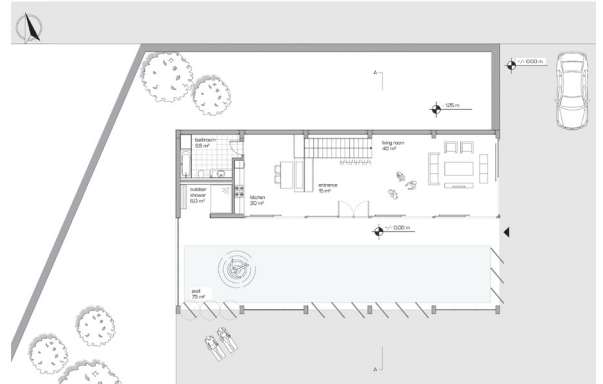
## SUSTAINABILITY

Mainly it could be shortly explained with our principal worries: sun and cooling. Sun is one of the well known problems in south of Spain. It hits strongly the south oriented facades, so that they have to be protected.

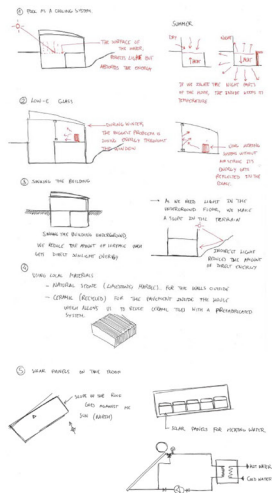
Our prototype is with its longest facades north-south oriented placed. Because of that, we place the pool on the south. On this side it cools down the warm air from south so that the internal space will be refreshed. Furthermore, the exterior south skin made out of fabric shutters, might provide a shaded space. By sinking the proposal underground we reduce the amount



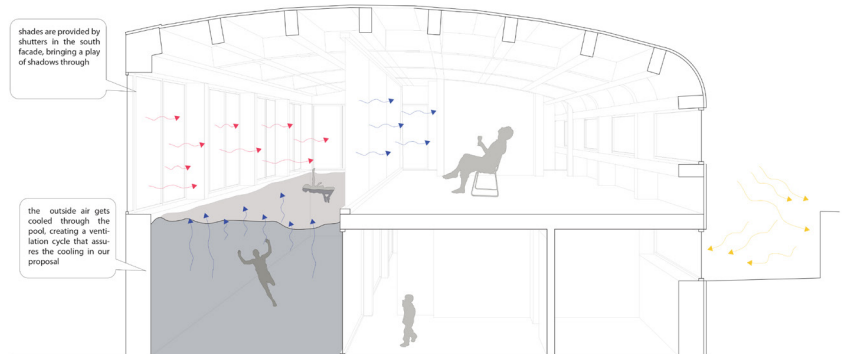
BASEMENT LEVEL 1.150



GROUND LEVEL 1.150



SUSTAINABILITY STRATEGIES



SUSTAINABILITY PROPOSAL





# THE POOL TEMPLE

HEALTHY HOUSING AWARD 2012

Alejandro García Gadea | Baris Harmanci | David Tejeda | Stefanie Subczynski

## STRUCTURE

The structure is solved by using an arcade system with laminated wooden beams, by this means we can solve one of the biggest issues, humidity due to its location over the swimming pool. If we were to use concrete or steel, the structure could rust, and this it would need maintenance and special treatment in order to avoid it.

On the other hand, reinforced concrete walls are used in the basement, because of the heavy loads that the walls are needed to support.

Dry systems are proposed for the facades. These systems are lighter and cheaper, and can also be prefabricated. All in all, they do not overload the roof structure and are replaceable in case it is needed in the future.

## CONSTRUCTION

The solution proposed takes materials, facilities and structure into consideration. Moreover, the simple required maintenance assure a long term cost to be considered for the clients.

### Roof-facade

Roof-top proposal is based on a dry, light and highly prefabricated system. Basically, we propose a rounded envelope made out of malleable and light aluminum, which allows us to design some curvature for the roof. The different aluminum planks are welded in the water flows direction, so that it does not get in. The plastic are easily transportable and placed, accelerating considerably the required time for construction.

### South facade

A rotating system is designed for the opening, orientable slats that protect from sun and winds, regulating the indoor temperature as the inhabitant decides. The slats are made out cheap wood frameworks and fabric surfaces, so a low-cost system for an optimal solution. The sun control system is complemented with the swimming pool. The air enters through the opening and it cools down the pool, lowering the indoor temperatures in summer. Thereby, we reduce the need for air conditioning systems, and thus the consumed energy in summer.

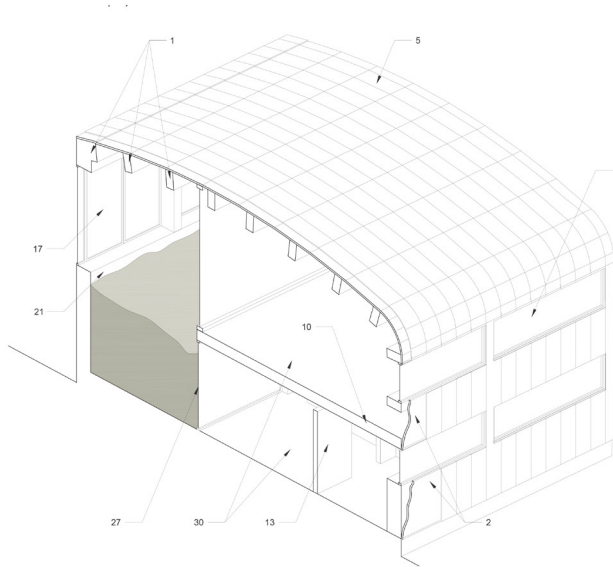
### Material viability

By using aluminum, we can curve the roof and optimize it form to the climatic conditions. On the other hand, its quickly attached to the wooden roof structure and serves as waterproofing system.

The wooden structure and facades is sustainably efficient, reducing thermal bridges and necessity for insulation. As for the structure, it does also light the weight of the overall system and faster the process. Finally, it does bring a warm and friendly atmosphere to the project interiors.

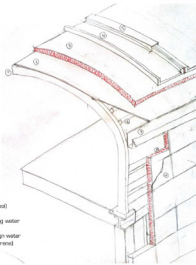
Gunité cement is both used as an almost structural reinforced concrete, and also as a waterproofing system, preventing water filtrations to adjoining rooms.

Lastly, oscillating doors are enhanced by a braced fabric, whereby we create a semi translucent wall that screens the light and protects from winds.

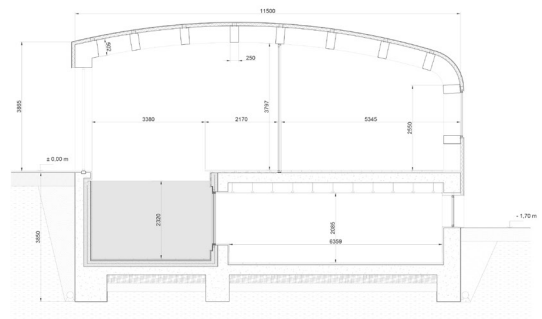


1. Structure - Wood Beams - Glued laminated timber
2. Sandwich Panel - Wood+Insulation-Wood (2x4-2 cm)
3. Preframe - Wood - Unseen
4. Drainage and ventilation - Polypropylene lam
5. Facade solution - Aluminum panel, welded and waterproof by geometry
6. Window - Aluminum frame
7. Mechanic fixation - Screw
8. Preframe - Wood - Seen from the inside
9. Window - Glass+Air camera+Glass (4x12+4 mm)
10. Structure - Reinforced Concrete
11. Ceiling system - Plasterboard - 1.5 cm
12. Isolation - PUR foam
13. Inside solution - Wood panel - 1.8 cm
14. Inside solution fixation - bonding mortar
15. Underground waterproofing - Sodium Bentonite
16. Lintel - Bended aluminum
17. Shades - wood frame with fabric panel - Fix-rotating system
18. Swimming pool cube - Build up concrete - 20 cm thick
19. Steel reinforcement for the swimming pool - 4 mm Ø
20. Waterproof mortar - 26 mm
21. Swimming pool finishing - natural stone - marble 20cm
22. Swimming pool drainage system - metallic gutter
23. Underground drainage - 20 cm Ø
24. Catwalk pavement - Wood with 10cm joint between used as a drainage system
25. Catwalk support - wood linoer 50x30 cm
26. Washbasin - EPDM form
27. Underwater waterproofing - 150x2000 mm (usual)
28. Soundproof lam - EPPS 1 cm
29. Interior pavement fixation - Glue mortar
30. Interior pavement - Industrial parquet

CONSTRUCTIVE AXONOMETRIC



- 1 wooden beams - Spruce
- 2 wooden board - Spruce
- 3 thermal isolation (polyurethane)
- 4 trapping for the roof
- 5 closed plate to drain-making water
- 6 wooden slat
- 7 closed panel to drain-making water
- 8 thermal isolation (polyurethane)
- 9 finishing for the facade



CROSS SECTION 1.75



DETAIL WINDOW GROUND LEVEL 1.10



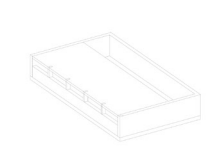
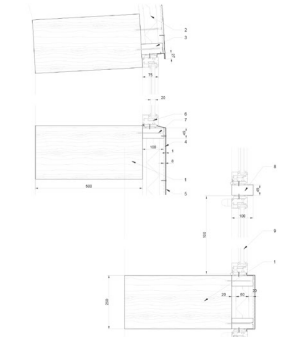
DETAIL WINDOW GROUND LEVEL 1.10



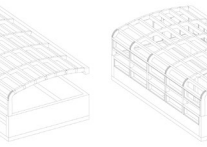
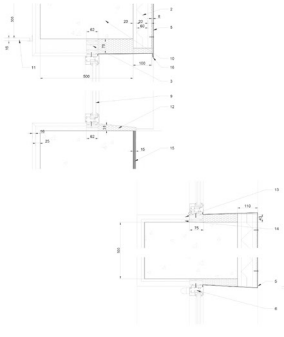
DETAIL WINDOW GROUND LEVEL 1.10



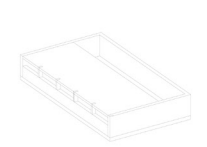
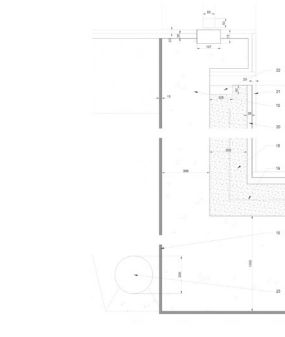
DETAIL WINDOW GROUND LEVEL 1.10



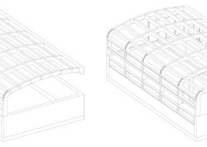
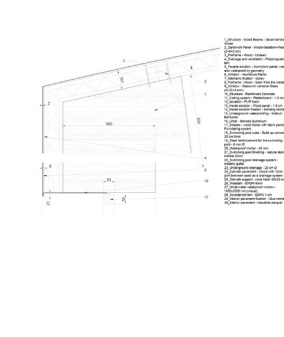
phase 01. foundations and load bearing walls made out of concrete. the whole basement has a concrete structure



phase 02. the north facade and the roofing system are supported by a rounded laminated structure made out of timber



phase 03. the interior has a rounded look due to the use of wood panels on the walls and wooden floor



phase 01. foundations and load bearing walls made out of concrete. the whole basement has a concrete structure

- 1. Foundations and load-bearing walls
- 2. North facade and roofing system
- 3. Interior structure
- 4. Swimming pool
- 5. Catwalk
- 6. Washbasin
- 7. Soundproofing
- 8. Interior pavement
- 9. Waterproofing
- 10. Insulation
- 11. Ceiling
- 12. Structure
- 13. Window
- 14. Preframe
- 15. Drainage and ventilation
- 16. Lintel
- 17. Shades
- 18. Swimming pool cube
- 19. Steel reinforcement
- 20. Waterproof mortar
- 21. Swimming pool finishing
- 22. Swimming pool drainage system
- 23. Underground drainage
- 24. Catwalk pavement
- 25. Catwalk support
- 26. Washbasin
- 27. Underwater waterproofing
- 28. Soundproof lam
- 29. Interior pavement fixation
- 30. Interior pavement

## CASA DEL VIENTO.

VAN WEEREN, Tim

VAN BEEST, Caspar

VAGEBUUR, Timo



# 6<sup>th</sup> HEALTHY HOUSING AWARD

## Analyse

### "Casa del Viento"

#### Location

Monforte del cid, a village in the province of Alicante, Spain. Situated in the Costa Blanca of the Alicante area between Valencia and Murcia. It's a small village with a population of 7000 people. A relative quiet village with a density of under a 100 people per km<sup>2</sup>.

The town itself is on the outskirts of Alicante, so it's very close to Alicante Airport, approximately 27 kilometers which is about 25 minutes drive from the city center. This because it's well connected by the A-31 highway, which takes you in about 25 minutes to Alicante city center. The village is also surrounded by several other villages, Noveldá (11 min), Aspe (8 min), Elche (big city, 23 min) and Elda (big city, 19 min).

A couple of touristic accommodations are a golf course, rich amount of architectural treasures, the towns musical groups and tasting the local delicacies. Its economy revolves around the table grapes, crop of excellent quality, in the microclimate which it is developed in. We want to try and focus our views of our sustainable home to these crops.

Our plot is situated on the outskirts of the village, because we are planning to use wind in our concept and therefore need enough space around our house. Also you get a lot of nice views of the area and still be properly connected to the town center and other cities.



#### Clients

One of our main focus point in creating this house are the residents who will end up living in this house. Therefore we're going to make our home accessible for their possible limited ability. Our choice and focus point are the elderly for northern Europe. We need to consider their needs and abilities for now and in the future.

For example:

- Their retired so they will probably need a space to practice their hobby, read a book or just sit in the sun
- Be well connected to other cities for groceries, shopping, playing golf and other trips out of town
- The home has to be situated in such a way that there is a possibility to sunbath and at the same time relax in the shade
- Space to welcome guest/family and have a separate guest area

We are trying to mix the Dutch and Spanish culture in the building by creating spaces for both parties. For example the Dutch often want to sit in the sun all day, but the Spanish people just want their siesta in the shade.



#### Weather

The south east coast line of Spain has a Mediterranean climate. The summers are hot and the winters can be very mild. The city of Alicante, and also the village Monforte del Cid, is surrounded by hills which creates a microclimate and ensures that there's almost no rain. This makes the area one of the driest in Europe.

A couple of quick facts about the weather in Alicante:

Average maximum temp. summer (August):	31 degrees
Average minimum temp. winter (January):	6 degrees
Average sun hours a day (August):	10 hours
General wind direction:	East to West
Month with the most average rainfall:	September (61-100 mm)

(www.klimaatinfo.nl)

The weather in and around Alicante is extremely hot during the day, so what we are trying to reach in our concept is designing a cool house throughout this period. This with the use of sustainable solutions. This means we try to use the minimal amount of energy sources provided by the energy companies and be self sufficient. This can be done by using the sun, wind or maybe water sources to create energy. Although water in this area is very limited, we are not planning to use this kind of source.





# 6th HEALTHY HOUSING AWARD

## Concept

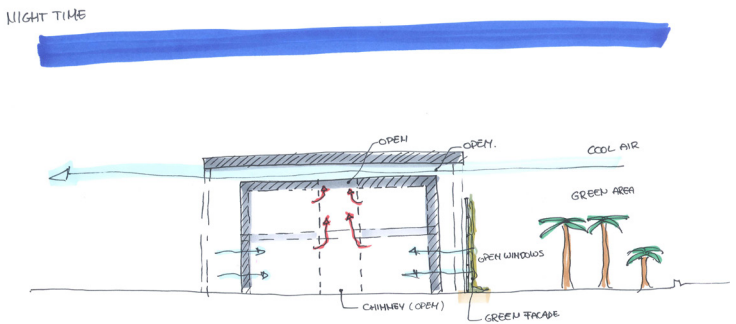
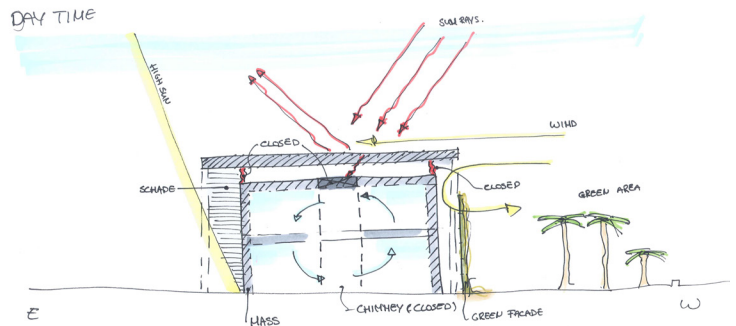
### "Casa del Viento"

#### Wind & Greenery

Our concept is based on creating a comfortable climate inside the building, by using daylight and natural cooling and heating principals. Therefore we are using wind, sun and orientation.

Our first idea was to create a second façade, to block the direct sun and create a space between these layers to ventilate the air out of the building. We are going to use the colder night air to cool our building. By completely open our structure at night we create an airflow that forces the heated air out of our building. We want to keep this cool temperature inside during daytime. To achieve this we close our chimneys during the day, this way the outside air can move freely around our building and we keep the cooler air inside. To keep the cooler air inside we create massive walls that are capable to keep the temperature at a constant level. These massive walls admit a cold temperature during the day because they were cooled down during the night.

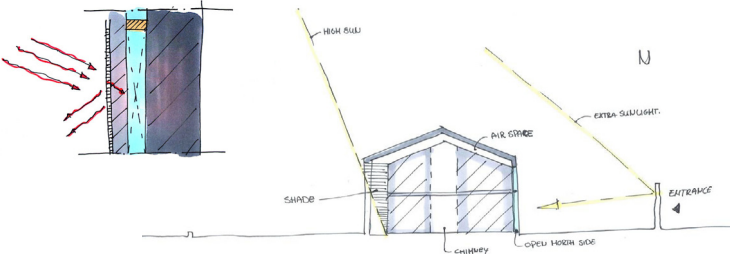
The use of greenery in our project is also of high value. By placing a green area of for example local trees in front of your structure they emit a little bit of moisture. The air we use to cool our building will go through these trees and bushes and not be extremely dry, this way you'll get some moisture inside your building therefore making it just that little bit better to life in.



#### Sunlight

There are two more things we are using to help our home to be a better living area. Firstly the second façade also keeps the high sunrays from the south side away from the windows thereby keeping the additional heat away. Secondly by placing a high white wall on the north side of the plot (entrance) we create a extra light source at the north side and limiting the use of lights inside of our building during daytime.

Because of the extra costs of creating a expensive second façade, we decided not to do that at the west façade. But we did find a much cheaper way to create a similar effect, by placing a rack in front of our west façade and growing some table grapes on that side. This way you create a kind of second façade and blocking those first rays of the sun. These grapes are one of the main products of the town, so easy to get. You could also build that rack a bit longer and create a shade on the south terrace.



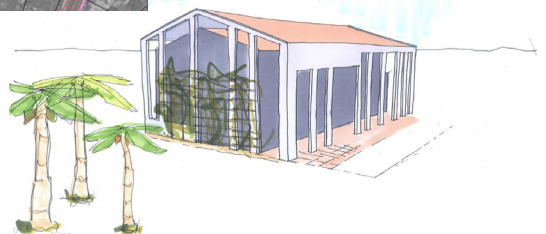
#### Orientation

Here are three ways how we orientated our building:

Because of the general wind directions being east to west, we want to place our building along these axes. This way we maximize our circulation concept with this air flow.

We are using the high south sun in two ways. Because of this high south sun we placed a overhang over the south façade, this way the sun does not reach the windows and keeps the warmth outside. We will use the high sun in another way for extra light in our building. With the high white wall on the north side of our plot, we get a reflection off this wall which creates a extra light source.

The last way of orientation is the orientation of rooms. Because of the light source on the north side, we placed the bedrooms, dinner room and hobby room on that façade. Between the living and dinner room there are no walls, so the north light also reaches the living area. The views are on the south side, that's because we orientated the living room, hobby room en master bedroom to this side. The sun rises at the east and sets in the west, for this reason we placed the terrace on both the east and south side. This way you can sunbath on the south terrace as well be in the shade on the east side. This way we tried to compromise all the benefits of the orientation and placing of the rooms to get the best home idea.

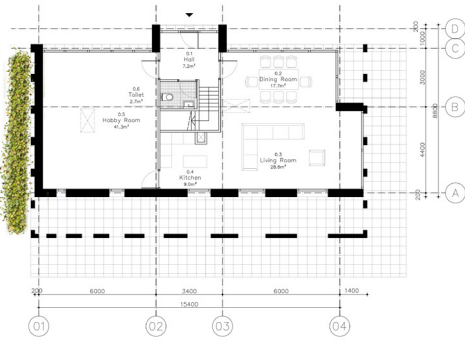




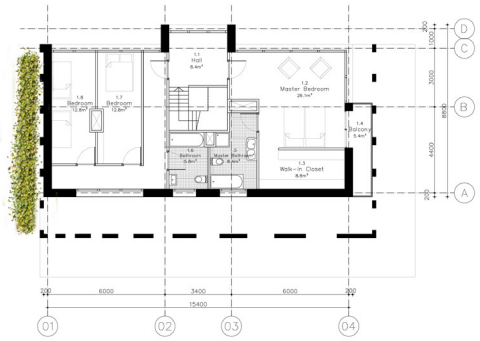
# 6<sup>th</sup> HEALTHY HOUSING AWARD

## Design "Casa del Viento"

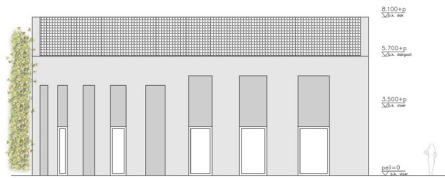
### Architectural drawings



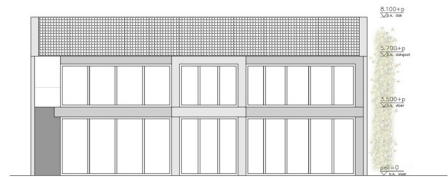
Ground floor



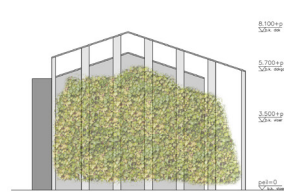
First floor



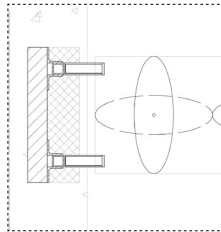
South facade



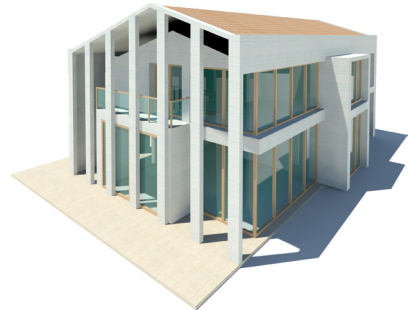
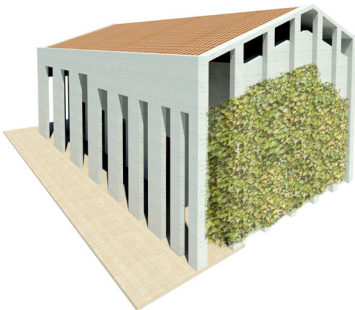
North facade



West facade



East facade



# CAVE HOUSE.

ALBALADEJO SOLER, Jesús

RÜZGAR, Yagmur

KREAWCZYNSKI, Michal



# CAVE HOUSE ANALYSIS

6th HEALTHY HOUSING AWARD

## USERS



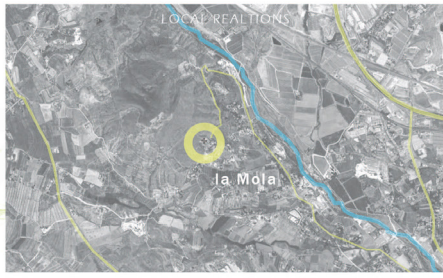
couple +60

## USER'S DEMANDS

nice views relax function social life guests  
 quiet and calm place universal design active function  
 close to nature close to the city easy accessible by car

## HOUSE MAIN FEATURES

respond to the users requirements  
 sustainable design local features  
 good and healthy environment  
 integrated with nature aesthetic



## LOCAL FEATURES

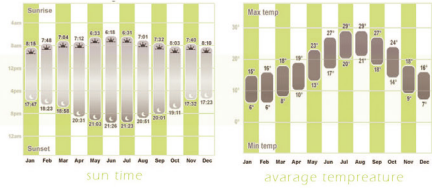


**local houses**  
 orientation to south east, porches,  
 big windows from east, swimming pools

**local materials**  
 marble, limestone, clay

**local plants**  
 pine trees, olive trees, grape trees

## LOCAL CLIMATE



sun track



shadows



sun trays

## CONCEPTS



## SUSTAINABLE PRINCIPLES

Energy efficiency Low-impact materials  
 Design for reuse and recycling Quality and durability:  
 Energy production Energy production

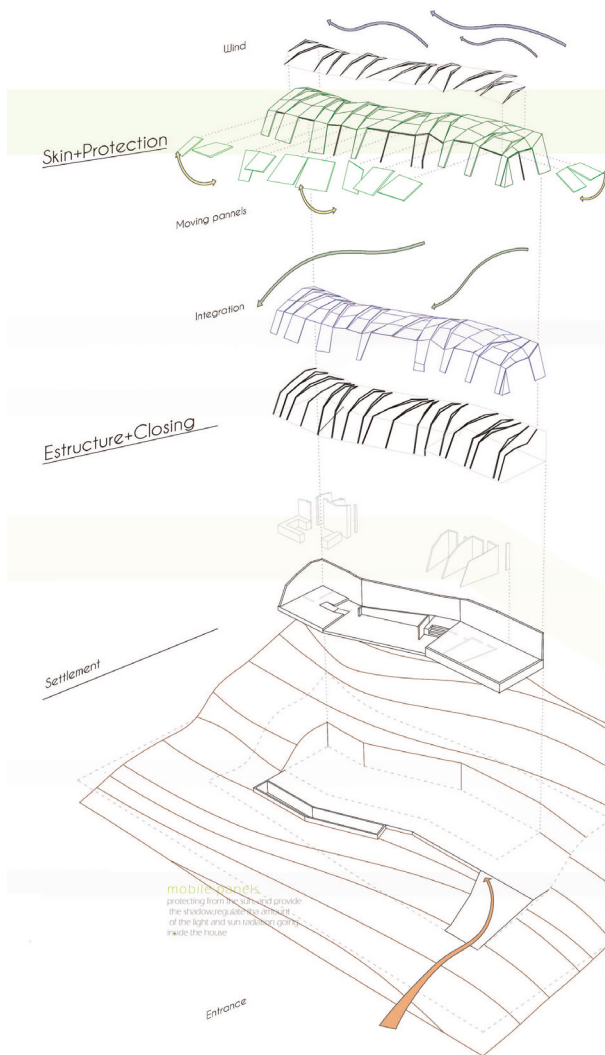




# CAVE HOUSE

# CONCEPT

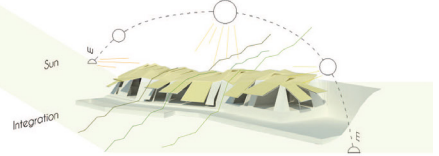
6th HEALTHY HOUSING AWARD



## Natural systems

In order to create a sustainable house, the necessity of creating different static and useful systems have been necessary in order to provide the house with protection, natural ventilation, easy and manually solar controllers or the use of the ground to cool the inner space.

Every system is directly related with the dynamic structure. Every window is provided with a vegetal moving protection that is able to block, shade or create shadow like a terrace. Also in the case of the ceiling, covering from the difference of surfaces, there appear narrow apertures that gives a secondary light coming from above and also works as natural ventilation with the physical principles of Venturi. The green roof works together with the structure and both together give protection to the interior being as it insulate, uses the water and also becomes a new surface of the house that can be used and enjoyed by everyone.

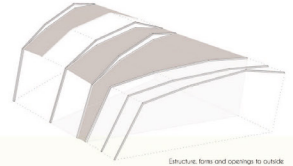


## Form as protection

The project is said that works as a skin that becomes another little piece of the levantine landscape. This concept has been taken as one of the most important and it has become the core to the designing part of the project because the structure gotten is an abstract idealization of how can a space landscape.

Dynamics is another important concept in the ideas of the project and this has been reflected in different ways being as it is the diverting green rooftops, the very interesting interior that gives a very refreshing sensation with the little light lines coming from the ceiling, the dynamics of the faceted surfaces of the ceiling, the repeatable books that one open to provide shadow as a terrace of closed to shade from the fierce sun. Not just this but also in the night living area of the house there is a movable system and it provides an important requirement of the owner because all this space can be organized to have a couple living in it if it can change in any moment to provide perfect sleeping space in two new spaces.

The structure is supported by the steel structure and a concrete mass goes in it to close the inner space and also make support of the green protective rooftop.



## Settlement

An integrated building in





# CAVE HOUSE

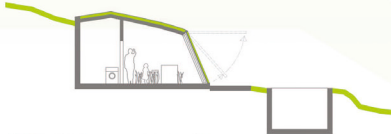
# DESIGN

6th HEALTHY HOUSING AWARD

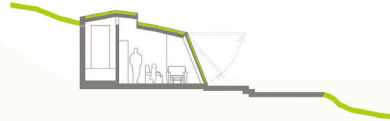
FLOOR PLAN WITH PLOT PLAN scale 1:100



SECTION A-A scale 1:100



SECTION B-B scale 1:100



SECTION C-C scale 1:100



DETAIL I



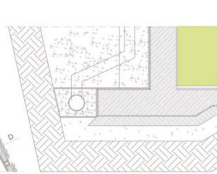
DETAIL II



DETAIL III



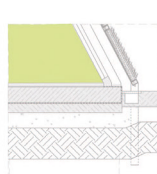
DETAIL IV



DETAIL V



DETAIL VI scale 1:20



## SUSTAINABLE SOLUTIONS

### mobile panels

protecting from the sun, and provide the shadowing area the amount of the light and sun radiation going inside the house

### sun protective windows

windows with glass reflecting/absorbing the UV and the heat radiation

### green roof and green walls

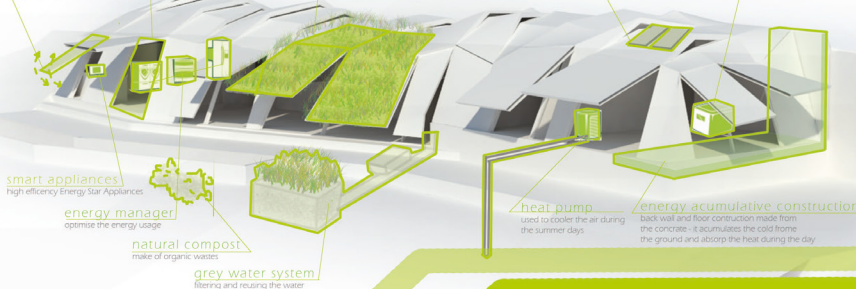
thermal and sound insulation, facade protection, creates outside space, aesthetic look, the greenery on facade purificate and cool the air (which is pump inside the house)

### solar photovoltaic

creates 3 to 4 kW solar energy to meet the requirements of the house

### energy storage

Battery storage for backup power and peak loads



### smart appliances

high efficiency Energy Star Appliances

### energy manager

optimize the energy usage

### natural compost

made of organic wastes

### grey water system

filtering and reusing the water

### heat pump

used to cooler the air during the summer days

### energy accumulative construction

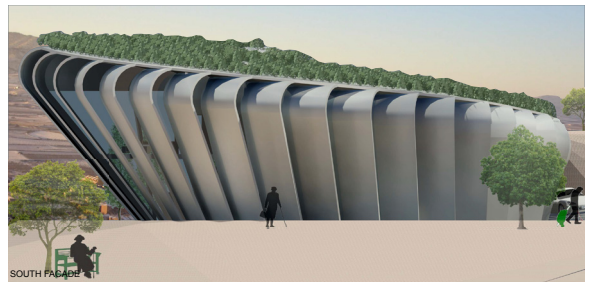
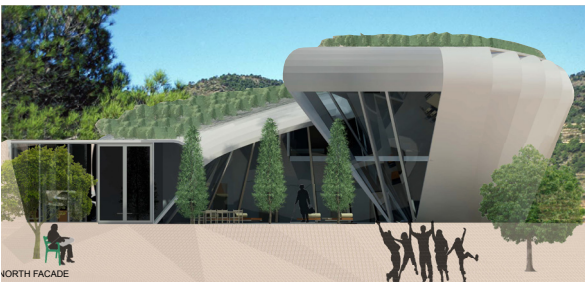
back wall and floor construction made from the concrete, it accumulates the cold from the ground and absorb the heat during the day

## FOLLOW THE SUN.

ADRIAANSE, Robin

LUBBERS, Maarten

MEIJER, Max



# 6<sup>TH</sup> HEALTHY HOUSING AWARD

## “FOLLOW THE SUN” ANALYSE

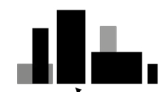
### USERS

The user where we designing a healthy house for is a retired couple. Next to this man user, the couple wants to be able to meet family and friends during the whole year. We take a average of 4 persons per visit.



RETIRED COUPLE WITH FAMILY

The couple also wants to be close to a city to buy there daily needs, to shop some times, go to the church, have a drink on a terrace and so on. They could travel by car, but when they are still healthy, it would be nice to be able to walk. Therefore we take approximately 1km.

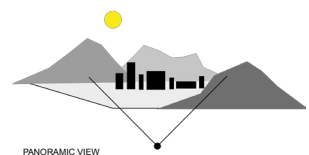


DISTANCE TO CITY

In contrast with all this functional aspects, the couple will live in this house to enjoy the environment, nature and the sun. Therefore they want to have a great view over the landscape.



GOOD CONNECTION



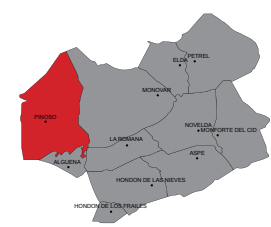
PANORAMIC VIEW



VIEW FROM LOCATION

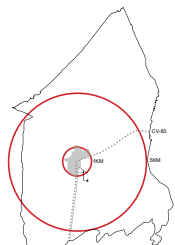
### LOCATION OF THE PROJECT : PINOSO

Pinoso is a city with 7.000 inhabitants in the most west part of the region of the Medio Vinalopó. Probably you will ask yourself: "Why so far away if you describe all this requirements?".



PINOSO IN THE REGION OF MEDIO VINALOP&O

We took this location because it has a lot to offer. Starting with a small city who has everything the couple needs. South-east from the city there is a hill with a lot of greenery and a great position towards the north. The north will be important cause of the heat of the sun. On the hill there is already an existing villa area, with good facilities and infrastructure. The infrastructure is good connect-ed with the main roads CV43 and CV56. We will put our building next to this villa area, toward the north and where you will have a panoramic view over to the landscape and the city of Pinoso. (see picture with the exact view). The height of the position on the hill will be 50 meter above the surrounded ground level. So there will be no problem to walk to the city, or even go by bike.



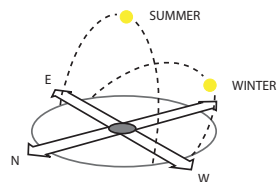
PINOSO



FL01

### SUN AND SHADOW

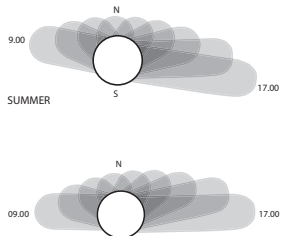
The sun is the most important and most problematic element of this district and for Spain in general. In summer it creates a lot of extreme heat and local people are hiding themselves during the most warm hours of the day, between 13:00 and 17:00. The sun is moving from east to west and is very high in the summer. At 14:00 o'clock the sun is at his highest with 75 degrees. In winter the sun is getting lower and the location of sunrise will change, more towards south.



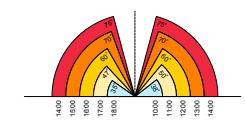
SUN COURSE

The local buildings are mostly located toward the north, cause the sun will never reach this facade. The south and west facade are mostly closed or protected.

The impact of the sun heat on a building or facade depends on the form. A square building will have the most m2 of facade, so will also be the most negative form. An angled form will already be better, but a sphere (or elips) is mathematically the most favorable form. A round form is has also a direct connection with the natural orbit of the sun.



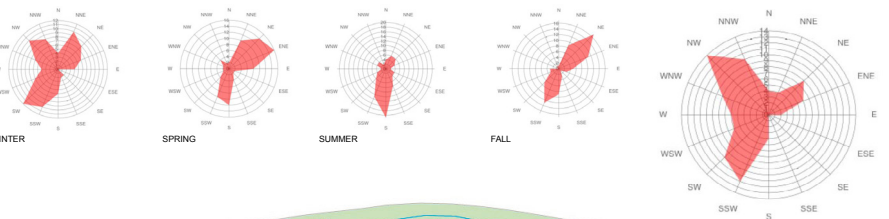
WINTER



VERTICAL POSITION OF THE SUN

### WIND

In Pinoso the wind is quite variable during the year. In winter the wind is not coming from a primary direction, only not from the south-east. The spring and fall are similar and in the summer the wind is primary coming out of the south.



WINTER

SPRING

SUMMER

FALL

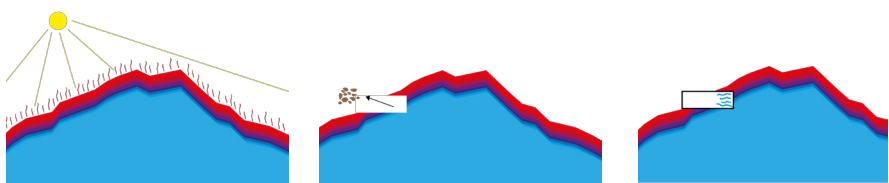
We will use the wind to ventilate our building. It will not work as cooling, but it can give a breeze while sitting in the shadow. We concentrate ourself on the summer situation, cause this will be the hottest period.

To use the wind we have to use the south facade, the facade you want to "close" cause of the sun heat. Our building is situated on a hill area. On the section from north to west you can see the airflow going over the hill. On the top of the "second hill" the wind tricks down, so the perfect location to put our building.



### GROUND COOLING

The surface of the ground is heated by the sun. But underneath the surface the ground is cold. This is a difference from 35-50 degrees to 10-15 degrees. The hill next to Pinoso is composed of sand stone and is between soft and hard. It is possible to dig out the ground with good machines. If you dig out a part of the hill you can reach the cold area. We will use the accumulative capacity to keep our building cool from inside.



# 6<sup>TH</sup> HEALTHY HOUSING AWARD

UNIVERSITAT D'ALACANT

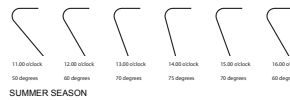
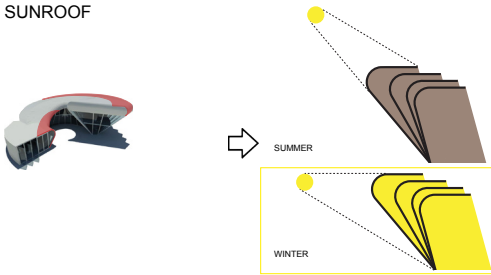
HOGESCHOOL VAN AMSTERDAM

FUNDACION MARJAL

BEUTH HOCHSCHULE FUR TECHNICK BERLIN

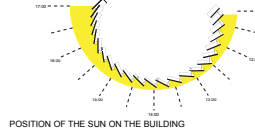
## "FOLLOW THE SUN" CONCEPT

### SUNROOF

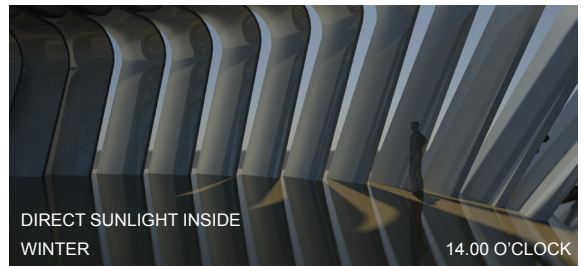
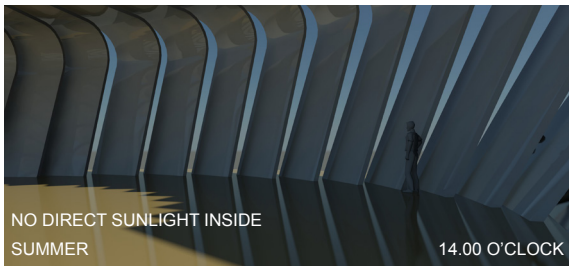


Prevention is better than healing. In our concept we combine horizontal and vertical sun shading in one element. We positioned the elements so that they have the same angle as the sun altitude. The sun is not touching the facade in summer time. This results in less m<sup>2</sup> facade that will be heated by the sun. We used this principle also on the inner ring of the villa. The vertical angles (altitude) we chose are taken from the most hottest time of the year: from June till the end of August. The horizontal angle (azimuth) of the elements are positioned in the right time, from east to west, between 11:00 and 17:00.

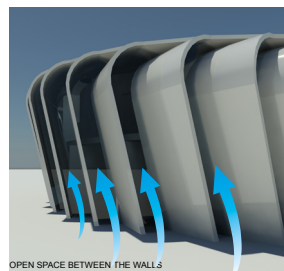
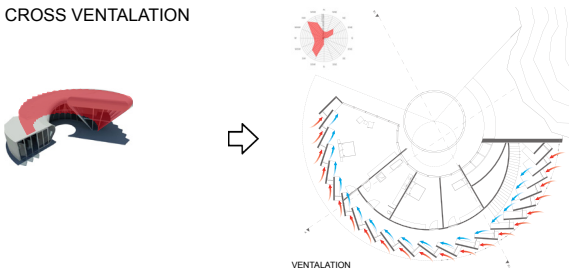
So the sun will not penetrate the building in the summer, the facade will be completely in the shadow. In the winter the sun will go lower, so the angles are not enough anymore. But in this period of the year it is nice to have some sunlight inside. The sunlight still will be reduced a lot by the elements.



POSITION OF THE SUN ON THE BUILDING

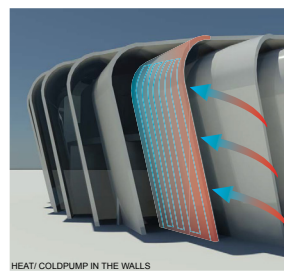
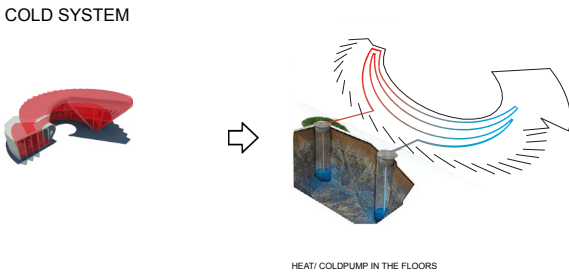


### CROSS VENTILATION



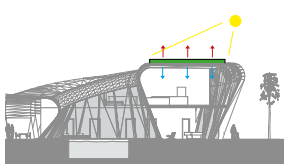
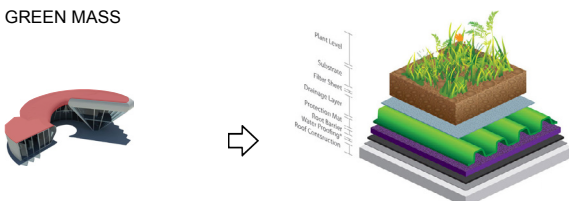
The oblique panels in the facade have a second reason. The hallway is situated between the rooms and the facade. In this way we can use the hallway as a heat-buffer for the rooms. The space between the panels is filled with glass and can be opened. When opened, wind can circulate inside the building. You can think about it like a turbine motor. Imported for the design is that in night the facade is opened so cool wind can flow inside. This cool wind can cool down the big mass of the building. This cool air can be stored inside the mass. In daytime the windows are closed so the cool air is kept inside. When the temperature outside is nearly the same as inside the panels can be opened to let the wind flow true the building. In the next system we explain how the cold air behaves.

### COLD SYSTEM



For a good use of the heat/cold-pump it is really necessary that we have a big mass inside the building. To get all this mass we used to make the construction of concrete. This heat-pump can be switched to a cold-pump to cool down the building. The heat-pump is linked to a well that will be situated inside the mass of the hill. This hill has the hole year (in summer and winter) an average temperature of 18 degrees Celsius. With that temperature of 18 degrees it is possible with a small amount of energy to cool down or heat up the building to the wanted temperature. The floor and the inside of the facade will be used to put in the system (concrete activation). In summer this mass will cool down the hot air inside the building, in winter it is work exactly the other way. The system will be operating the whole night and day, so there will be no peak point.

### GREEN MASS



The green roof will give the design shadow, air and mass. The shadow appears on the green-roof because there will be small plants there. Shadow is in all times color than the heating sun on the roof. The air between the plants will be cooled by the flowing air and wind. Also the mass of the green-roof is very important. This because the heat must come true a thick layer of plants, sand and concrete to reach the inside of the building. The inside of the building will also cool down the earth inside green-roof. The plants on the roof make the design also less visible from and up the hill and gives the surroundings of the villa a cleaner air.

If we compare this roof to a normal roof we see that we have a lot more m<sup>2</sup>. But this results in the fact that the whole facade will not be touched by the sun. So if we add all the m<sup>2</sup> together it will result in less square meters that will be heated by the sun.



# 6<sup>TH</sup> HEALTHY HOUSING AWARD

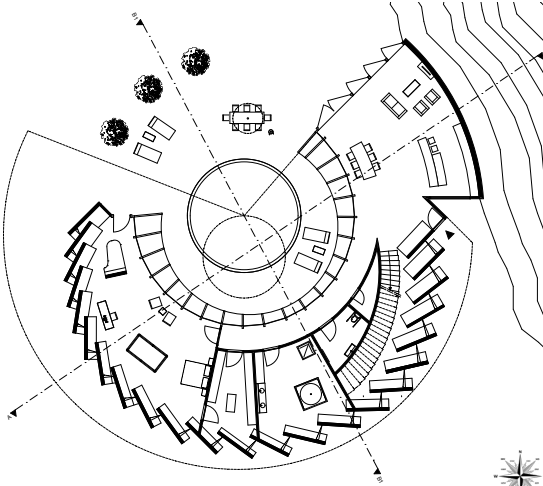
UNIVERSITAT D'ALACANT

HOGESCHOOL VAN AMSTERDAM

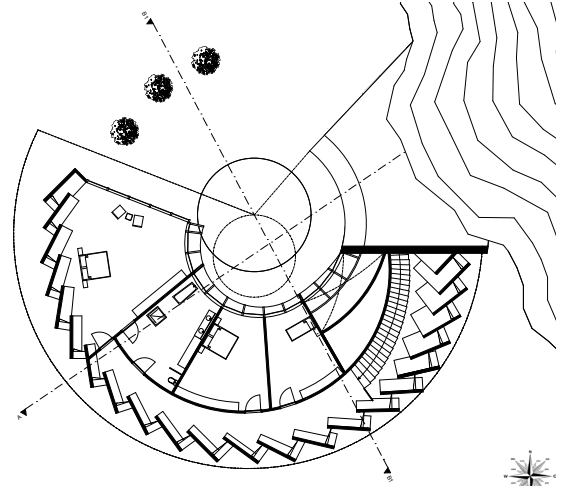
FUNDACION MARJAL

BEUTH HOCHSCHULE FUR TECHNICK BERLIN

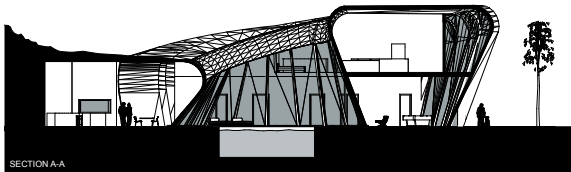
## “FOLLOW THE SUN” DESIGN



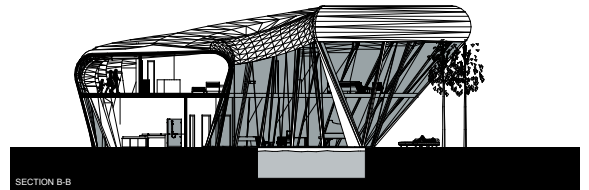
GROUND FLOOR



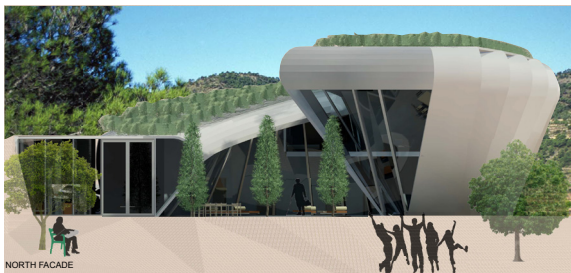
FIRST FLOOR



SECTION A-A



SECTION B-B



NORTH FACADE



SOUTH FACADE

FOUNDATION	€ 150,-/m <sup>2</sup>	450m <sup>2</sup>	= € 67.500,-
enriched foundation beams			
CONSTRUCTION	€ 900,-/m <sup>2</sup>	100m <sup>2</sup>	= € 90.000,-
concrete pylons walls			
FLOORS	€ 250,-/m <sup>2</sup>	280m <sup>2</sup>	= € 70.000,-
concreting			

FACADE	€ 650,-/m <sup>2</sup>	450m <sup>2</sup>	= € 292.500,-
concrete walls curtain walls windows			
ROOF	€ 300,-/m <sup>2</sup>	300m <sup>2</sup>	= € 90.000,-
green mass concreting			
INSTALLATION	€ 80.000,-/each	000m <sup>2</sup>	= € 80.000,- +
heat/ coldpump			
TOTAL PRICE			= € 690.000,-



LIVING VIEW



HALL WAY

# THE MEMBRANE HOUSE.

JIMÉNEZ, Marina

VAN RAALTE, Raalte

VAN ROSMALEN, Ilse

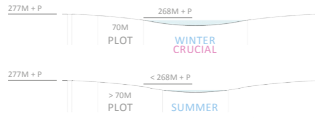
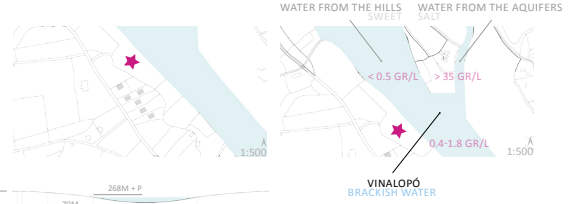
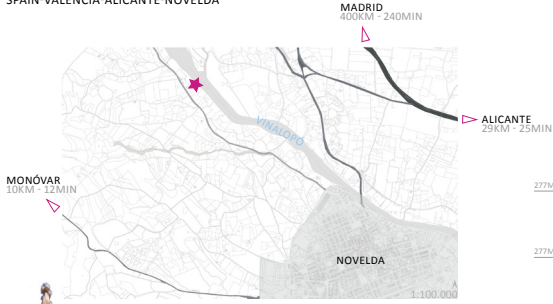


# 6TH. HEALTHY. HOUSING. AWARD

UNIVERSIDAD DE ALICANTE | HOGESCHOOL VAN AMSTERDAM | 15.03.2012 | MARINA GIMÉNEZ | RIANNE VAN RAALTE | ILSE VAN ROSMALEN

## LOCATION

SPAIN-VALENCIA-ALICANTE-NOVELDA



An aquifer is a wet underground layer of water-bearing permeable rock or unconsolidated materials, from which groundwater can be usefully extracted using a water well.

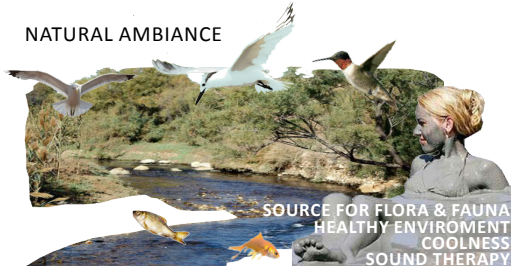
The river Vinalopó will contain water that can be very old. So the water-flow in this river doesn't depend on the rainfall at that moment. This gives a guarantee of water the whole year through, even it's not always much.

## LOCATION CHARACTERISTICS



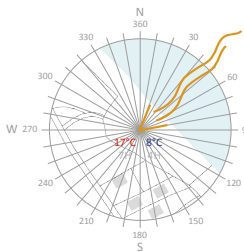
SANCTUARY OF MARIA MAGDALENA - TOMATOES - OLIVE TREES - GRAPES - SAFFRON - MARBLE - MILLS

## NATURAL AMBIANCE

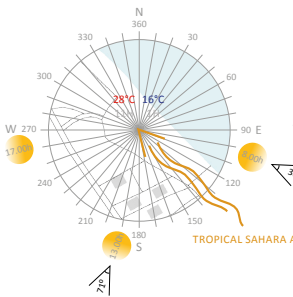


## WEATHER

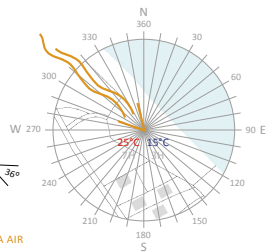
21.MARCH



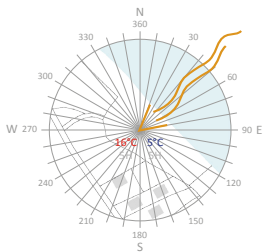
21.JUNE



21.SEPTEMBER

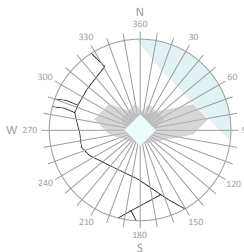


21.DECEMBER

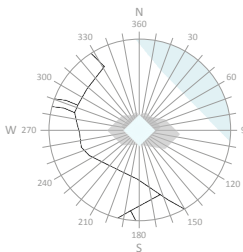


## SHADOW

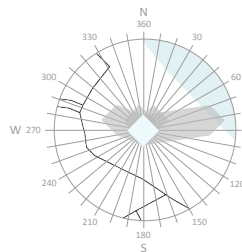
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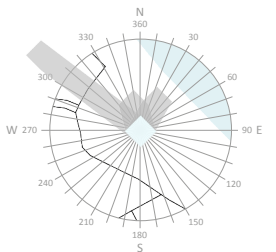
21.JUNE



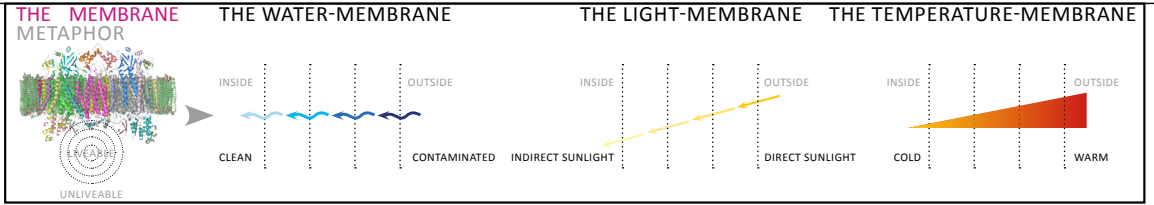
21.SEPTEMBER



21.DECEMBER

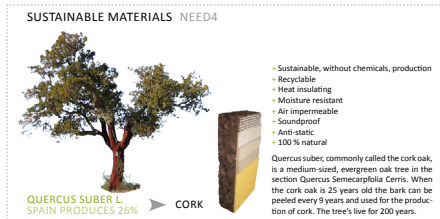
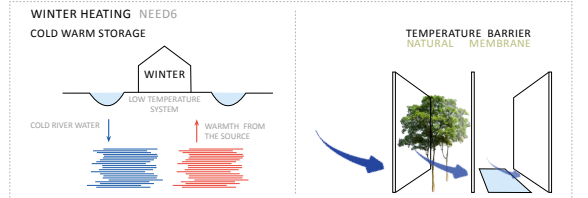
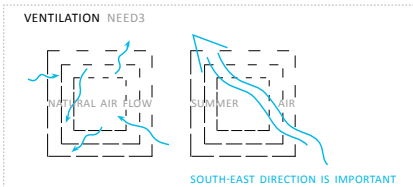
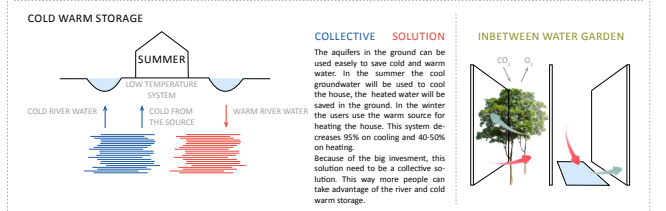
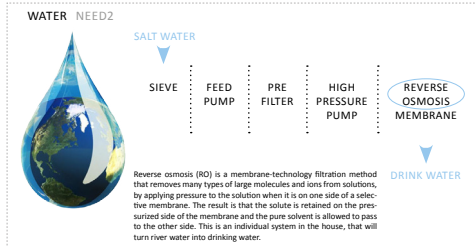
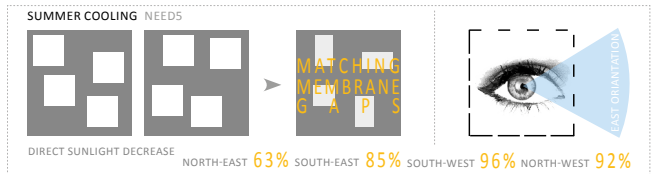






## CONCEPT

- 7 NEEDS**
- 1. SOCIAL-SUSTAINABILITY
  - 2. WATER
  - 3. VENTILATION
  - 4. SUSTAINABLE-MATERIALS
  - 5. SUMMER-COOLING
  - 6. WINTER-HEATING
  - 7. TRASH-SOLUTION





# T H E . M E M B R A N E . H O U S E

UNIVERSIDAD DE ALICANTE | HOGESCHOOL VAN AMSTERDAM | 15.03.2012 | MARINA GIMÉNEZ | RIANNE VAN RAALTE | ILSE VAN ROSMALEN

## PLANS

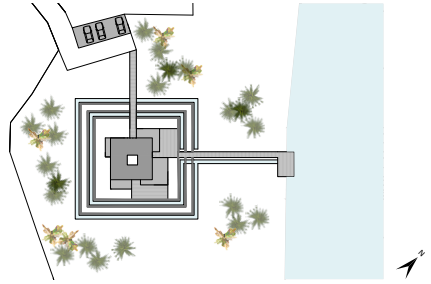
### LEVEL 0 | BASE PLAN

1:100

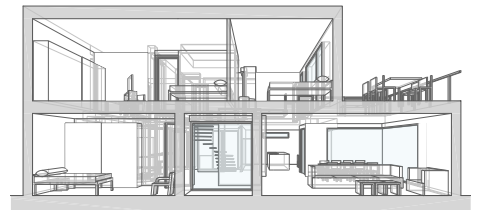


### SITUATION

1:500



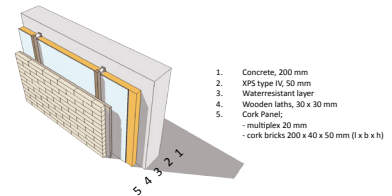
### SECTION AA'



### SECTION BB'



### DETAIL FACADE



### LEVEL 1 | ADAPTIVE PLAN

1:100



### LEVEL 1 | ADAPTIVE PLAN



## ENVELOPE HOUSE.

COLOM JOVER, Francisco

SLYSZ, Izabella

HEIJNEN, Stef



# ENVELOPE HOUSE 6th HEALTHY HOUSING AWARD MARCH 2012

FRAN COLOM JOVER - UNIVERSIDAD DE ALICANTE

IZABELLA SLYSZ - POLITECHNIKA KRAKOWSKA

STEF HEIJUNEN - HOGESCHOOL VAN AMSTERDAM



Alguena offers three main bicycle tracks which starts within the citycentre. All kinds of people can enjoy the tracks with beautiful hills and stunning nature.



The areas of the hills of Alguena are well know for hiking and walking. A group of middle age people organizes trips to the hills.



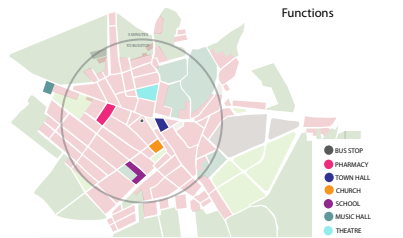
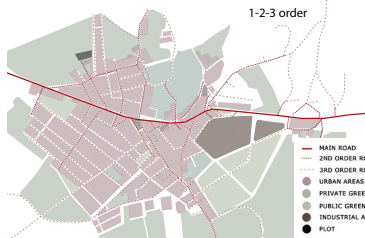
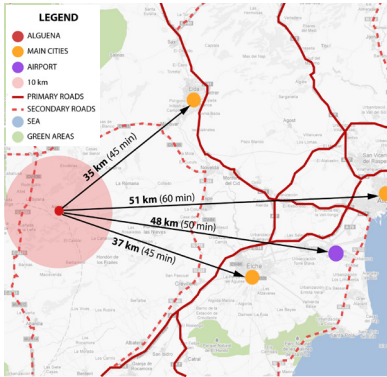
About 5 kilometers from the citycentre is a marble mine. This beautiful natural material can be used in design. Because it is nearby the transport will be cheaper.



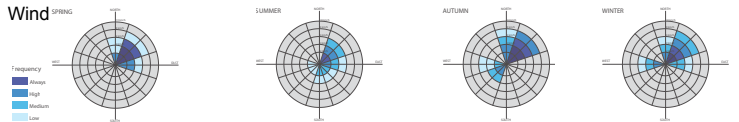
A lot of the quality wines from the Alicante are comes from Alguena. The farmers will make sure the wine is as tasty as the vineyards looks!



In Alguena you have all the facilities for social activities like a theatre, library, music hall and little squares with a lot of shade! The perfect place to live with a long and healthy life.



## Wind

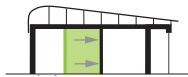


## CONCEPT



**Winter**  
Glass skin is closed:  
greenhouse effect

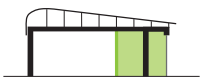
**Summer**  
Glass skin is open:  
Ventilation



**Divided spaces**  
More rooms for more people



**Multiple views to outside**  
Different experiences for the users

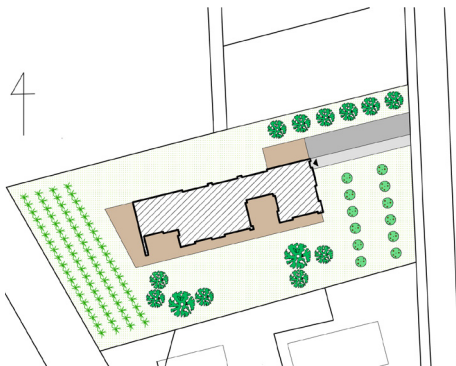


**Winter garden**  
Enjoy the outside space  
also during winter

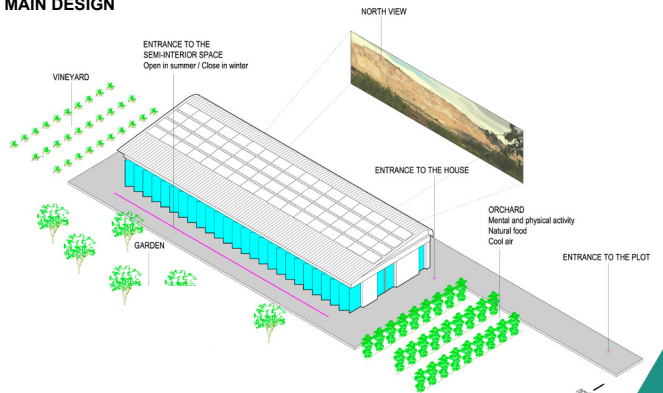


We are going to re-use the materials from the houses in Lorca. They were destroyed by an earthquake one year ago. We use the debris of the houses. As of today they are still doing the demolition from the remaining houses. It is a cheap way to recycle this debris. Also, Lorca is located less than 100 km from Alguena; this will make the transport to our construction site very cheap.

## PLOT



## MAIN DESIGN





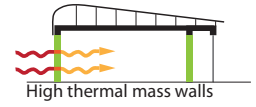
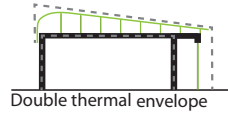
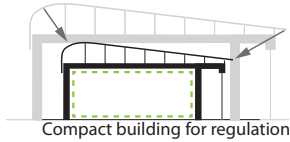
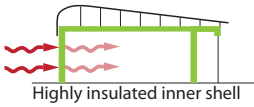
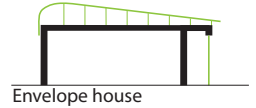
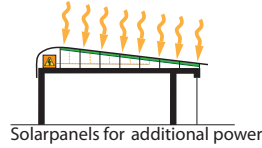
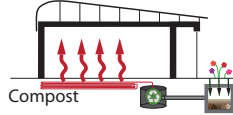
# ENVELOPE HOUSE 6th HEALTHY HOUSING AWARD MARCH 2012

FRAN COLOM JOVER - UNIVERSIDAD DE ALICANTE

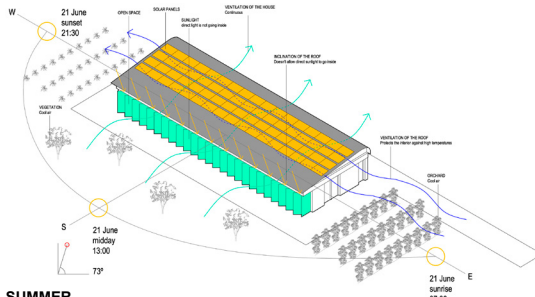
IZABELLA SLYSZ - POLITECHNIKA KRAKOWSKA

STEF HEIJEN - HOGESCHOOL VAN AMSTERDAM

## SUSTAINABLE DECISIONS

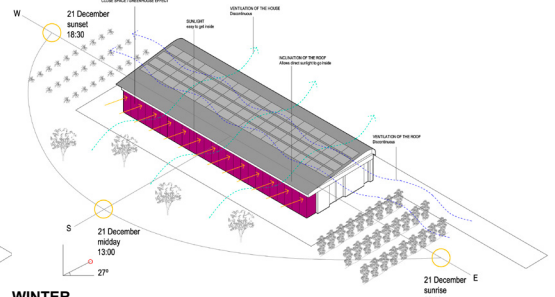


### GLASS SHUTTER CAPABILITIES



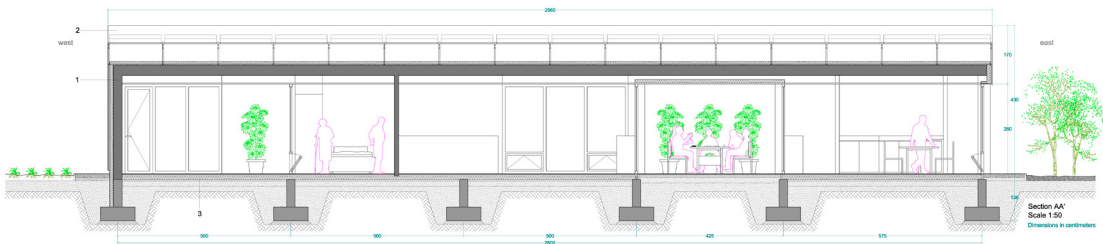
### SUMMER

The deciduous trees will provide cool air trough summer for ventilation. The ventilated space between the roof and the ceiling protects the house from heating. The extended roof blocks the sun and gives shadow in the semi-interior space.



### WINTER

The deciduous trees will provide the sunlight to get into the house. The semi-interior space with the glass shutters will create enough heat because of the greenhouse effect. Also the compost will provide up to 60 degrees of extra heat.



1. WALL  
Filling material - Stone - 3 cm  
Waterproofing - bitumen sheet  
Thermal and sound insulation - 10 cm mineral wool - 10 cm  
Structure - Composite of brick from inside and concrete - 20 cm

2. ROOF  
Filling material - Chiral sheet  
Substructure - Steel (cross section - 10 cm)  
Waterproofing - bitumen sheet  
Thermal and sound insulation - 10 cm mineral wool - 10 cm  
Structure - Reinforced concrete - 30 cm

3. FLOOR  
Filling material - Concrete - 6 cm  
Thermal and sound insulation - 10 cm  
Waterproofing - bitumen sheet

4. DECORATIVE ENVELOPE  
Fixed glass open to summer - closed to winter





# ENVELOPE HOUSE 6th HEALTHY HOUSING AWARD MARCH 2012



FRAN COLOM JOVER - UNIVERSIDAD DE ALICANTE



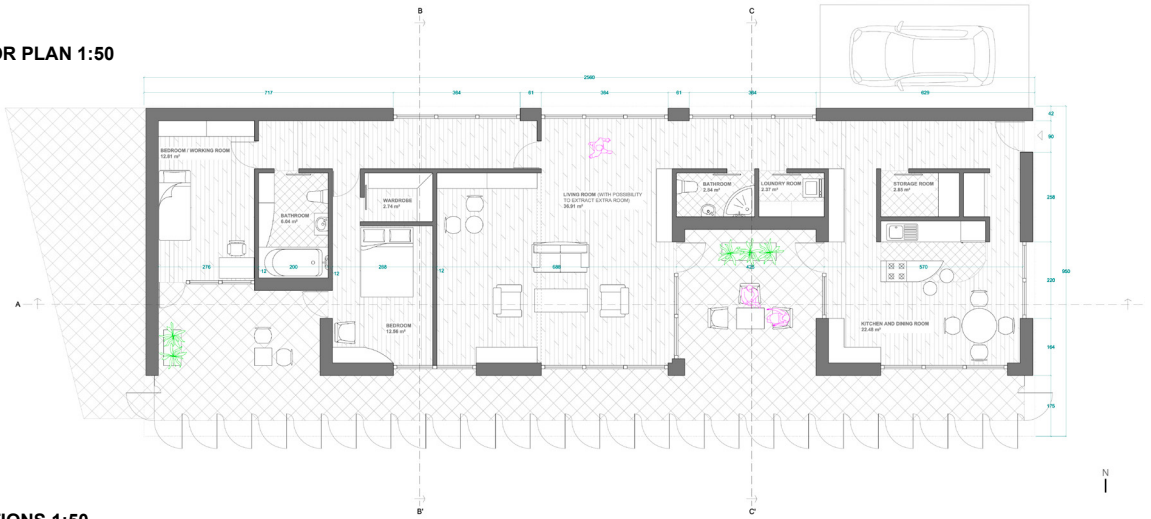
IZABELLA SLYSZ - POLITECHNIKA KRAKOWSKA



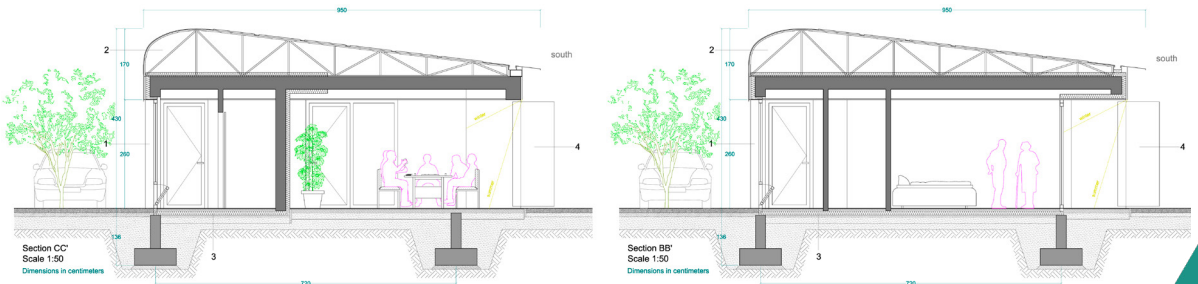
STEF HELINEN - HOGESCHOOL VAN AMSTERDAM



FLOOR PLAN 1:50



SECTIONS 1:50











# HEALTHY HOUSING AWARDS

2011/2012