ContainerHome.info Mini Series

Presentation Book 20 - “Demark Upcycle House”

BOOK # 20

FREE

TO DOWNLOAD

Container Home Book 20 – Upcycle House

2015

Valued Reader,

Following the incredible popularity of our digital book series – The Most Influential Shipping Container Homes Ever Built – we have decided to release a number of expanded titles for 2015 showcasing in greater detail some of the best in Container based Construction from around the World.

This **Booklet Number 20** in the series is free as an electronic download.

If you are interested in reviewing our first book or any others in the series please drop us an email, we would be happy to send you a copy for free.

As the World's leading educator in Container Home Construction we strive to bring our readers the very best in Container Home Design, Inspiration and Educational Resources.

If you have any questions about this booklet or our site in general please email us at admin@containerhome.info

Regards

Victor Wallace
www.containerhome.info

Book 20

Project Type	High Level Upcycled Content
Container Type	2 x Type 1A 40’ Containers
Country	Nyborg, Denmark
Architect / Engineer	Lendager Arkitekter
Size / Cost	129 sqm / $175,000 USD

Upcycle House is an experimental project, aimed at exposing potential carbon-emission reductions through the use of recycled and upcycled building materials.

Upcycling is the process of converting waste-materials or waste products into new materials or products of higher quality resulting in a reduction in production and therefore CO2-emissions.

In the case of Upcycle House, the reduction has been 86% compared to a benchmark house.

With increasing building performance in regards to operational energy consumption, focus has now shifted towards CO2-emissions related to construction.

When building houses, it is therefore environmentally beneficial to think in terms of material recycling, since the materials have already emitted CO2. It is even better to develop processes where garbage or useless materials can be upcycled and reused for new building materials of higher utility value than they had originally.

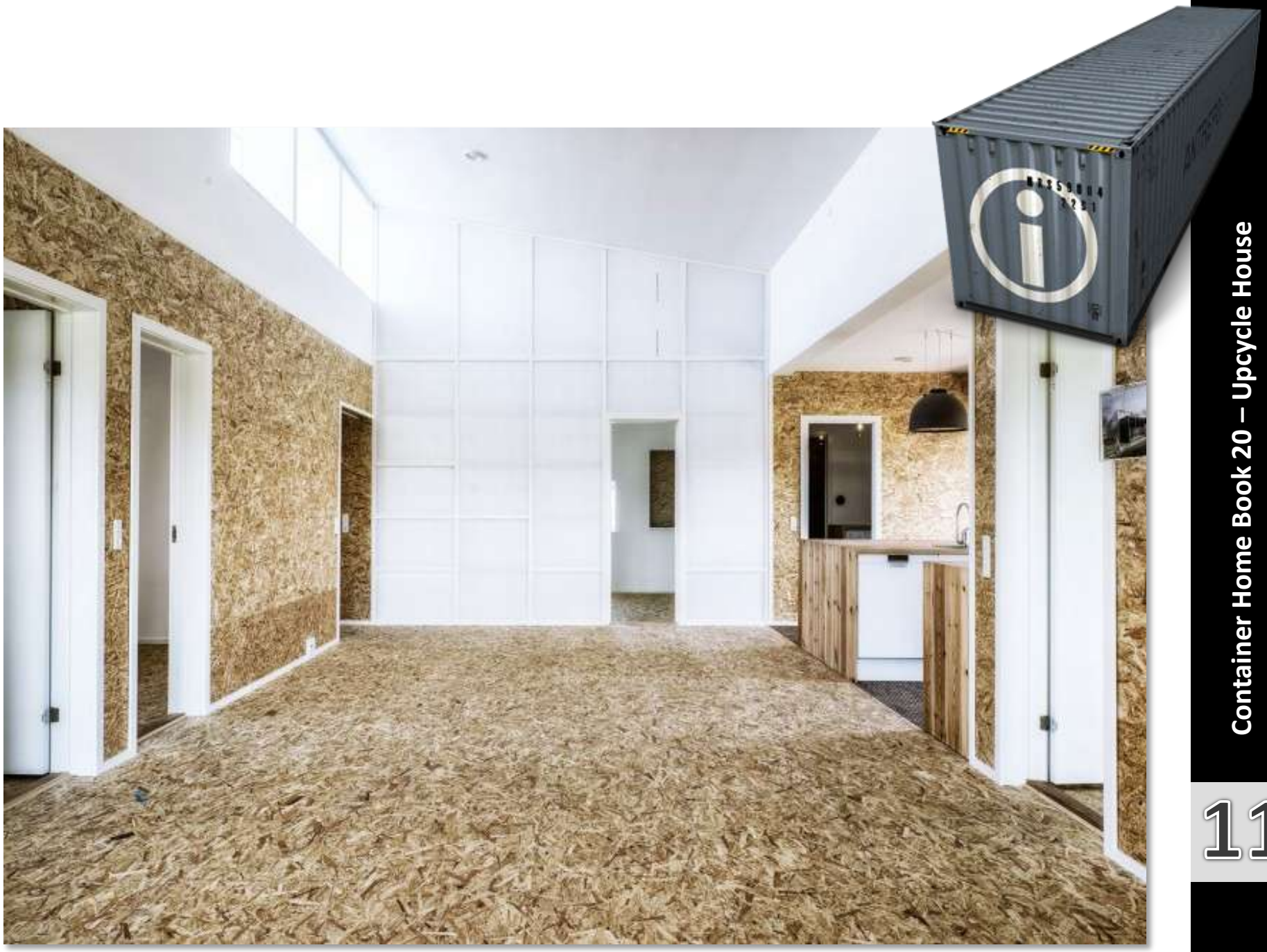
Realdania Byg (a Danish foundation that promotes innovation and good practice in the building sector) has developed and constructed a single-family house with Lendager Architects called Upcycle House conveying the principles of upcycling in a tangible and clear example.

The house is built of processed recycled materials and Upcycle House investigates how much it's actually possible to reduce the CO2 footprint by using upcycled materials to the extent possible.

The loadbearing structure consists of two prefabricated shipping containers, while the roof and facade cladding is made from recycled aluminium soda-cans. Facade panels, consist of post-consumer recycled granulated paper, which is pressed together and heat-treated. The kitchen floor is clad in tiled champagne cork-leftovers, and the bath tiles are made from recycled glass.

Walls and floors are covered with OSB-panels consisting of wood-chips that are bi-products of various production sites, pressed together without glue. The recycled materials are not very visible and the house does not radiate a recycled look – The house looks and functions like a contemporary house built of conventional materials.

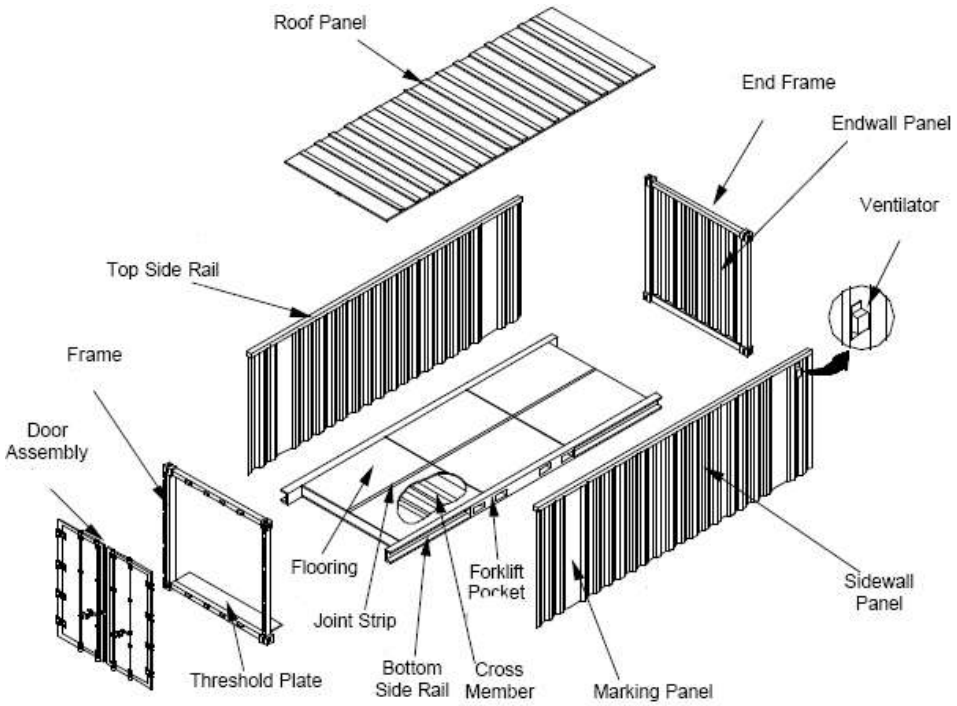
Interior



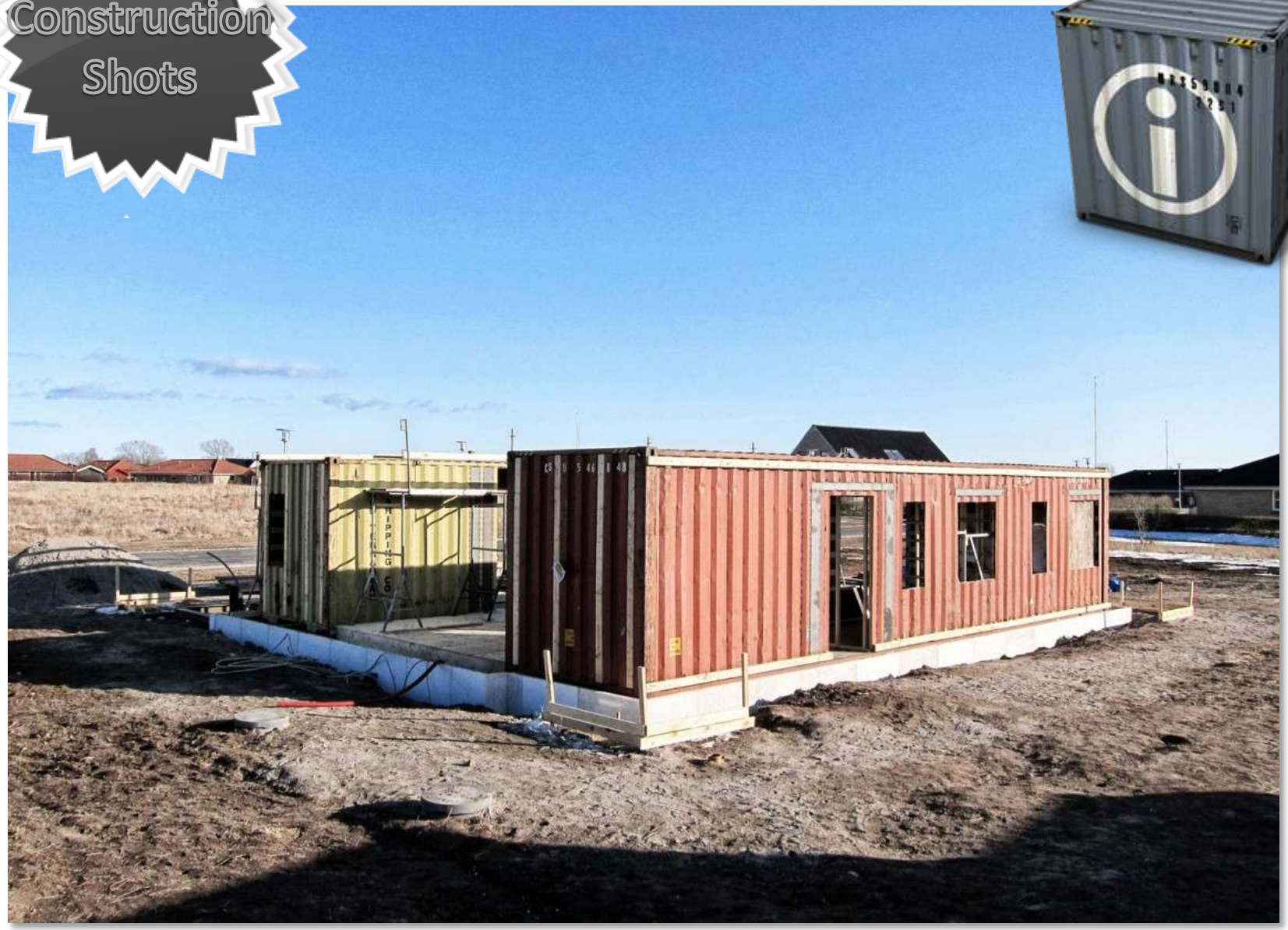

SHIPPING

Video 2 in our series of 15 “How to Build a Container Home” Video Tutorials looks at How a Shipping Container is manufactured – Vital information if you want to re-engineer them.

Click here to Watch Video 2 of 15

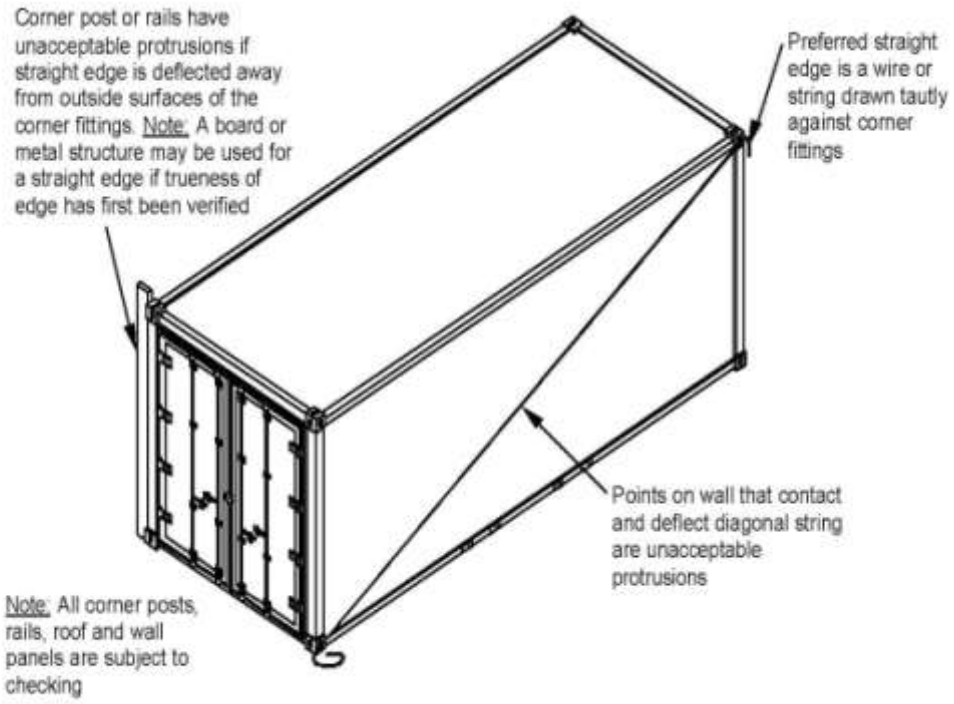


Construction Shots



Video 3 in our series of 15 “How to Build a Container Home” Video Tutorials looks at Purchasing Second Hand Containers. What to look for and what to look out for !

Click here to Watch Video 3 of 15

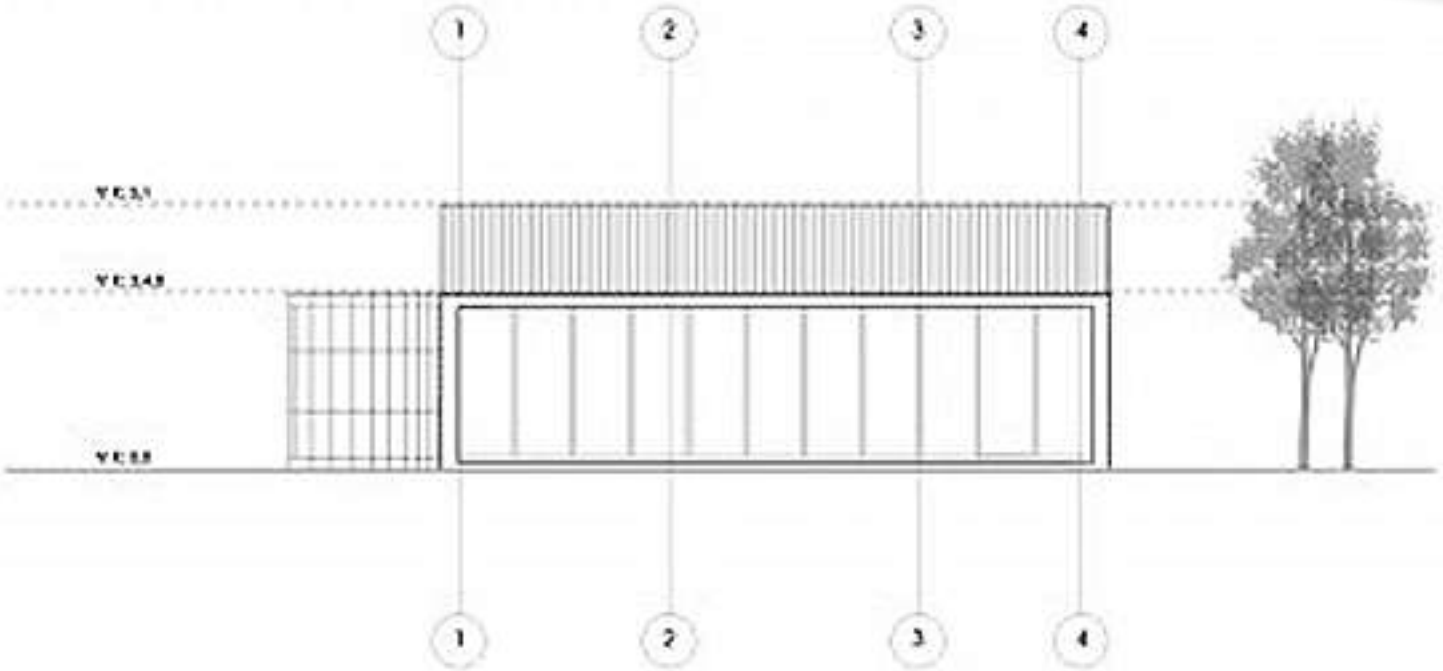


- CHECKING FOR PROTRUSIONS

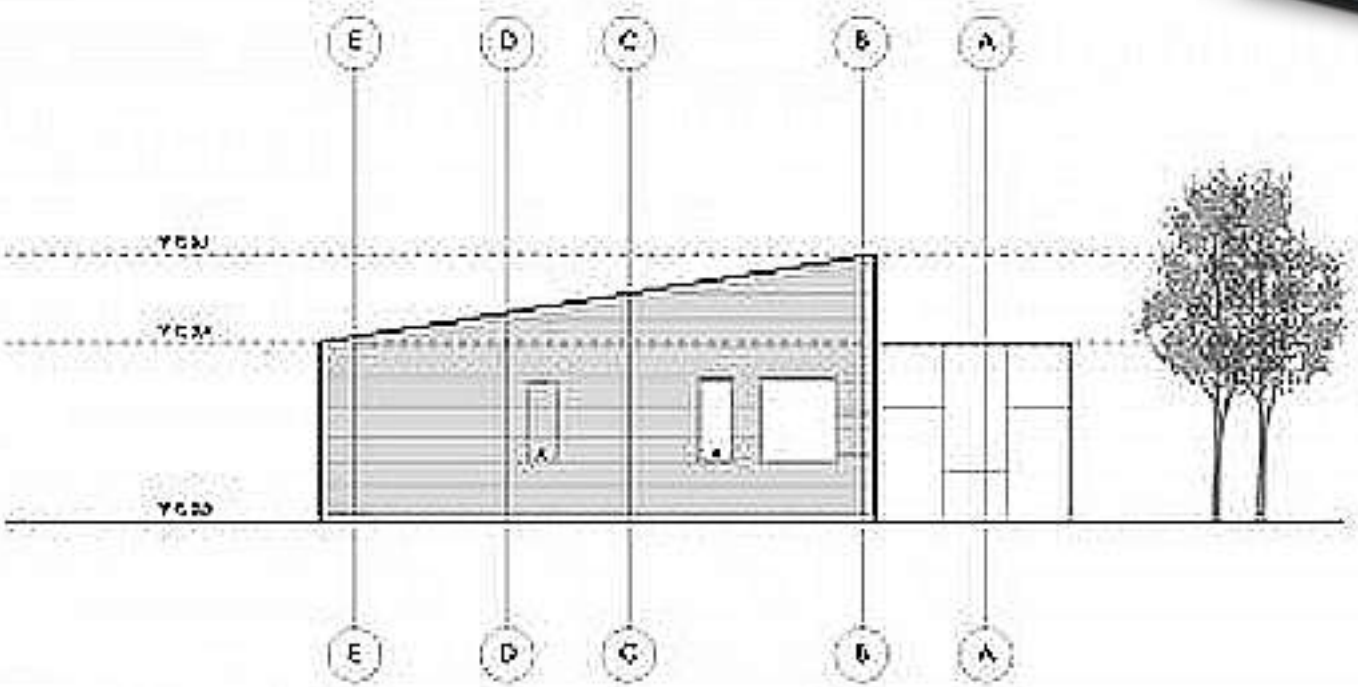
Plans


Room 2
8.94 m²
Room 3
8.2 m²
Entry
3.07 m²
Toilet/Shower
6.37 m²
Living Room
18.97 m²
Dining Room
20.92 m²
Master Bedroom
15.29 m²
Room 1
9.42 m²
Kitchen
10.8 m²
Greenhouse
31.49 m²

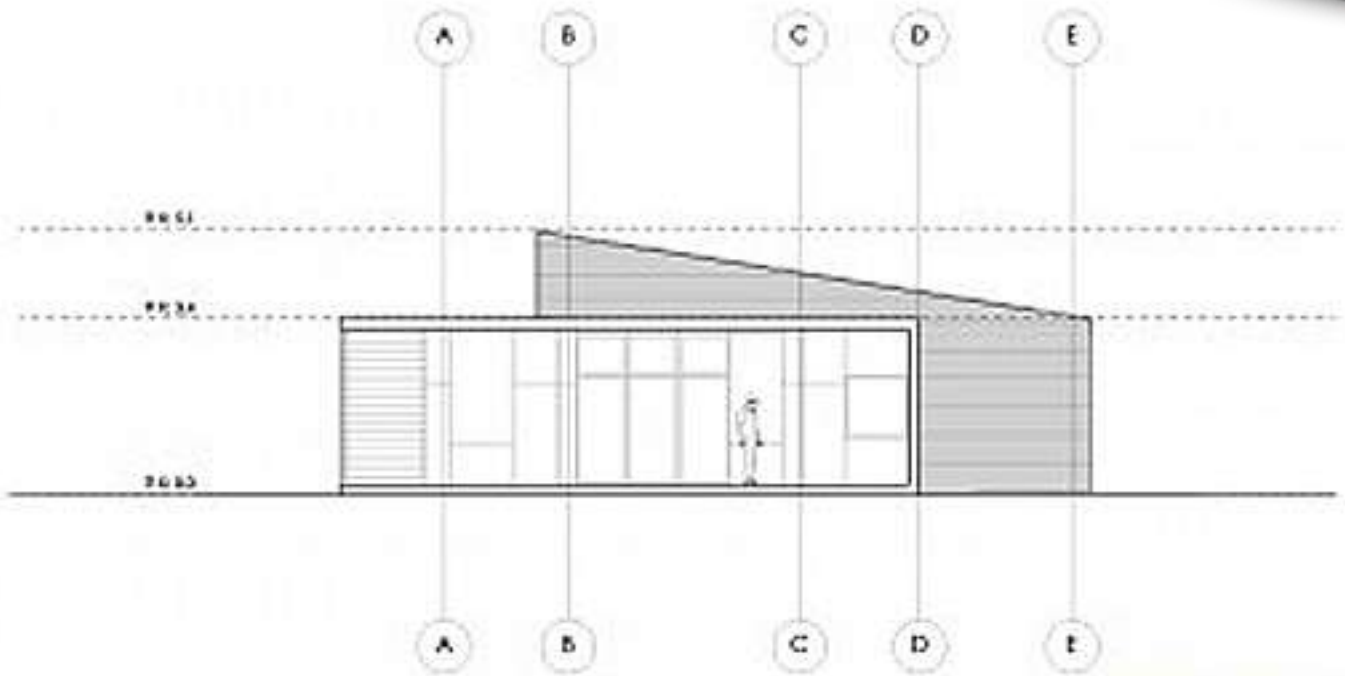
Plans



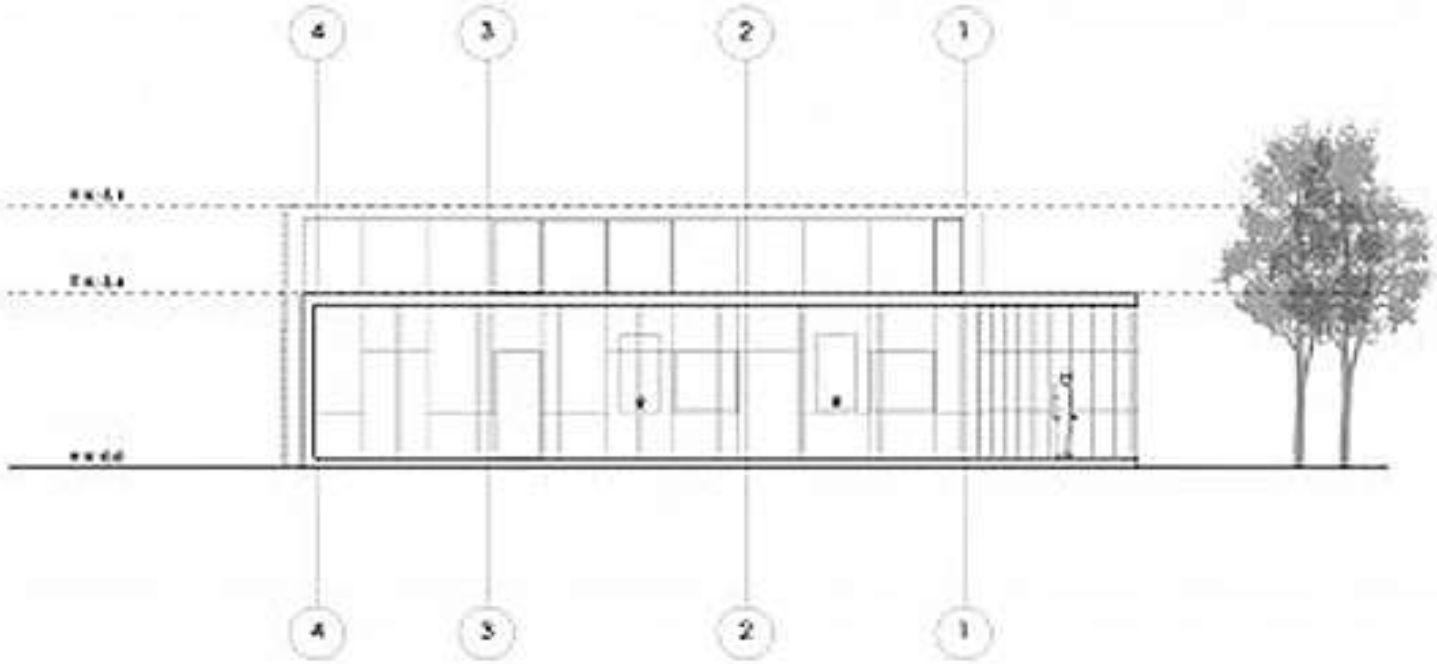
Plans



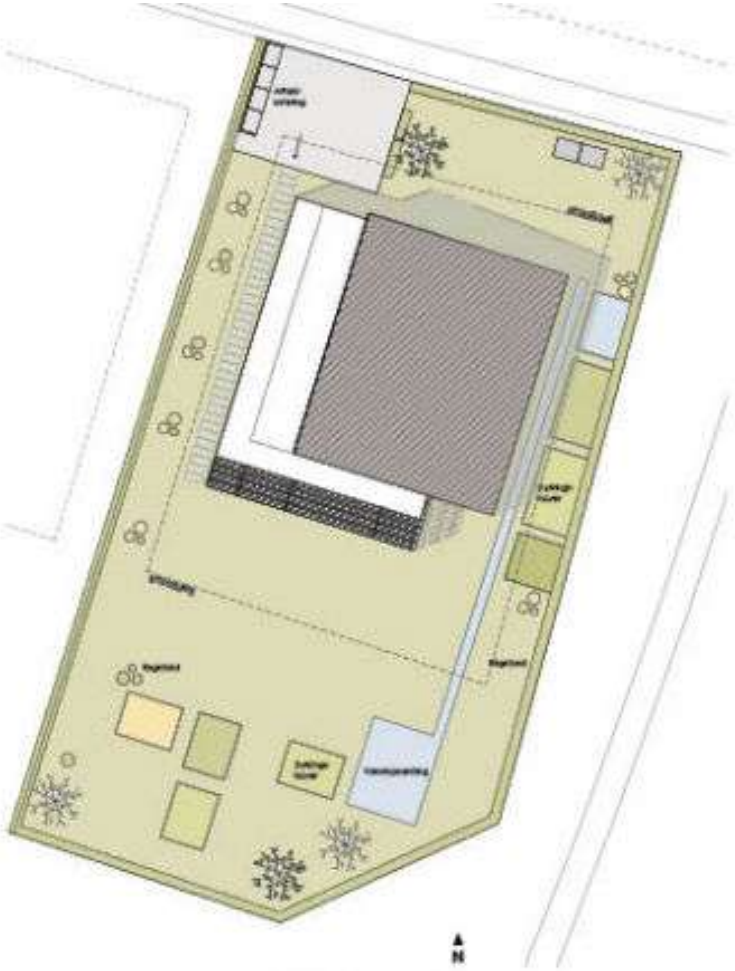
Plans



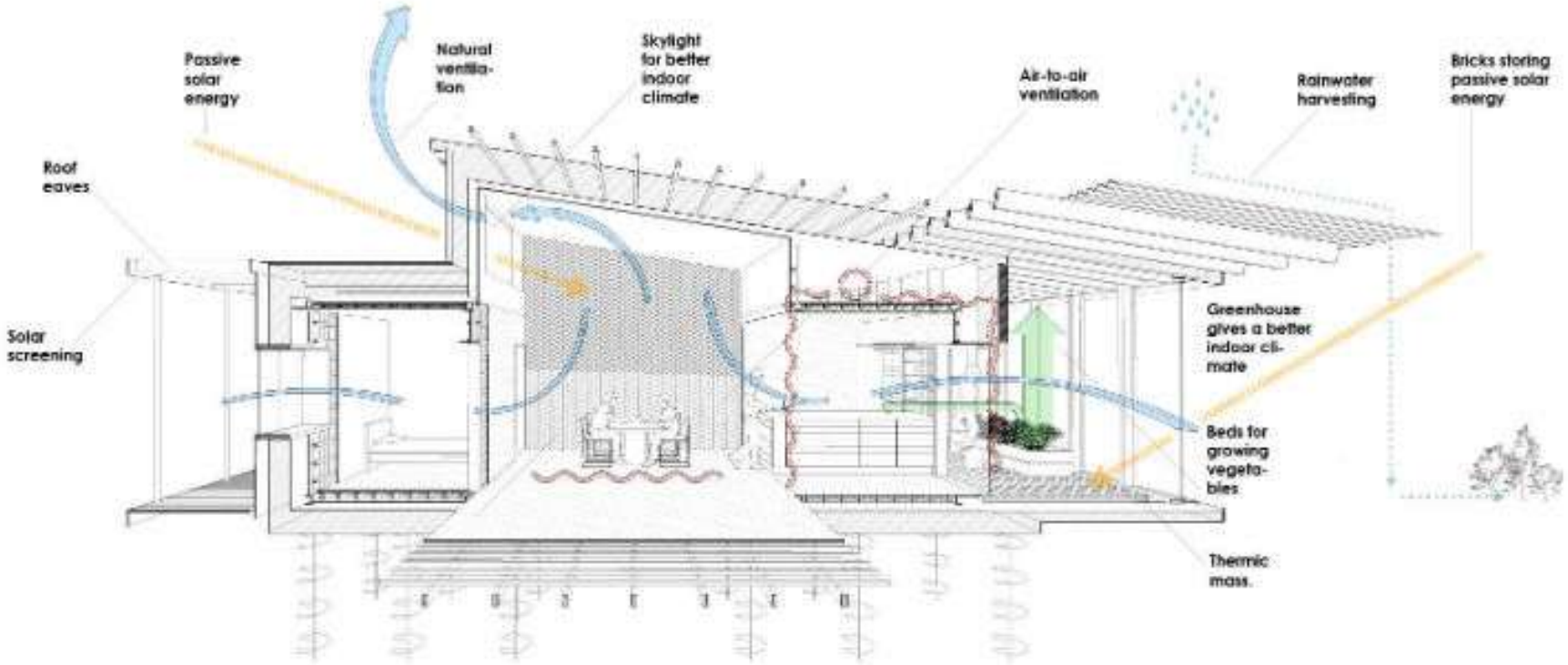
Plans



Plans



SITUATIONSPLAN


Passive solar energy
Natural ventila-tion
Skylight for better indoor climate
Air-to-air ventilation
Rainwater harvesting
Bricks storing passive solar energy
Roof eaves
Solar screening
Greenhouse gives a better indoor cli-mate
Beds for growing vegeta-bles
Thermic mass.

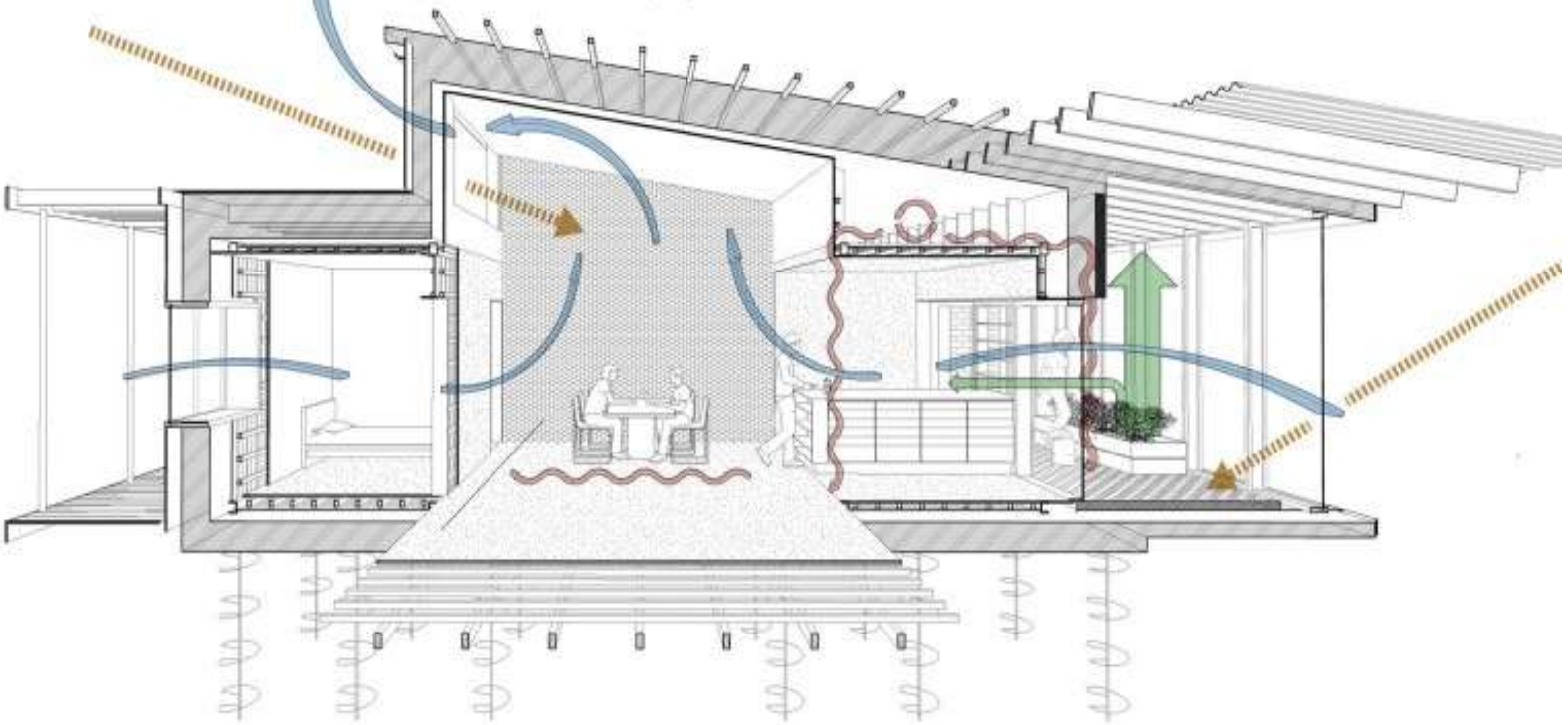
What : Passive solar energy
How : The water in the plastic bottle wall absorbs the sun's rays, which counters potential overheating during the summer.

What : Natural ventilation
How : Operable windows placed in the optimal heights enables natural ventilation, which lowers the need for mechanical ventilation.

What : Indoor climate
How : The clerestory window facing west, is dimensioned to allow for maximum light in-take without risk of overheating and glare issues.
Correct use of daylight minimizes the energy, consumed by electrical lighting.

What : Ventilation strategy
How : In the void between the container and the roof, a air-to-air ventilation system is installed, that utilizes the difference in temperature between the green house and the interior spaces.

What : Bio-diversity
How : The flora of the greenhouse results in an increase in biodiversity, and contributes with a higher understanding of natural cycles.
The plants also generate oxygen, which results in a better indoor climate.

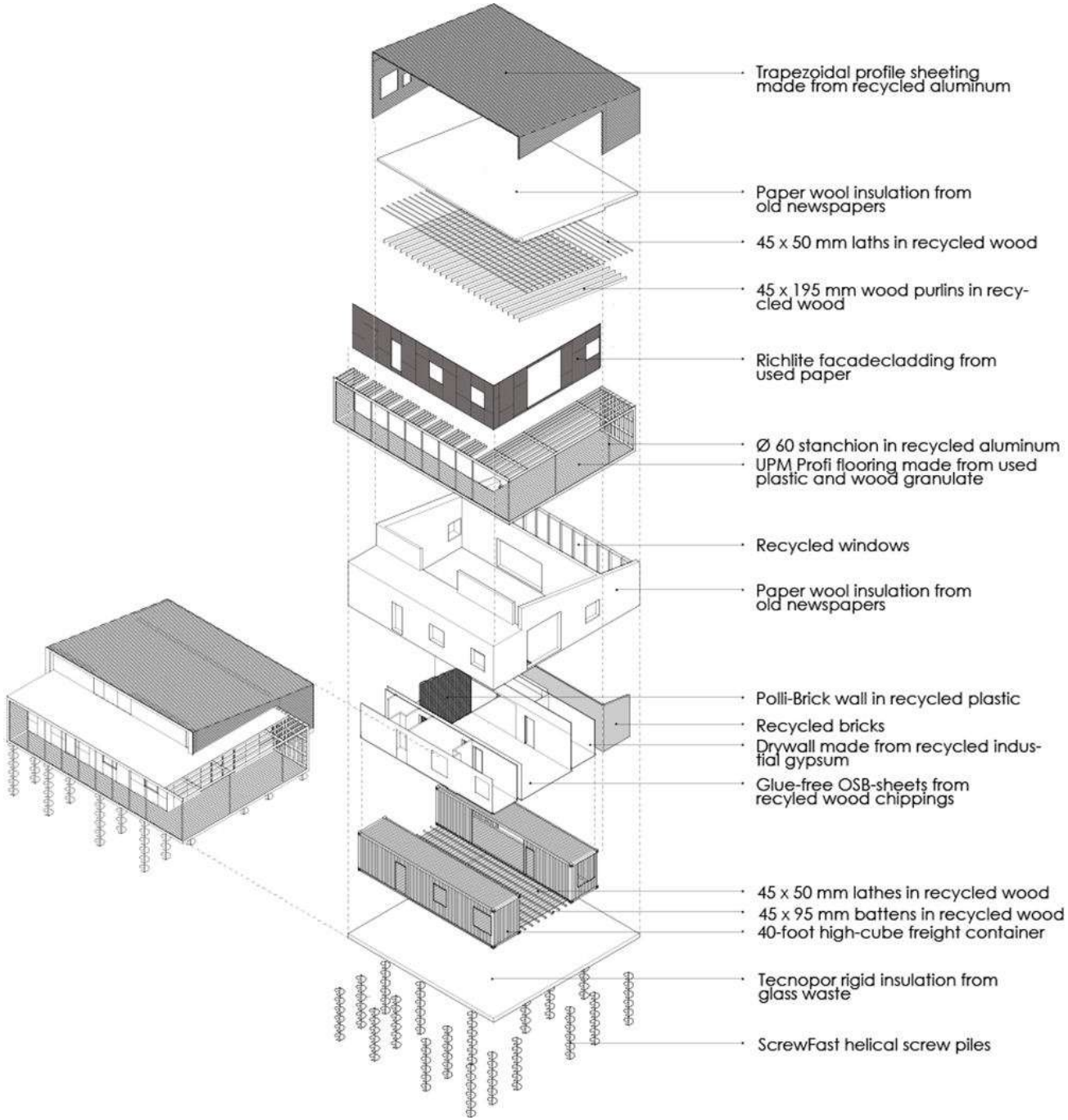


What : Roof overhang
How : The roof overhang around the house provides covered outdoor areas, making them useable for bigger parts of the year. The overhan also shields the facade from the rain, so maintainance costs are kept low.

What : Shading
How : The roof overhang protects the house from solar rays, so the risk of overheating is minimized during the summer.

What : Thermal mass
How : The greenhouse is clad with recycled bricks, that function as thermal mass. The bricks are heated by the sun, and the excess temperature in the greenhouse can be tapped, when the overall temperature of the house has dropped.

What : Homegrown
How : The east-facing greenhouse allows for homegrown produce, which lowers the need for storebought food and has a positive impact on the family's economy.


Trapezoidal profile sheeting made from recycled aluminum
Paper wool insulation from old newspapers
45 x 50 mm laths in recycled wood
45 x 195 mm wood purlins in recycled wood
Richlite facadecladding from used paper
Ø 60 stanchion in recycled aluminum
UPM Profi flooring made from used plastic and wood granulate
Recycled windows
Paper wool insulation from old newspapers
Polli-Brick wall in recycled plastic
Recycled bricks
Drywall made from recycled industrial gypsum
Glue-free OSB-sheets from recyled wood chippings
45 x 50 mm lathes in recycled wood
45 x 95 mm battens in recycled wood
40-foot high-cube freight container
Tecnopor rigid insulation from glass waste
ScrewFast helical screw piles

Video 4 in our series of 15 “How to Build a Container Home” Video Tutorials looks the 10 biggest mistakes people make when building a Container Home.

Click here to Watch Video 4 of 15