



ARCH 3691
2013

Advanced Design and Building Information Modeling February

Your Name:	Christopher Jaleco
Name of Project:	CHIP, Sci-Arch_Cal Tech
Preference:	Commpacted Hyper Insulated House
Use of Passive Solar Strategies	
<p>Solar Passive Strategies used in this house are transferring heat into the house. Each of the room in the CHIP house has a level of comfort with a cool balanced environment. The shape has a height which allows heat to rise further. Higher ceilings in general will let hot air rise and cool air drop. The insulation also controls how much heat can be stored as well.</p>	
Use of Sustainable strategies-	
<p>The sustainable strategies are HVAC, DHW and Energy Monitoring, which allow for convenient use of heat, water, and electricity with appliances. The DHW uses waste heat from the air conditioning to heat water from a thermal storage tank. Energy savings made it possible in the CHIP house since waste heat has been reusable. Blinds and louvers control the amount of lighting by allowing natural light to penetrate the house.</p>	
Use of Technology	
<p>HVAC, DHW and Energy Monitoring allow the convenient use of heat, water, and electricity with appliances. There are also smart appliances for daily use for monitoring devices with electricity. Kinect is a system that allows sensory movement and senses movement. It is a great way to conserve electricity since it uses light when needed. Weather conditions, temperature, energy efficiency can be controlled at a central location with smart software.</p>	



Use of materials

The materials used in the CHIP are wood, concrete, glass, metal, exterior-protected insulation and other materials.

Photovoltaic strategy

Energy Efficiency with Solar Panels and photovoltaic are used for daily routines within the house. There is an AC to DC converter which saves electricity.

What strategy would you copy? What is the greatest strength?

The sensory monitoring of energy is a good strategy since it is effective of conserving energy and is used when needed. It makes the house sustainable since it senses carbon dioxide.

What is the greatest weakness of the entry? What would you avoid?

The side of the house provides only one access space which is limited for occupants to move around.

Additional comments?

The change of level in the space is unique since it allows people inside the house to view different areas of elevation.



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Your Name:	Christopher Jaleco
Name of Project:	Team Florida Flex House
Preference:	Eco-Sustainable
Use of Passive Solar Strategies	
<p>The Flex House uses glazing and ventilation on the exterior side of the house. The house also incorporates airflow from underneath the house and through roof. Ventilation also creates a cool environment while controlling temperature from the exterior part of the house into the interior space. The Cypress louvers that control the amount of sunlight entering the building. Natural Lighting is a key of Passive Solar Strategies since solar paneling are used less. This allows conserving energy since natural lighting can be used in the daytime.</p>	
Use of Sustainable strategies-	
<p>The Flex House uses Solar Paneling and a Cypress louver system to control the amount of light.</p>	
Use of Technology	
<p>The Flex House uses diagnostics software which monitors the use for appliances within the building of the house. The system monitors appliances such as for temperature, power, and occupancy scheduling. Team Florida also used energy simulation software to produce smart appliances that increases safety and overall comfort for daily routines. LED lighting with Fluorescent is used at night when the sunlight is not available.</p>	



Use of materials

The Flex House is known for its Durability, Energy Efficiency, Recyclability, and Maintainability. The material of wood, concrete, and glass ensures its Durability, Energy Efficiency, and Recyclability. Its materials are mostly natural thus making use of the material in nature without creating waste.

Photovoltaic strategy

Solar paneling and Solar Thermal Concentrated Panels are integrated to produce maximum energy and usage. The Flex House will use a combined system of photovoltaic panels and solar thermal concentrating panels to optimize the energy conversion system. Heat energy is produced multiple times since the Flex House uses both the photovoltaic panels and solar thermal panels.

What strategy would you copy? What is the greatest strength?

The use of louvers of Cypress and Solar Thermal paneling used in the circulation of the house produces the greatest of sunlight.

What is the greatest weakness of the entry? What would you avoid?

What I would avoid in the entry is entering the house from the bathroom side of the house since most occupants need privacy.

Additional comments?

The use of the Vegetation at the exterior of the house is considered an innovation since vegetation has the ability to recycle air.



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Your Name:	Christopher Jaleco
Name of Project:	Hale Pilihonua A Sustainable and Floatable Home
Preference:	Sustainable Home
Use of Passive Solar Strategies	
<p>Solar paneling is integrated with the canopy of panels and shading louvers that cloaks the main structure of the house, harvesting energy, filtering daylight, and giving the house its distinctive form. The house is curved and smoothly morphs from one end of the house to the other. The main feature is that this house has adjustable louvers which can allow natural light in during the day which can save energy in tropical climates.</p>	
Use of Sustainable strategies	
<p>One of the sustainable strategies used in this house is natural objects that are bio based. The functional nature of the Hale Pilihonua is demonstrated by an integrated aquaponics system that enhances the atmosphere and supports sustainable food production. The structure itself gets natural resources of water from the natural rainfall that occurs in tropical weather while also providing water for grown vegetation. This method enables the Hale Pilihonua to have its own farm which they can collect water and grow crops.</p>	
Use of Technology	
<p>Sustainable innovation and use of technology is greatly used in the Hale Pilihonua since it uses both stored water and light. The high efficiency LED's can be controlled with the desired brightness of the house. One part of the house will glow due to the motion detector and recognition technology to make it energy efficient. When there is no occupants in the house the motion detector will detect and will shut the lights automatically.</p>	



Use of materials

The Hale Pihonua consists of insulation mounted on a thermally broken steel frame and sandwiched between two layers of fiber-reinforced polymer skin. This gives it a translucent well-insulated tubular shell that enables natural daylight of the house without expelling thermal performance. The natural lighting of the house can be controlled by the external canopy of operable louvers which are made of aluminum frames..

Photovoltaic strategy

This house photovoltaic panel is concealed with shading louvers which is used to harvest energy and filter daylight into the house. With the use of harvesting energy this energy can be converted into heat energy for later use. The shape of the Hale Philhonua provides the effective use of the integrated solar array which can be concealed and fitted within the exterior of the house.

What strategy would you copy? What is the greatest strength?

The Hale Philhonua great survivability depends on the forces of nature that resists against the house. Water, wind, and earth are resistant against the Hale Philhonua since the house have great buoyant force that is capable of floating in a flood event. Lateral Forces has been a major issue of houses and the design of the Hale Philhonua can withstand most forces of nature.

What is the greatest weakness of the entry? What would you avoid?

The Hale Philhonua is a tubular structure that already has rooms configured in a linear shape. This provides occupants to easily circulate inside and knowing which room to go to.

Additional comments?

The Unique characteristics of the Hale Philhonua is that it has a great survivability rate compared to most house today since most structures fail under flood and wind. The Hale Philhonua is capable of withstanding the effects of nature since it can float during an event of a storm. The house utilize its design so that it cannot get destroyed under lateral loads.



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Your Name:	Christopher Jaleco
Name of Project:	Solar Roof Pod
Preference:	Green Architecture
Use of Passive Solar Strategies	
<p>The Solar Roof Pod is a project design in order to respond to the Urbanization and increase of Energy consumption. The Solar Roof Pod is located at the roof of a building that is located in New York City. By being located at the rooftop of buildings they can absorb more energy due to the exposure of the sun. Solar panels are quite rare in the New York since High rise towers block solar rays.</p>	
Use of Sustainable strategies	
<p>The Solar Roof Pod with the addition of Drainage and a Garden can provide vegetation as well as fresh air. Vegetation and plantation is useful in a temperate climate like New York City since vegetation blocks sunrays during the summer and allow sunrays during the winter. This design strategy is effective since the location of the garden is located at the perimeter of the Solar Roof Pod.</p>	
Use of Technology	
<p>The Solar Roof Pod's exterior solar panels are adjustable in response to excessive light from the sun. With this method we can control the amount of sunlight that goes into the structure. The windows of the Solar Roof Pod is another technological innovation since it has an Oxnilux which is transparent to people. The control of sunlight of the Solar Roof Pod means that they can get natural light from outside which means that they can conserved energy during the daytime.</p>	



Use of materials

The Solar Roof Pod consists of PV panels, Racking system, space frames, and evacuated tubes. Most of these materials are metal while consisting of glass panels to allow natural light to get in. The house is made of Solid blocks that are easy in customization. Due to its easy construction and design this house is effective since it is easy to repair or customized.

Photovoltaic strategy

This house photovoltaic panel generates 10.08 kW with solar cells absorbing sunlight in order to deliver the maximum amount of electricity. This house effectively uses its solar cells to absorb the necessary amount of electricity to power the house. The amount of energy this house produce consumes twice as much as a regular house. Since it is located in the rooftop we would gain the most amount of sunlight in the city.

What strategy would you copy? What is the greatest strength?

The used of the Bird Transparent glass is effective in terms of allowing natural light to penetrate the house. With natural light penetrating the house the indoor would replicate the outdoors with the addition of vegetation. Living inside the Solar Roof Pod feels like living outdoors.

What is the greatest weakness of the entry? What would you avoid?

According to the Floor plans of the Solar Roof Pod the Bathroom is located at the center of the House which means that it is accessible for occupants to travel from place to place. The access of bathroom provides occupants the convenience to use the restroom. Since the bathroom is centered people would know where to go.

Additional comments?

The incorporation of the garden provides an aesthetic appeal since we can incorporate nature into an urban community. It is useful for people to use roof gardens since gardening and farming is not quite common in the city.



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Your Name:	Christopher Jaleco
Name of Project:	New Zealand Solar Decathlon
Preference:	The Space has Limited Circulation
<p>Circulation is a key element of people moving in and out of the house. Houses that run on appliances are a good way to maintain comfort. Providing room for people to move in and out and having the accessible space is important since comfort is not how we feel. Comfort is defined as what we feel if we are contained in one area.</p>	
Use of Passive Solar Strategies	
<p>This house practically uses a 6.3 kilowatt solar array with 28 polycrystalline photovoltaic panels installed into the roof in the house. The house converts solar energy to electricity that generates electricity throughout the entire year. This house is useful in terms of storing energy and using it when necessary such as a desert where the temperature rises during the morning and cools during the night.</p>	
Use of Sustainable strategies	
<p>The First Light house is a net zero homes which uses one third of a typical U.S. house would use. This house can provide a comfort space for tenants if they live in dry humid regions. The strategies it uses to maintain a functional daily living is a high energy efficient pump, solar array, and solar tube collectors. All of these machines provide the capacity to store heat while releasing heat during cold seasons.</p>	
Use of Technology	
<p>The high energy efficient pump functions as a high recovery system which transfers 4 kilowatts of heat into the space during the winter and pumps cold air during the summer. This is known as an air conditioning system which draws hot air out and draws chill air in during hot summer months. The solar array and the solar tube all gather solar energy from the sun to power the efficient pump.</p>	



Use of materials

First light is composed of materials such as wood recycled New Zealand Rimu, LVL (Laminated veneer lumber), plywood, and a two inch concrete. The two inch concrete acts as a mass by storing heat during the day and releasing it during the night might like what an adobe works in a desert. Concrete has a high heat storage capacity that it gives off heat during cold climates. It traps heat and releases heat during cold months.

Photovoltaic strategy

The first light consists of 6.3 kilowatt solar array with 28 polycrystalline photovoltaic panels installed into the roof which converts solar energy into electricity. These panels are made of silicon wafers that are connected electrically and packaged into a frame. This system can produce electricity throughout the year. We presume that silicon to be a good conductor of electricity since it can provide energy throughout the year.

What strategy would you copy? What is the greatest strength?

The high energy efficient pump shows that the house can function in different conditions of different climates. What a comfort home should have is its ability to survive at any given climate. Air conditioner is one thing to maintain home comfort while we get its energy from its photovoltaic solar array.

What is the greatest weakness of the entry? What would you avoid?

The first light has three defined spaces which is the Living Room, Study Area, and a Bedroom. The Dining room is located in the middle of the entrance. In the plan of the First Light, the Living should have an entrance to the outside since we feel we can enjoy the scenery outside. The Dining Room entrance proves to be inefficient since most circulation occurs within this region. The Living Room has many circulations where air gets in and out while people also get in and out.

Additional comments?

The First Light is recommended on places in which hot air is abundant during the daytime and cold during the nighttime. This house is limited to arid climates such as a desert since it uses its concrete effectively to deal with these temperatures. The cheap materials use to construct this house is a good way to build a practical house at a given climate.



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Your Name:	Christopher Jaleco
Name of Project:	Parsons NS Stevens
Preference:	Green Architecture
Use of Passive Solar Strategies	
<p>The Parsons NS Stevens is an Empower house that is a site net-zero energy homes, efficiently producing as much electricity as it uses in a year. A 4.2 kW solar array produces all of the energy to heat and cool the home in terms of the lighting. The 4.2 kW solar arrays are integrated with the cool and heat of the home. As both components work as once they can eliminate electric bills to a net of zero.</p>	
Use of Sustainable strategies	
<p>The Parson NS Stevens uses a net-zero energy home strategy by efficiently producing as much electricity it uses in a year. All features such as the solar panels and mechanical components work synergistically. They all work together as one unit; thus this is a great way to conserved cost since it is compressed to one unit.</p>	
Use of Technology	
<p>The synergetic system uses a mechanical component that allows fresh preconditioned air to flow from the ventilator directly into the air handler. The water heater recovers heat from the exhaust of the condensing of the dryer. The Parson NS Stevens uses sensors effectively which is why it is considered a smart home because it uses sensors to indicate if there is occupants. To maximize efficiency it automatically turns off if there are no occupants.</p>	



Use of materials

The Parson NS. Steven uses a thick envelope that wraps the home and is made of wood I-joists that are sandwiched between sheathing.

Photovoltaic strategy

The Empower house is a net zero energy homes, efficiently producing as much electricity it uses in a year. It contains a 4.2 kW solar array that produces all the energy to heat and cool the home. These powers include lighting, run the hot water heater and electric appliances

What strategy would you copy? What is the greatest strength?

What I would copy in this home is the making the home habitable as possible. One of the strategies that they emphasize was making the home coming to life. They build vegetation plants where they can plant and grow crops for consumption. The team did their best to create a house which has sustainable materials to reduce maintenance cost and create a healthy environment.

What is the greatest weakness of the entry? What would you avoid?

According to the Plans of the Parson NS. Stevens House the entry goes in two directions. Personally two directions mean ease of access space from one end to the next. With this concept two egress means that we can escape the house during an emergency.

Additional comments?

What this house incorporated was the use of green materials in the roof to provide vegetation so that the garden can be consumed. With this concept the house itself can be habitable without the strain of being to go outside. With all the resources available the Parson NS Stevens house can attract many occupants since it provides people what they need to have healthy lives.



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Your Name:	Christopher Jaleco
Name of Project:	Re_Home
Preference:	Green Architecture
<p>Green Architecture has been favored throughout the world since people benefit a healthy lifestyle as well as providing the functional and aesthetic needs of the house.</p>	
Use of Passive Solar Strategies	
<p>The Re_Home consists of photovoltaic panels that act as shading across the southern face of the building prevents the house from overheating. The photovoltaic panels act as a solar absorption while providing shade and energy for tenants living inside the house. The photovoltaic panels uses a 7.2 kilowatt photovoltaic array which optimizes solar production and eliminate self shading for the entire year.</p>	
Use of Sustainable strategies	
<p>The Re_Home is sustainable due to its ability to remove waste products of tenants by minimizing the waste circulation space between the interior of each room of the house. The Re_Home encourages a close interaction between both the exterior and interior of the space.</p>	
Use of Technology	
<p>The house used a centralized air sourced heat pump with a force distribution of heat and cool in two zones of the living space. The centralized air conditioner uses a recovery system that supplies the heating, cooling, and ventilation needs of the Re_home. The monitor pad controls all the building systems such as the photovoltaic panels and centralized air source. This process allows us to control the desired temperature we want in order to live comfortably.</p>	



Use of materials

The house consists of recycled lumber which makes it function in a nature environment. All the sustainable lumbers provide efficient indoor quality since vegetation recycles air waste from its environment. We might picture ourselves living in a forest where all waste products are exported outside the house and indoor air is recycle so people maintain a healthy lifestyle.

Photovoltaic strategy

The Re_Home consists of a 7.2 kilowatt Photovoltaic Array that provides a complete energy to the Re_Home all year round. The Photovoltaic Array is adjustable at any angle to provide shading as well as controlled gain of solar energy to produce electricity. Since Energy is adjustable we can get a good amount of energy that we need to power the house.

What strategy would you copy? What is the greatest strength?

The Adjustable solar arrays controlled by an i-pad are a way to manipulate the amount of energy coming into the house. It is convenient since we can get the desired amount of energy as well as maintaining the right cost. If we can maintain the energy in the house we can save electric bills as well as low down the cost of living.

What is the greatest weakness of the entry? What would you avoid?

Providing the circulation of air in the middle of the house is an excellent strategy for distributing the quality of air throughout the house. However, a Mechanical system that is near a bathroom in my opinion isn't an effective circulation strategy since methane gas exists toilet pipes. The Bathroom should be located at the furthest most of the house since getting the required air is important to live a healthy lifestyle.

Additional comments?

We can consider this house as a part of green architecture since vegetation exists within its surroundings. The Use of vegetation is an effective use of filtration of air inside the house since it eliminates all the odors that exists inside and outside the house. Wood itself is a breathable material since it has porous surface that can recycle air.



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Your Name:	Christopher Jaleco
Name of Project:	Team Virginia Tidewater House
Preference:	Quiet technology
Use of Passive Solar Strategies	
<p>The Tidewater house uses dark tiles plates used in the porch to store heat from phase changing. The use from Rain-Screen Technology of double wall system allows air flow to go inside the building to cool and control heat gain. This air system increases ventilation throughout the building.</p>	
Use of Sustainable strategies-	
<p>The house consist of a 10 Gal Drain back and Heat Exchanging reservoir which produces hot water with the use of solar panels and water</p>	
Use of Technology	
<p>A controller is used to allow additional air from coming inside the house. The Compact Side Discharge Outdoor Unit, Wired or Wireless Remote controller produces a "Quiet Operation". This means that the fan used inside the Tidewater house is quiet and convenient for people to hear no sounds. Its Acoustics is integrated with the automatic fan. The remote control controls the house indoor.</p>	



Use of materials

The materials used are concrete, wood, metal, glass, and other materials.

Photovoltaic strategy

Solar paneling is used inside the house for every appliance to gain the most efficient amount of electricity.

What strategy would you copy? What is the greatest strength?

The use of Remote control appliances with HVAC is a great way of recycling water with distilled water into hot water with rain-screen system.

What is the greatest weakness of the entry? What would you avoid?

The bathroom should be located to where there is huge vegetation. Vegetation is a great way to reduce waste as well as recycle incoming air.

Additional comments?

Everything in the house seems to evolve to the future since it uses photo sensor technology which makes the house breathable.



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Your Name:	Christopher Jaleco
Name of Project:	Y Container House Team China
Preference:	Multiple comfort for tenants
Use of Passive Solar Strategies	
The Y Container house consists of wooden screens as louvers which can offer views of the interior space. The louvers and allow moderate sunlight within the house during the daytime.	
Use of Sustainable strategies-	
The House uses an Energy Efficiency with Photovoltaic system with solar cells on panels placed on a flat roof. The Split System Air Conditioning isolates both warm air and cold dry air using an evaporator and external compressor. High Value Insulation dual insulation with up to R-70 (two R-35 insulations) and it balances temperature for hot and cold seasons. This produces comfort for Occupants all year round.	
Use of Technology	
Photovoltaic system, Split System Air Conditioning, and High Value Insulations. The House uses a high level insulation that can trap heat during the summer and release it during the winter. Since it has a high R-value it can maintain comfort at high levels in the house is heavily insulated.	



Use of materials

The Y Container House uses wood, concrete, glass, and metal

Photovoltaic strategy

The Y Container House uses an Energy Efficient with Photovoltaic system that is placed on a flat roof. Due to high insulation the House receives more than what is loss. Cold air when needed can be use while the split system allows isolates the cold and warm air. It provides a high comfort level since HVAC systems are used effectively without any waste.

What strategy would you copy? What is the greatest strength?

The R-70 use of insulation traps and release heat that was used from HAVAC Air conditioning. Whatever air is needed stays inside the Y Container House.

What is the greatest weakness of the entry? What would you avoid?

The Y Container House has equidistant entry but the used of water from the water collector system should provide space for egress.

Additional comments?

The Rotating walls in the Y Container House is innovative since each room can be adjustable at any spec. Each occupant can get their own personal space since the wall are adjustable.