



# Eco-House

Masayoshi Oka

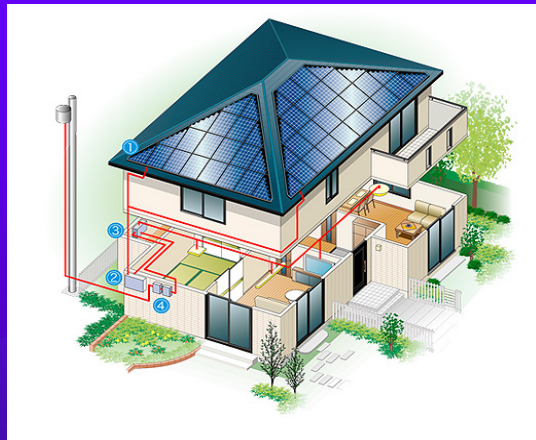


# Eco-House

- ◆ Getting familiar and popular  
(thousands of website could be found)
- ◆ Provide Ecological Life  
(Environmentally and Physically friendly)
- ◆ Incorporates simple but effective ideas to improve live
- ◆ Not going back, but moving forward

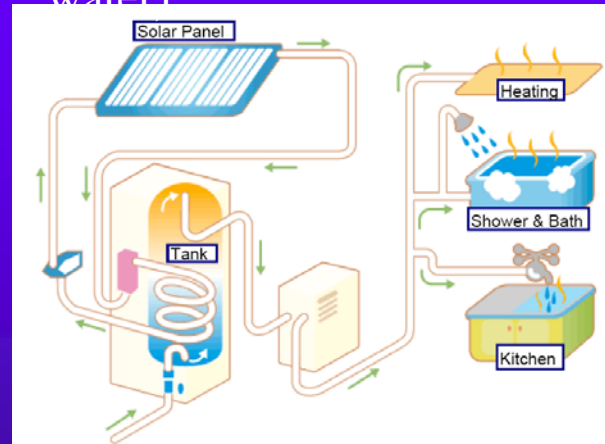
# Example of Echo-House

Photovoltaic System  
(Generates electricity)



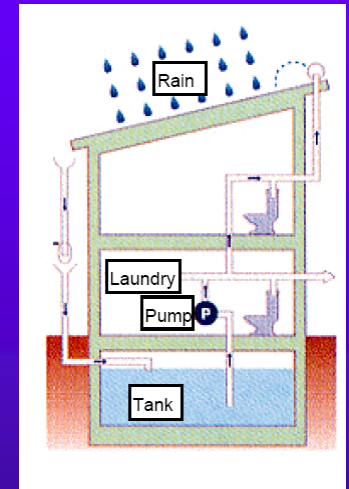
Source: Sharp Corp., Sunvista

Solar Panels  
(Generates hot water)



Source: Solar System Development Association

Rain Storage Tank  
(Generates water)



Source: Tokyo Electric Power Company

Effective Use of Natural Sources



# Indoor Air Pollution

- ◆ Combustion Sources
- ◆ Building and Furnishing Materials
- ◆ Cleaning and Maintenance Products
- ◆ Central Cooling and Heating System
- ◆ Humidification Devices
- ◆ And others



Short and Long-term Health Impacts



# Health Effects

## ◆ Short-term (Mostly treatable)

### Symptoms:

Irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue  
Asthma, hypersensitive pneumonitis, and fever

## ◆ Long-term (Debilitate and Fatal)

### Symptoms:

Respiratory diseases, heart disease, and cancer

Depends on Individual Sensitivity



# How to Improve

## ◆ Source Control

Removing individual source of pollution

Reducing their emission by sealing or enclosing

## ◆ Ventilation Improvement

## ◆ Installation of Air Cleaner



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# How to Improve

## ◆ Source Control

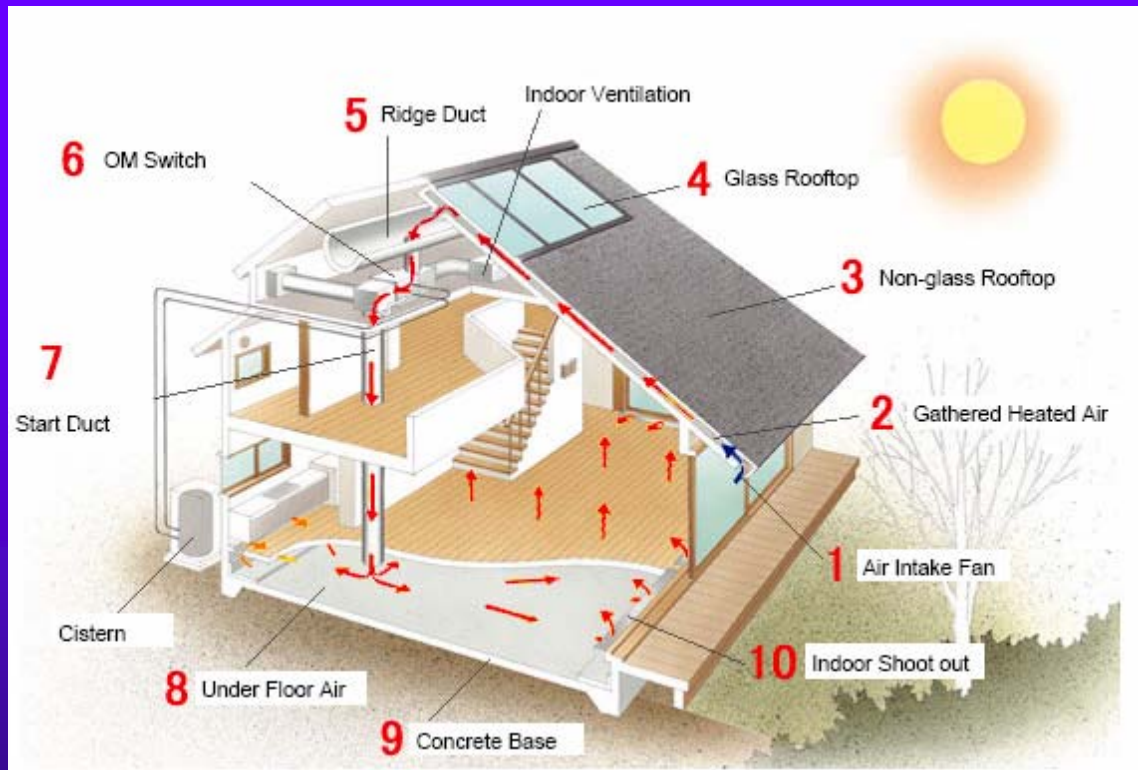
Removing individual source of pollution

Reducing their emission by sealing or enclosing

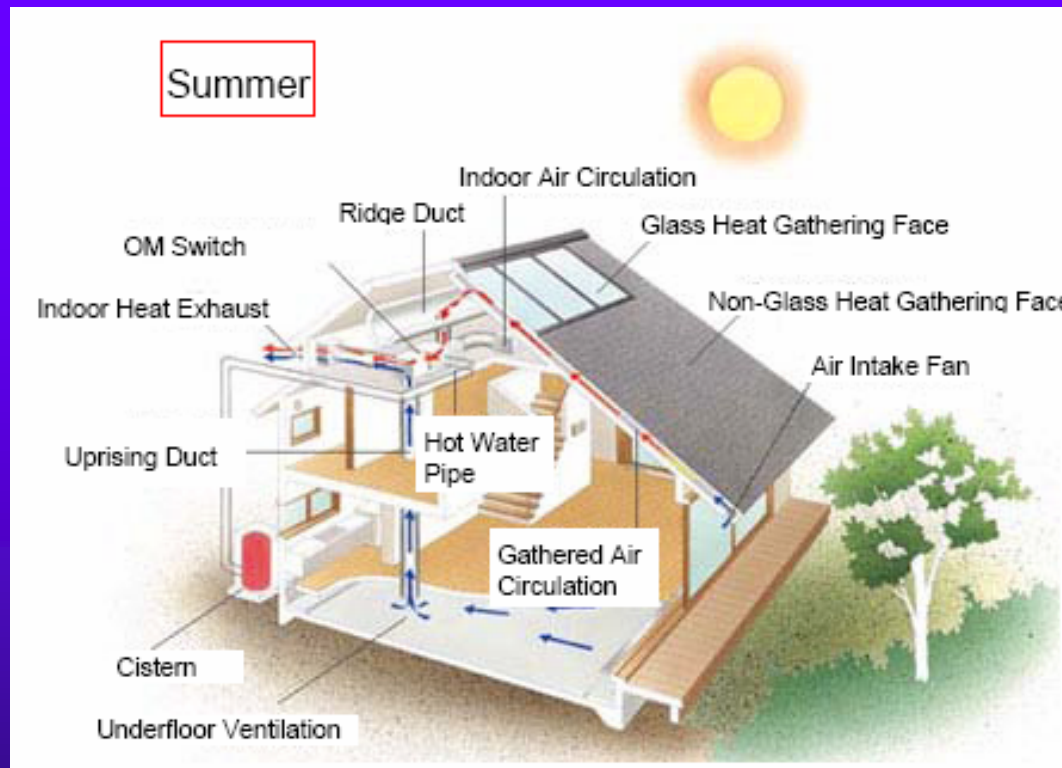
## ◆ Ventilation Improvement

## ◆ Installation of Air Cleaner

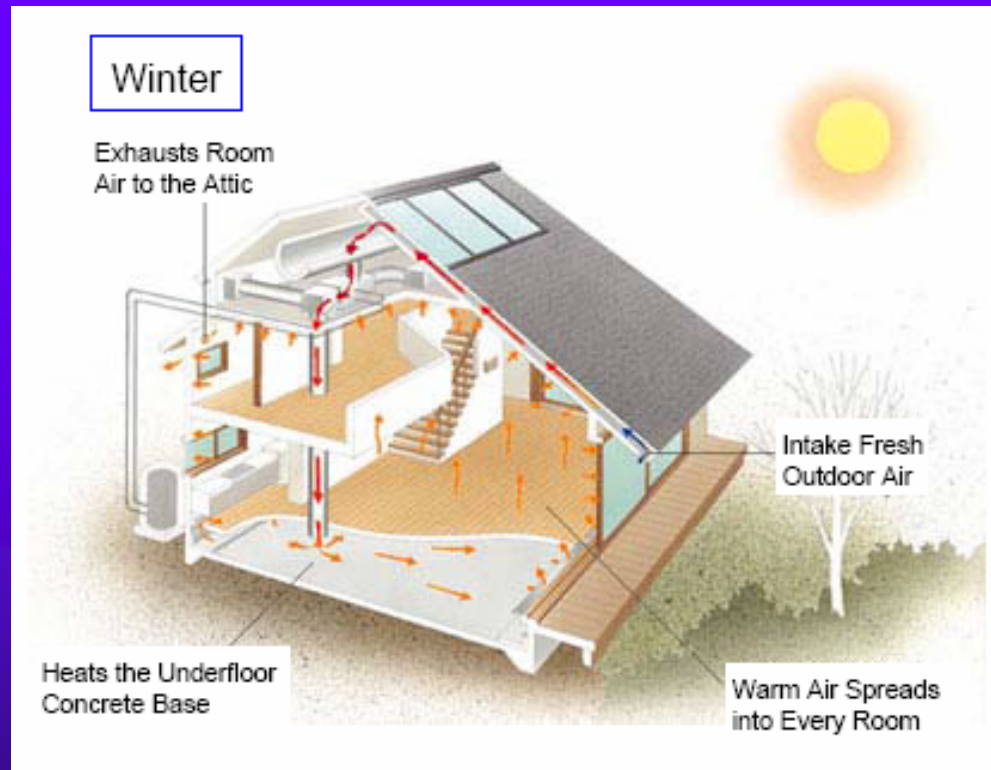
# Passive Solar System



# During the Summer



# During the Winter

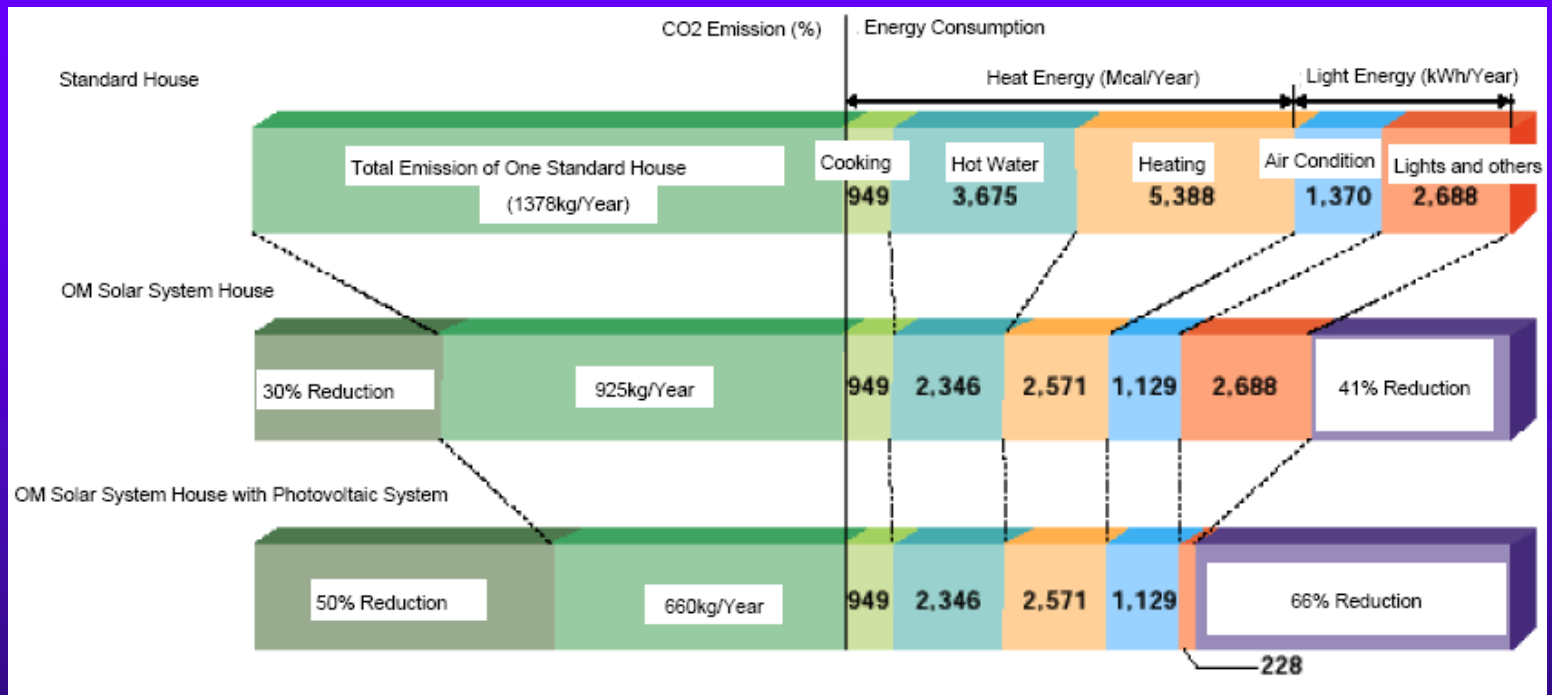




# Animation

<http://www.omsolar.co.jp/main/s012.shtml>

# Benefit of the System





# Ideal Building????

- ◆ Cost-Benefit Analysis  
(Initial Cost, Maintenance, Durability etc..)
- ◆ Possible to be deployed?
- ◆ Comparison with other alternatives



Sustainable Building for Future



# Sources

- ◆ Eco-\$mart, Inc.: <http://www.ecosmartinc.com/index.html>
- ◆ Sharp Corp., Sunvista: <http://www.sharp.co.jp/sunvista/index.html> (Japanese)
- ◆ Solar System Development Association: <http://www.ssda.or.jp/index.php> (Japanese)
- ◆ Tokyo Electric Power Company: <http://www.tepco.co.jp/> (Japanese)
- ◆ U.S. EPA: <http://www.epa.gov/ebtpages/airindoorairpollution.html>
- ◆ The University of Florida, Institute of Food and Agricultural Science (UF/IFAS): <http://edis.ifas.ufl.edu/HE638>
- ◆ OM Solar Association: <http://www.omsolar.co.jp/> (Japanese)