Aardskip
"Earthship"

The ultimate off-grid house

By Ludwig and Retha Everson
The six principles of earthships

● Building with recycled materials
● Passive temperature control
● Generate own electricity
The six principles of earthships

- Harvest own water
- Contained sewage treatment
- Own food production
1. Building with recycled materials

- Use used motorcar tyres filled with rammed earth.
1. Building with recycled materials

- Aluminum tins/cans
- Glass- / plastic bottles
- Recycled wood
2. Temperature control

- Earthships have a comfortable temperature in any climate.
  - thermal mass keeps it constant
  - use sun to increase air temperature and thermal mass
  - use ventilation to decrease air temperature
  - isolation to control temperature flow
2. Temperature control
... also design

- House faces north (southern hemisphere)
- Greenhouse indoors and in front
- Thermal mass behind
- Underground ventilation system
- Isolation in roof and in thermal mass
3. Generate electricity

- Wind turbine
- Micro-hidro-turbine
- Bio-diesel
- Natural gas
- Photovoltaic cells
... own power station
4. Water harvesting

• Catch rain water
• Use well

Roof and gutter for water
Gravel filter
Water tank in earth wall
4. Water harvesting

- Separate taps for drinking and washing
- Re-use water four times
- Use sun to heat the water
... own water reservoir
5. Contained sewage

- Use water
  - second time for indoors greenhouse plants
  - third time for toilet
  - black water goes to septic tank outside
5. Contained sewage

- Use water
  - fourth time for outdoor plants
- No ground water pollution
  - roots clean the water
6. Food production

- Tropical fruits indoors
- Permaculture outdoors
Advantage

• Efficient use of energy
  – Thermal mass
  • cool in the summer
  • warm in the winter

• Sustainable
  – Maximize use of natural resources
... more advantages

- Easy to build
  - owner and volunteers
- Available
  - Motorcar tyres
  - Bottles en cans
Disadvantages

• Resale
  – alternative house

• Building permit
  – alternative houses

• Financing
  – new concept
References

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