CLIMATE ALLIANCE
KLIMA-BÜNDNIS
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Ice Block Bet - Campaign of the year 2007

The “Ice Block Bet” (Eisblockwette) event aims to highlight the great potential to reduce costs, energy consumption and CO2 emissions by installing thermal insulation, for instance to passive house standards. This event makes energy efficiency a clear and comprehensible reality for a broad public.

More than 40 towns and municipalities are taking part in the campaign of the year 2007 in Germany. They cover a block of ice in a well-insulated hut and take bets from their citizens on how much ice will remain after a certain period (from one up to three months). The media response is enormous. Event partners include the German association of carpenters and the German Energy Agency (dena).

Organisational hints:

1. Costs: 3000-5000 Euro (if the house is produced new without sponsoring), In Germany all costs were covered by partners and sponsors for example companies who produce insulating material or guilds of carpenters.

2. Ice block (1000 litre) = weight about one ton

It’s cheaper to make it from assembled ice plates or smaller blocks. Transportation with a forklift.
It has to be delivered in a standard eu-box (1000 l canister) called IBC-Container (http://www.wagirat.de/engl/shop/)

3. Ice house-construction manual: see attachment
Dimensions: about 2,30 meters x 2 m x 2 m

Attention: The insulation has to be all around the inner side of the house inclusive the door- its still missing on this picture!!! But it has to be inserted before closing the door and starting the bet!!

Time spread:

In early spring: up to 8 weeks or even 12 weeks (see remarks below)

In summer: **four weeks** (its sufficient to draw the attention of the media)

Remarks: With a greater ice block (2 tons) you may run the action three month in a bigger house, with some improvements in construction.

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What is a Passive House?

A passive house is a building in which a comfortable interior climate can be maintained without active heating and cooling systems. The house heats and cools itself, hence "passive".

For European passive construction, prerequisite to this capability is an annual heating requirement that is less than 15 kWh/(m²a) (4755 Btu/ft²/yr), not to be attained at the cost of an increase in use of energy for other purposes (e.g., electricity). Furthermore, the combined primary energy consumption of living area of a European passive house may not exceed 120 kWh/(m²a) (38039 Btu/ft²/yr) for heat, hot water and household electricity.

With this as a starting point, additional energy requirements may be completely covered using renewable energy sources.

This means that the combined energy consumption of a passive house is less than the average new European home requires for household electricity and hot water alone. The combined end energy consumed by a passive house is therefore less than a quarter of the energy consumed by the average new construction that complies with applicable national energy regulations eg. Comparison of Energy Ratings of Homes: WSchVO = German Heat Protection Regulation or SBN = Swedish Construction Standard.

A passive house is cost-effective when the combined capitalised costs (construction, including design and installed equipment, plus operating costs for 30 years) do not exceed those of an average new home.

Following are the basic features that distinguish passive house construction:

Compact form and good insulation:

All components of the exterior shell of the house are insulated to achieve a U-factor that does not exceed 0.15 W/(m²K) (0.026 Btu/h/ft²/°F).
Southern orientation and shade considerations: Passive use of solar energy is a significant factor in passive house design.

Energy-efficient window glazing and frames:
Windows (glazing and frames, combined) should have U-factors not exceeding 0.80 W/(m²K) (0.14 Btu/h/ft²/°F), with solar heat-gain coefficients around 50%.

Building envelope air-tightness:
Air leakage through unsealed joints must be less than 0.6 times the house volume per hour.

Passive preheating of fresh air:
Fresh air may be brought into the house through underground ducts that exchange heat with the soil. This preheats fresh air to a temperature above 5°C (41°F), even on cold winter days.

Highly efficient heat recovery from exhaust air using an air-to-air heat exchanger: Most of the perceptible heat in the exhaust air is transferred to the incoming fresh air (heat recovery rate over 80%).

Hot water supply using regenerative energy:
Solar collectors or heat pumps provide energy for hot water.

Energy-saving household appliances:
Low energy refrigerators, stoves, freezers, lamps, washers, dryers, etc. are indispensable in a passive house.

More Information: http://www.passivhaustagung.de/Passive_House_E/passivehouse.html