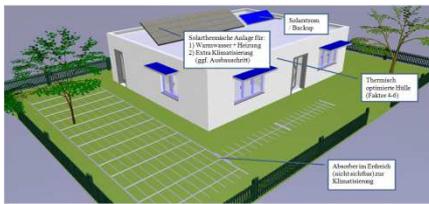


# Project description: 0-Energy Balance House India (solar-thermal heating and cooling)

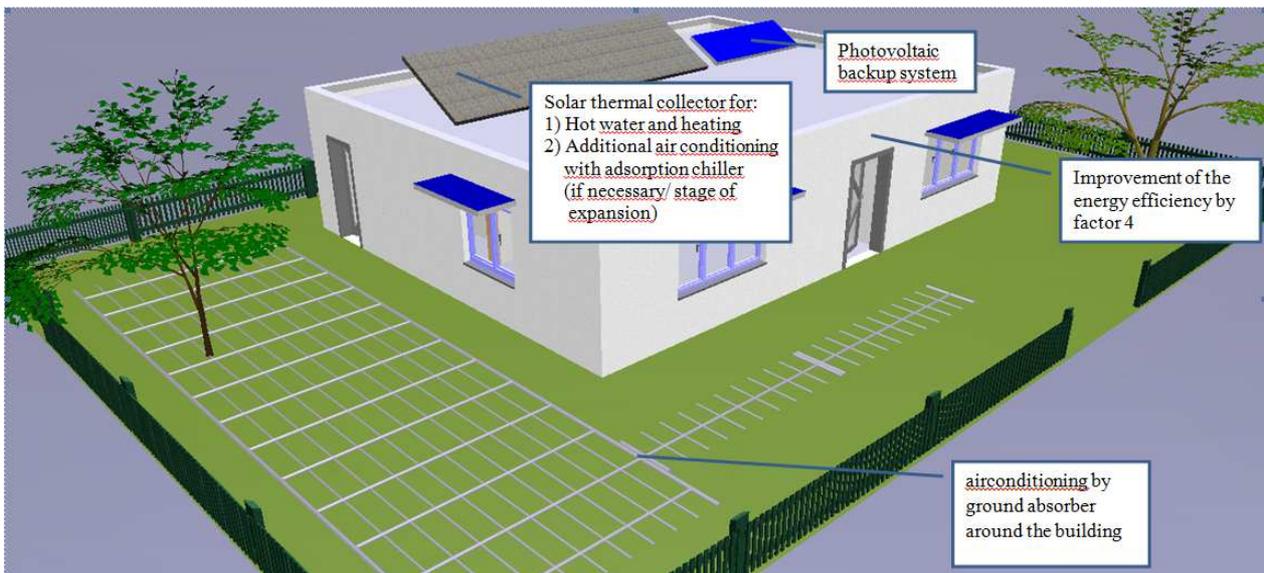


## A) The problem

The energy balance and characteristics of a conventional/ traditional Indian residential house:

- Outside walls without thermal insulation
- Low airtightness of the building.
  - ⇒ High inner temperature during the summer months, high cooling load
  - ⇒ Low inner temperature during the winter months, high heating load
  - ⇒ Low energy efficiency
- Low comfort and/or high energy demand for the use of conventional air-conditioners driven by electricity, no heating during the winter months
- Dependence on the overloaded national power supply system
- Low use of solar energy

## B) Approach to solving the problem: The 0-Energy Balance House for India (1-X floors) – Description of the model house



### The aim of the model house:

- Improvement of the energy efficiency by factor 4 (energy efficiency is four times as high as in a conventional building)
- Improvement of the thermal cover and airtightness of the building
- Solar thermal heating and hot water generation
- No expensive air conditioning run by electricity, but cooling energy production by ground absorber around the building
- Additional cooling with adsorption chiller, if there is more demand for air conditioning (see below: \*) Cooling with solar thermal energy))
- Reduction of electric power consumption. Covering the residual need by solar panels -> Independence from the national power supply system.

## C) The conception of the 0-Energy Balance House – the product of our experience

The Walter Ingenieure GmbH (WI) has achieved 20 years of experience in planning energy-efficient buildings, preparing plots of land for building, efficient and regenerative production and use of energy. It has experience in being a public and private energy provider and operator of energy supply systems (electric power and heat supply).

### Examples:

- Building and designing (architecture) passive houses (40 kWh/m<sup>2</sup>/a), KfW 40 houses (40 kWh/m<sup>2</sup>/a). The first ever 0-energy-balance residential area in Germany was planned and built by us.
- Planning of building services (heating, air conditioning, ventilation, sanitation, electro-technics)
- Cost efficiency studies, feasibility studies, partially government-funded by the Free State of Bavaria
- 10 years of experience as an electrical network operator (see: <http://www.stmwi.bayern.de/en> Bavarian Ministry of Economic Affairs and Media, Energy, search: „Walter Ingenieure GmbH“)
- Contractor/ operator of power plants (combined heat and electric power plant), (member of vfw-energy contracting association, see: <http://www.energiecontracting.de>)
- Research/Development/apprenticeship
  - Planning of regenerative hybrid energy systems
  - Lecture at the international Sonnenforum 1996 in Freiburg, Germany.
  - Publicly-funded pilot project by the German Federal Environmental Foundation (DBU): The “Olperer Hütte” in Austria, regenerative and self-sustaining electrical power supply of an alpine hut with 66 beds with a novel energy management system, developed by WI (project report, download ([https://www.dbu.de/projekt\\_24456/db\\_799.html](https://www.dbu.de/projekt_24456/db_799.html)))
  - Since 2005, our managing director Dipl. Ing. C. Walter ins teacher at the technical college (RDF) in Nuernberg-germany (<http://www.rdfnuernberg.de>)

## D) Aim and realisation of the model house project

The Walter Ing. Ltd (WI) wants to provide its technical knowhow and experience to build a model residential house in India. It also aims to support the socially disadvantaged in India. WI is looking for a project-partner to plan and build the model house. The partner should be a non-profit organization whose aim it is to support these disadvantaged people as specified in constitution (e.g. children’s homes, schools and education, medical services...)

Our expectations for a partnership are as follows:

We would like to establish an own project corporation (PC) according to Indian law (WI and project partner (pp)). We seek a 50 %/ 50% partnership.

The Walter Ing. GmbH provides the following services and means:

- Knowhow
- Planning
- Providing 100 % of the funds (either WI and/or sponsors)

The project partner (pp) provides the following services and means:

- Future real estate management. Responsibility for renting out the model house.
- Promoting the formation of the project company
- Constitutional application of the funds achieved by the zero energy home (by renting and marketing).

The following services have to be decided by the project corporation (PC):

- Choice of more project partners if necessary (see below: "Other project partners")
- Realisation of the model house project itself (searching for suitable partners for construction work, consultants, tax accountants, lawyers)
- Searching for suitable partners for construction works
- Allocation of construction contracts
- Site selection

#### **Other project partners:**

WI and its sponsors give means up to a precalculated limit. The minimum aim is to build a high quality turnkey model house, to be rented. Together with the project partner, WI can decide, whether another partner from the building industry may join the PC to do part of the construction work himself, and later to market the 0-Energy-balance house. This would result in additional income for the pp to be used as specified in the constitution (q.v. "future plans" below).

#### **Ideological project partners (e.g.: Development/education and training):**

- Technical college (RDF) in Nuernberg, Germany (<http://www.rdfnuernberg.de>)
- Aktion Lebensbrot e. V. in Velburg, Germany.

#### **Future plans following the "Model house project"**

The established Project corporation will evaluate the success of the 0-energy balance house and then decide how to carry on with the project. There are two different possibilities:

- a) Renting out the model house: 100% of the earnings go to the constitutional aims of the project partner. WI can determine that 50% of the earnings are used for a specific project of the PP.
- b) If it is possible to market more than one building, the WI receives a share of the marketing profit for the project development, which should be fixed before. The rest of the profit will be distributed as described in a)

## E) Goals / purpose of the trip in December 2014 / January 2015

- Conversation with potential project partners
- Conversation with construction experts, recommended by project partners, if necessary
- Conversation with ideological project partners (for example: University of Delhi - chair for construction engineering, technical building services or renewable energy)
- Discussion about a suitable location suggested by the project partner (a plot of land in or near Delhi, Lucknow or Dehradun would be of advantage). However it is not necessary to definitely determine a location in North India, as all other options should be kept open.

Walter Ing. GmbH

92355 Velburg

Germany

(Homepage: Under construction / complete regeneration in Dez. 2014)

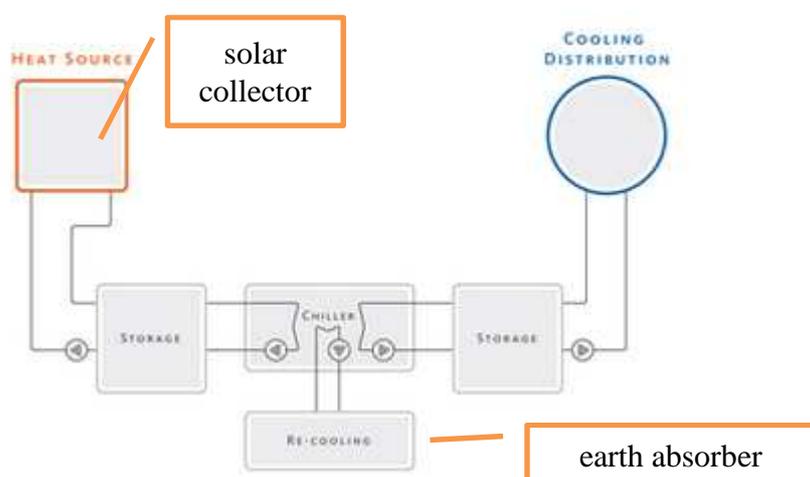
**Dipl. Ing. Christian Walter, Nov. 2014**

(Managing Director)

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### \*.) Cooling with solar thermal energy

#### APPLICATION DIAGRAM



The chiller works on the adsorption principle. Two sub processes alternate with one another in the chiller, thereby achieving a virtually continuous capacity.

In addition to being used for cooling, the chiller can also be used as a heat pump - e.g. for helping to heat a building in the winter.