

Location: D-51545 Waldbröl
Client: Dr. Schlechtingen, Dr. Voßkämpfer
Architects: Architekturbüro Pahl-Kaupp
Earth building: Lehmbau Beuchel, Crimmitschau
Completed: 2001



Environmentally-sound Medical Centre

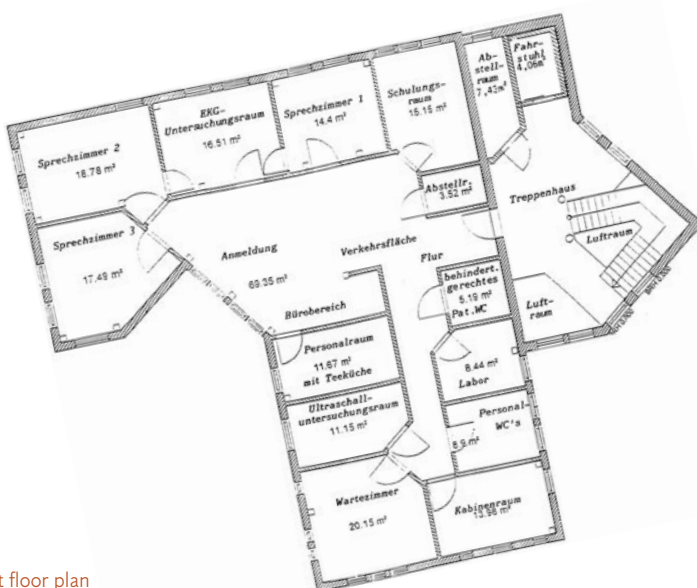


“Every person has a right to an environment in which it is possible to live in good health and well-being.” so states the European Charta for Health and the Environment as declared in 1989. In reality the number of people suffering from illnesses which either result directly from environmental pollution from or in connection with it is steadily increasing. With this in mind the medical centre in Waldbröl was

conceived to provide a healthy home for four medical practices.

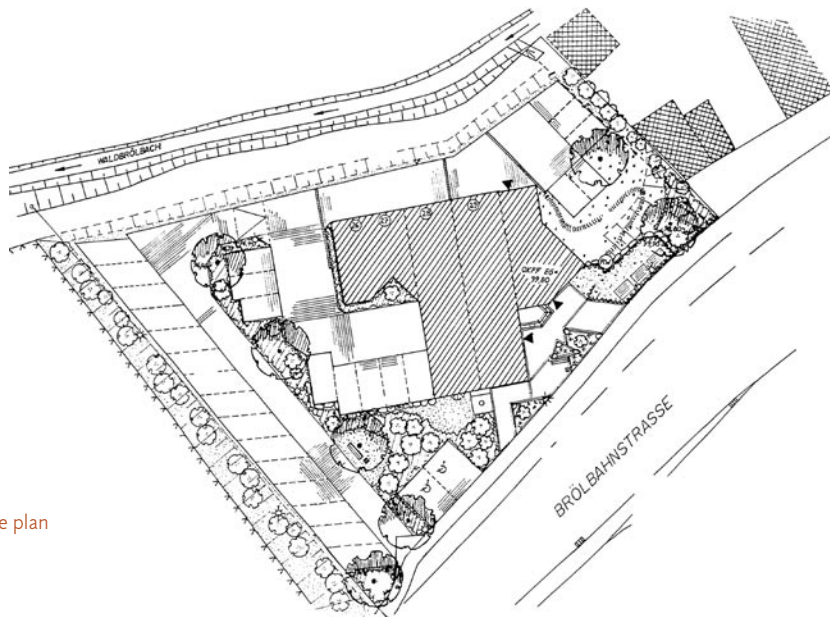
The construction of the building is conceived with the needs of future generations in mind and can be therefore be adapted flexibly to new uses. It is a building in which ecological building is both visible and can be experienced. The needs of those working in the building as well as those visiting (patients) are considered. The architects have attempted to reduce the consumption of resources and energy to a minimum, both in terms of construction and operation. The building fulfils the passive energy house standard. Active energy provision is sourced from renewable energy sources.

The building plan and construction is optimised with future adaptations and extension possibilities in mind so that it can be adapted to changing requirements, work patterns and future uses. Floors, walls and ceilings do not need to be knocked down or broken through in order to adapt to changing requirements both in terms of use and with regard to technical services.



1st floor plan

earthen building · case study



Site plan

Usable floor area: 1142 m²
Building costs: 1,4 Mio €
Building cost/m²: 1226 €/m²



The building construction is based upon a reinforced concrete frame enclosed in highly-insulated timber-panel elements. Wood has been used in many different ways in the building, not just for the external wall elements and roof. For example formaldehyde-free composite wood panels are used for supporting constructions, soft fibreboard is used as a base for plastering or as insulation in addition to cellulose insulation. Doors, windows and floors are also made of wood.

Building materials with a high thermal mass were also used when fitting out the building as a means of thermal storage. Earthen panels and earthen plasters were used to line the inner surface of the external walls as well as for the interior walls in order to help regulate an even indoor room climate. Installation and ventilation risers are clad in wood panelling visible in the room. Surfaces are finished with non-vapour retarding translucent stains or with naturally soluble and recyclable paints. In some cases earthen plasters are left visible or pigmented.

The passive energy house standard was achieved as a result of a highly insulated building envelope and a ventilation system with integrated heat exchanger. The ventilation system ensures a hygienic air environment. The warmth contained in the exhaust air is reclaimed via the heat exchanger and used for warming the fresh air supply. Air supply from outside is drawn in via an underground heat exchanger so that the air is warmed by the soil in winter and cooled in the hot summer months. Individual heating radiators are also provided in order to enable different temperature zones in the building as well as to ensure heating independent of the ventilation.

The active energy requirement is provided solely from renewable sources. A solar-thermal collector is used for warm water heating and for a portion of the heating. The remaining heat requirement is provided by a wood-pellet-fired central heating system. A large portion of the electricity demand is covered by a photovoltaic plant.

