

Location: D-16515 Oranienburg-Eden
Architecture Prof. Dr. Gernot Minke mit
& earth building: Tobias Weyhe, Quedlinburg
Completion: 2002



Children's Nursery Oranienburg-Eden

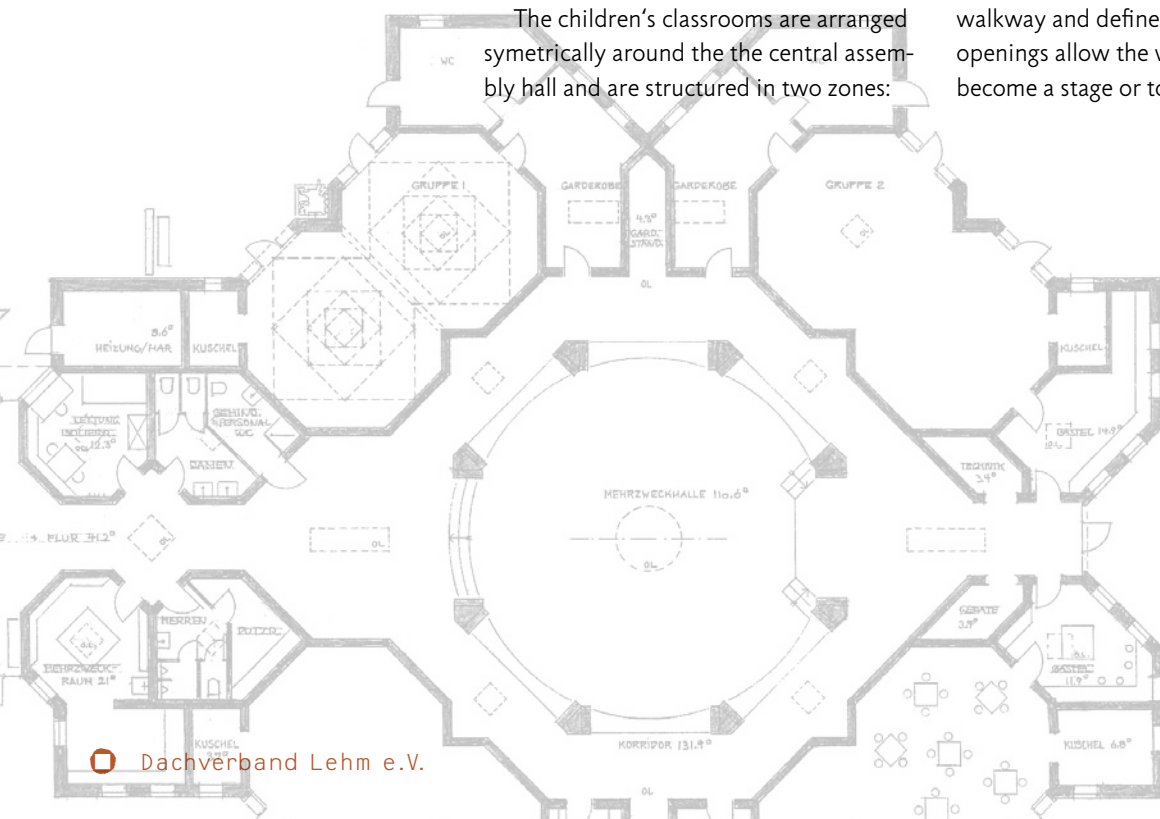


As part of the fruit growers cooperative in Oranienburg-Eden north of Berlin, an 870 m² children's nursery was built in 2002 to provide accommodation for four children's rooms, an after-school facility and a general assembly hall. The entire building is ecologically planned with timber and earth as the primary building materials. The 11 m wide and 6.80 m high dome of the assembly hall is, at the time of writing, the single largest earth dome structure in Germany.

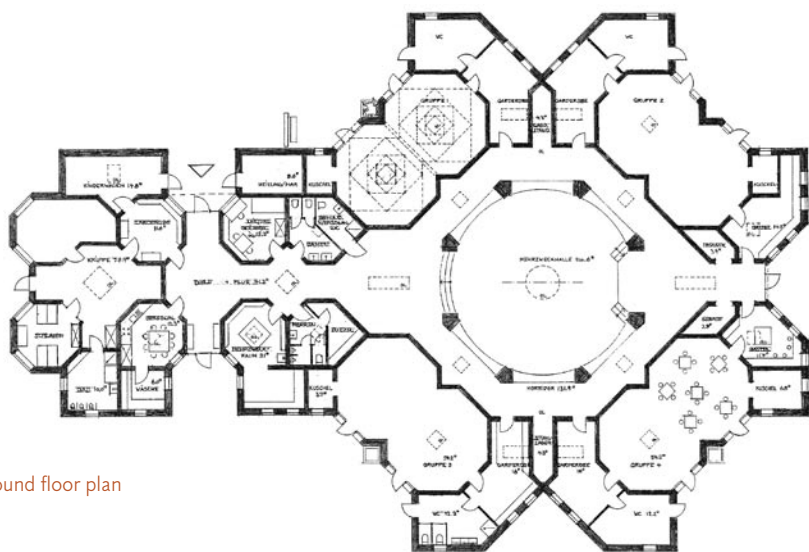
The children's classrooms are arranged symmetrically around the central assembly hall and are structured in two zones:

for active movement and for quieter activities. Each children's room has its own wardrobe, washing and toilet facilities, as well as separate individual access to the playground. Each group can therefore be independent of the others. Each group has rooms of a certain colour palette and a chosen mascot or symbol.

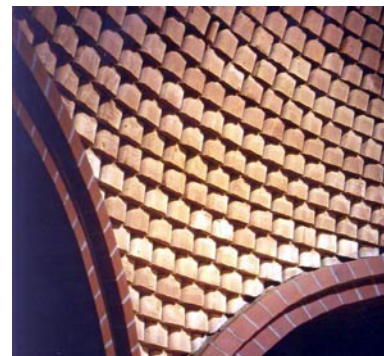
The 111 m² large assembly hall is used for music and theatrical performances, exhibitions and readings. The inner area is 50 cm lower than the surrounding walkway and defined by eight arches. The openings allow the walkway behind to become a stage or to be part of the space.



Usable floor area: 870 m²
Building costs: 1,1 Mio €
Building cost/m²: 1200 €/m²



Ground floor plan



The almost 7m high dome of the assembly hall is constructed from 36 cm acoustically prepared earth bricks. No formwork was used. Instead a rotational guide, specially developed at the research laboratories for experimental building at the University of Kassel, was used to help precisely position the earth bricks according to a structurally optimised rotational geometry so that the structural load is carried directly to the foundations without horizontal compression or tension forces. The guide also dictates the inclination of the layers of bricks so that the bricks are inclined by up to 20° less perpendicular than their position in the dome. Each layer of bricks cantilevers 3 cm forward of the layer below resulting in a positive acoustic effect: the

modulated inner surface disperses acoustic reflections rather than reflecting them into the centre of the room.

The dome is covered by a green roof so that the rooms below are cool in summer and heat loss through wind is reduced. Heating energy costs can be reduced significantly. During hot summer days the indoor room temperature never exceeds 26°C provided the building is ventilated at the right time of day.

All walls are made of room-height prefabricated wooden panels in 1m sections. The external walls are finished with a double layer of wooden panelling and soft fibreboard panels. The cavity is insulated with 20cm of loose cellulose insulation. The internal walls have earth brick infill.

Clay panels (2 cm thick) are fixed to the inside surfaces of the external walls and covered with a finishing layer of fine clay plaster (system: casadobe).

The nursery is heated using a local wood-chip-fired central heating boiler.

Rainwater does not flow into the drain but is instead retained on site in a water trough and allowed to percolate into the soil.

The compact low-lying form of the building enabled the low-energy standard to be fulfilled without the need for extra costly measures.

