

**Location:** D-24960 Glücksburg  
**Client:** artefact gGmbH  
**Architect:** Günter zur Nieden, Lübeck  
**Earth building:** Self-build as training measure  
**Construction:** 1989 - 1995



## The artefact centre, Glücksburg

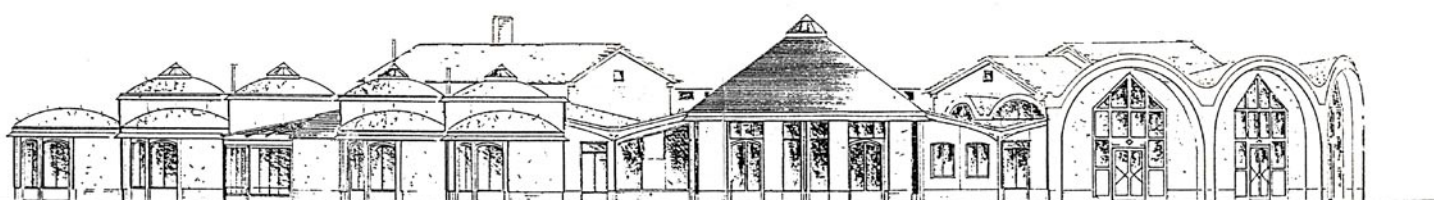


As an organisation for energy, appropriate technology and international development “artefact” required a centre which could be used not only to learn about its aims, but also to demonstrate and practice them with. To reflect its international orientation and aims, building forms and construction methods from both the northern and southern hemispheres where wood is more scarce were chosen.

The construction was carried out through a series of work placement schemes, training programmes and youth projects. Those who took part were given the opportunity to learn directly from the construction under the guidance of professionals from various different countries.

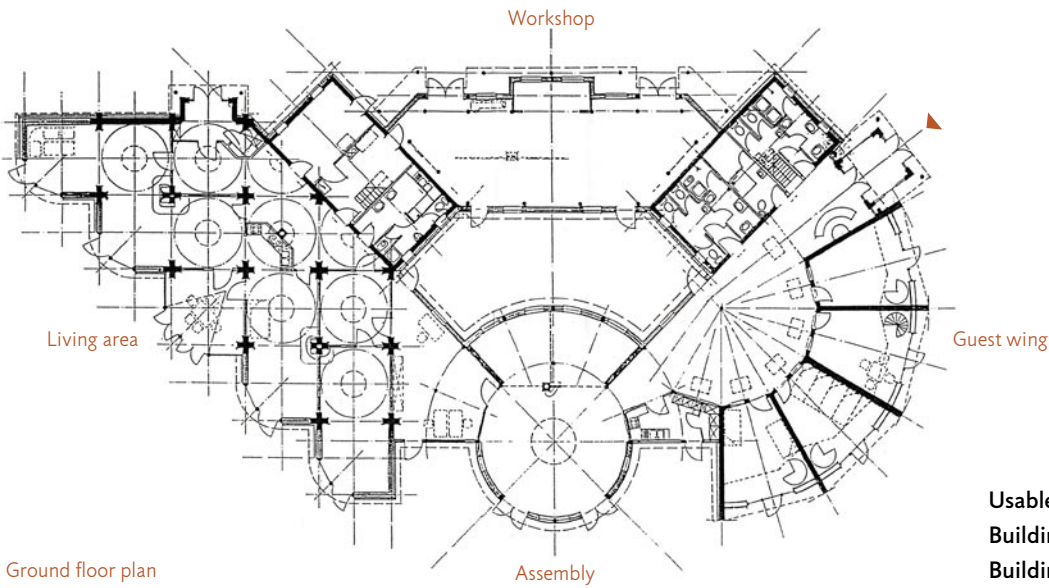
Over a period of six years an ensemble of different rectangular and more fluid building forms resulted, arranged along two main axes. The project began with two conventional buildings and a hall for the offices, plant and workshop which draw upon the local rural building tradition.

In further phases a guest wing, a series of four nubian vaults were constructed which fan out from a single point followed by a timber-frame central congress room and a living area as a series of domes. Each area has its own specific exterior face as well as interior atmosphere e.g. the neutral functionality of the workshop and offices, or domed spaces providing a sense of comfort and security.



South elevation

# earthen building · case study



Usable area: 700 m<sup>2</sup>  
 Building costs: 920 400 €  
 Building cost/m<sup>2</sup>: 1083 €/m<sup>2</sup>

The ensemble is constructed in part as heavy masonry (domes and vaults) and in part as timber-frame with light clay filling. The repetitive forms of the vaults, arches and domes allowed difficult constructions to be practised several times over.

The domes in the living area relate to both European tradition and newer Indian and African examples. The domes rest on four pillars built on a square plan. The first part between the base of the arches and their apex transform the square to a circle. The first full circle of bricks, the so-called "tonsure" ring, named after the monks hair, serves as a ring beam and is laid in cement mortar with reinforcement bars (2 Ø 10). The actual dome cap is self-supporting and laid without formwork using earth bricks and mortar.

The two storey vaults of the guest wing are executed in the form of nubian vaults along the lines of the constructions built by Hassan Fathey in Egypt. The brickwork vaults which taper towards a single point are laid in conventional layers up to a height of 1.80m, the 24 cm thick layers shifting inwards slightly with each layer. The actual vault is executed on top of this base in the form of a lying-down curved shell using 11.5 cm earth bricks turned on end. The inclined layers of bricks and the adhesive quality of the mortar means that supporting formwork is not required.

Water and space heating as well as power is provided by a combination of solar collector plant and combined heat and power sources.



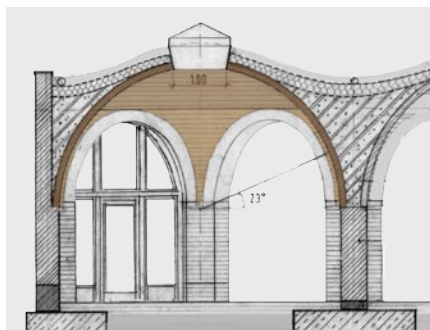
Bricklaying a nubian dome without supporting form



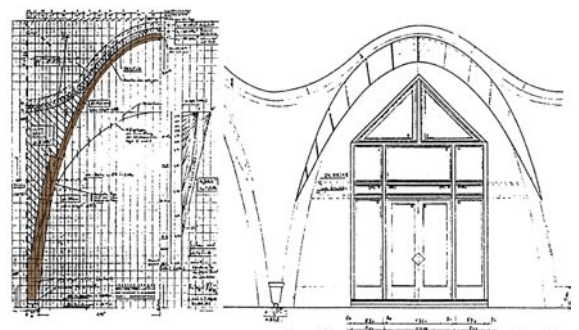
Forms for the nubian vaults



The so-called "tonsure" ring of a dome in the living area



Diagonal section through a dome



"Chain line" for constructing the form of a nubian vault