

# CSEB - Visitors' Centre

methodology  
local development  
renewable energies  
ressources management  
materials  
process



For millennia, the Earth was used to build amazing lasting constructions without any maintenance. Since 1950, the compressed and stabilised earth block (CSEB) has made the revival of earthen architecture possible. All over the world, laboratories, institutes, governmental and non-governmental organisations are looking for this appropriated technology and promote it. The CSEB secures the link between millennial tradition and modern and scientific development.

Depuis des millénaires, la terre est utilisée pour construire d'étonnante constructions sans aucune maintenance. Depuis 1950, la brique de terre comprimée et stabilisée (CSEB) a fait revivre l'architecture de terre. Dans le monde, laboratoires, instituts, organisations gouvernementales et non-gouvernementales travaillent sur cette technologie appropriée et la promeuvent. La CSEB crée un lien entre tradition millénaire et développement scientifique.



## An appropriated material

### project

#### Function

The Visitors' Centre is a public building aiming at integrating an alternative building process, various appropriate building technologies and renewable energies.

#### Building owner

The Auroville Foundation - under the supervision of the Indian State - ordered this building

#### Type of property

This building belongs to the Auroville Community

#### Opening date

1992

#### Surface

1200 m<sup>2</sup>

#### Geographic morphology

This region of Tamil Nadu is characterised by a hot and damp climate. The climatic conditions are comfortable from November to February, the rest of the time a good ventilation is needed.

### process

#### The CSEB

CSEB is just earth with 5% cement compressed as a brick with a press. It constituted a breaking point in the history of construction. It is said to be more attractive than the fired country brick for the following reasons :

- It is made of a natural and plentiful resource, i.e. earth, which is to be found everywhere in the environment,
- It has a nice aspect and finish, as it is smooth with thin and regular edges,
- It has standard dimensions with less than 0.5 mm variations for the Auram 3000 Press.
- Its cement component (5%) guarantees soil stabilisation and durability,
- It can be used for most buildings, provided they are built according to its characteristics.

#### Low cost

This sort of block is most of the time cheaper than other conventional materials. This is due to its exceptional characteristics: low percentage of stabilizer, employment of semi-skilled workers using a manual press. In Auroville, a 1 m<sup>3</sup> wall made of CSEB is 20% cheaper than 1 m<sup>3</sup> wall made of fired brick.

#### Energetic efficiency

Today the management of conventional energies and natural resources has undeniably become a worldwide problem. This is mainly due to the over-consumption of wood and fossil resources to produce fired bricks. CSEB requires no firing and contains virtually no stabilizer. Its production necessitates 5 to 15 times less energy than other structural materials.

#### Basic datas

Constraint of dry compressive strength after 28 days  
Constraint of wet compressive strength after 28 days  
Constraint of dry flexion after 28 days  
Constraint of chiselling  
Water absorption after 28 days (3 days of immersion)  
Volume mass

40 à 60 Kg/cm<sup>2</sup>  
20 à 30 Kg/cm<sup>2</sup>  
5 à 10 Kg/cm<sup>2</sup>  
4 à 6 Kg/cm<sup>2</sup>  
8 to 12 % (mass)  
1700 à 2000 Kg/m<sup>3</sup>

### design

#### End of life

The Visitors' Centre is made of raw compressed earth, which is a reversible material.

#### Maintenance

After noticing a premature degradation on top of the walls, concrete dripstones forming cornices have been designed for the most recent part of the building.

#### Processes and products

Brick : the whole building is made of compressed and stabilised earth block.  
Vaults and domes made of CSEB are waterproofed by a coating made of crushed baked clay. Local stone was used for the foundations. The flagstones are sustained by ferrocement shells prefabricated on the site.  
Doors and railings are made of ferrocement. Metal fittings were used for the framework. The stairs were prefabricated on the site.

#### Energy

The use of innovative and alternative technologies has considerably minimised the intrinsic energetic quantity of materials (no aluminium...). Besides, solar chimneys made compressed and stabilised earth blocks were designed. The quantity of heat they store creates a depression which allows natural ventilation.  
The water pump is driven by a wind turbine.

#### Auto-construction

Auto-construction is underlying in this project since it is a community designed by and for the social group living in Auroville.

