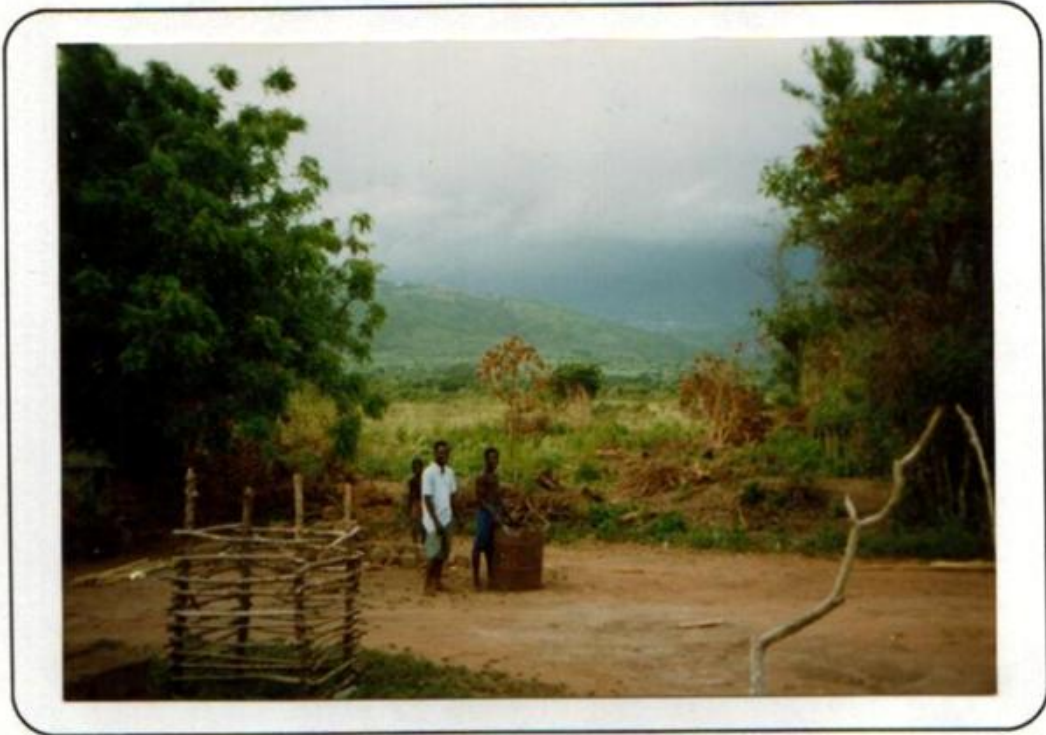


Construction of a solar tunnel dryer in Danfa near Accra/Ghana



The landscape around Danfa is partially cultivated; there are many wild mango trees,



Construction begins with 600 adobe bricks and a small quantity of cement,



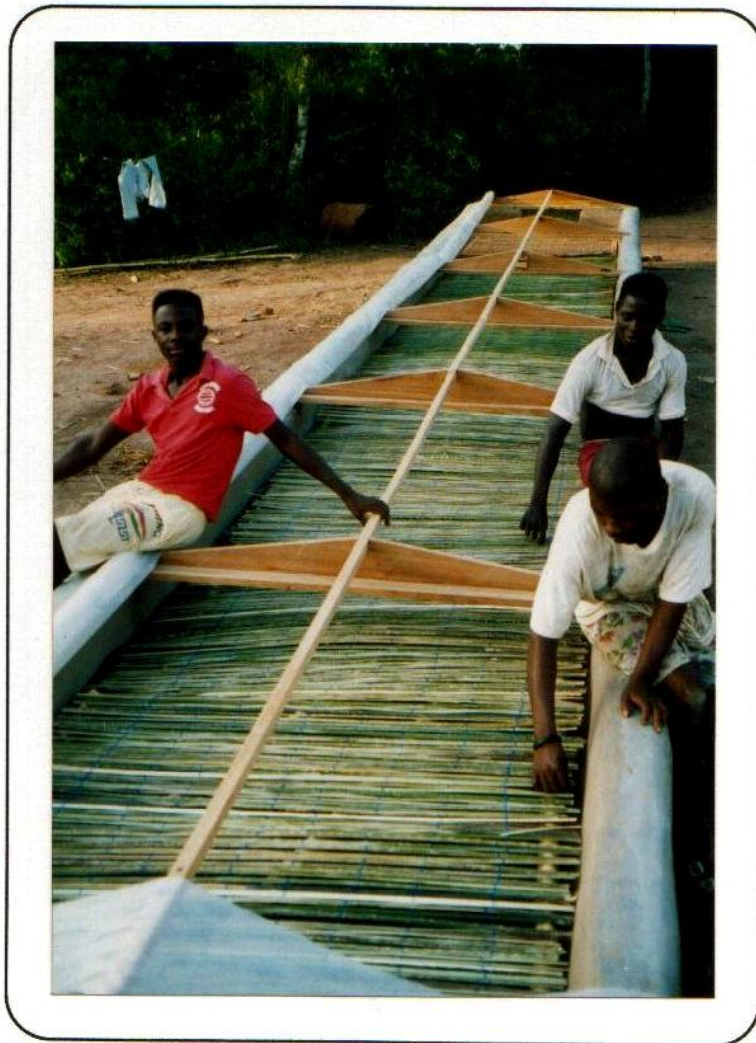
The interior is filled with earth up to the upper level of bricks. Thereafter, the earth is condensed, and the 22 m long construction is covered with plaster,



A wooden roof diverts the rain water. A black foil of polyethylene (PE) is put into the dryer to protect against from below and to serve as an absorber for the rays of the sun,

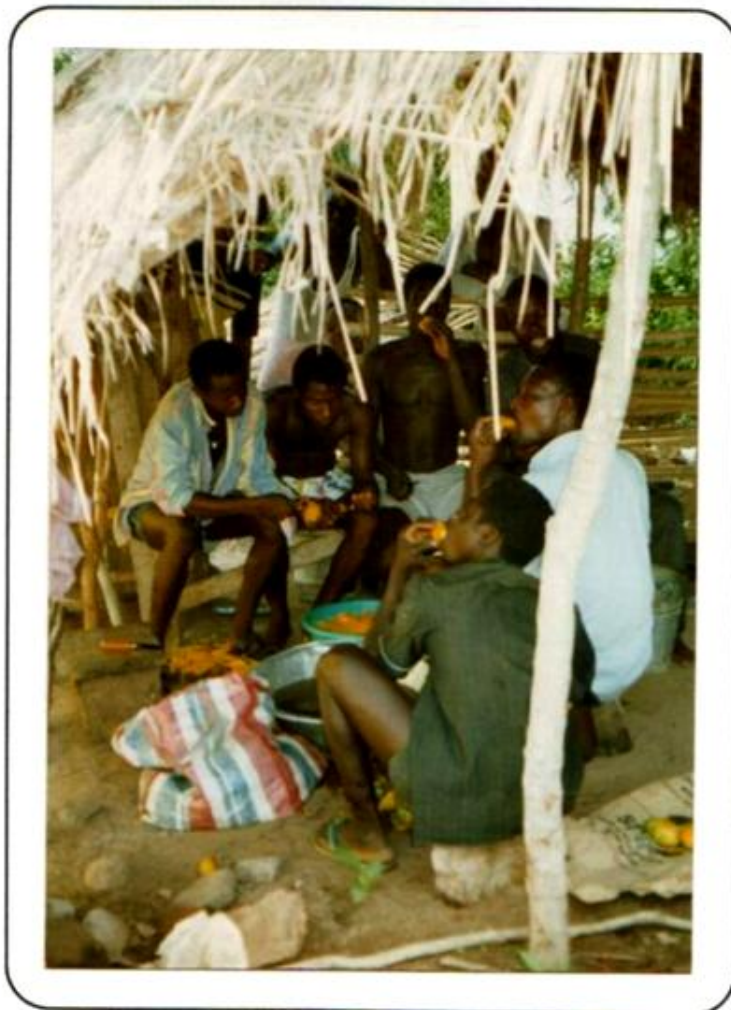


A mat made of palm strings is used as a support for the goods to be dried. The mat has been made with a simple weavers loom,





The finished dryer is aerated by a car ventilator. The latter gets its energy from a 50W solar module,



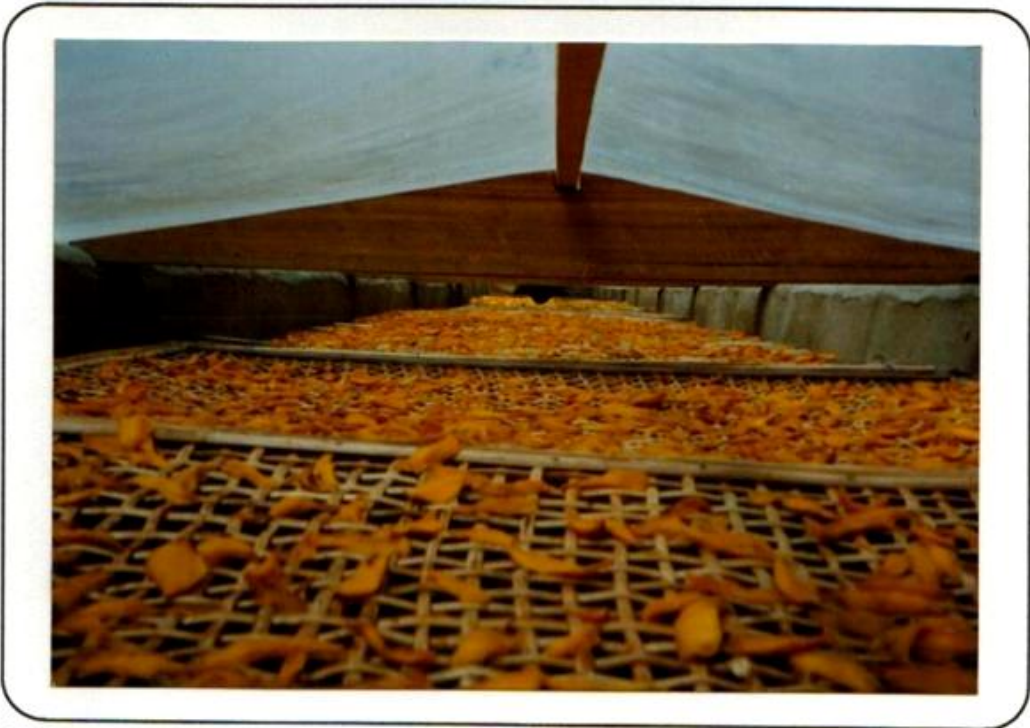
Some members of the cooperative cutting mangoes,

Dipl.Ing. Christoph Müller ©'97 email: chris@hc-solar.de web: www.hc-solar.de

This project was financed by „Aktion Partnerschaft Dritte Welt Karlsruhe“

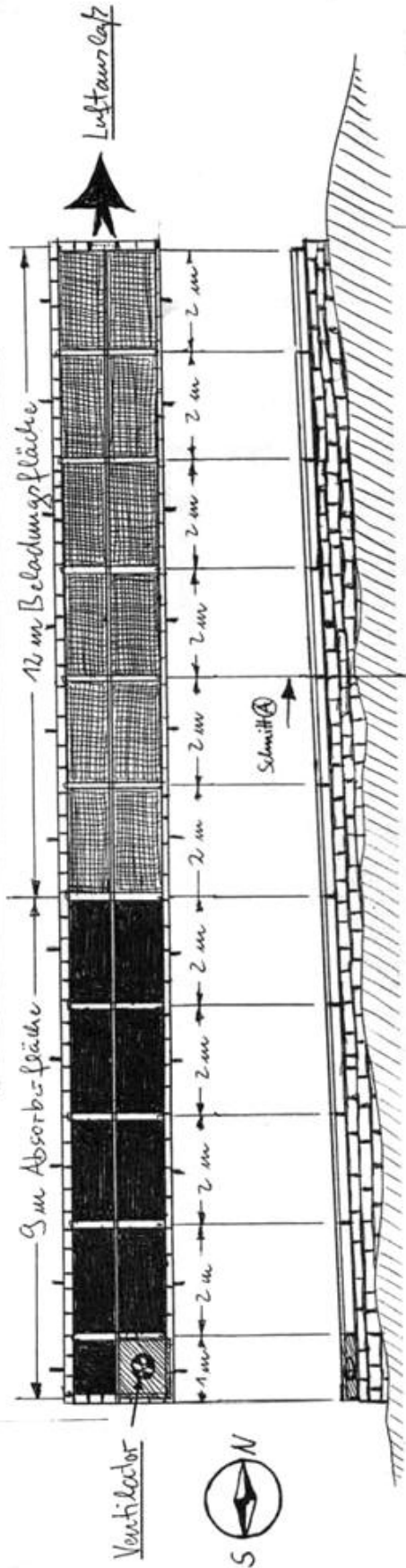


Before filling the foil is rolled back. If weather conditions are favorable, 200 kg can be dried in one day. The maximal temperature is 60° C.



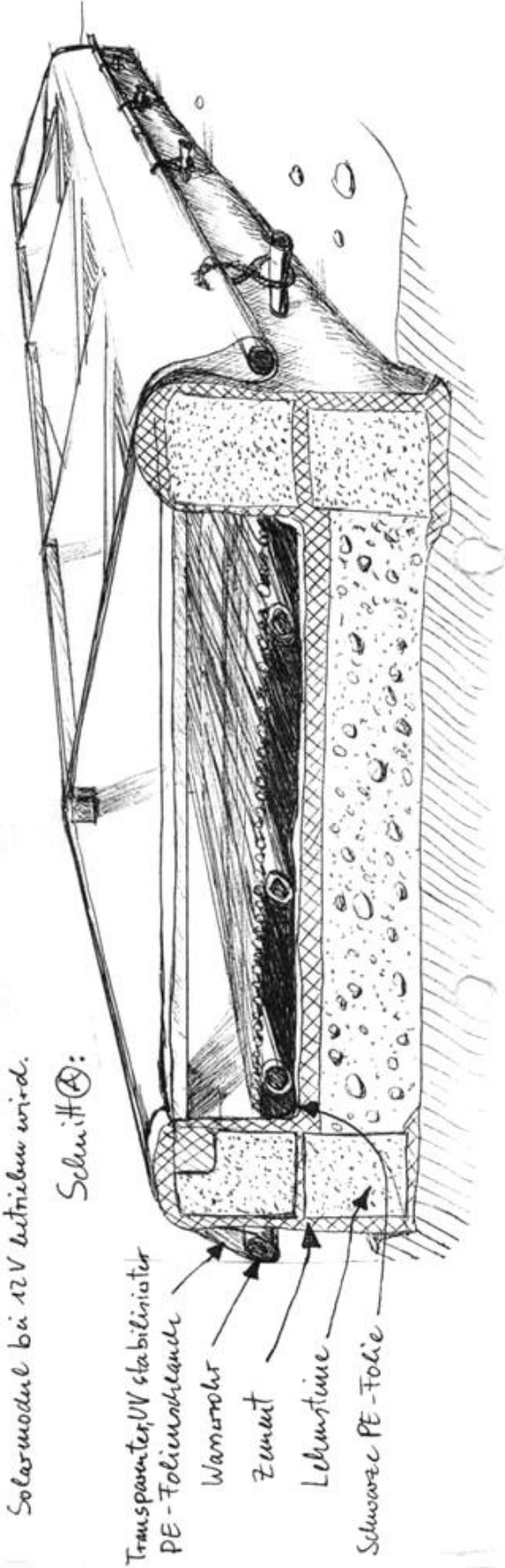
Not only mangoes, but also bananas and ananas can be dried,

Solarer Tunneltrochner in Daula/Grana, 1936



Die Länge des Absorbers bestimmt die Betriebstemperatur. Ein Trochner mit den angegebenen Größen liefert maximal 60°C am Absorberausgang.
 Als Ventilator wurde ein alter Autoventilator verwendet, der mit einem 50 Watt Solarmodul bei 12V betrieben wird.

Schnitt A:



Design on the last page :

Design above: Longitudinal section of the solar tunnel dryer in Danfa/Ghana, 1996
9 m absorber surface, 12 m chargeable surface

Ventilator, air outlet,

The length of the absorber determines the working temperature.

A dryer of the given dimensions provides 60°C at the air outlet.

For aeration, a car ventilator was used, which gets its energy from a 50Watt solar module at 12 V

Design below: Transversal/perspective design:

Transparent, UV-stabilized PE foil

Water tube

Cement

Mud bricks

Heavy PE foil

Many thanks to Dr. Paul Krämer for his translation in English !

Remark:

It is better to use several electronically comutated ventilators as used in computers (for example 8 units, 12V, 6W each, 12 x 12 cm with one solar panel of 50W) to replace the car ventilator. This allow to improve durability of the system. The ventilators should be placed at the front side of the dryer to blow the air straight into the tunnel to avoid unnecessary pressure drop.