

WPT1 Output 2:

Four optimised cob mixes produced
Four earth-fibre mixes will be used to
produce samples in France and in UK.
These mixes will have a design which
complies with actual regulation. Materials
used (soil, fibre) will be selected based on
availability and location of buildings to be
constructed in order to minimise CO2
production due to the material
transportation. The manufacturing
method will also be an integral part of
products and allow a reduced
time of labour compared to traditional
method of cob building.

This output follows on from the document 'T1.1 Output report.
(This output summarises the Technical report 'An innovative mixing and building method.')

Mixing

Current techniques

The traditional mixing of the cob was generally carried out by foot treading, by men or animals.



Mixing with animals – Meti School worksite Rudrapur Bangladesh – Anna Heringer architecte



Mixing by foot on a tarpaulin, cob training, april 2018, Les Grands Ateliers de L'Isle d'Abeau

Advanced mechanical mixing

In order to promote CobBauge as a modern method of construction, a more efficient method of mechanical mixing has been developed.

Planetary mixers are also used. They can be mounted on a carrier vehicle, an agricultural tractor for example. In this case, mixing is often done at the construction site. They can be fixed in a production site, brickyard or depot of a masonry company. In this case, the mixture is transported to the building



Mobile planetary mixer – Renovation site, Daviaud open air museum (F)

Horizontal brickyard mixer test, ECOMATERRE R&D project – IFFSTAR et Collectif des Terreux Armoricaains, Nantes (F)

The bibliographical research on the mixing processes used in the agricultural and construction fields has made it possible to identify mixing buckets as an avenue to explore. The interest lies in this type of equipment in the possibility of managing with a single carrier machine the loading of the mixer, the mixing and the dumping on the construction area of the work, including at height.



Mixing bucket BB610 – WARZEE



Mixing soil and flax straw with Warzee mixing bucket

As part of the construction of the test wall at ESITC Caen, we were able to test a fourth variety of mixer. This is a mixer whose tank is conical where the mixing is carried out by peripheral arms and a central axis rotating in the opposite direction and at different speeds. This is equipment designed for concrete, here in a small volume version for the ESITC laboratory.



Conical mixer KNIELE – ESITC Caen

Implementation of shuttered cob

In order to speed up implementation times and limit the number of stages in the construction of cob walls, several formwork tests have been carried out, in the past (cf, 1st transdisciplinary exchanges on raw earth constructions - 2003 - A Klein p 417-437), and more recently in Normandy in Brittany, England and Switzerland. The formwork allows without too much constraint and risk to implement by dumping and trampling the cob to obtain a good compactness. It allows you to control the overhang and avoids having to recut the facings.



Meshed formwork – Olivier Dargagnon



Solid wood formwork – Les Frères Bon