CONTAINER WOOD DRYER

General information

- This dryer is made of a metal cargo container, simple hand-made rails, iron sheets, wire mesh for supporting the iron sheets and six 45 cm diameter fans. The container must be painted dark to ensure high absorption of sun light in order to create enough heat inside the dryer.
- The fans are located between the container ceiling and iron sheets. The fans ensure a steady flow of air and constant temperature.
- This dryer, constructed in a 20 foot container, is suitable for drying soft wood of all sizes below 5,5 meter. This dryer model can also be constructed in a bigger, 40 foot container, in which case it can accommodate longer loads.
- The dryer requires 15 days for drying a full load of soft wood.
- This type to dryer is cheap, easy to construct and maintain, and it requires only a small power source.
- The dryer does not require good quality indoor conditions, it can be installed anywhere under simply roofing.
- The container dryer is ideal for local Tanzanian conditions. It provides an easy-access drying option for rural conditions, enabling professional level end result.

Main points

1. Compared to air drying, the container dryer speeds up the drying process by as much as 100%.
2. Good drying result and quality: because the wood is loaded evenly in the dryer, it keeps the temperature and air flow steady. As a result, the drying process is controlled and prevents splitting, twisting or colouring.
3. Easy manufacturing and operation – this type of dryer can be manufactured and maintained locally and it is very easy to use.
4. Low power source: even a small generator or electrical motor can run this efficiently.
5. Cost-effective: the dryer requires little maintenance and is very durable, as all the parts are simple and robust.

Specifications and maintenance information

- The dryer has dimensions of 6,06*2,44*2,60 m (outside), 5,90*2,35*2,40 m (inside; empty, before fitting in equipment).
- Max length of wood 5,5 m. The maximum loading capacity is 5,5*1,7*1,6 m (length-width-height). With proper packing that ensures air flow this equals to approximately 7 m^3 of timber.
- Maximum required input power is 3 kWh.
- Power 1,5–3 KWh. During 24 hrs, the fans are running for 8 hrs (half of the fans running simultaneously). So for approximately 16 hrs per day the fans are not operating.
- This machine can be used for drying any types of soft wood material.
- Average weight of an empty container is about 2,200 kgs.
- The running time for a full load is 15 days, compared to up to 30–40 days of air drying.

Purchase information

- This type of dryer can be fabricated from materials available locally.
- The range of anticipated costs for a medium-sized (7 m^3) is 4,2 mill TSH (equalling to 1680 euros in 2018), of which:
  - 2,5 mill TSH is the purchase price of a used container.
  - 2 mill TSH is the purchase price of all other materials (including trolley rails, iron sheets, wire mesh, a small motor of 0,5 kWh capacity and two switches).
- The issues to be considered when fabricating the machine:
  - The container must be in place with direct access to sunlight.
  - The container must be painted dark to ensure enough absorption of sun light (colours like black and dark green work best).
  - Ventilation inside the container must be regulated in order to control humidity. This can be achieved by making holes with lids that can be closed. The FWITC container dryer has six holes in total, three on each side, approximately 1 meter from the container floor, evenly distributed in relation to length.
  - The dryer must be placed on an flat surface in a way that prevents rain water from going inside.

Cost-profit estimates

Description	Size 7 m^3 (20 feet container)	Size 14 m^3 (40 feet container)
Suitability	Sawn wood (for construction)	
Investment cost	4,2 mill TSH (1,680 EUR)	8,4 mill TSH (3,360 EUR)
Number of operators	1	1
Electricity (fans running for 8 hrs per day)	1,125kWh (135 kWh per cycle)	2,25 kWh (270 kWh per cycle)
Electricity costs per cycle	47,250 TSH	94,500 TSH
Maintenance	Daily (before switching machine on): cleaning the container flow (spare parts: none) Between cycles: checking electrical wires and fan rotations, as well as greasing fans (spare parts: grease) Monthly: checking the motor and adding oil if necessary (spare parts: motor oil)	
Maintenance costs per month	25,000 TSH (labour), 20,000 (parts)	
Max annual production	168 m^3	336 m^3

Services related to this machine at FWITC

- Testing client's timber samples
- Demonstration services for potential buyers and other stakeholders
- Advisory services for potential buyers and other stakeholders
- Training SME owners, managers and operators on the use of the machine
- Training on value adding on timber dried with the HFVWD

Contact and how to get there

Forestry and Wood Industry Training Centre (FWITC)

Kinyanambo

Mafinga

Mr. Edigary Mwaifweya Forestry and Wood Industry Training Centre Manager

E-mail: edigary.mwaifweya@privateforestry.or.tz

Tel: +255 744 874 521

Driving instructions: Junction of CF Madibira Rd., drive straight about 1,5 km. The junction to FWITC is opposite to the briquetting factory, on the left side of the road.

About the Private Forestry Programme (PFP)

The Private Forestry Programme (PFP) supports private forest ownership, particularly the establishment and management of plantations by smallholders, as well as the wood industry and the development of mature timber markets that would benefit all stakeholders. The programme operates in four regions: Iringa, Njombe, Morogoro and Ruvuma.

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United Republic of Tanzania
MINISTRY OF NATURAL RESOURCES AND TOURISM
Forestry and Beekeeping Division

MINISTRY FOR FOREIGN AFFAIRS OF FINLAND