



# GG ENGINEERING SOLUTIONS

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**FROM; DRYING MACHINE MANUFACTURER  
GG ENGINEERING SOLUTIONS LTD  
P.O.BOX  
DAR ES SALAAM**

**TO; ALL MACHINE USERS**



## VARIOUS MACHINE INFORMATION

**Brand name: GESOV**

**Origin:** Made in Tanzania, by GG ENGINEERING SOLUTIONS LTD

**Manufacturer's contacts:** +255759208209/+255715265107

### **Brief description on how this machine works:**

This machine is made to be a drier of various products mainly fish, meat and agro products, a brief details on how fish and sardine are dried are as detailed here-under

### **Sardines:**

Temperature settings: 140 degree centigrade

Duration of drying: 40 minutes

Ideal condition of sardine before oven loading: Dewatering for at least 30 minutes.

### **Machine operation directives:**

**Preheating:** In some cases preheating is necessary to make sure heat is evenly distributed all over; this situation will eventually determine total quality of a dried product.

Water and moisture

drainage: to maximize machine performance as well as to shorten the drying period a new version of this drying machine will be provided with several drainage systems.

Heat sensors:

In order to have a more realistic temperature condition inside the oven, a new version of this machine will be provided with several sensors located in various parts of the machine.

Air circulating fan:

The short period practical experience has indicated that, there is a serious problem in heat dispersion inside the oven, whereby some oven parts are easily heated before others are heated. To avoid this situation, we are planning to introduce an air circulating fan that will play a very important role of making sure hot air is evenly distributed throughout the oven, this in turn will determine quality of dried product.

#### **Important production estimates:**

It is estimated that 20kg of fresh sardine when dried can produce 5kg of a complete dry sardines.

It is estimated that one full tin can weigh 20kgs.

It is also estimated that one box can carry five tins that weighs twenty kgs.

#### **Estimated machine drying capacity:**

It is estimated that a machine with six trays, each tray with a size of 760mmx680mm can process four full boxes of fresh sardines, that can yield total 100kg of complete dry sardine in 24 hours.

It is estimated that, each full box can produce 25kg of complete dry sardines

#### **Production cost estimates:**

The ideal production cost will depend on the availability of raw fish from the lake, and this will eventually depend on the seasons.

#### **Brief description on materials application:**

This machine is made of various steel materials as detailed here-under

#### **Issue of equally drying fish uniformly:**

Although we are working on our machine, to make sure heat distribution is uniformly made so that the drying is uniform through out the machine, but it must be noted that another factor that causes drying not to be uniform is the size of the fish, if the size of fish that are being dried then it is very difficult to achieve uniform drying, it is our strong advise that the size of the fish be approximately same.

#### **Stainless steel:**

This material has been used in making the inner lining of the oven where the product to be dried is kept during the process of drying; no portion of this oven is made of any different steel materials other than stain less steel or galvanized steel.

#### **Galvanized steel:**

This material is used in making external body of the machine such as ducts for air transmission, external panels for forming the body, fiber glass for making panels and other heat transfer restriction parts.

All external panels in this machine are made of either galvanized steel or mild steel, sandwiched together with fiber glass materials to restrict heat loss from the machine interior, the machine roof is provided with a safety valve through which an excessful pressure is released

#### **Fiber glass:**

Just as explained above, this material is used in making all the panels and any other machine parts that are supposed to restrict heat conduction away from the oven.

The external machine panels are fabricated such that two steel sheets or plates are installed while the fiber glass materials are installed and compressed at the center of these two plates. For the air transmission duct, after duct fabrication and subsequent installation, the fiber is then installed on top followed by aluminum cladding.

#### **Aluminum Cladding:**

This material is used in binding the fiber glass materials installed on top of the duct to restrict heat transfer through the duct from the machine interior.

#### **HOW DOES THE MACHINE WORK**

When the product to be dried is kept in the oven through trays, the proper temperature setting is made on the machine control, the machine is then switched on.

After that, the machine drying process is left to proceed until the set temperature is achieved, when the set temperature is reached the heat generation through heaters stops while the fans proceed to rotate, the machine will then maintain this set temperature for a predetermined duration of time and subsequently achieving product drying level.

After that, the machine operator opens the oven door to inspect if the product drying have been evenly completed, once the operator is satisfied the oven door is closed and the heaters are switched off to make sure the product is now cooled by the fans that will proceed in sending fresh unheated air.

The four tires installed at the machine bottom have been provided for making the machine mobile when required. The top of the machine have been provided with safety valve to release out an excessful pressure. Small water tank has been provided inside the oven for the products that need moisture during drying process

The bottom of the oven is provided with a tray for collection of liquids coming out of drying products.

All bigger machines are provided with two doors, one for oven and the other one for machine maintenance access. It is important that the machine operator know the ideal drying temperatures for each of the products to be dried in the oven as well as the ideal drying duration in the oven for each of the products.

The operator must not mix different products with different drying temperatures.

#### **LIST OF PRODUCTS THAT CAN POSSIBLY BE DRIED IN THIS MACHINE**

1. Sardines (Dagaa)
2. Fish Samaki)
3. Cashew nuts (Koroshoh)
4. Peanut (Karanga)
5. Sesame (Ufuta)
6. Fruits (Pineapple,bananas,Mengo,Sweet potatoes etc)
7. Vegetables
8. Cassava
9. Various types of meat.

#### **OTHER AVAILABLE MACHINES FROM THE MANUFACTURER**

Fume cupboards for Labs  
Cold rooms  
Bluster freezers  
Exhaust fans