

NIOMR FISH SMOKING KILN

The NIOMR smoking kiln was designed specifically to address the following problems in traditional processing methods which predispose the artisanal catch to large scale postharvest losses estimated at over 20% of the total landed weight.

- Poor quality product due to fish being damaged by difficult handling of the fish on wire nets used to support them over the fire
- Loss of smoke and heat, resulting in uneven smoking
- Limited capacity of smoking larger volumes of fish
- Time consuming in terms of amount of time needed to handle the fish in smoking.
- Constant attention to intensity of the flame and rotation of trays in order to achieve even drying of fish.

The kiln with **Patent No RP 4050 of 1980 is the property right of NIOMR**. The smoking kiln model with a capacity for either **100kg** of wet fish was designed and fabricated by our Institute in 2001.

There are three distinct segments namely the heating, the drying and the chimney. The heating segment contains stoke hole (s) along at the back of the wall for the burning of firewood or charcoal to produce energy for the smoking process.

Smoke damper is introduced in the design to retard and diffuse the smoke reaching the fish trays. This prevents heavy deposition of soot on the fish as well as dripping from fish falling on the burning fuel. The drying segment can take ten trays, five in each compartment.

The exhaust escapes via the chimney, which is equipped with a heat reflector to allow for a more economic use of energy. The walls inclusive of chimney and baffle are constructed of galvanized iron sheets and the trays made from galvanized iron pipes and wire mesh.

Advantages of NIOMR Fish smoking kiln

- Good and efficient in the use of Charcoal/firewood. Low fuel consumption of fuel (charcoal or gas) and higher retention of heat because of the insulation leading to a better quality product and quick drying time (about 16 hours).
- Uniform fish drying. Very minimal rearrangement of trays because of the heat reflector, which provides even distribution of heat.
- The door with a locking system protects the fish against pilferage and attack by rodents.
- The final product comes out with attractive golden yellow or black lustre colour depending on the fish being smoked.

Plate 1 shows the front view of NIOMR fish smoking kiln with doors opened to reveal the fish trays while Figure 1 shows the geographical distribution of NIOMR kilns among processors in Nigeria



Plate 1: NIOMR Fish Smoking Kiln

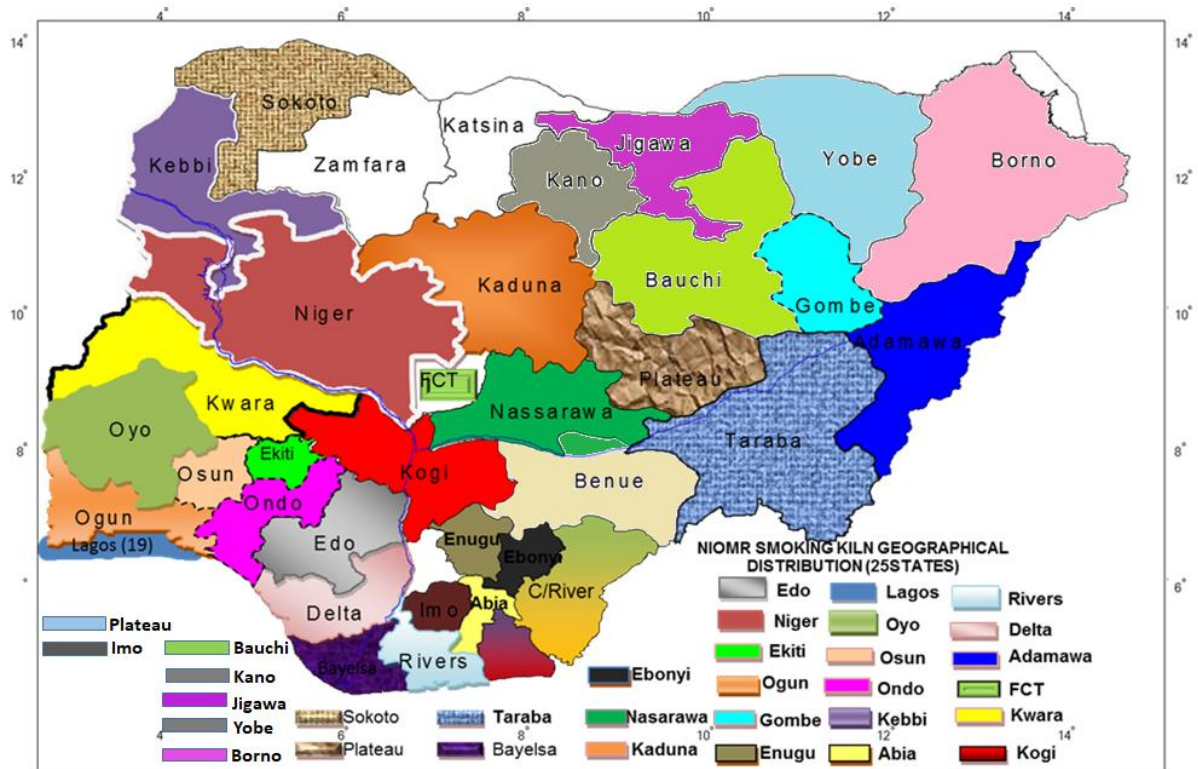


Figure 1: Geographical distribution of NIOMR smoking Kilns in Nigeria

The available Designs and capacities:

The NIOMR kiln regular design is available in different sizes reflecting the batch processing capacities: 25kg, 50kg, 100kg, 250kg live weight fish, or as specified by customer. The kiln can also be manufactured to accommodate the use of gas and charcoal as energy sources. This flexibility is to afford the customer the option of gas, charcoal or both as source of energy for the equipment. Each of the kiln sizes (except the 25 kg capacity) is equipped with fish oil collector.

The WAAPP/NIOMR kiln is our newest design, with a batch capacity of 50 kg. The distinguishing feature of this design is that it has built-in fan which is powered by solar energy. The fan ensures better circulation of heat within the smoking/drying chamber. The specific components include drying chamber with galvanized discontinuous trays, chimney, smoke generation chamber, damper charcoal stove, 12v battery, 30W solar panel, storage warming basket, oil collector, DC motor fan and roller Plate 2).

NB: The dimension for height excludes the hood and the chimney. The design for this model is similar but differences in dimensions only reflect the capacity.

The asset life span:

Not less than 5yrs if properly handled and maintained.

Services such as delivery, warranty, maintenance:

Customer is responsible for the transport of equipment from our workshop to destination of use. We provide customers with after sales demonstration on installation, use and maintenance of the equipment purchased from us at moderate cost to the customer.

Size Specification, Prices and payment modalities:

The Price varies with designs, capacity and special requirements by customer. Essentially, the following prices (excluding delivery charge) are charged for charcoal fired, natural convection kilns with product contact surfaces (trays) made of Galvanized Steel:

- a) 25 kg capacity, 58cm (length) x 54cm (breadth) x 143cm (height)- **N180,000.00**
- b) 50 kg capacity (120 cm (length) x 115 cm (breadth) x 146 cm (height)- **N280,000.00**
- c) 100 kg capacity (146cm (length) x 115cm (breadth) x 120cm (height)- **N470,000.00**
- d) 250 kg capacity (221 cm (length) x 104 cm (breadth) x 182 cm (height)- **N920,000.00**
- e) WAAPP/NIOMR kiln design (50kg capacity), 104 cm (length) x 94cm (breadth) x 175cm (height)- **₦ 400,000.00**

Optional Features:

Optional features that attracts additional charges include:

- a) Installed thermometer,
- b) Gas fired combustion unit,
- c) Stainless steel product contact surfaces (fish trays), or
- d) Any other special features desired by the customer.



FRONT VIEW



BACK VIEW



FRONT DOORS (OPENED SHOWING TRAYS (c), PRODUCT STORAGE BASKET & OIL COLLECTING PIPE (d))

Plate 2. WAAPP/NIOMR Detachable fish smoking kiln (A-front view; B-back view; C-front doors opened to show inside of the kiln; D-product storage basket and oil collecting pipe)

Payment Instructions:

Payment should be made into **NIGERIAN INSTITUTE OF OCEANOGRAPHY AND MARINE RESEARCH** CBN e-payment platform with any Commercial Bank in Nigeria.

Further inquiry: info@niomr.gov.ng