

CTT Inert Gas Drying Oven

Process

The drying of charged negative plates in an oxygen reduced atmosphere of less than 3% oxygen.

2.0 Description

2.1 General Construction

The oven shell is constructed from separately bolted and sealed insulated panels within a rolled steel channel framework faced with 'Zintec' sheet metal and packed with 50 mm mineral wool insulation. The inside of the oven is divided into two compartments. The front compartment is the plate drying section and the rear houses the water cooling coils and the burners, above which are located the air circulating fans. The floor of the oven is constructed from stainless steel sheet.



2.2 Door

The door is of a similar construction to the oven shell but with additional bracing to give it extra strength. It is located in vertical guides to allow correct positioning during the opening and closing movement and is sealed in the closed position by means of screw clamps around the front edge of the oven. The door is manually operated with the aid of a counterweight system the weights being located in guides on the rear edges of the oven and connected to the door with wire ropes which move over pulleys fastened to channel frames at the front and rear of the oven.

2.3 Burner

The burner works on the high/low mode and comprises a 360,000 Btu/hour 457 mm long horizontal ribbon burner complete with governor, pre-mix control, fan, valves and pipe work all to British Gas Council requirements. Ignition is semi-automatic in order to avoid pre-purging should the burner 'lock out' in mid cycle.

2.4 Air Circulation

By means of two centrifugal circulators located in the roof of the oven above the burner chamber. A balanced flue damper is fitted on the side of the oven connecting the drying compartment to atmosphere.

2.5 Cooling System

A bank of finned water cooling tubes is located below the burner, designed to cool the oven from operating temperature in half an hour. Dousing spray units are fitted in the roof of the drying chamber to enable the plates to be quickly cooled in an emergency.

2.6 Control Panel

The control panel is mounted on the side of the oven and contains fan and burner stop/start buttons, indicator lights, contactors, isolators, flame failure unit, temperature indicator/controllers, strip chart recorder, process timer, audible alarm and 110V transformer. The panels will be tropicalised when necessary and all the external wiring, carried in conduit, is complete with all connections made.

3.0 Product specification

The plate will have a PbO content of not more than 8%.

4.0 Output

Automotive

Approximately 20,000 double battery plates, (i.e. 40,000 total single plates), per complete drying cycle of 22 hours, using Chloride standard Universal skids.

Industrial

Approximately 7,000 single negative plates (300 mm long) per complete drying cycle of 22 hours using purpose designed skids. (Customer supply). Note that outputs will vary with plate length and thickness.

5.0 Services required

Electrical Connected load 4 kW 3-phase

Gas Propane 144 Kg per cycle

Cooling Water 3,630 litres in a 1/2 hour cooling cycle (can be recycled)

There is a separate water connection for emergency cooling with dousing sprays in the drying chamber.

6.0 Space required

The minimum space required to install the inert gas oven is 4430 mm width x 3810 mm deep by 5100 mm high.

7.0 Labour requirements

It is expected that only one man is necessary per shift to efficiently run a plate drying department containing up to three inert gas negative ovens along with the equivalent number of positive plate drying ovens.

8.0 Environmental factors

The oven is fitted with explosion relief panels in the roof and rear of the oven. These panels meet the requirement laid down by the British Health and Safety Executive.



9.0 Process control

A portable oxygen analyser is supplied as standard equipment with the oven.