

# TECHNICAL DESCRIPTION OF OUTDOOR SUBSTATION

## 1. GENERAL DESCRIPTION

The shelter is designed specifically to house electromechanical equipment.

The roof construction, ensures complete tightness of the shelter.

The shelter can be mounted on a concrete base on which is anchored with plugs.

The shelter has a steel frame suitably dimensioned so as to receive with safety all the loads. The base of the shelter is steel with anticorrosive coating. All the rest of the frame is made entirely of galvanized sheet metal. Externally coated with laminated sheet (plastisol) which ensures minimal maintenance and resistance to oxidation of the order of 20 years (standard sheet plastisol).

The transfer is made with the suspension of four (4) fixed points.

## 2. DIMENSIONS

The shelter includes three separated areas:

- Space Medium Voltage (MV)
- Space Transformer (T / F)
- Space low voltage (LV)

The outside dimensions of the shelter are approximately (LXWXH), 5000X2700X2800mm

## 3. FLOOR

The base frame of the shelter is made from UPN-100. Inside the box there are sleepers (Hollow section 100x50x3) to be undertaken safely, the projected internal load. In the transformer room there are also rails (UPN-120) to allow the transformer move on rails. The frame is welded and has anticorrosive coating on the entire surface.

In the upper part of the base, in the transformer room, is placed non-slip aluminum plate thickness 3 mm, while in the MV and LV rooms is placed plywood thickness 19 mm on which stuck antistatic vinyl floor thickness 2 mm. In the lower portion of the base positioned galvanized steel sheet 0.5 mm. In the interior of the base is placed glass wool thickness 80 mm.

In the floor of the shelter there are openings for the passage of cables.

## 4. SKELETON

In the four (4) corners of the shelter as well as the middle of the shelter there are screwed studs, profiles of galvanized sheet metal thickness 3mm, which are connected together by crosspieces of profile plate thereby forming a rigid scaffold on which are secured the walls of the shelter .

## 5. WALLS

The walls of the shelter are composed of polyurethane insulating panel thickness 80mm (density polyurethane 42kg/m<sup>3</sup>) with a coefficient of thermal conductivity  $K < 0,21 \text{ Kcal/m}^2\text{hC}$  and sealingly connected together.

The outer sheet of the panel is galvanized thickness of 0,9 mm and a rubber anti-rust coating thickness ~ 200mm, while the inside is galvanized, thickness 0.5mm and painted with polyester whitish.

## **6. ROOF**

The roof is made of trapezoidal polyurethane panel (PU density 42kg/m<sup>3</sup>) with average thickness of 60mm with a maximum thermal conductivity  $K < 0.29 \text{ Kcal/m}^2\text{hC}$ , with outer galvanized steel sheet 0,5 mm thick, while the internal is galvanized and painted with polyester whitish.

The panel of the roof are connected so as to form a single piece which is placed as a lid on the walls of the shed ensuring the tightness and water runoff. Between the roof and side walls positioned "insulating clay" (mastic) high resistance to temperature changes and over time.

Around the sides of the roof are installed gutters and generally taken care for the runoff of rainwater and avoid stagnant water.

## **7. DOORS**

The doors and the frame are manufactured from heavy duty aluminum profile, which is placed within a special insulating material to avoid thermal bridges.

By using a single perimeter cassia and placing special elastic profiles of EPDM between cassia and door achieved absolutely tight seal.

The shelter has three double doors, one for each room. Each door based on Cassia with four (4) hinges. All doors are fitted with lock and handle.

## **8. LIGHTING**

The shelter is equipped with three (3) fluorescent lighting 2x36W, one on each room.

## **9. ELECTRICAL INSTALLATION**

Generally the lines are moving in horizontal sections in plastic channel type "Kouvidi." Traffic to sockets, switches etc. are also made with plastic channel type "Kouvidi".

Supply consumptions lines constructed with cable NYY.

The lighting circuits constructed with conductors 1,5 mm<sup>2</sup>, while the circuits of sockets with conductors 2,5 mm<sup>2</sup>. For both circuits provided grounding conductor of the same cross section.

## **10. EARTHING**

The shelter bear an obvious grounding point.

Inside the shelter is placed copper conductor rectangular, measuring 25x5mm. The grounding conductor is positioned at 20cm from the floor.

## **11. VENTILATION**

The transformer room is equipped with two (2) fans. The fan is covered externally with steel cover. In addition there are two (2) openings for air intake (size 600x600mm). Internal openings are covered by louvers.

## 12. EQUIPMENT

The shelter includes:

- Medium voltage transformer, 0,4/20KV (or different voltages), oil immersed or cast resin (according to customer needs)
- Medium voltage switchboard, 24KV, 630A, 16KAX1sec, type AIR24, Contact Plasma.
- Low voltage switchboard with all the necessary outgoing and general low voltage breaker. The low voltage switches are from the company AEG-General Electric and the enclosure type MCS, ELDON with a protection degree IP56.

