

“PASSCOOL”

GENERAL PURPOSE PASSIVELY COOLED EQUIPMENT SHELTERS

PURPOSE BUILT EQUIPMENT SHELTERS

The “PASSCOOL” General Purpose Equipment Shelters have been designed to provide modern efficient housing for a wide range of telecommunication and electronic equipment, microwave, VHF, UHF and HF radio, satellite earth stations, telemetry and control equipment.

The efficient reliable operation of electronic equipment requires a stable temperature environment. As long as the maximum temperature is below the maximum operating temperature of the equipment, stability of temperature is the most important element. Passive cooling using the “PASSCOOL” principle provides this environment.

In modern remote radio and electronic stations electro mechanical cooling devices such as Air-conditioners, fans, filters etc. can be the least reliable element in an installation. Such devices are also hungry for power, which is more often than not an extremely limited commodity in remote locations. Passively cooled shelters provide the ideal alternative in most cases.

DESCRIPTION

The “PASSCOOL” General Purpose Equipment Shelter is a passively cooled, temperature compensated, sealed, weather proof, fully transportable shelter for all locations including seaside and hot inland areas. The unit consists of a fully insulated interior, sealed equipment room with thermally transparent walls and/or ceiling for rapid heat transfer into a ventilated plenum chamber. As most passively cooled shelters are used in conjunction with solar power generators, it is usual to include a separate battery cabinet, insulated from the equipment room with separate external access and venting.

OPTIONS

The shelters are available with or without a number of options, some of which include galvanised iron step, lighting power, storm porch, fire extinguisher, wash basin, water tank, cupboards, shelves etc.

FUNCTION

The aim of the passively cooled shelters is to provide a thermally controlled, dust free environment independent of the necessity of electro-mechanical air conditioning devices. Heat generated and emitted by the electronic equipment within the shelters is dissipated through the sheet metal, thermally transparent walls and/or ceiling of the equipment room into the plenum space between the inner walls and ceiling and the insulated outer walls and roof. The plenum space is fitted with a mesh air intake and a similar outflow on the opposite side encouraging convection flow through the plenum space. The outer roof and walls are well insulated to reduce solar gain to an absolute minimum. The heat transferred through the transparent walls and/or ceiling is carried away by airflow through the plenum space and exhausted to the atmosphere.

PHYSICAL DIMENSIONS

The physical dimensions of the shelters vary widely depending on the degree of heat to be dissipated, the physical size of the equipment to be housed, the number of external options required and the physical accessibility required around the housed equipment.

CONSTRUCTION

The shelters are constructed on a galvanised steel chassis or frame, which is extended to the roof for solar panel mounting or where top lift by crane or helicopter is required. External and non-transparent walls are constructed from Colour-bond steel foam sandwich sections, which are joined using our patented joining sections to provide insulation continuity between inner and outer walls. The thermally transparent wall materials vary depending on the amount of heat to be dissipated and the transparent area available for such dissipation. In confined areas various profiles of thermally transparent sheeting can be selected to enhance the surface area and subsequently enhance the thermal transfer rate of the shelter.