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TAUTECH (Pty) Ltd

NOTES ON SHELTER EMERGENCY VENTILATION

Since the shelter air-conditioning installation relies on the availability of mains AC power supply for operation and the DC stand-by power capacity provided for allows for 4 to 8 hours of equipment operation in the absence of mains supply to a site, it is necessary to provide for emergency DC powered ventilation of the equipment shelter. This system is not intended as a temperature control mechanism but should rather be seen as a measure to relieve the build-up of excessively high equipment shelter temperatures in the absence of active cooling.

Emergency ventilation has specific relevance in high earnings potential sites where downtime should be kept to an absolute minimum and also in the case where sites are fed off low reliability mains AC power supplies and frequent power interruptions occur. This solution can be applied as a general installation standard except at those sites where the air-borne dust levels (eg. grain silo sites) places prohibitive maintenance requirement on the intake filter system or in excessively high wind force applications in the immediate coastal belt where the equipment shelter has to be a totally closed environment to protect the equipment from the elements.

The effectiveness of the emergency ventilation installation of a given capacity is a function of the equipment heat dissipation level at such a site, the ambient temperature at the time (day/night, summer/winter) when emergency ventilation is called for and the condition of the intake louver filter.

The emergency ventilation system is intended for minimum operation duty since the operation period has a direct bearing on the frequency of filter maintenance that is required and will, despite the filtration of the intake air, bring about higher demands in terms of the cleaning out of shelters. It is for this reason that operation is limited exclusively to those periods when the site mains AC power supply is completely down (all phases) and the site has reached a preset high temperature justifying fan operation.

Shelter air-conditioning installations are generally dimensioned at the nominal 3,5; 5 and 7kW level to meet the specific heat load requirements of a site with adequate active cooling capacity. Emergency ventilation requirements of the lower 3,5 and 5kW cooling capacity installations can, depending on the specified performance, as a rule be met with the EMF200 (200mm dia fan) assembly while for the higher capacity 7kW class installations the EMF250 (250mm dia fan) assembly is recommended. Both the EMF200 and EMF250 are used with the same intake louver arrangement.

Emergency Ventilation should not be confused with the Free Cooling principle where the motive is to capitalise on low ambient temperatures in order to save energy through ventilation rather than to operate active cooling plant. Given the harsh environmental conditions found in Africa in terms of free dust as one extreme and high humidity levels as another, together with generally high ambient temperatures, Free Cooling is seldom a viable option in this market.

Refer to EMF.pdf for fan data.

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