

TAUTECH (Pty) Ltd

NOTES ON LOW AMBIENT CONTROL

Commercial comfort cooling air-conditioning units, when used with the correct peripheral controls and accessories, form a small telecommunications environment cooling solution at a considerably more attractive price than higher specification dedicated close control or precision products.

One aspect of operation that needs to be addressed however when commercial comfort cooling units are applied in an equipment cooling role is the units' Low Ambient Control (LAC). Comfort type air-conditioning units are sold in a price competitive market and are fitted with the minimum but adequate controls for this application where cooling operation will generally not be called for by the user under low ambient temperature conditions. In an unmanned equipment cooling application however cooling operation is called for irrespective of ambient conditions. When cooling operation is called for at low ambients the air-conditioning unit is operated outside its design application parameters and the component element thermal dimensioning balance of the unit is lost. The cooling capacity offered by the condensing cycle dominates the capacity of the evaporative cycle to the extent that the evaporation core could operate at sub-zero temperature levels which could lead to icing up of the evaporator core. When this occurs cooling operation is lost and the block of ice that could be formed becomes a very unwelcome element within the telecommunications environment.

The compressor in an air-conditioning unit in a low ambient iced-up condition takes a lot of strain in terms of attempting to compress refrigerant that is not entirely evaporated and in layman's terms will 'pump liquid'. Apart from loss of operation, this could lead to valve failure and compressor failure. Preventing this condition through LAC eliminates this potential failure option completely and fitment of LAC is therefore offered as part of the total solution.

In certain cases larger through wall air-conditioning units are fitted standard with a protection scheme that will prevent the above strain on the compressor but it operates at set points that are not intended to prevent icing-up per se.

Remember also that all of the above only applies to through wall type air-conditioning units where the condensing and evaporator fans are operated off the same drive. Split type air-conditioning units with separate condensing fan motors generally will be equipped with high pressure condensing fan control.

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