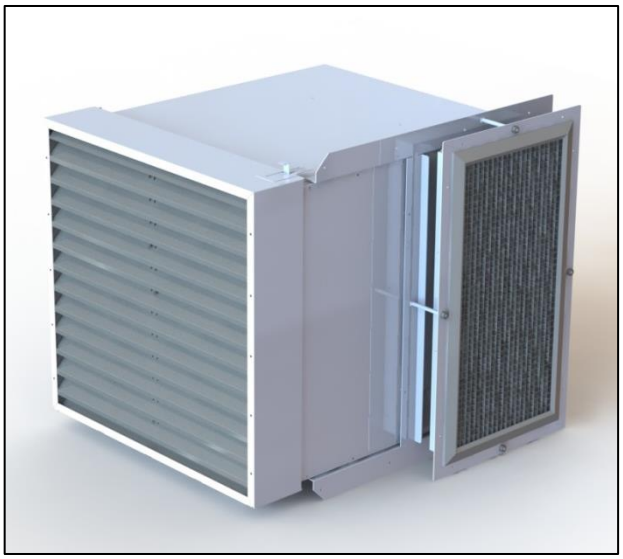
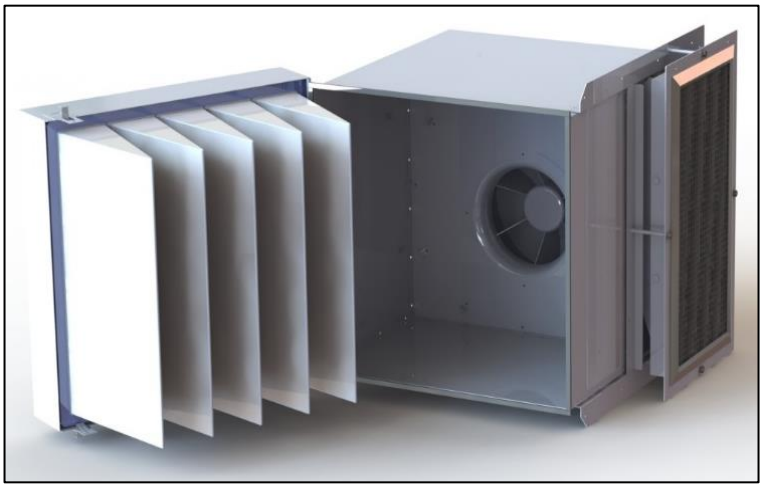
Tellumat
Integrated Solutions

TK1 Positive Pressure AHU Unit





Outdoor Site Build

Product Overview

The Tellumat Positive Pressure cooling system, is a free-cooling system specifically designed for cooling Base Station sites with high-load density. The system monitors conditions inside and outside of the shelter and controls the cooling mechanisms (air-conditioners and free-cooling) so as to optimize energy consumption, while keeping the internal environment within strict parameters.
The system is suitable for new site builds, but has been specifically developed for retro-fit onto existing sites with 1 or more BTS units.

In comparison with other free-cooling systems it has been optimised to:

- Deliver large flow volumes
- Offer high-level security once installed
- Extend filter service life
- Maximise the use of free cooling
- Control the air-flow path through the shelter

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Main Features:

1. The System consists of the following components:
2. Free-cooling supply box (with air-filters)
3. BTS Exhaust Relief / Outlet
4. Supply Flow Grille and BTS Cowling
5. PP Controller (with air-con switches)

The system is similar to traditional free-cooling systems, but offers some unique advantages. Firstly, the unit can supply large flow volumes at 48VDC. Secondly, the system includes a specially developed BTS cowling that helps expel exhaust air directly from the top of the BTS without contaminating the shelter. This allows the system to maintain supply temperatures extremely close to the environmental temperature and significantly increases the useable free-cooling period.

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Free-Cooling Supply Box

Supply Flow Volume (@ 53VDC)	m^3/h	3100 (initial filter pressure @65Pa) 2200 (final filter pressure @450Pa)
Free-Cooling Capacity	W/K	615 - 870
Maximum Pressure Drop	Pa	800
Intake Free-Area	m^2	0.34
Dimensions	mm	735(w) x 610 (h) x 610(d)
Weight	kg	49 (36kg Box; 4.4kg fan, 8.5kg Filters)
Fan Voltage	V	36–57 VDC
Maximum Current draw	A	8.1 (@ 460W)
Maximum Noise generation	dB	70 (@ 2m)
Filter Sizing	mm	Primary: 600 x 600 x 50 Secondary: 600 x 600 x 350 (max)
Filter Class / Type	-	Primary: G2 Steel Mesh Filter Secondary*: F5 F50S Compact Pocket *Alternative: F6 Cassette Filter
Secondary Filter Dust Holding Capacity	kg	Secondary: 1.4kg

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Controller & Logic

Controller Type	Positive Pressure Controller (24/48VDC) CK30 Double-Aircon Switching Device
Dimensions	PP Controller: 210(h) x 170(w) x 115(d) CK30: 200(h) x 190(w) x 120(d)
Controller Inputs	1 x External Ambient Temperature Probe 3 x Internal Temperature Probes 2 x Aircon Failure Detection Probes
Controller Alarms	14 Inputs 16 Outputs

Email: TISinfo@tellumat.com Website: http://www.tellumat.co.za Tel: +27 (0) 11 848 1300
383 Roan Crescent, Corporate Park North, Midrand, 1685

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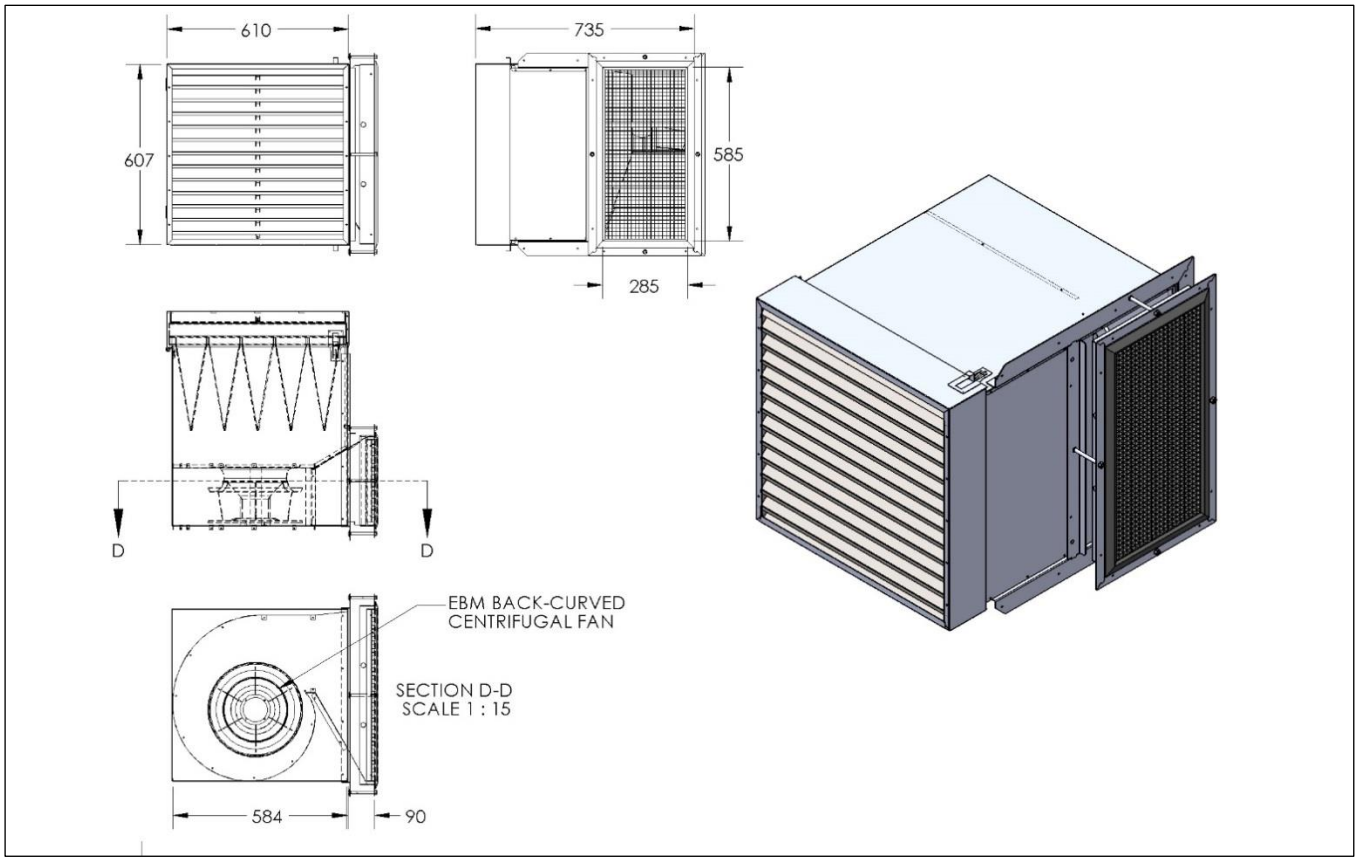
Dimensions & Drawings



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Configurations

There are many possible installation configurations, but the Positive Pressure System was developed specifically for Base Station Shelters with similar configuration to that shown below:

- The PP Supply Box is installed below the air-conditioner units:
  - Very little change to shelter footprint (underneath aircon units)
  - Cool Supply air is intended to be pushed in at the lowest point in the shelter
  - Supply air is pushed into the middle of the shelter

- A Relief/Outlet and cowling is then installed above each BTS unit as shown:
  - Each BTS should be fitted with a cowling to direct warm exhaust air

- The PP Controller comes in two different configurations, either of which can be chosen depending on the specific site:
  - Wall Mounted (PP Controller + CK30)
  - Integrated 2U Positive Pressure rack-mounted unit

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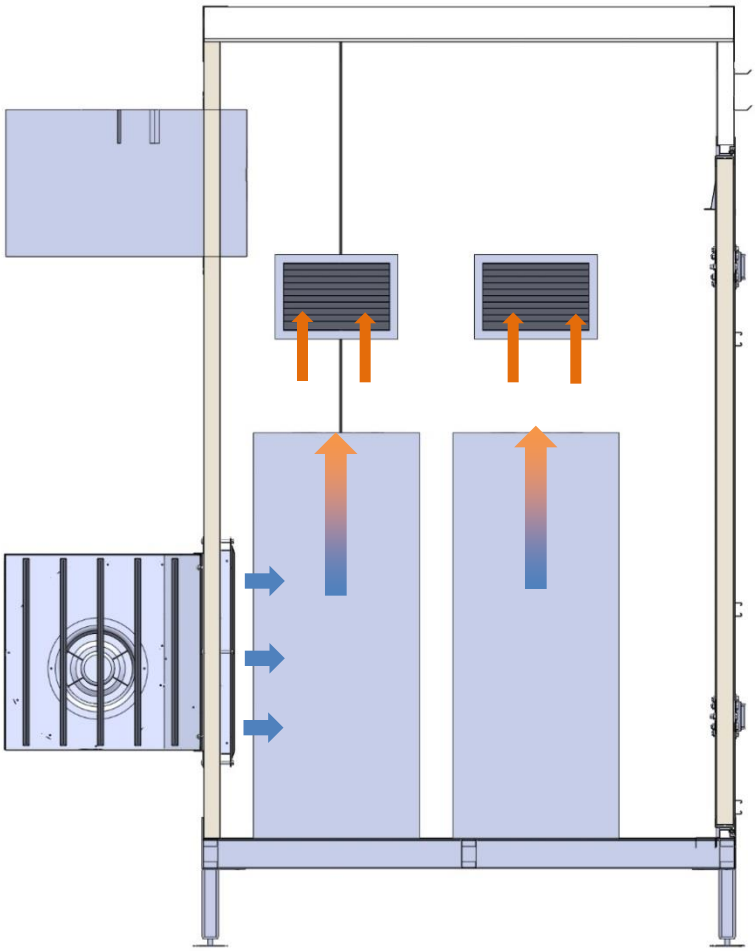
Passive Cooling Airflow



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