

Outside Broadcasting Vehicles - Australian Broadcasting Corporation

1. INTRODUCTION

Major cultural and sporting events are broadcast to national and international audiences by a fleet of 8 mobile broadcasting studios fitted into a fleet of drop deck semi-trailer chassis.

The trailers are complete with control for multiple cameras and include editing and mixing suits.

The maintenance of constant temperature control in four separate zones is provided by a twin circuit, Heuch custom air-conditioning system with contingent redundancy for back up.

The vehicle used triple rear axle assemblies with air bag suspension. Extra space was provided by expanding sides on the side of the trailer with access at either end.

A hydraulic leveling system was installed with actuators in each corner.

An extensive locker system for cables and equipment was placed between the main air-conditioning sections in the lower, under floor sections.

2. PROCESS DESCRIPTION

The air conditioning was required to control four zones, Audio, Video, Production and Engineering. Each zone can be set for a separate temperature and control accordingly. Each zone comprises of personel, static and equipment heat loadings that varied with the level of activity required for each event and the number of camera operating.

Storage and equipment space is always at a premium in mobile applications where road application limitations place restrictions on overall dimensions, vehicle balance and overall weight.

3. PROCESS DETAILS

Cooling and heating was provided by two separate systems allowing for some redundancy. Air was conditioned in the first stage by an under-floor, fan forced air-conditioning unit that supplied air to the under-floor ducting system. This air was fed into the bottom of the equipment racking to hold the racks at the correct temperature according to their needs.

The air exiting the equipment racks was captured by a ceiling plenum where it was re-conditioned to suit the temperature requirements of the personel section and distributed by ceiling mounted air registers. Centrifical blowers and cleanable air filters assist in keeping the air flow at suitable levels.

Each zone has its own room sensor and access to control set points was provided by a Heuch DDC controller in the Engineering section.

The vehicle enjoys a high electrical and cooling load for a relatively small space when compared with comparable stationary applications. This provided considerable challenges to the



Rear view with entrance into Engineering Section and the expanding side section. Main switch board door is open



Internal View looking backwards towards the Engineering Section



engineering team in finding routes for ducting around the vehicle without interfering with the basic transport chassis. Noise limits were very strictly controlled to maintain the suitably low level that a production facility requires.

The system On/Off switches and DDC Controller are located in the lower section of the Eng./CCU control cabinet. The two systems may be run independently during cooler or low load conditions or together on warmer days or when the van is fully loaded.

A fresh air fan operates continuously to both pressurise the vehicle to reduce dust ingress and provide a constant source of fresh air for the occupants in all zones.

The DDC controller includes a multiple of control logic schedules to protect the system from overload. These schedules include staging the refrigeration compressors to minimise the chance of total system failure due to high current draw, over pressure or over temperature trips.



Front view with entrances into the Audio and Video sections. A Front ladder provides access to the roof stand area.

Input	Controller Monitoring Parameters Required Range
On/Off Switch – Sys 1 and/or Sys 2	On or Off
Motor Circuit Breakers	Open or Closed
Rack Air – Common leaving Temp	Setting range 20°C – 32°C
Eng./CCU – Common leaving Temp	Setting range 18°C – 29°C
VTR – Common leaving Temp	Setting range 18°C – 29°C
Prod – Common leaving Temp	Setting range 18°C – 29°C
Audio – Common leaving Temp	Setting range 18°C – 29°C
Refrigerant Discharge Temp's	OK if < 100°C
Refrigerant Discharge Pressure	OK if < 2400 kPa
Refrigerant Suction Pressure	OK if > 10 kPa
Condenser Fan Control Point	1600 kPa
Total Unit Amps	OK if < 63 Amps, Compressor/s will shed for up to 1 hour on over Amp condition.
Air Pressure – Evaporator Eng./CCU	OK if > 30 Pa and < 200 Pa
Air Pressure – Evaporator VTR	Ok if > 30 Pa and < 200 Pa
Air Pressure – Evaporator Prod	Ok if > 30 Pa and < 200 Pa
Air Pressure – Evaporator Audio	Ok if > 30 Pa and < 200 Pa

Ambient conditions for operating the Unit are:

Minimum Ambient	:	Winter	:	0°C
Maximum Ambient	:	Operating	:	42°C
	:	Standing	:	55°C

HEUCH PTY LTD *A.B.N. 92 085 200 380*
17 Friars Road, Moorabbin Victoria Australia 3189
email : cool@heuch.com.au www.heuch.com.au
Phone : 61-3-9555 7755 Fax : 61-3-9555 5451