

PROJECT NAME	APPOINTMENT OF A SERVICE PROVIDER FOR THE COMPLETION OF THE DRY ROOM AND MINOR REPAIR WORK TO THE SEEDBANK FACILITY AT THE KIRSTENBOSCH NATIONAL BOTANICAL GARDEN, CAPE TOWN
CLIENT	SANBI
PROJECT NO.	G591/2026
DOCUMENT TITLE	APPENDIX D – TECHNICAL DATASHEETS
REVISION	00

EMPLOYER	CONSULTING ENGINEERS
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DOCUMENT CONTROL

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TECHNICAL DATASHEETS

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1. CONDENSER DATASHEET

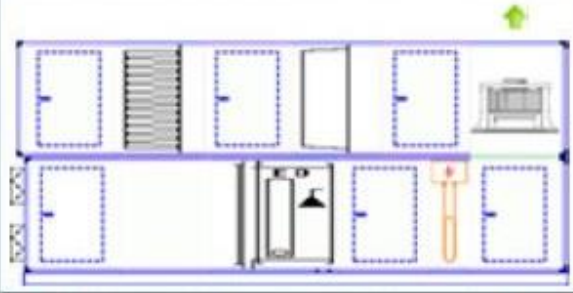
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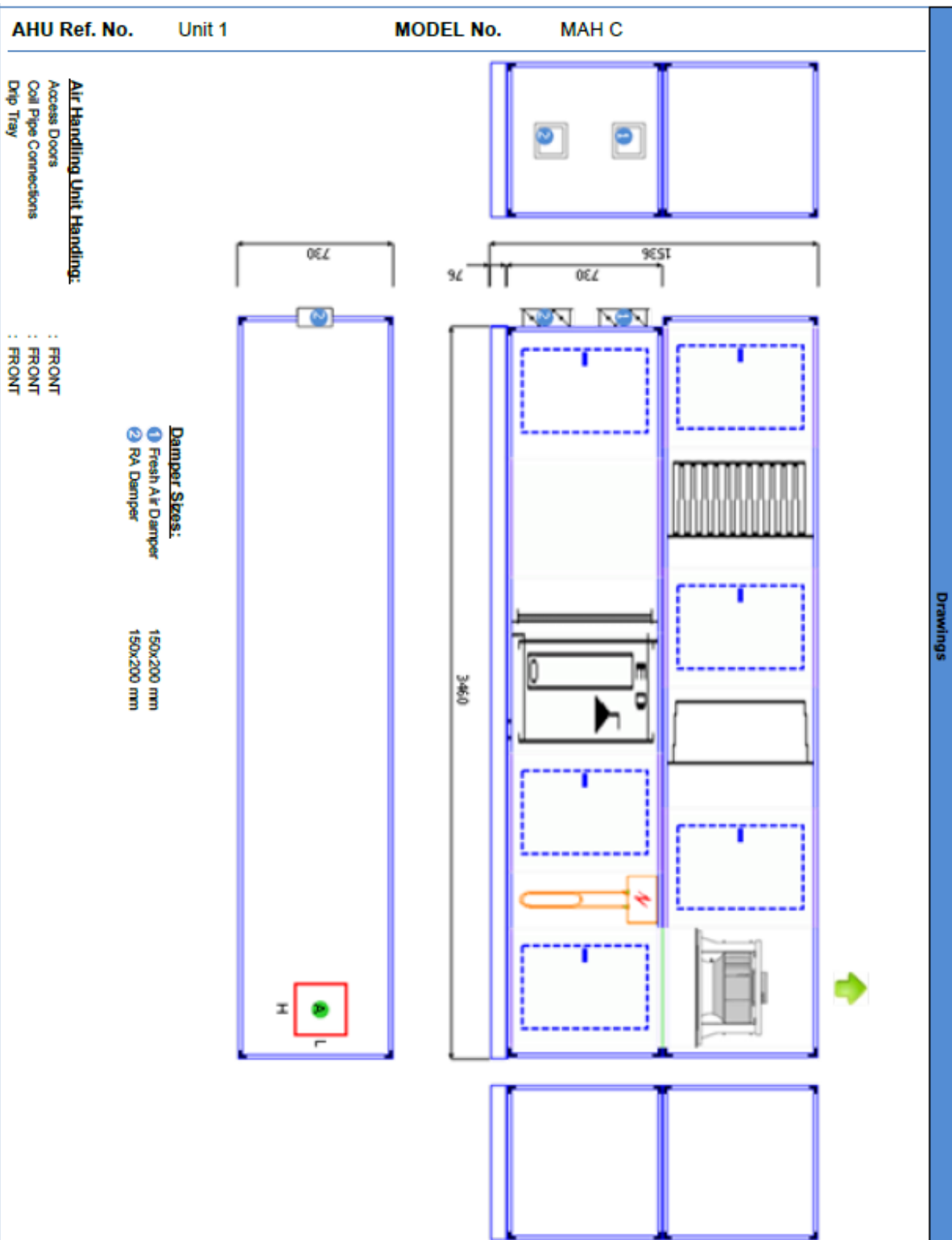


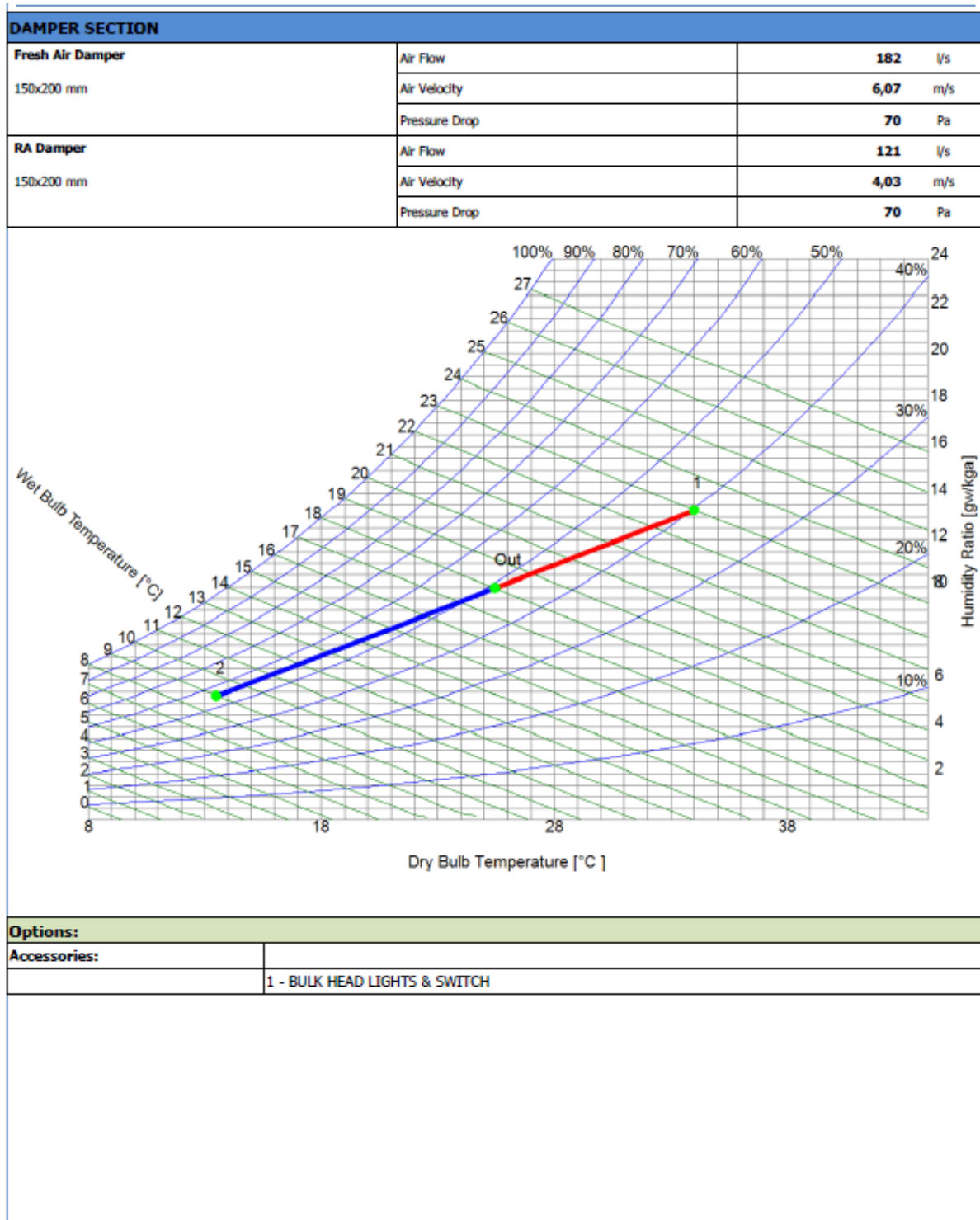
LREQ-BY1/BY1R				5	6	8	10	12	15	20	15	20
Refrigerating capacity	Low temperature	Nom.	kW	5.51 (1)	6.51 (1)	8.33 (1)	10.0 (1)	10.7 (1)	13.9 (1)	15.4 (1)	-	-
	Medium temperature	Nom.	kW	12.5 (2)	15.2 (2)	19.8 (2)	23.8 (2)	26.5 (2)	33.9 (2)	37.9 (2)	-	-
Power input	Low temperature	Nom.	kW	4.65 (1)	5.88 (1)	7.72 (1)	9.27 (1)	9.89 (1)	12.8 (1)	14.1 (1)	-	-
	Medium temperature	Nom.	kW	5.10 (2)	6.56 (2)	8.76 (2)	10.6 (2)	12.0 (2)	15.2 (2)	17.0 (2)	-	-
Capacity control	Method			Variable								-
Seasonal energy performance ratio SEPR	R-410A	Te -10°C		3.86	3.79	3.64	3.42	3.51	3.38	3.23	-	-
		Te -35°C		1.80	1.77	1.84	1.88	1.80	1.70	-	-	-
Annual electricity consumption Q	R-410A	Te -10°C	kWh/a	19,907	24,681	33,483	42,794	46,377	61,683	72,030	-	-
		Te -35°C	kWh/a	22,805	27,453	33,817	39,747	44,363	61,090	67,325	-	-
Parameters at full load and ambient temp. 32°C	R-410A	Te -10°C	Rated COP (COPA)	2.45	2.32	2.26	2.25	2.21	2.23	-	-	-
		Te -35°C	Rated COP (COPA)	1.18	1.11	-	1.08	-	1.09	-	-	-
Parameters at part load and ambient temp. 25°C	R-410A	Te -10°C	Declared COP	2.94	2.86	2.74	2.65	2.59	2.55	2.44	-	-
		Te -35°C	Declared COP	1.30	1.31	1.24	1.21	1.33	1.28	-	-	-
Parameters at full load and ambient temp. 43°C	R-410A	Te -10°C	Declared COP	1.54	1.57	1.40	1.46	1.47	1.46	1.51	-	-
		Te -35°C	Declared COP	0.76	0.74	0.68	0.70	0.71	0.74	-	-	-
Dimensions	Unit	Height	mm	1,680								1,680
		Width	mm	930								1,240
		Depth	mm	765								765
Weight	Unit		kg	166								331
Heat exchanger	Type			Cross fin coil								331
Compressor	Type			Hermetically sealed scroll compressor								337
	Output		W	2,600	3,200	2,100	3,000	3,400	2,600	3,400	2,600	3,400
	Piston displacement		m³/h	11.18	13.85	19.68	23.36	25.27	32.24	35.8	32.24	35.80
	Speed		rpm	5,280	6,540	4,320	6,060	6,960	5,280	6,960	5,280	6,960
	Starting method			Direct on line (inverter driven)								3,600
Compressor 2	Output		W	-	-	-	3,600	-	-	-	-	3,600
	Piston displacement		m³/h	-	-	19.68	23.36	25.27	32.24	35.8	32.24	35.80
	Speed		rpm	-	-	-	2,900	-	-	-	-	2,900
Compressor 3	Output		W	-	-	-	-	3,600	-	-	-	3,600
	Piston displacement		m³/h	-	-	-	-	32.24	35.8	32.24	35.80	-
	Speed		rpm	-	-	-	-	2,900	-	-	-	2,900
Fan	Type			Propeller fan								-
	Quantity			1								2
Fan motor	Air flow rate	Cooling	Nom. m³/min	95	102	171	179	191	230	240	230	240
	Output		W	350								750
Fan motor 2	Drive			Direct drive								750
	Output		W	-								350
Sound pressure level	Nom.		dB(A)	55.0 (3)	56.0 (3)	57.0 (3)	59.0 (3)	61.0 (3)	62.0 (3)	63.0 (3)	62.0	63.0
Operation range	Evaporator	Cooling	Max.-Min. °CDB	10~-45								-
Refrigerant	Type			R-410A								-
	GWP			2,087.5								-
	Charge		kg	5.2								11.5
Control	TCO _{2eq}			10.9								24.0
	Electronic expansion valve			3~/50/380-415								-

(1) Cooling: evaporating temp. -35°C; outdoor temp. 32°C; suction SH10°C
(2) Cooling: evaporating temp. -10°C; outdoor temp. 32°C; suction SH10°C
(3) Sound pressure data: measured at 1m in front of unit, at 1.5m height
RLA is based on following conditions: outdoor temp. 32°CDB; suction SH 10°C; saturated temperature equivalent to suction pressure -10°C
Maximum allowable voltage range variation between phases is 2%.
Contains fluorinated greenhouse gases

2. AIR HANDLING UNIT DATASHEET

AHU Ref. No.	Unit 1	MODEL No.	MAH C
Unit Design Data		Supply Air Fan	
Altitude above sea level (m)	: 0	Supply Fan Air Quantity (l/s)	: 303
Supply Air Quantity (l/s)	: 303	SA Ext. Static Pressure (Pa)	: 250
		SA Fan Qty & Size	: 1xK3G310P
		SA Fan Motor Size (kW)	: 3,05
AHU Components		Return / Exhaust Air Fan	
Plenum Type (Single/Double Skin)	: Double	RA/Exh. Fan Air Quant. (l/s)	:
Plenum Thickness (mm)	: 50	RA Ext. Static Pressure (Pa)	:
50mm DSPanel.Ext.0.5mm Cdk/Int.0.5mm Cdk		RA Fan Qty & Size	: x
Number of Modules	: 2	RA Fan Motor Size (kW)	:
Mixing Box with Dampers (Yes/No)	: Yes	Cooling Coil	
Economy Cycle Damper (Yes/No)	: No	Air Quantity (l/s)	: 303
Coil Bypass Damper (Yes/No)	: No	Coil Type (CHW/DX)	: DX
Return Air Plenum (Yes/No)	: No	Coil Face Vel. (m/s)	: 2,16
Primary Filters (Yes/No)	: Yes	On Coil Temp. db/wb (°C)	: 25,5 / 18,0
Secondary Filters (Yes/No)	: Yes	Off Coil Temp. db/wb (°C)	: -10,4 / -10,
Hepa Filters (Yes/No)	: Yes	Cooling Duty (kW)	: 20,89
Cooling Coil (Yes/No)	: Yes	Cooling Coil Rows / Fins	: 8 / 8
Humidifier (Yes/No)	: No	Coil Material	: Copper/Alu
Hot Water/Steam/DX Heat Coil (Yes/No)	: No	Casing Material	: Stainless S
Electric Heater Bank (Yes/No)	: Yes	Heating Coil	
Supply Fan Type	: Plug Fan	Air Quantity (l/s)	:
Return/Exhaust Fan Type (n/a if excl.)	: n/a	Coil Type (HW/ST/DX)	:
Energy Recovery Wheel	: No	Coil Face Vel. (m/s)	:
Energy Recovery Plate Heat Exch.	: No	On Coil Temp. db (°C)	:
		Off Coil Temp. db (°C)	:
		Heating Duty (kW)	:
		Heating Coil Rows / Fins	: /
		Coil Material	:
		Casing Material	:
		Humidifier	
		Duty (kg/h)	:
		Heating - Electric	
		Heating Duty (kW)	: 9
Heat Recovery			
Heat Recovery Equipment (Rotating Wheel/Plate H. Exch.) :			
Supply Air Quantity (l/s) :		Exhaust Air Quantity (l/s) :	
Face Velocity (m/s) :		Energy Recovered (S/W) (kW) :	
			
Additional comment & detail			
Length (mm): 3460		Height (mm): 1536	
Width (mm): 730		Weight (kg): 523,56	

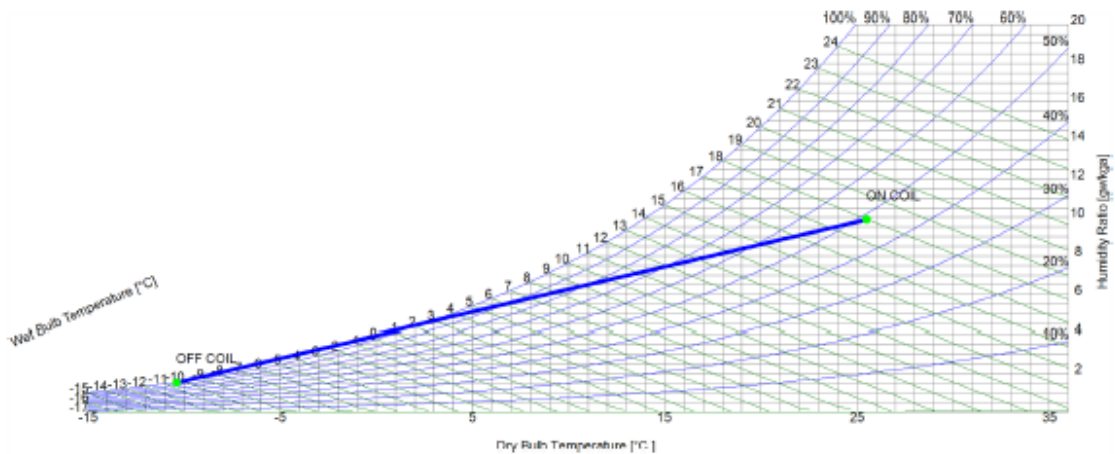




AHU Ref. No.	Unit 1	MODEL No.	MAH C
FILTER SECTION			
Filter Type	Corrugated media Primary filter		
Typology	Primary Filter		
Filter Sizes and Quantities	1 x (595x595x50)		
Filter Efficiency	EU4		
Filter Depth	50 mm		
Pressure Drop Project	150 Pa		
Pressure Drop Clean	25 Pa		
Pressure Drop Dirty	150 Pa		
Options:			
Accessories:			
	1 - MAGNEHELIC GUAGE ASSEMBLY		
	1 - MAGNEHELIC / MANOMETER COVER		

AHU Ref. No.		Unit 1		MODEL No.		MAH C			
COIL SECTION - DX COOLING COIL									
CW TC38DXTHK / 14 / 08 / 8 / 400 Al/St (14) - NTC 8									
Altitude				0 m					
Design Data				Dimensional data					
Design Coil Duty				20,71 kW		Coils Nr.		1 N°	
Inlet Air Temp DB / WB				25,50/18,00 °C/°C		Fin length per coil		400,00 mm	
Outlet Air Temp DB / WB				-10,00/-9,00 °C/°C		Finned Depth		173,20 mm	
Selected Coil Duty				20,89 kW		Row Nr.		8 N°	
Total Cooling				20,89 kW		Circuits Nr.		14 N°	
Latent				7,51 kW		Tube		Fin	
Sensible				13,37 kW		Material		Copper	
AIR SIDE				20,89 kW		Material		Aluminium	
DB Temp.				WB Temp.		Air Flow		Air Vel.	
°C				°C		l/s		m/s	
Inlet				25,50		18,00		303	
Outlet				-10,38		-10,38		2,16	
Air Density				Standard		1,20		kg/m³	
Qty condensate produced				0,003037		kg/s		Pa	
FLUID SIDE				20,89 kW		Thickness		0,5 mm	
Evap. Temp.				-27,00 °C		Inlet Manifolds		Thickness	
Cond. Temp.				45,00 °C		Outlet Manifolds		1 x 1 5/8"	
Overheating				5,0 K		Manifolds material		Copper	
Subcooling				5,0 K		Frame		Stainless Steel Class 304 (Sst)	
Fluid				R410A		Frame material		Stainless Steel Class 304 (Sst)	
Wet Bulb Temperature [°C]				Dry Bulb Temperature [°C]		Humidity Ratio [g/kg]		100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%	
OFF COIL				ON COIL		15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0		-15 -10 -5 0 5 10 15 20 25 30 35	

Options:



Options:

AHU Ref. No.	Unit 1	MODEL No.	MAH C				
Accessories:							
		1 - FITMENT VRF KIT					
		1 - FITMENT OF VRF ELECTR.INTERFACE					
		1 - VEE DRIP TRAY EXTRA COST					
Options:							
Accessories:							
		1 - BULK HEAD LIGHTS & SWITCH					
COIL SECTION - ELECTRIC HEATER BANK							
HEATER BANK ASSEMBLIES 9,0kW 3 x F							
Altitude	0 m	AIR SIDE					
Capacity			DB Temp.	WB Temp.	Air Flow	Air Vel.	Press. Drop
Calculated Duty	9 kW		°C	°C	l/s	m/s	Pa
Stages	1	Inlet	-10,4	-10,4	303	1,17	0
Installed Duty	9 kW	Outlet	14,24	4,81			
		Air Density	Standard		1,2	kg/m ³	
Options:							
Accessories:							

AHU Ref. No.	Unit 1	MODEL No.	MAH C
		1 - BULK HEAD LIGHTS & SWITCH	
Options:			
Accessories:			
		1 - BULK HEAD LIGHTS & SWITCH	
FILTER SECTION			
Filter Type		High performance HEPA absolute filter	
Typology		HEPA Filter depth 300mm	
Filter Sizes and Quantities		1 x (595x595x300)	
Filter Efficiency		H13	
Filter Depth		300 mm	
Pressure Drop Project		500 Pa	
Pressure Drop Clean		100 Pa	
Pressure Drop Dirty		500 Pa	
Options:			
Accessories:			
		1 - MAGNEHELIC GUAGE ASSEMBLY	
		1 - MAGNEHELIC / MANOMETER COVER	
Options:			
Accessories:			
		1 - BULK HEAD LIGHTS & SWITCH	
FILTER SECTION			
Filter Type		Soft bag filter	
Typology		Filter Depth 300mm	
Filter Sizes and Quantities		1 x (595x595x300)	
Filter Efficiency		EU8	
Filter Depth		300 mm	
Pressure Drop Project		315 Pa	
Pressure Drop Clean		90 Pa	
Pressure Drop Dirty		315 Pa	
Options:			
Accessories:			
		1 - MAGNEHELIC GUAGE ASSEMBLY	
		1 - MAGNEHELIC / MANOMETER COVER	

AHU Ref. No.	Unit 1	MODEL No.	MAH C
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Fan Section - SUPPLY			
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Fan Model	K3G310PV6903		
No. of Fans	1	Altitude	0 m

Performances Data	
Air Flow	303 l/s
Total Pressure	1438 Pa
Total Static Pressure	1433 Pa
Available Static Pressure	250 Pa
Rotation Velocity	3173 Rpm
Total Efficiency	39,5 %
Static Efficiency	39 %
Electrical Data	
Absorbed Power	1,1 kW
Altitude	0 m

The graph displays the performance characteristics of the fan. The x-axis represents air flow (qv) in m³/h (0 to 7000) and cfm (0 to 4000). The left y-axis represents total pressure (Pa) in Pa (0 to 3000) and psf (0 to 60). The right y-axis represents static pressure (Pa) in Pa (0 to 3000) and psf (0 to 60). The fan curve (red) shows a peak pressure of approximately 2500 Pa at 3000 m³/h. The system curve (blue) shows a pressure drop of approximately 1438 Pa at 303 l/s. The operating point is marked with a green dot at approximately 303 l/s and 1438 Pa. A small inset image of the fan unit is shown with the text 'with effects of'.

Different Operating Point Data					Sound Pressure Level											
Air Flow		-5 %	-2,5 %	2,5 %	5 %		Hz	63	125	250	500	1000	2000	4000	8000	Lw-tot
Total Pressure	Pa	1438	1438	1438	1439	Lwl	dB	81	81	91	88	82	77	72	67	
Absorbed Power	kW	1,1	1,1	1,1	1,11	Lwo	dB	83	82	92	89	90	87	83	74	
Rotation Velocity	Rp	3172	3173	3173	3174											

Options:	
Accessories:	
	1 - BULK HEAD LIGHTS & SWITCH
	1 - ISOLATOR - GEWISS LARGE
	1 - E-STOP