

**STATEMENT OF WORK FOR  
Replacement of Air Conditioning System**

**United States  
Ambassador Residence  
at Attard, Malta**

**08/06/2020**

TABLE OF CONTENTS

Section	Page
1. DESCRIPTION.....	2
2. SCOPE OF WORK.....	2
3. ADMINISTRATION.....	3
4. Current System Specifications.....	4

## 1. DESCRIPTION

The Chief of Residence (CMR) at Attard requires a replacement of the current Air Conditioning system. This project shall result in all systems being replaced under this agreement being commissioned and fully operational when activated.

## 2. SCOPE OF WORK

2.1 Contractor shall confirm the requirements of the SOW are understood, and that the Contractor is fully aware of the location and requirements contained therein. If the Contractor believes additional information is needed, the Contractor shall schedule additional site visits, at the Contractor's expense, with the Contracting Officer representative (COR) to ensure the project work requirements are established prior to submitting pricing for the project.

2.2 Provide laborers, equipment, and materials necessary to provide the work defined by the specific requirements which follow

### 2.3 Existing Equipment Modification / Removal / Demolition requirements

2.3.1 General: The Contractor shall shut down equipment in its entirety. Isolating equipment, draining down, flushing and refilling the systems, and locking-out/tagging-out systems shall be required to safely complete the specified tasks

2.3.2 Remove two Airedale condensing units and an Airedale Air-Handling unit: The Contractor shall remove the existing air conditioning units, from the CMR. Removal shall include all associated and if necessary electrical circuiting/breakers, electrical conduit/wiring, controls wiring/devices, copper conduits that will not be used as part of the new work.

2.3.3 Electrical Service: The Contractor shall evaluate the existing electrical installation during the pre-bid walk through to determine if existing conduit and/or wiring can be reused to feed the new equipment. In the bid proposal, the Contractor shall document all electrical service items being replaced and the justification for the replacement. If existing feeder cannot be reused, new electrical service must be provided per *Electrical: Circuit Breakers, Conductors and Calculations*.

2.3.4 Recover Existing Refrigerant: The Contractor shall be responsible to recover all existing refrigerant and handle it per the guidelines of the *Refrigerant Handling* subparagraph above.

2.2.5 Existing Equipment to Remain: Existing Duct work shall remain in place and if necessary, shall be modified to fit the new system accordingly

2.2.6 Duct work cleaning: Existing duct work must be cleaned and sanitized in all locations

2.4 New Equipment and New Work Requirements:

2.4.1 The Contractor shall provide and install new air conditioning units, and associated copper piping connections, conduit/wiring, controls, and devices necessary mechanical and electrical accessories to provide a fully functioning system that meets the project requirements for replacement in kind

2.4.2 The Contractor shall make every reasonable attempt to provide equipment similar in size, footprint, and weight to the existing equipment. If providing equipment similar in size, footprint, and weight to the existing is not possible or is cost prohibitive, and because of this the existing equipment pad from equipment being demolished is not adequate for re-use, the Contractor shall demolish the existing equipment pad and remove it. Where existing equipment pads must be removed, the Contractor shall provide and install new concrete housekeeping pads. All equipment shall be mounted on structurally engineered housekeeping pads or structural supports. If new roof mounted equipment pads and structural supports are required, the Contractor shall submit sealed engineered drawings by a licensed structural engineer to demonstrate they are able to safely function with the existing roof system.

2.4.4 The Contractor shall perform tests, adjust, and provide a commissioning procedure on all newly installed equipment. The Contractor shall provide full documentation of the procedure and results in the form of an electronic (pdf format) report, submitted to the project COR.

**3. ADMINISTRATION**

The Contractor shall maintain contact with the USG through the Contracting Officer's Representative (COR):

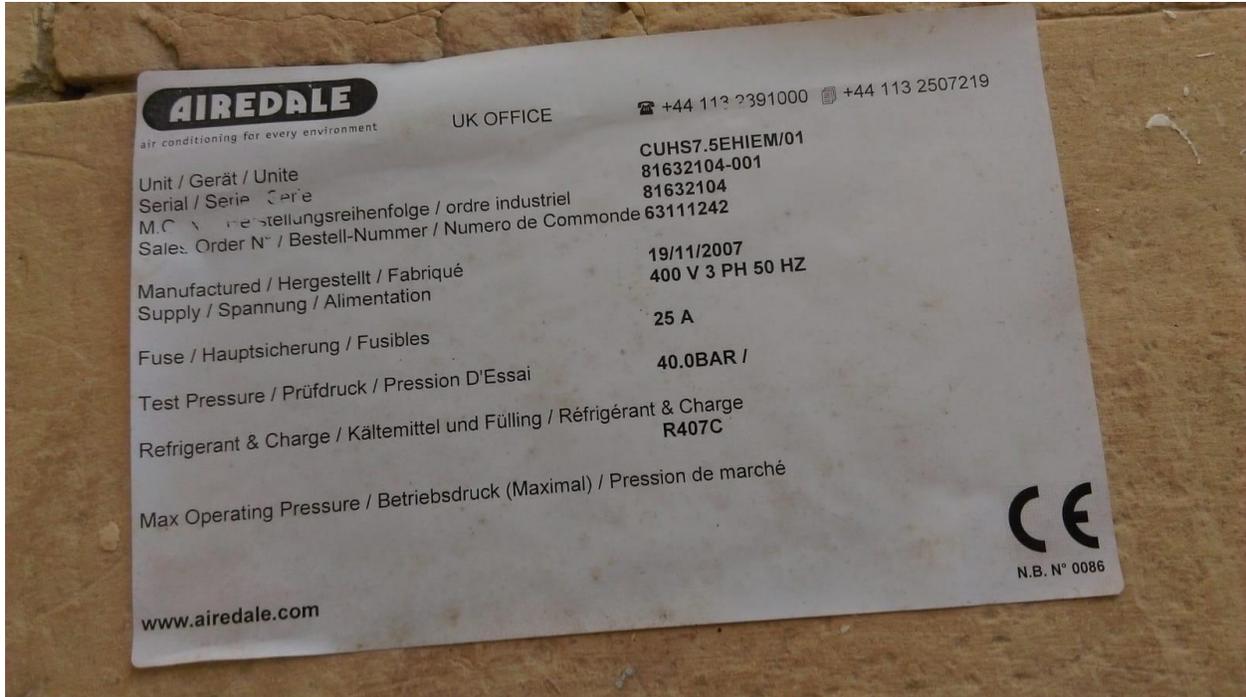
Name: Carmel Buttigieg  
U.S. Department of State COR  
Email: [buttigieg@state.gov](mailto:buttigieg@state.gov)

Backup's Name: Jacob Whitley  
U.S. Department of State Deputy FM  
Email: [WhitleyJ@state.gov](mailto:WhitleyJ@state.gov)

FM: Sarah Pierce  
U.S Department of State Facility Manager  
Email: [PierceSL@state.gov](mailto:PierceSL@state.gov)

CO: Christopher J Edgecomb  
U.S Department of State Contracting Officer  
Email: [Edgecombcj@state.gov](mailto:Edgecombcj@state.gov)

4. Current System Specifications



Units type CUHS7.5 EHIEM/01



Two Condensing Units



Airedale Condenser 1 Close up Picture



Airedale Condenser 2 Close up Picture



Airedale Air Handler

Airedale technical manual Specs:

CUS5-12

Condensing Units

**General Description**

**Unit Identification**

AIR COOLED CONDENSING UNIT & OUTDOOR HEAT PUMP RANGE	
CUS.....	Condensing Unit Cooling Only
CUHS.....	Outdoor Heat Pump
5-12.....	Model Size
e.g.....Model CUS 6	

**Introduction**

This range of air cooled condensing units and heat pumps covers the 14-35kW requirement, in axial fan only.

The range is custom designed for use with Airedale's comprehensive range of close control units and Comfort Modular units. They can also be used in conjunction with other cooling applications, eg air handling units. All units are leak tested and carry a holding charge of inert gas.

**CE Directive**



Airedale certify that the equipment detailed in this manual conforms with the following EC Directives:

Electromagnetic Compatibility Directive (EMC)	2014/30/EU
Low Voltage Directive (LVD)	2014/35/EU
Machinery Directive (MD)	89/392/EC in the version 2006/108/EC
Pressure Equipment Directive (PED)	2014/68/EU

To comply with these directives appropriate national & harmonised standards have been applied. These are listed on the Declaration of Conformity, supplied with each product

**Standard Features**

**Construction**

The units are constructed of corrosion resistant pre-coated sheet steel. Standard unit colour is Light Grey (RAL 7035)

**Condenser**

Large surface area condenser coil(s) manufactured from refrigeration quality copper tubes, with mechanically bonded aluminium fins.

**Fan**

610mm diameter axial flow fan assembly(s) with low noise paddle type blades. The external rotor motor design allows the use of a low power output single phase speed controllable motor. The motor has inbuilt thermal overload protection, and the assembly is supplied complete with a finger guard for protection.

**Compressor**

All units utilise hermetic scroll compressors. The CUS7.5/10 and 12 models are fitted with a crankcase heater to guard against floodback and oil foaming on start up. Other features include internal motor protection.

**Refrigeration Cooling Only**

Each unit is fitted with a liquid and suction line shut off valve for ease of maintenance and installation. Factory set HP/LP pressure switches are fitted, with manual reset high pressure cut-out and automatic reset low pressure cut-out.  
A large capacity filter drier is supplied loose for on site installation.

## Condensing Units

CUS5-12

### Refrigeration

#### Heat Pump

Each unit is fitted with a thermostatic expansion valve and a check valve assembly to prevent short circuiting of refrigerant, together with a large capacity suction accumulator and a reversing valve. A factory set defrost switch facilitates defrosting of the outside coil when in heat pump mode. All heat pump compressors are fitted with crankcase (oil sump) heaters.

Factory set HP/LP pressure switches are fitted, with manual reset high pressure cut-out and automatic reset low pressure cut-out.

A bi-directional filter drier is supplied loose for on site installation.

#### Electrical

Weatherproof control panels are accessed via a lockable panel and contain the necessary contactors, sub-circuit protection and terminals .

All wiring is colour coded and numbered for identification. All units are wired in accordance with current local and European standards.

#### Head Pressure Control

Head pressure is maintained by a factory fitted, pressure actuated head pressure controller which varies the speed of the fan to provide optimum head pressure control under varying ambient conditions.

#### Mains Isolator OPTIONS

A weatherproof mains isolator is fitted to ensure mains isolation of the electrical panel.

#### Epoxy Coated Coils

In atmospheres where high corrosion is anticipated epoxy coated aluminium finned coils can be supplied.

#### Hot Gas Bypass (Cooling Only Units)

To achieve capacity control during low load conditions, a factory fitted hot gas bypass valve is fitted. This will modulate down to 40% of full capacity. A stub is provided for site connection of the hot gas line to the local expansion device.

#### Compressor Anti-Cycle Timer

To prevent short cycling and subsequent additional wear on the compressor, this option can be factory fitted to limit compressor starts to six per hour. Not required on Airedale equipment featuring start delay timers inbuilt into the Air Handling unit.

#### Defrost Drain Tray (Heat Pump Only)

An insulated and trace heated drain tray can be provided to collect condensate when units are used in the reverse cycle/defrost mode.

CUS5-12

Condensing Units

Capacity Data

COOLING duty - Cooling Only Units

	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW								
CUS5	-5	10.83	2.65	10.21	3.07	9.61	3.49	9.06	3.91	8.40	4.33
	0	12.99	2.88	12.28	3.28	11.57	3.67	10.89	4.07	10.21	4.50
	5	15.26	3.13	14.48	3.51	13.73	3.89	12.95	4.27	12.17	4.72
	10	17.64	3.43	16.82	3.80	16.00	4.17	15.16	4.54	14.35	4.99
CUS6	-5	14.31	4.00	13.60	4.54	12.88	5.07	12.16	5.61	11.21	6.21
	0	17.09	4.30	16.16	4.81	15.23	5.32	14.28	5.84	13.31	6.46
	5	19.86	4.60	18.87	5.11	17.90	5.62	16.84	6.18	15.57	6.75
	10	22.86	4.93	21.81	5.43	20.77	5.94	19.57	6.51	18.43	7.07
CUS6.5	-5										
	0										
	5										
	10										
CUS7.5	-5	16.67	4.81	15.79	5.47	14.86	6.12	13.96	6.77	12.98	7.49
	0	19.85	5.08	18.83	5.71	17.84	6.36	16.84	7.00	15.64	7.76
	5	23.39	5.39	20.21	6.00	21.04	6.60	19.81	7.26	18.57	7.99
	10	27.19	5.67	25.89	6.24	24.58	6.82	23.14	7.54	21.78	8.19
CUS10	-5	22.15	5.27	20.88	6.21	19.66	7.14	18.41	8.07	17.17	9.01
	0	26.12	5.56	24.90	6.47	23.61	7.38	22.38	8.29	21.12	9.22
	5	33.92	5.94	30.66	6.73	27.41	7.52	24.14	8.30	21.79	9.17
	10	35.89	6.14	34.60	7.00	33.32	7.87	31.98	8.73	30.52	9.69
CUS12	-5	28.25	7.81	26.80	8.83	25.35	9.86	23.94	10.89	22.38	11.97
	0	33.54	8.35	31.95	9.32	30.30	10.30	28.69	11.27	26.87	12.35
	5	39.30	8.85	37.52	9.82	35.73	10.79	33.91	11.78	31.86	12.89
	10	45.68	9.53	43.74	10.14	41.78	10.74	39.62	11.98	37.23	13.37

Condensing Units

CUS5-12

Capacity Data

COOLING duty – Reverse cycle mode

	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW								
CUHS5	-5	10.40	2.54	9.80	2.95	9.23	3.35	8.70	3.75	8.06	4.16
	0	12.47	2.76	11.79	3.15	11.11	3.52	10.45	3.91	9.80	4.32
	5	14.65	3.00	13.90	3.37	13.18	3.73	12.43	4.10	11.68	4.53
	10	16.93	3.29	16.15	3.65	15.36	4.00	14.55	4.36	13.78	4.79
CUHS6	-5	13.74	3.84	13.06	4.36	12.36	4.87	11.67	5.39	10.76	5.96
	0	16.41	4.13	15.51	4.62	14.62	5.11	13.71	5.61	12.78	6.20
	5	19.07	4.42	18.12	4.91	17.18	5.40	16.17	5.93	14.95	6.48
	10	21.95	4.73	20.94	5.21	19.94	5.70	18.79	6.25	17.69	6.79
CUHS6.5	-5										
	0										
	5										
	10										
CUHS7.5	-5	16.00	4.62	15.16	5.25	14.27	5.88	13.40	6.50	12.46	7.19
	0	19.06	4.88	18.08	5.48	17.13	6.11	16.17	6.72	15.01	7.45
	5	22.45	5.17	19.40	5.76	20.20	6.34	19.02	6.97	17.83	7.67
	10	26.10	5.44	24.85	5.99	23.60	6.55	22.21	7.24	20.91	7.86
CUHS10	-5	21.29	5.06	20.06	5.97	18.89	6.86	17.69	7.76	16.50	8.66
	0	25.10	5.34	23.93	6.22	22.69	7.09	21.51	7.97	20.30	8.86
	5	32.60	5.71	29.46	6.47	26.34	7.23	23.20	7.98	20.94	8.81
	10	34.49	5.90	33.25	6.73	32.02	7.56	30.73	8.39	29.33	9.31
CUHS12	-5	27.15	7.51	25.75	8.49	24.36	9.48	23.01	10.47	21.51	11.50
	0	32.23	8.02	30.70	8.96	29.12	9.90	27.57	10.83	25.82	11.87
	5	37.77	8.50	36.06	9.44	34.34	10.37	32.59	11.32	30.62	12.39
	10	43.90	9.16	42.03	9.74	40.15	10.32	38.07	11.51	35.78	12.85

Notes:

- 1 Output kW refers to the compressor duty.
- 2 Input kW refers to the compressor input power only

CUS5-12

Condensing Units

Capacity Data

HEATING duty - Reverse cycle mode

	Outdoor Unit	Indoor Unit Condensing Temperature					
	Evaporator Air On Temperature °C/ RH %	30°C Output kW	35°C Output kW	40°C Output kW	45°C Output kW	50°C Output kW	55°C Output kW
CUHS5	5 / 85	14.24	14.07	14.01	13.93	13.84	13.75
	7 / 85	15.30	15.07	14.98	14.88	14.71	14.58
	10 / 80	16.40	16.30	16.09	15.90	15.70	15.55
CUHS 6	5 / 85	18.65	18.60	18.64	18.61	18.57	18.49
	7 / 85	19.78	19.71	19.69	19.58	19.49	19.31
	10 / 80	21.40	21.17	21.14	20.93	20.65	20.41
CUHS 6.5							
CUHS 7.5	5 / 85	22.16	22.01	21.94	21.89	21.75	21.69
	7 / 85	23.45	23.24	23.20	23.02	22.95	22.90
	10 / 80	25.38	25.24	25.15	24.93	24.74	24.58
CUHS 10	5 / 85	25.66	25.40	25.15	24.90	24.65	24.40
	7 / 85	27.19	26.92	26.65	26.38	26.12	25.86
	10 / 80	29.37	29.08	28.79	28.50	28.21	27.93
CUHS 12	5 / 85	29.16	28.87	28.58	28.29	28.01	27.73
	7 / 85	30.90	30.59	30.29	29.98	29.68	29.39
	10 / 80	33.38	33.05	32.72	32.39	32.06	31.74

Notes:

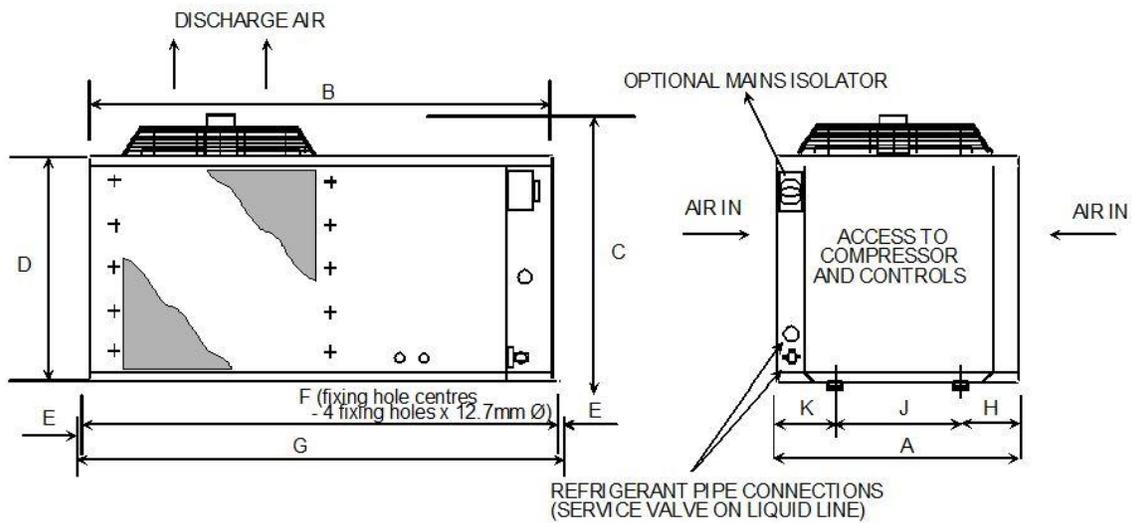
- 1 Output kW refers to the compressor duty.
- 2 Indoor ambient at 20°C

CUS5-12

Condensing Units

Installation

Dimensions: CUS/CUHS 5 - 7.5



CUS/CUHS		A	B	C	D	E	F	G	H	J	K
5	mm	865	1148	699	550	16	1181	1213	195	457	213
5.5	mm	865	1148	699	550	16	1181	1213	195	457	213
6	mm	865	1148	699	550	16	1181	1213	195	457	213
6.5	mm	996	1376	699	550	16	1409	1441	193	610	193
7.5	mm	996	1376	699	550	16	1409	1441	193	610	193

Technical Data

<b>CUS/CUHS</b>		<b>5</b>	<b>5.5</b>	<b>6</b>	<b>6.5</b>	<b>7.5</b>	<b>10</b>	<b>12</b>
<b>Nominal Capacity</b> (1)	kW	13.7	15.2	17.9	19.3	21.0	27.4	35.7
<b>Nominal Input</b> (1)	kW	5.1	5.2	6.4	6.6	6.6	10.0	11.5
Capacity Steps	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100
<b>Construction</b>								
Material		Pre Coated Sheet Steel						
Colour		Light Grey (RAL 7035)						
<b>Condenser</b>								
Type		Air Cooled						
Quantity		2	2	2	3	3	2	2
Face Area	m <sup>2</sup>	0.69	0.69	0.69	1.03	1.03	1.37	1.37
Nominal Airflow	m <sup>3</sup> /s	2.00	2.00	2.00	2.225	2.25	4.45	4.45
Coil Volume (2)	l	8.0	8.0	8.0	12.0	12.0	15.7	15.7
Discharge		Vertical						
<b>Fan</b>								
Type		Axial						
Quantity		1	1	1	1	1	2	2
Diameter	mm	630	630	630	630	630	630	630
Maximum Speed	rpm	930	930	930	930	930	930	930
<b>Compressor</b>								
Type		Hermetic Scroll						
Quantity		1	1	1	1	1	1	1
Oil Charge Volume	L	1.55	1.65	1.65	4.10	3.25	3.80	4.00
<b>Refrigeration</b>								
Number of Circuits		1	1	1		1	1	1
Refrigerant Type		R407C						
Refrigeration Control (CUH only)		Thermostatic Expansion Valve						
Unit Refrigerant Charge	kg	2.4	2.4	2.4	3.6	3.63	4.76	4.76
<b>Dimensions</b>								
Height	mm	699	699	699	699	699	953	953
Width	mm	1148	1148	1148	1376	1376	1705	1705
Depth	mm	865	865	865	996	996	866	866
<b>Weights CUS Units</b>								
Machine Weight (nom)	kg	138	140	141	236.5	203.5	242	247
Operating Weight (nom)	kg	141	143	144	241.5	208.5	261	266
<b>Weights CUHS Units</b>								
Machine Weight (nom)	kg	164	166?	167	261.5?	216.5	267	272
Operating Weight (nom)	kg	168	170?	171	242.5?	222.5	272	277
<b>Connections</b>								
Liquid Line	in	Flare 1/2	Flare 5/8	Flare 5/8	Flare 5/8	Flare 5/8	Sweat 7/8	Sweat 7/8
Suction Line	in	Sweat 7/8	Sweat 7/8	Sweat 7/8	Sweat 1 1/8	Sweat 1 1/8	Sweat 1 1/8	Sweat 1 3/8
Hot Gas Stub	in	5/8	5/8	5/8	5/8	5/8	7/8	7/8

(1) Nominal cooling capacity based on 5°C evaporating temperature and a 35°C ambient.

(2) Figures for guidance.

Condensing Units

CUS5-12

Electrical Data

CUS/CUHS		5	5.5	6	6.5	7.5	10	12
<b>Unit Data</b>								
Nominal Run Amps (1)	A	11.1	11.9	13.5	15.7	15.2	21.1	26.6
Maximum Start Amps	A	71.1	76.1	100.8	104.6	103.8	131.6	146.6
Control Circuit CUS	VAC	230	230	230	230	230	230	230
Control Circuit CUHS	VAC	24	24	24	24	24	24	24
Mains Supply	V			400/3/50				
Rec. Mains Fuse	A	20	20	25	25	32	40	40
Max Incoming Mains	mm <sup>2</sup>	10	10	10	10	10	10	10
<b>Compressor - Per Compressor</b>								
Motor Rating	kW	4.45	5.3	5.9	6.65	6.9	8.9	11.6
Nominal Run Amps (1)	A	8.3	9.1	11.0	12.9	12.7	16.1	21.6
Locked Rotor Amps	A	65.5	70.5	95.0	99.0	98.0	120.0	135.0
Crankcase Heater Rating	W	65 <sup>(2)</sup>	65 <sup>(2)</sup>	65 <sup>(2)</sup>	65 <sup>(2)</sup>	50	50	50
Type of Start		Direct on Line						
<b>Condenser Fan - Per Fan</b>								
Motor Rating	kW	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Full Load Amps	A	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Locked Rotor Amps	A	5.80	5.80	5.80	5.80	5.80	5.80	5.80

- (1) Nominal data based on 5C evaporating temperature and a 35C ambient.
- (2) Heat pumps only.

Website Reference:

<https://www.airedale.com/products/condensers/condensing-units/#Technical>

Additional Specs information can also be requested to the COR