



CLADE

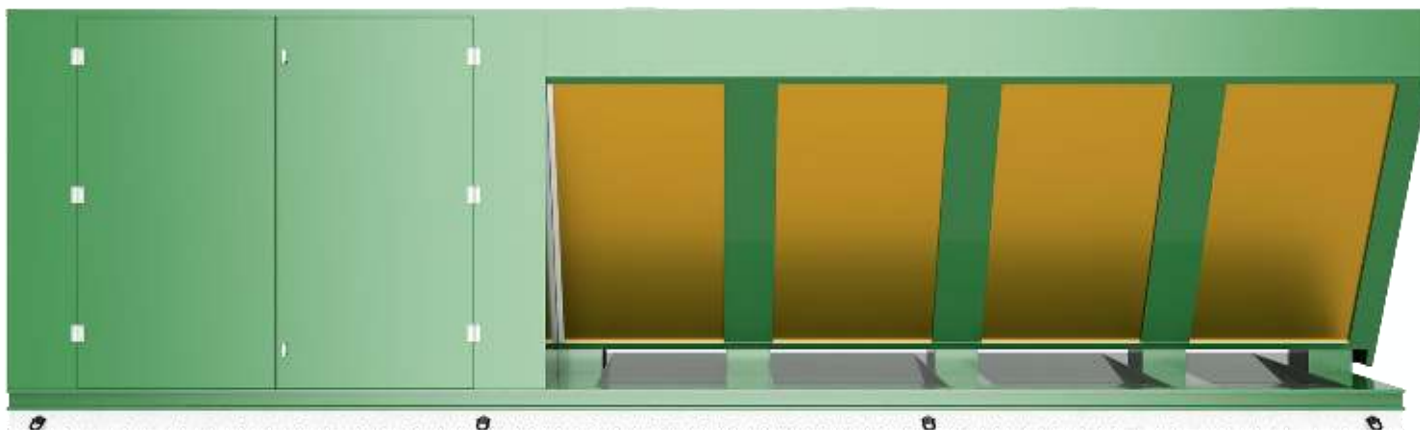
OAK 350KW HEAT PUMP //

Sept 22 //



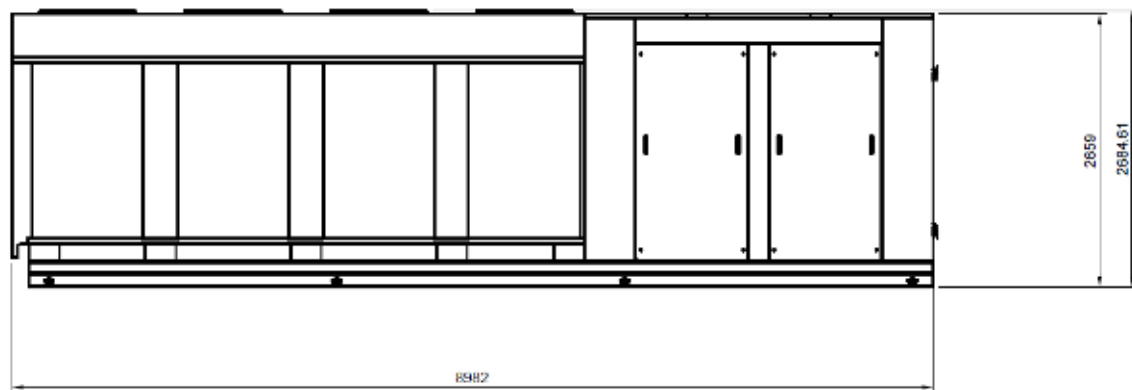
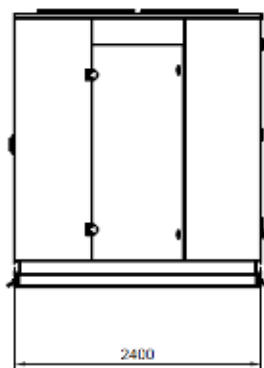
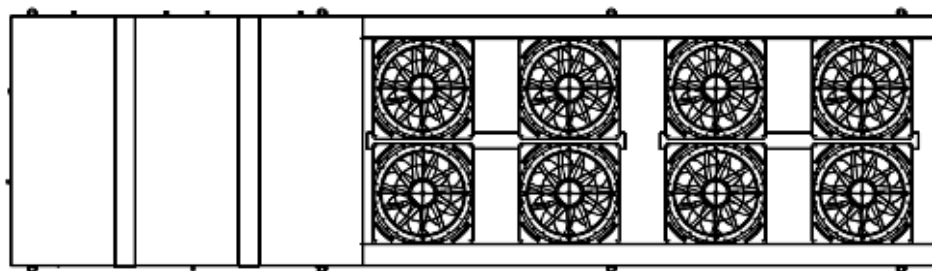
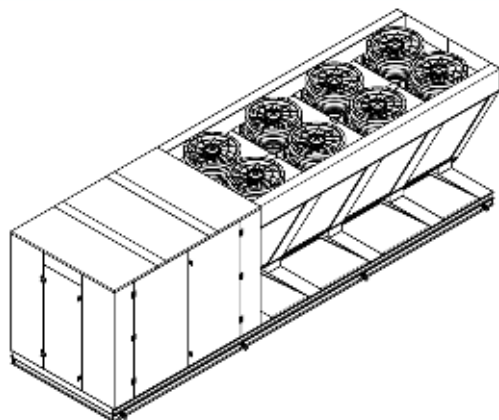
THE CLADE OAK 350kW //

Single unit combining; compressor station, controls, gas cooler and water side pump, evaporator section





DIMENSIONAL INFORMATION //





TECHNICAL INFORMATION //

OAK 350kW //

Clade Oak ASHP		Oak -350Kw ASHP	
Nominal conditions: Water side		flow 45c to 85c Return temperature <35°C	
Nominal conditions: CO ₂ side		Ambient air temperature +3°C (85% RH) and -9°C evaporation	
Compressor Manufacturer		Dorin	
Compressor Heating Qty	Pcs.	3	
Compressor Paralell Qty	Pcs.	1	
Compressor Power @ Design total	kW	135	
Evaporator fans Power at design	kW	11.2	
Total	kW	148	
Heat Pump Design Run Amps DRA	A	260	
Ancillary Controls Amps	A	4	
Total Amps	A	264	
Variable speed drive (VSD)	Pcs.	2	
Refrigerant charge (CO ₂)	kg	250	
Electrical supply	-	3~ 400V 50 HZ	
Housing Weight (empty)	kg	2,957	
Housing Weight (operational)	kg	3,082	
Load Cell A Weight (empty)	kg	2,031	
Load Cell A Weight (operational)	kg	2,156	
Load Cell B Weight (empty)	kg	N/A	
Load Cell B Weight (operational)	kg	N/A	
Sound Power	dB(A)	62	
Connections waterside flow	DN	67mm Copper	
Connections waterside Return	DN	67mm Copper	
Connections waterside Pressure Rating	PN	10	
Waterside Burst Disk	PN	10	
Communication protocol	-	MODBUS/BACNET	
IP-Class	-	IP54	
Evaporators Type		V Block	
No. evaporators	Pcs.	8	
Fin Material	-	AL/MG	
Defrost Type	-	Cool Gas CO ₂	
Defrost medium	-	CO ₂	
Defrost design/condition	-	> +6c ambient Off Cycle / < +6c ambient Cool Gas	
Fan regulation	-	0-10v	
Colour	-	BS48 – 000A05 Textured Grey	





HEAT PUMP PERFORMANCE //

OAK 350kW //

Noise Performance Characteristics

Model name	Nameplate output (kW)	Output Temp (°C)	Noise Data db(A)		
			Sound Power	Sound Pressure @ 1m	Sound Pressure @ 10m
Oak 350Kw	350	65	87	61	51
		70	87	61	51
		75	88	62	52
		80	88	62	52

Clade Heat Pump Performance Characteristics

Model name	Nameplate output (kW)	Output Temp (°C)	Return Temp (°C)	SCOP	SPF	-10°C External			-5°C External			0°C External			5°C External			10°C External			15°C External			20°C External			25°C External		
						QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)
Oak 350kW	350	55	35	2.8	2.9	280	136	2.06	350	153	2.29	385	150	2.57	420	147	2.86	420	134	3.13	420	124	3.39	420	116	3.63	420	106	3.95
		60	35	2.8	2.9	280	136	2.06	350	153	2.29	385	150	2.57	420	147	2.86	420	134	3.13	420	124	3.39	420	116	3.63	420	106	3.95
		65	35	2.8	2.9	280	136	2.06	350	153	2.29	385	150	2.57	420	147	2.86	420	134	3.13	420	124	3.39	420	116	3.63	420	106	3.95
		70	35	2.8	2.9	280	139	2.01	350	159	2.2	385	154	2.5	420	150	2.8	420	138	3.05	420	127	3.3	420	118	3.55	420	108	3.9
		75	35	2.8	2.9	280	140	2	350	159	2.2	385	154	2.5	420	150	2.8	420	138	3.05	420	127	3.3	420	118	3.55	420	108	3.9
		80	35	2.8	2.9	280	140	2	350	159	2.2	385	154	2.5	420	150	2.8	420	138	3.05	420	127	3.3	420	118	3.55	420	108	3.9

Clade Heat Pump Performance Characteristics

Model name	Nameplate output (kW)	Output Temp (°C)	Return Temp (°C)	SCOP	SPF	-10°C External			-5°C External			0°C External			5°C External			10°C External			15°C External			20°C External			25°C External		
						QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)	QH (kW)	PI (kW)	COPH (-)
Oak 350kW	350	55	30	3	3.1	280	126	2.22	350	141	2.48	385	138	2.78	420	136	3.09	420	124	3.39	420	115	3.66	420	107	3.93	420	98	4.27
		60	30	3	3.1	280	126	2.22	350	141	2.48	385	138	2.78	420	136	3.09	420	124	3.39	420	115	3.66	420	107	3.93	420	98	4.27
		65	30	3	3.1	280	126	2.22	350	141	2.48	385	138	2.78	420	136	3.09	420	124	3.39	420	115	3.66	420	107	3.93	420	98	4.27
		70	30	3	3.1	280	130	2.15	350	146	2.4	385	143	2.7	420	140	3	420	127	3.3	420	117	3.6	420	109	3.85	420	100	4.2
		75	30	3	3.1	280	130	2.15	350	146	2.4	385	143	2.7	420	140	3	420	127	3.3	420	117	3.6	420	109	3.85	420	100	4.2
		80	30	3	3.1	280	130	2.15	350	146	2.4	385	143	2.7	420	140	3	420	127	3.3	420	117	3.6	420	109	3.85	420	100	4.2



BUILDING CONNECTIONS //

POWER

3 phase.

Connection box mounted in position shown.

Isolation at control panel only.

Installer to provide local isolator external to heat pump.

HEATING

Supplied with primary pump with 14m spare head.

Flow and return located in position shown.

PN 10 Flanged steel connections with butterfly valve.

CONDENSATE

Condensate from the evaporator will drain centrally from the base of the unit.

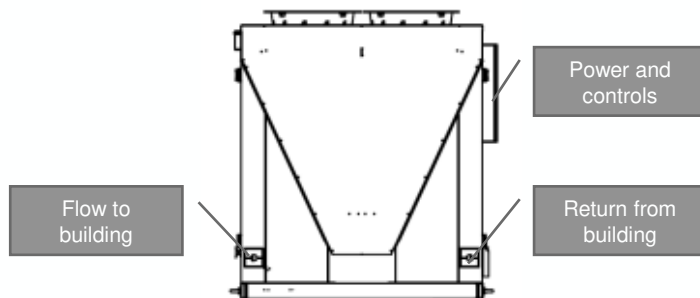
It is recommended that a gully be installed below the heat pump and lead to a soak away.

CONTROLS

The heat pump has self contained controls that manage its operation and the primary pump.

Alarms

- Hardwired shut down signal for fire alarm
- CO₂ detection
- Other fault
- High return water temperature.



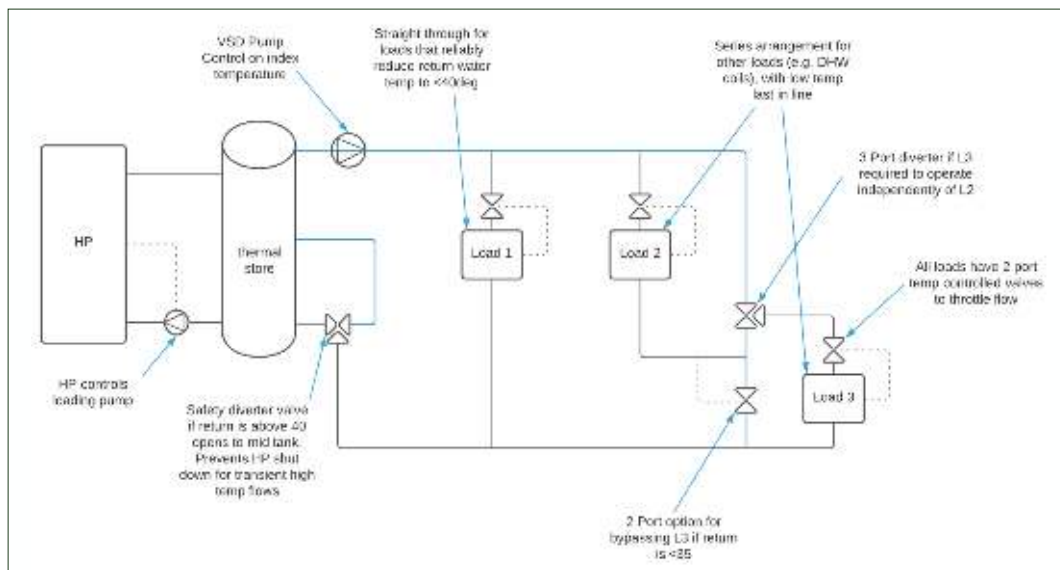
SYSTEM DESIGN

Here are our recommendations for good system design, however each building and application is different and so the system should be designed to meet the specific needs of the building.

The designer should aim to minimise the return water temperature to the heat pump in order to generate the highest COP possible.

Clade offers engineering support if required.

- Series arrangement of heat load by temperature with the lowest last
- Proper sizing of terminal units for high DT
- High quality two port control on terminal units to prevent high temperature bypass
- VSD pumping controlled on temperature at the index point
- Zero bypass on the system
- Proper commissioning of systems
- Data and analytics for continuous improvement
- Primary control on the return water temperature
- Thermal store to even out temperature variations






LEEDS MANUFACTURING CENTRE //



- UK based
- 35 years of engineering experience
- Leeds manufacturing division
- Committed to sustainable business and sustainable products
- Investing in people, diversity & inclusion
- Non leveraged, owner operated

ACCREDITATIONS
 ISO 9001:2015
 ISO 14001:2015
 OHSAS ISO 18001:2007

CERTIFICATIONS
 Altius Assured Vendor Award
 Altius ODM Vendor Award
 CHAS
 Sales Contractor



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