



CLADE

OAK 150kW HEAT PUMP //

Sept 22 //



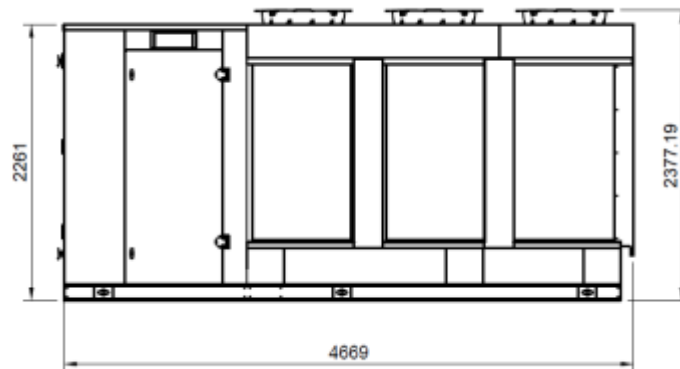
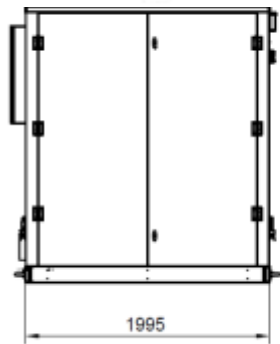
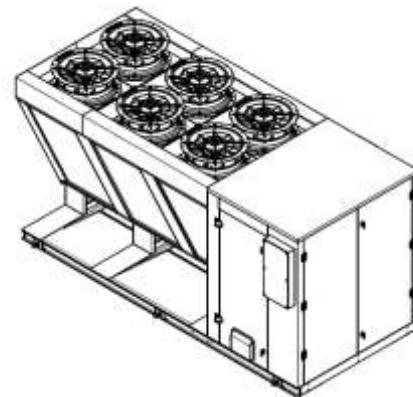
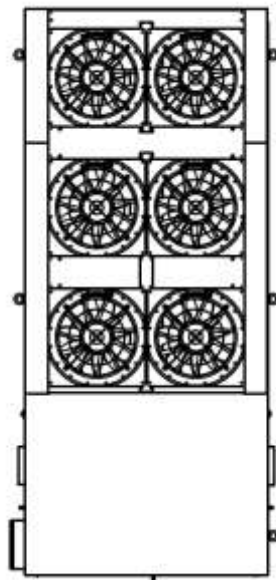
THE CLADE OAK 150kW //

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





DIMENSIONAL INFORMATION //





TECHNICAL INFORMATION //

Clade Oak ASHP		Oak -150Kw 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.	2
Compressor Paralell Qty	Pcs.	0
Compressor Power @ Design total	kW	62.2
Evaporator fans Power at design	kW	5.4
Total	kW	67.6
Heat Pump Design Run Amps DRA	A	124
Ancillary Controls Amps	A	4
Total Amps		128
Variable speed drive (VSD)	Pcs.	1
Refrigerant charge (CO ₂)	kg	120
Electrical supply	-	3~ 400V 50 HZ
Housing Weight (empty)	kg	1,845
Housing Weight (operational)	kg	1,905
Load Cell A Weight (empty)	kg	985
Load Cell A Weight (operational)	kg	1,045
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	42mm Copper
Connections waterside Return	DN	42mm 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.	24
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 //

Noise Performance Characteristics					
Model name	Nameplate output (kW)	Output Temp (°C)	Noise Data db(A)		
			Sound Power	Sound Pressure @ 1m	Sound Pressure @ 10m
Oak 150Kw	150	65	87	61	49
		70	87	61	49
		75	88	62	50
		80	88	62	50

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 150kW	150	55	35	2.8	2.9	120	58	2.06	150	66	2.29	165	64	2.57	180	63	2.86	180	58	3.13	180	53	3.39	180	50	3.63	180	46	3.95
		60	35	2.8	2.9	120	58	2.06	150	66	2.29	165	64	2.57	180	63	2.86	180	58	3.13	180	53	3.39	180	50	3.63	180	46	3.95
		65	35	2.8	2.9	120	58	2.06	150	66	2.29	165	64	2.57	180	63	2.86	180	58	3.13	180	53	3.39	180	50	3.63	180	46	3.95
		70	35	2.8	2.9	120	60	2.01	150	68	2.2	165	66	2.5	180	64	2.8	180	59	3.05	180	55	3.3	180	51	3.55	180	46	3.9
		75	35	2.8	2.9	120	60	2	150	68	2.2	165	66	2.5	180	64	2.8	180	59	3.05	180	55	3.3	180	51	3.55	180	46	3.9
		80	35	2.8	2.9	120	60	2	150	68	2.2	165	66	2.5	180	64	2.8	180	59	3.05	180	55	3.3	180	51	3.55	180	46	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 150kW	150	55	30	3	3.1	120	54	2.22	150	60	2.48	165	59	2.78	180	58	3.09	180	53	3.39	180	49	3.66	180	46	3.93	180	42	4.27
		60	30	3	3.1	120	54	2.22	150	60	2.48	165	59	2.78	180	58	3.09	180	53	3.39	180	49	3.66	180	46	3.93	180	42	4.27
		65	30	3	3.1	120	54	2.22	150	60	2.48	165	59	2.78	180	58	3.09	180	53	3.39	180	49	3.66	180	46	3.93	180	42	4.27
		70	30	3	3.1	120	56	2.15	150	63	2.4	165	61	2.7	180	60	3	180	55	3.3	180	50	3.6	180	47	3.85	180	43	4.2
		75	30	3	3.1	120	56	2.15	150	63	2.4	165	61	2.7	180	60	3	180	55	3.3	180	50	3.6	180	47	3.85	180	43	4.2
		80	30	3	3.1	120	56	2.15	150	63	2.4	165	61	2.7	180	60	3	180	55	3.3	180	50	3.6	180	47	3.85	180	43	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.

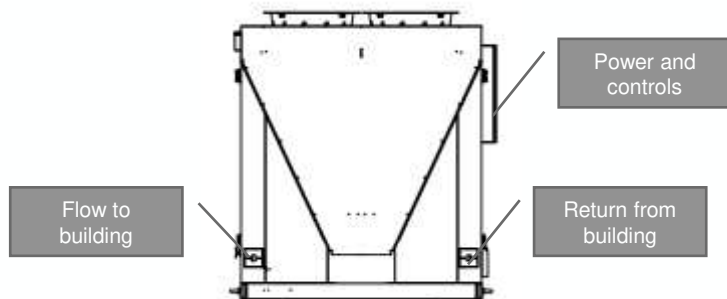
It is recommended that a gully be installed below the heat pump and lead to a soak away.

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.



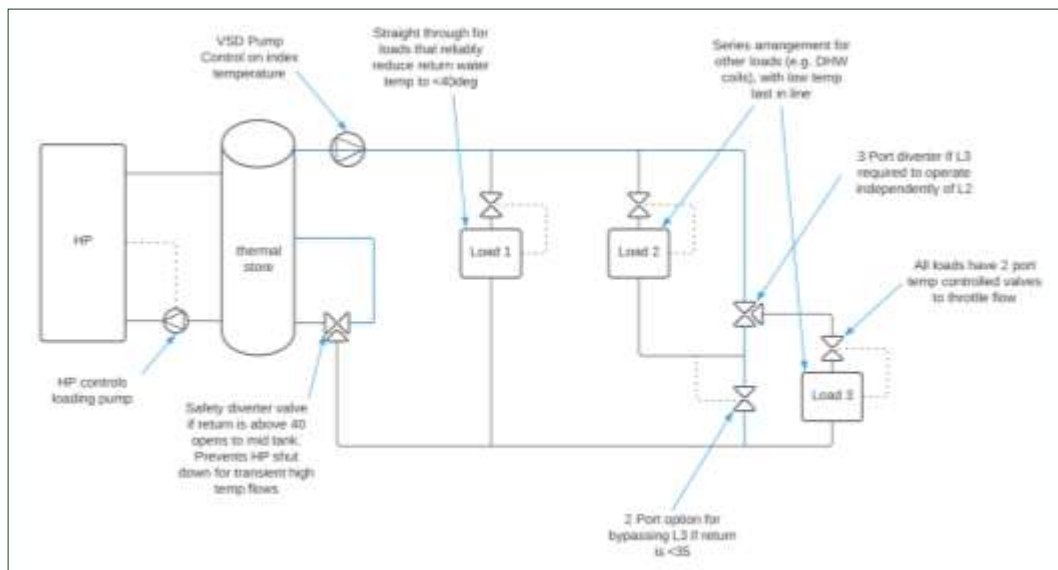
SYSTEM DESIGN

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





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- 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
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