CLADE

ACER RANGE

CO2 HEAT PUMP
for HEATING AND HOT WATER
Pump and PICV option

May 2026 //

DESIGNED & MADE
IN THE UK

ACER RANGE //

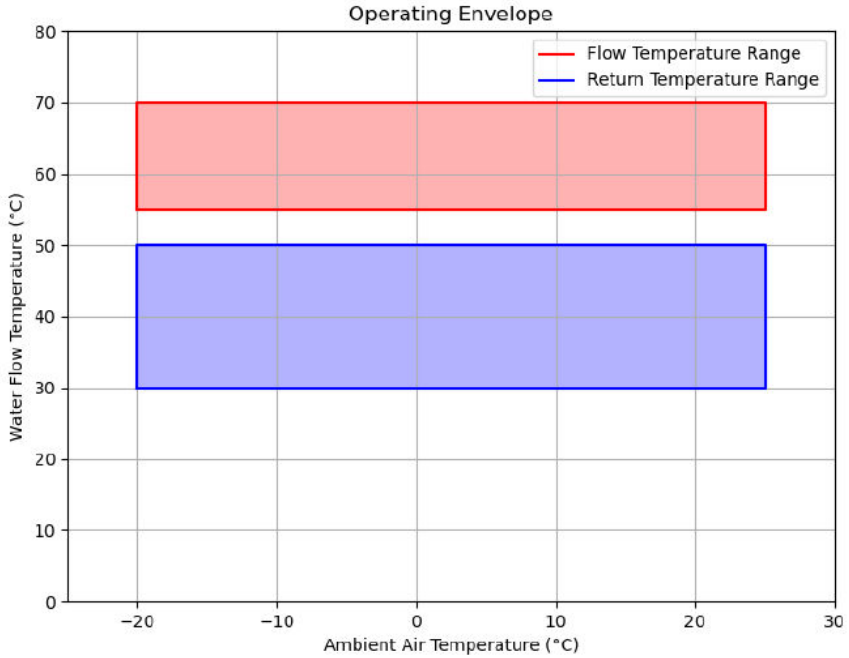
The Acer, our flagship low-noise, natural refrigerant heat pump. Its modern design, whisper-quiet operation and low space take, making it the perfect heat source for retrofit or new build applications including schools, apartment complexes, and libraries.

Model	-5°C capacity	+7°C capacity
Acer 65/50	50KW	65KW
Acer 95/75	75KW	95KW
Acer 130/100	100KW	130KW

- Future proof refrigerant which is non toxic and non flammable
- GWP =1
- ODP = 0
- Low noise version 34 dB at 10m
- Up to 70°C flow temperature
- Up to 50 °C return temperature
- Coated coil option
- Can be multiplexed using Clade Multi Controller
- Built in BMS interface
- Leak detection and vent fan included
- Inverter controlled
- Pump or PIC valve option for LTHW control

CO2 REFRIGERANT //

ACER REFRIGERANT OPERATING ENVELOPE



As a refrigerant CO_2 is excellent with unique thermodynamic properties which are fantastic for heat pumps.

CO_2 produces high temperatures efficiently whilst also being

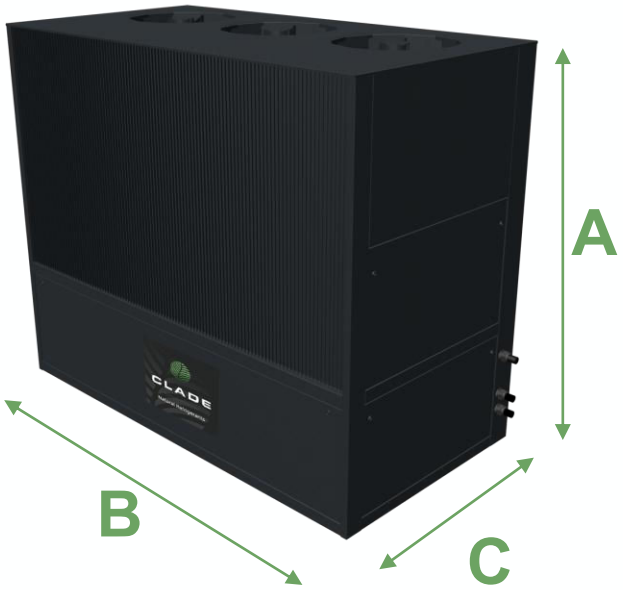
- Non flammable
- GWP of 1
- Non toxic & non PFAS
- High COP at high output temperatures

In order to delivery these benefits CO_2 requires a low return temperature from the heating system. This is a result of the unique thermodynamic properties of the refrigerant.

The heating system must be designed, installed and commissioned for a wide delta T. Design return temperatures should be 30°C which allows for operational variation up to 50°C whilst aiming for highest efficiency.

CLADE

DIMENSIONAL INFORMATION //



Unit	Height 'A' (mm)	Width 'B' (mm)	Depth 'C' (mm)	Operating Weight (kg)
Acer 65/50kW LN	2395	1959	1159	1008
Acer 65/50kW SN	1907	1959	1159	943
Acer 95/75kW LN	2395	2815	1156	1375
Acer 95/75kW SN	1907	2815	1156	1270
Acer 130/100kW LN	2396	2815	1451	1605
Acer 130/100kW SN	1907	2815	1450	1302

PUMP OR PICV OPTION //

PUMP OPTION

The Acer is supplied with an on board pump that is controlled by the heat pump to maintain the correct flow conditions.

The system designer must ensure the system does not exceed the supplied pump duty and must provide a means of flow control (typically a control valve) that maintains the correct return temperature at all times.

Advantages:

- The supplied pump has sufficient duty for most applications.
- The designer can choose the control method used to maintain the DT.

PICV OPTION

The Acer is supplied with an on board pressure independent control valve that is controlled by the heat pump to maintain the correct temperature differential.

The system design must provide a pump that has the duty to provide the correct flow rate under all conditions. This pump will be controlled by the heat pump The installer should wire the control cable back to the heat pump control panel.

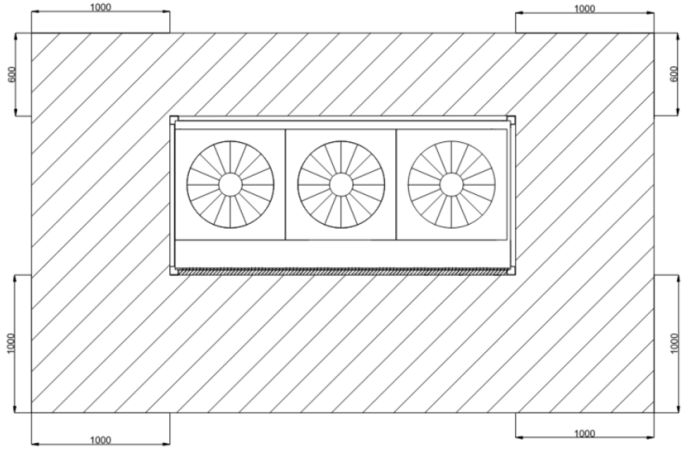
Advantages:

- System designer has more freedom in positioning the heat pump and buffer, the pipe route and sizing as they are not constrained by the available pump duty.
- The heat pump can more accurately apply control to maintain stable temperature differential and therefore output and efficiency.

TECHNICAL DETAIL SUMMARY //

Acer Range		Acer 65/50kW	Acer 95/75kW	Acer 130/100kW
REFRIGERATION SIDE				
Compressor Type	-	Reciprocating		
Compressor Qty	Pcs.	1		
Refrigerant	-	CO_2	CO_2	CO_2
Refrigerant Circuits	Pcs	1		
Variable speed drive (VSD)	Pcs.	1	1	1
Refrigerant charge (CO_2)	kg	5	7	10
No. evaporators	Pcs.	1		
Evaporators Type	-	Flat bed		
Fin Material	-	AL/MG		
Defrost Type	-	Hot Gas CO_2		
Defrost medium	-	CO_2		
Electrical supply	-	3~ 400V 50 HZ		
DIMENSIONS & NOISE				
Acer Low Noise				
Colour	-	RAL7016 Anthracite		
Unit Weight (empty)	kg	1354	1847	2115
Unit Weight (operational)	kg	1367	1865	2179
Sound Power Level $L_{W(A)}$ (dB)*	dB	65	67	68
Acer Standard Noise				
Colour	-	RAL7016 Anthracite		
Unit Weight (empty)	kg	938	1263	1302
Unit Weight (operational)	kg	943	1270	1311
Sound Power Level $L_{W(A)}$ (dB)*	dB	79	80	80
WATER SIDE – PIC VALVE				
Type of internal exchanger	-	Stainless steel plate heat exchanger		
Exchanger Water content	l	3.9	3.9	5.0
Connections waterside Flow/Return	DN	28mm Copper	35mm Copper	42mm Copper
Connections waterside Pressure Rating	PN	6		
Waterside Burst Disk (supplied by installer)	PN	6		
Control Methodology	-	PICV		
Water flow rates				
Nominal dT 40 K	l/s	0.37	0.55	0.73
Nominal dT 35 K	l/s	0.43	0.63	0.84
Nominal dT 30 K	l/s	0.42	0.73	0.98
Minimum Water Flow Rate	l/s	0.12	0.18	0.23
Minimum water volume in heating	l	303	443	606
Total internal water volume	l	4.3	6.3	8.4
Waterside Pressure Drops	kPa	28	40	40

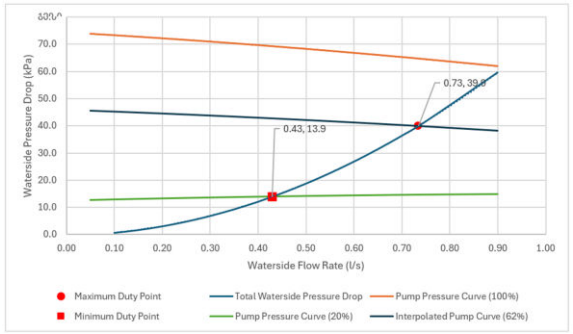
FANS SECTION				
Fans type	-	Axial fans		
N° fans	Pcs.	2	3	3
Standard air-flow	m^3/h	17,640	26,280	31,320
Additional Static Pressure Available	Pa	0	0	0
Fan regulation	-	0-10V		
Fan Power Input	kW	1.4	2.0	2.7
ELECTRICAL DATA				
Total Absorbed Power (at 7°C ambient)	kW	21.5	32.2	43.3
Total Current per phase	A	32.6	47.5	65.9
Starting Method	-	Soft Start		
Starting Current	A	18.8	28.2	37.9
Total kVA	kVA	22.6	33.9	45.6
Electrical supply	-	3~ 400V 50 HZ		
Communication protocol	-	BACNET over IP (optional extra)		
IP-Class	-	IP54		



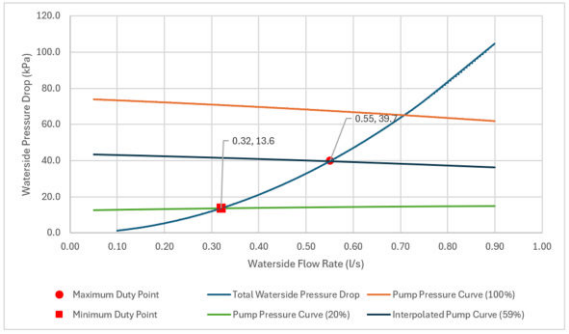
ACER INTERNAL PUMP OPTION //

WATER SIDE - PUMP				
Type of internal exchanger	-	Stainless steel plate heat exchanger		
Exchanger Water content	l	3.9	3.9	5.0
Connections waterside Flow/Return	DN	28mm Copper	35mm Copper	42mm Copper
Connections waterside Pressure Rating	PN	6		
Waterside Burst Disk (supplied by installer)	PN	6		
Control Methodology	-	Pump		
Water flow rates				
Nominal dT 40 K	l/s	0.37	0.55	0.73
Nominal dT 35 K	l/s	0.43	0.63	0.84
Nominal dT 30 K	l/s	0.42	0.73	0.98
Minimum Water Flow Rate	l/s	0.12	0.18	0.23
Minimum water volume in heating	l	303	443	606
Total internal water volume	l	4.3	6.3	8.4
Waterside Pressure Drops	kPa	28	40	40

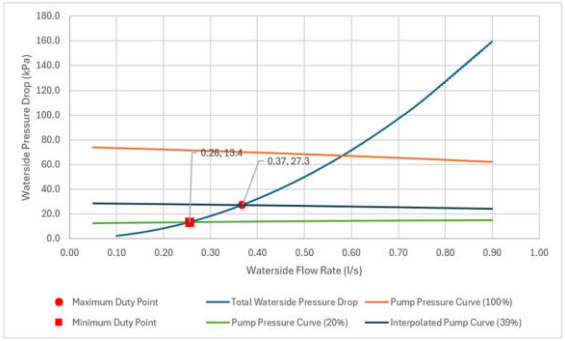
ACER 130/100 PUMP CURVE



ACER 95/75 PUMP CURVE



ACER 65/50 PUMP CURVE



CLADE

HEAT PUMP PERFORMANCE ACER 65/50 //

Water Temp (°C)	-10°C External			-5°C External			0°C External			5°C External			7°C External			10°C External			15°C External		
	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP
70/35	40.8	21.2	1.9	45.5	21.7	2.1	50.5	21.9	2.3	55.7	21.9	2.5	57.8	21.8	2.7	57.8	20.7	2.8	57.8	19.0	3.0
65/35	40.8	21.2	1.9	45.5	21.7	2.1	50.5	21.9	2.3	55.7	21.9	2.5	57.8	21.8	2.7	57.8	20.7	2.8	57.8	19.0	3.0
60/35	40.8	21.2	1.9	45.5	21.7	2.1	50.5	21.9	2.3	55.7	21.9	2.5	57.8	21.8	2.7	57.8	20.7	2.8	57.8	19.0	3.0
70/30	43.1	20.5	2.1	48.2	21.1	2.3	53.6	21.4	2.5	59.3	21.6	2.7	61.6	21.5	2.9	61.6	20.4	3.0	61.6	18.6	3.3
65/30	43.1	20.5	2.1	48.2	21.1	2.3	53.6	21.4	2.5	59.3	21.6	2.7	61.6	21.5	2.9	61.6	20.4	3.0	61.6	18.6	3.3
70/25	45.6	20.9	2.2	51.0	21.5	2.4	56.8	21.8	2.6	62.8	22.0	2.9	65.3	21.9	3.0	65.3	20.8	3.1	65.3	19.0	3.4
65/20	48.6	20.8	2.3	54.2	21.3	2.5	60.1	21.5	2.8	66.3	21.5	3.1	68.8	21.3	3.2	68.8	20.3	3.4	68.8	18.6	3.7
65/17	49.1	20.5	2.4	54.9	21.1	2.6	61.1	21.4	2.9	67.6	21.6	3.1	70.2	21.5	3.3	70.2	20.4	3.4	70.2	18.6	3.8
65/15	49.9	20.8	2.4	55.6	21.3	2.6	61.7	21.5	2.9	68.1	21.5	3.2	70.7	21.3	3.3	70.7	20.3	3.5	70.7	18.6	3.8
65/09	51.2	20.8	2.5	57.1	21.3	2.7	63.3	21.5	2.9	69.9	21.5	3.2	72.5	21.3	3.4	72.5	20.3	3.6	72.5	18.6	3.9
70/40	38.2	23.3	1.6	42.6	23.9	1.8	47.2	24.1	2.0	52.1	24.1	2.2	54.1	24.0	2.3	54.1	22.8	2.4	54.1	20.9	2.6
70/45	27.3	25.3	1.1	30.5	26.0	1.2	33.8	26.2	1.3	37.3	26.3	1.4	38.7	26.2	1.5	38.7	24.9	1.6	38.7	22.8	1.7

CLADE

HEAT PUMP PERFORMANCE ACER 95/75 //

Water Temp (°C)	-10°C External			-5°C External			0°C External			5°C External			7°C External			10°C External			15°C External		
	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP
70/35	61.1	31.6	1.9	68.1	32.5	2.1	75.6	32.9	2.3	83.4	33.1	2.5	86.7	32.9	2.6	86.7	31.3	2.8	86.7	28.8	3.0
65/35	61.1	31.6	1.9	68.1	32.5	2.1	75.6	32.9	2.3	83.4	33.1	2.5	86.7	32.9	2.6	86.7	31.3	2.8	86.7	28.8	3.0
60/35	61.1	31.6	1.9	68.1	32.5	2.1	75.6	32.9	2.3	83.4	33.1	2.5	86.7	32.9	2.6	86.7	31.3	2.8	86.7	28.8	3.0
70/30	65.0	31.0	2.1	72.4	31.9	2.3	80.5	32.3	2.5	88.8	32.4	2.7	92.2	32.2	2.9	92.2	30.7	3.0	92.2	28.2	3.3
65/30	65.0	31.0	2.1	72.4	31.9	2.3	80.5	32.3	2.5	88.8	32.4	2.7	92.2	32.2	2.9	92.2	30.7	3.0	92.2	28.2	3.3
70/25	68.9	31.6	2.2	76.8	32.5	2.4	85.3	32.9	2.6	94.1	33.1	2.8	97.7	32.9	3.0	97.7	31.3	3.1	97.7	28.8	3.4
65/20	72.8	31.0	2.3	81.1	31.9	2.5	90.1	32.3	2.8	99.4	32.4	3.1	103.2	32.2	3.2	103.2	30.7	3.4	103.2	28.2	3.7
65/17	74.1	31.0	2.4	82.6	31.9	2.6	91.7	32.3	2.8	101.2	32.4	3.1	105.1	32.2	3.3	105.1	30.7	3.4	105.1	28.2	3.7
65/15	74.7	31.0	2.4	83.3	31.9	2.6	92.5	32.3	2.9	102.1	32.4	3.1	106.0	32.2	3.3	106.0	30.7	3.5	106.0	28.2	3.8
65/09	76.7	31.0	2.5	85.5	31.9	2.7	94.9	32.3	2.9	104.8	32.4	3.2	108.8	32.2	3.4	108.8	30.7	3.5	108.8	28.2	3.9
70/40	57.2	34.7	1.6	63.7	35.7	1.8	70.8	36.2	2.0	78.1	36.4	2.1	81.1	36.2	2.2	81.1	34.5	2.4	81.1	31.7	2.6
70/45	40.9	37.8	1.1	45.6	38.9	1.2	50.7	39.4	1.3	55.9	39.7	1.4	58.1	39.5	1.5	58.1	37.7	1.5	58.1	34.6	1.7

CLADE

HEAT PUMP PERFORMANCE ACER 130/100 POWER MODE //

Water Temp (°C)	-10°C External			-5°C External			0°C External			5°C External			7°C External			10°C External			15°C External		
	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP	QH (kW)	PI (kW)	COP
70/35	79.1	40.5	2.0	89.1	42.2	2.1	99.8	43.3	2.3	110.9	44.2	2.5	115.5	44.2	2.6	115.5	42.5	2.7	115.5	39.7	2.9
65/35	79.1	40.5	2.0	89.1	42.2	2.1	99.8	43.3	2.3	110.9	44.2	2.5	115.5	44.2	2.6	115.5	42.5	2.7	115.5	39.7	2.9
60/35	79.1	40.5	2.0	89.1	42.2	2.1	99.8	43.3	2.3	110.9	44.2	2.5	115.5	44.2	2.6	115.5	42.5	2.7	115.5	39.7	2.9
70/30	84.1	39.7	2.1	94.8	41.3	2.3	106.2	42.4	2.5	118.0	43.3	2.7	122.9	43.3	2.8	122.9	41.7	2.9	122.9	38.9	3.2
65/30	84.1	39.7	2.1	94.8	41.3	2.3	106.2	42.4	2.5	118.0	43.3	2.7	122.9	43.3	2.8	122.9	41.7	2.9	122.9	38.9	3.2
70/25	89.2	40.5	2.2	100.5	42.2	2.4	112.5	43.3	2.6	125.1	44.2	2.8	130.3	44.2	2.9	130.3	42.5	3.1	130.3	39.7	3.3
65/20	94.2	39.7	2.4	106.2	41.3	2.6	118.9	42.4	2.8	132.2	43.3	3.1	137.7	43.3	3.2	137.7	41.7	3.3	137.7	38.9	3.5
65/17	95.9	39.7	2.4	108.1	41.3	2.6	121.0	42.4	2.9	134.6	43.3	3.1	140.1	43.3	3.2	140.1	41.7	3.4	140.1	38.9	3.6
65/15	96.8	39.7	2.4	109.0	41.3	2.6	122.1	42.4	2.9	135.7	43.3	3.1	141.4	43.3	3.3	141.4	41.7	3.4	141.4	38.9	3.6
65/09	99.3	39.7	2.5	111.9	41.3	2.7	125.3	42.4	3.0	139.3	43.3	3.2	145.0	43.3	3.3	145.0	41.7	3.5	145.0	38.9	3.7
70/40	74.0	44.4	1.7	83.4	46.3	1.8	93.4	47.5	2.0	103.9	48.6	2.1	108.2	48.7	2.2	108.2	46.8	2.3	108.2	43.7	2.5
70/45	53.0	48.3	1.1	59.7	50.4	1.2	66.9	51.8	1.3	74.4	53.0	1.4	77.4	53.2	1.5	77.4	51.1	1.5	77.4	47.7	1.6

ABOUT THIS INFORMATION //

Performance may vary based on climate conditions, installation quality, and specific usage patterns. Actual energy savings may differ from estimates.

Professional installation is required to ensure optimal performance and compliance with local building codes. Improper installation will void the warranty.

Regular maintenance is necessary to maintain efficiency and performance. Failure to perform recommended maintenance may reduce system lifespan and efficiency.

Efficiency ratings (COP) are based on standard testing conditions and control patterns. Actual efficiency may vary depending on operational conditions and geographic location. COP are instantaneous figures not averaged over any period of time which may include defrost and other system variables.

Heat pumps are designed for specific use. Using the product for unintended purposes may result in suboptimal performance or damage.

Noise levels produced by the heat pump may vary based on the installation environment and operating conditions. Sound pressure figures are for free field without the specifics of the site application.

Please refer to the user manual and installation guide for detailed information on operation, maintenance, and safety instructions.

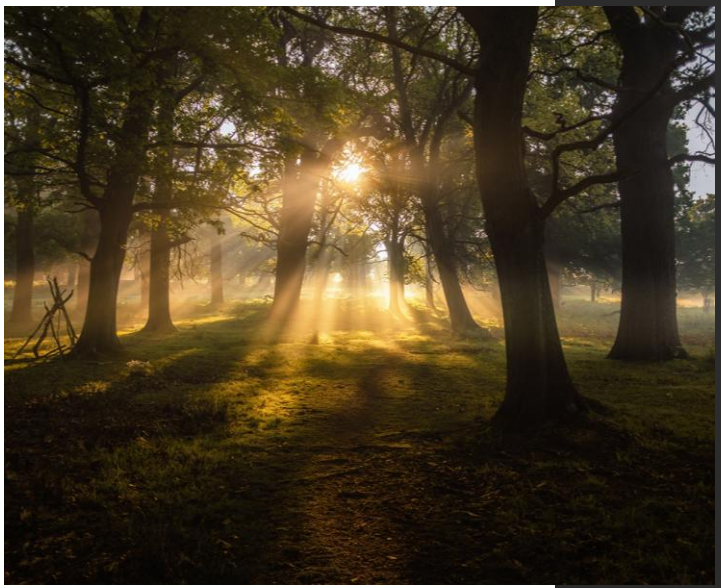
Clade continually innovate to improve our products, the information in this document are valid (excepting typographic errors) at the time of publication. Availability, specification and performance are subject to change from time to time and without warning.

Any technical advice provided is for informational purposes only, unless specifically covered by a purchase order, and is based on our current understanding and available information. While we strive to ensure the accuracy and reliability of the information provided, it is not intended to be a substitute for professional advice or services tailored to specific circumstances.

By utilising this advice, you acknowledge that it is provided "as is" without any warranties or guarantees, express or implied, regarding its completeness, accuracy, reliability, suitability, or availability.

We strongly recommend consulting with a qualified professional before implementing any advice or making any decisions based on the information provided.

In no event shall Clade or its representatives be liable for any direct, indirect, incidental, special, or consequential damages, including but not limited to loss of profits, data, or other intangible losses, arising out of or in connection with the use of, or reliance on, the technical advice provided.



THANK YOU //

www.clade-es.com

Sales@clade-es.com
Aftersales@clade-es.com

Head Office & Registered Office //
Bristol & Bath Science Park,
Dirac Crescent, Emersons Green,
BRISTOL BS16 7FR

The Technology Centre //
Unit R3 Gildersome Spur Industrial Estate,
Stone Pits Lane, Morley,
LEEDS LS27 7JZ