



CLADE ELM

DIRECT BOILER REPLACEMENT HEAT PUMP //

Oct 2025 //



**DESIGNED & MADE
IN THE UK**

ELM //



CLADE

The **ELM R290 Heat Pump** is the ultimate, high temperature, future-proof heating solution, combining the low Global Warming Potential of **R290 refrigerant** with a **strong and robust build** engineered for UK conditions.

Designed for maximum flexibility, it features **no horizontal ATEX zone**, a **space-efficient** design, and a **low noise option** for quiet operation. Offering exceptional versatility, the Elm can be **weather compensated** for higher efficiency, and every unit is **fully supported by our expert UK engineers** with comprehensive pre- and post-sale technical guidance, ensuring a powerful, sustainable, and entirely reliable heating investment.



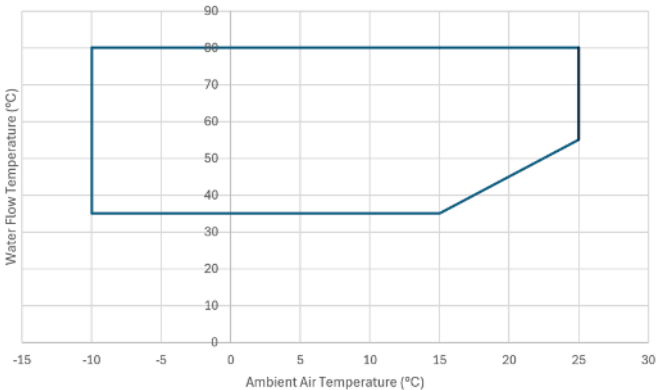
Available in 4 models	-5°C capacity	+7°C capacity	Sound Power
Elm SN 75/60	60kW	75kW	80 dB
Elm SN 105/70	70kW	105kW	81 dB
Elm LN 75/60	60kW	75kW	67 dB
Elm LN 105/70	70kW	105kW	68 dB

- SCOP - Achieves a high Seasonal Coefficient of Performance of 4.10
- Full performance from -15°C to +40°C ambient temperature
- Future proof refrigerant which is non-toxic with a GWP of 3
- Low and standard noise models
- Up to 80°C water temperature
- Coated coil option
- Can be multiplexed using Clade Multi Controller
- Built in BMS interface
- Leak detection and vent fan included
- Inverter controlled compressor and fans for maximum efficiency
- PIC Valve for LTHW flow rate control included
- Electronic expansion valve ensures accurate control of refrigerant
- Hydrophilic coil reduces ice build up



R290 – PROPANE PERFORMANCE //

Elm r290 operating envelope



Flow temperature range	35 to 80°C
Return temperature range	20 to 70°C

Clade is a leading manufacturer of r290 propane heat pumps being one of the first to bring a large capacity heat pump to market. We continue to innovate with this exciting refrigerant.

R290 propane is an increasingly popular refrigerant for heat pumps due to its excellent thermodynamic properties, environmental benefits, and efficiency.

As a natural hydrocarbon, R290 has an ultra-low Global Warming Potential (GWP) of just 0.02*, making it a sustainable alternative to synthetic refrigerants with high GWP values.

Its high latent heat and superior thermal conductivity enable efficient heat transfer, enhancing the energy efficiency of heat pump systems. R290 operates effectively across a wide range of temperatures, making it suitable for both heating and cooling applications.

While its flammability requires safety consideration, modern system designs and proper handling mitigate these risks. Overall, R290 propane represents a future-proof choice for heat pumps, balancing performance, cost-effectiveness, and sustainability in decarbonizing heating solutions.

* Propane’s GWP, as defined by the IPCC, is approximately 3 and represents propane’s inherent ability to absorb infrared radiation, assuming it behaves like long-lived greenhouse gases such as CO₂. However, in real-world applications, propane breaks down rapidly in the atmosphere. This short atmospheric lifetime means it does not accumulate and has a negligible long-term climate impact. As a result, its adjusted GWP over a 100-year timeframe is approximately 0.02.



ELM DIMENSIONS //



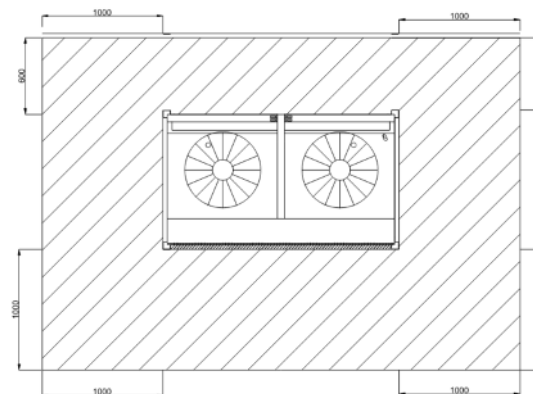
Unit	Height 'A' (mm)	Length 'B' (mm)	Width 'C' (mm)	Operating Weight (kg)	Shipping Weight (kg)
Elm 75/60kW SN	2057	2354	1455	1268	1238
Elm 105/70kW SN	2057	3144	1455	1348	1308
Elm 75/60kW LN	2400	2354	1455	1590	1560
Elm 105/70kW LN	2400	3144	1455	2175	2140



TECHNICAL INFORMATION //

Elm Range		Elm 75/60kW	Elm 105/70kW
REFRIGERATION SIDE			
Compressor Type	-	Reciprocating	
Compressor Qty	Pcs.	1	
Refrigerant	-	Propane (R290)	
Refrigerant Circuits	Pcs.	1	
Variable speed drive (VSD)	Pcs.	1	1
Refrigerant charge	kg	5.0	6.0
No. evaporators	Pcs.	1	
Evaporators Type	-	Flat bed	
Fin Material	-	AL/MG	
Defrost Type	-	Hot Gas	
Defrost medium	-	R290	
Electrical supply	-	3~ 400V 50 HZ	
WATER SIDE			
Type of internal exchanger		Stainless steel plate heat exchanger	
Exchanger Water content	l	13.5	13.5
Connections waterside Flow/Return	DN	54mm Copper	67mm Copper
Factory pressure test rating	PN	6	
Connections waterside Pressure Rating	PN	6	
Control Methodology		PICV	
Pressure Drop (A7/W80) 10K TD	kPa	97.3	80.2
Water flow rates			
Nominal dT 10 K	l/s	1.82	2.46
Minimum Water Flow Rate	l/s	0.61	0.82
Minimum water volume in heating	l	1400	1679
Total internal water volume	l	23.3	29.1

FANS SECTION			
Fans type	-	Axial fans	
N° fans	pcs	2	3
Standard air-flow	m³/h	22680	33840
Additional Static Pressure Available	Pa	0	0
Fan regulation	-	0-10V	
Fan Power Input	kW	2.8	4.2
ELECTRICAL SECTION (W80 10K TD)			
Total Absorbed Power (at 7°C ambient)	kW	36.3	47.7
Total Current per phase	A	59.3	81.1
Starting Method	-	Soft Start	
Max Starting Current	A	33.3	44.5
Total kVA	kVA	44.5	59.3
Electrical supply	-	3~ 400V 50 HZ	
Communication protocol	-	BACNET over IP (optional extra)	
IP-Class	-	IP54	
CLEARANCES			



CONTROL OPTIONS //

Capped Capacity Control

There are two options for output capacity available from the Clade controls.

1. Efficiency mode: Capped at -5°C – the unit will only deliver heat up to the -5°C ambient rated output.
2. Power mode: Capped at +7°C – the unit will deliver heat up to the maximum rating at +7°C ambient temperature.

See capacity tables for details

Pressure Independent Control Valve

All Elm R290 heat pump systems are equipped with Pressure Independent Control Valves (PICVs) and do not include an internal circulating pump. The PICVs are provided to regulate the flow of water through the plate heat exchanger by varying the pressure drop across the valve independently of the inlet pressure. This design ensures that the system-side flow balance remains unaffected.

Acoustic information

Noise details are detailed below for the Elm heat pump Range. The A-weighted sound power levels $L_{w(A)}$ shown below are declared in accordance with BS EN ISO 4871:2009. Measurements were performed using the BS EN ISO 9614-1:2009 sound-intensity method (survey grade). The “Sound Pressure at 10 m” values actual site sound pressures will vary with distance, screening, reflections, and background noise. Conditions apply see product manual for full information.

Elm Range	Elm 75 / 60		Elm 105 / 70	
	Standard	Low Noise	Standard	Low Noise
Sound Power Level, $L_{w(A)}$ (dB) (1)(2)	80	67	81	68
Sound Pressure Level at 10m (dB) (3)	48	35	49	36
Uncertainty (dB)	4	4	4	4



HEAT PUMP PERFORMANCE ELM 75/60 POWER MODE //

POWER MODE (+7°C CAPACITY CONTROL)

Model name	Water Temp (°C)	SCOP	-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
Elm (SN + LN) 75/60	80/70	1.9	51.9	31.2	1.7	59.4	33.7	1.8	66.9	35.6	1.9	75.1	37.4	2.0	78.6	37.8	2.1	78.6	36.9	2.1	78.6	35.3	2.2
	75/65	2.1	52.4	29.4	1.8	59.7	31.7	1.9	67.5	33.4	2.0	75.9	35.0	2.2	79.5	35.4	2.2	79.5	34.5	2.3	79.5	33.0	2.4
	70/60	2.3	52.9	27.8	1.9	60.2	29.9	2.0	68.1	31.4	2.2	76.8	32.9	2.3	80.5	33.2	2.4	80.5	32.3	2.5	80.5	30.8	2.6
	65/55	2.4	53.5	26.3	2.0	60.8	28.2	2.2	68.9	29.6	2.3	77.8	30.9	2.5	81.6	31.1	2.6	81.6	30.2	2.7	81.6	28.7	2.8
	60/50	2.6	54.1	25.0	2.2	61.4	26.7	2.3	69.7	27.9	2.5	78.9	29.0	2.7	82.8	29.2	2.8	82.8	28.3	2.9	82.8	26.9	3.1
	55/45	2.8	54.9	23.8	2.3	62.1	25.3	2.5	70.6	26.3	2.7	80.0	27.4	2.9	84.0	27.5	3.1	84.0	26.6	3.2	84.0	25.1	3.3
	50/40	3.0	55.6	22.7	2.5	62.9	24.0	2.6	71.6	24.9	2.9	81.2	25.8	3.1	85.3	25.8	3.3	85.3	25.0	3.4	85.3	23.5	3.6
	45/35	3.2	56.5	21.7	2.6	63.7	22.9	2.8	72.6	23.6	3.1	82.4	24.4	3.4	86.7	24.4	3.6	86.7	23.5	3.7	86.7	22.0	3.9
	35/30	3.6	58.5	20.1	2.9	65.7	21.0	3.1	72.7	21.6	3.4	72.7	19.4	3.8	72.7	18.4	4.0	72.7	17.6	4.1	72.7	16.4	4.4
	30/20	3.9	59.4	19.3	3.1	66.6	20.1	3.3	76.0	20.6	3.7	86.6	20.9	4.1	91.2	20.8	4.4	91.2	19.9	4.6	91.2	18.5	4.9
	25/20	4.0	60.4	18.5	3.3	67.6	19.3	3.5	72.7	19.6	3.7	72.7	17.0	4.3	72.7	16.0	4.5	72.7	15.2	4.8	72.7	14.0	5.2



HEAT PUMP PERFORMANCE ELM 75/60 EFFICIENCY MODE //

EFFICIENCY MODE (-5°C CAPACITY CONTROL)																							
Model name	Water Temp (°C)	SCOP	-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)	CO P	QH (kW)	PI (kW)	CO P	QH (kW)	PI (kW)	CO P	QH (kW)	PI (kW)	CO P	QH (kW)	PI (kW)	CO P	QH (kW)	PI (kW)	CO P	QH (kW)	PI (kW)	CO P
Elm (SN + LN) 75/60	80/70	1.9	51.9	31.2	1.7	59.4	33.7	1.8	59.4	32.3	1.8	59.4	30.6	1.9	59.4	29.6	2.0	59.4	28.9	2.1	59.4	27.5	2.2
	75/65	2.0	52.4	29.4	1.8	59.7	31.7	1.9	59.7	30.2	2.0	59.7	28.6	2.1	59.7	27.6	2.2	59.7	26.9	2.2	59.7	25.6	2.3
	70/60	2.2	52.9	27.8	1.9	60.2	29.9	2.0	60.2	28.4	2.1	60.2	26.8	2.2	60.2	25.8	2.3	60.2	25.1	2.4	60.2	23.8	2.5
	65/55	2.4	53.5	26.3	2.0	60.8	28.2	2.2	60.8	26.7	2.3	60.8	25.1	2.4	60.8	24.2	2.5	60.8	23.4	2.6	60.8	22.2	2.7
	60/50	2.5	54.1	25.0	2.2	61.4	26.7	2.3	61.4	25.2	2.4	61.4	23.6	2.6	61.4	22.6	2.7	61.4	21.9	2.8	61.4	20.7	3.0
	55/45	2.7	54.9	23.8	2.3	62.1	25.3	2.5	62.1	23.8	2.6	62.1	22.2	2.8	62.1	21.2	2.9	62.1	20.5	3.0	62.1	19.3	3.2
	50/40	2.9	55.6	22.7	2.5	62.9	24.0	2.6	62.9	22.5	2.8	62.9	20.9	3.0	62.9	19.9	3.2	62.9	19.2	3.3	62.9	18.0	3.5
	45/35	3.1	56.5	21.7	2.6	63.7	22.9	2.8	63.7	21.3	3.0	63.7	19.7	3.2	63.7	18.7	3.4	63.7	18.0	3.5	63.7	16.8	3.8
	35/30	3.6	58.5	20.1	2.9	65.7	21.0	3.1	65.7	19.5	3.4	65.7	17.8	3.7	65.7	16.9	3.9	65.7	16.2	4.1	65.7	15.0	4.4
	30/20	3.8	59.4	19.3	3.1	66.6	20.1	3.3	66.6	18.5	3.6	66.6	16.9	3.9	66.6	15.9	4.2	66.6	15.2	4.4	66.6	14.0	4.8
	25/20	4.1	60.4	18.5	3.3	67.6	19.3	3.5	67.6	17.7	3.8	67.6	16.0	4.2	67.6	15.0	4.5	67.6	14.3	4.7	67.6	13.1	5.2



HEAT PUMP PERFORMANCE ELM 105/70 POWER MODE //

POWER MODE (+7°C CAPACITY CONTROL)																							
Model name	Water Temp (°C)	SCOP	-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
Elm (SN + LN) 105/70	80/70	2.0	72.6	42.4	1.7	81.4	45.3	1.8	90.2	47.3	1.9	100.5	49.6	2.0	104.8	50.1	2.1	104.8	49.2	2.1	104.8	47.3	2.2
	75/65	2.1	73.1	39.9	1.8	82.1	42.6	1.9	91.4	44.6	2.0	102.0	46.7	2.2	106.6	47.1	2.3	106.6	46.2	2.3	106.6	44.4	2.4
	70/60	2.3	73.6	37.7	2.0	82.8	40.2	2.1	92.7	42.1	2.2	103.5	43.9	2.4	108.3	44.3	2.4	108.3	43.4	2.5	108.3	41.6	2.6
	65/55	2.5	74.2	35.7	2.1	83.6	38.1	2.2	94.0	39.8	2.4	105.1	41.4	2.5	110.0	41.7	2.6	110.0	40.9	2.7	110.0	39.1	2.8
	60/50	2.6	74.9	33.9	2.2	84.4	36.0	2.3	95.3	37.6	2.5	106.6	39.0	2.7	111.7	39.3	2.8	111.7	38.5	2.9	111.7	36.7	3.0
	55/45	2.8	75.5	32.2	2.3	85.3	34.2	2.5	96.6	35.6	2.7	108.1	36.8	2.9	113.4	37.0	3.1	113.4	36.2	3.1	113.4	34.5	3.3
	50/40	3.0	76.3	30.6	2.5	86.2	32.4	2.7	97.9	33.7	2.9	109.6	34.8	3.2	115.1	34.9	3.3	115.1	34.1	3.4	115.1	32.4	3.6
	45/35	3.2	77.0	29.2	2.6	87.1	30.9	2.8	99.2	32.0	3.1	111.1	32.9	3.4	116.8	32.9	3.5	116.8	32.2	3.6	116.8	30.4	3.8
	35/30	3.7	78.7	26.9	2.9	89.2	28.3	3.2	102.1	29.2	3.5	114.5	29.8	3.8	116.3	28.4	4.1	116.3	28.1	4.1	116.3	26.4	4.4
	30/20	3.9	79.5	25.7	3.1	90.0	27.0	3.3	103.4	27.7	3.7	115.9	28.2	4.1	122.1	28.0	4.4	122.1	27.3	4.5	122.1	25.6	4.8
	25/20	4.3	80.2	24.7	3.3	90.9	25.8	3.5	104.6	26.4	4.0	116.3	24.3	4.8	116.3	25.1	4.6	116.3	24.5	4.8	116.3	22.7	5.1



HEAT PUMP PERFORMANCE ELM 105/70 EFFICIENCY MODE //

ELM RANGE //

EFFICIENCY MODE (-5°C CAPACITY CONTROL)																							
Model name	Water Temp (°C)	SCOP	-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
Elm (SN + LN) 105/70	80/70	1.9	26.0	15.6	1.7	29.7	16.9	1.8	29.7	16.1	1.8	29.7	15.3	1.9	29.7	14.8	2.0	29.7	14.4	2.1	29.7	13.8	2.2
	75/65	2.0	26.2	14.7	1.8	29.9	15.9	1.9	29.9	15.1	2.0	29.9	14.3	2.1	29.9	13.8	2.2	29.9	13.4	2.2	29.9	12.8	2.3
	70/60	2.2	26.4	13.9	1.9	30.1	14.9	2.0	30.1	14.2	2.1	30.1	13.4	2.2	30.1	12.9	2.3	30.1	12.5	2.4	30.1	11.9	2.5
	65/55	2.4	26.7	13.2	2.0	30.4	14.1	2.2	30.4	13.4	2.3	30.4	12.6	2.4	30.4	12.1	2.5	30.4	11.7	2.6	30.4	11.1	2.7
	60/50	2.5	27.1	12.5	2.2	30.7	13.3	2.3	30.7	12.6	2.4	30.7	11.8	2.6	30.7	11.3	2.7	30.7	10.9	2.8	30.7	10.3	3.0
	55/45	2.7	27.4	11.9	2.3	31.1	12.6	2.5	31.1	11.9	2.6	31.1	11.1	2.8	31.1	10.6	2.9	31.1	10.3	3.0	31.1	9.6	3.2
	50/40	2.9	27.8	11.3	2.5	31.4	12.0	2.6	31.4	11.3	2.8	31.4	10.4	3.0	31.4	10.0	3.2	31.4	9.6	3.3	31.4	9.0	3.5
	45/35	3.1	28.2	10.8	2.6	31.8	11.4	2.8	31.8	10.7	3.0	31.8	9.9	3.2	31.8	9.4	3.4	31.8	9.0	3.5	31.8	8.4	3.8
	35/30	3.6	29.2	10.0	2.9	32.8	10.5	3.1	32.8	9.7	3.4	32.8	8.9	3.7	32.8	8.4	3.9	32.8	8.1	4.1	32.8	7.5	4.4
	30/20	3.8	29.7	9.7	3.1	33.3	10.1	3.3	33.3	9.3	3.6	33.3	8.5	3.9	33.3	8.0	4.2	33.3	7.6	4.4	33.3	7.0	4.8
	25/20	4.1	30.2	9.3	3.3	33.8	9.7	3.5	33.8	8.9	3.8	33.8	8.0	4.2	33.8	7.5	4.5	33.8	7.2	4.7	33.8	6.6	5.2



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.

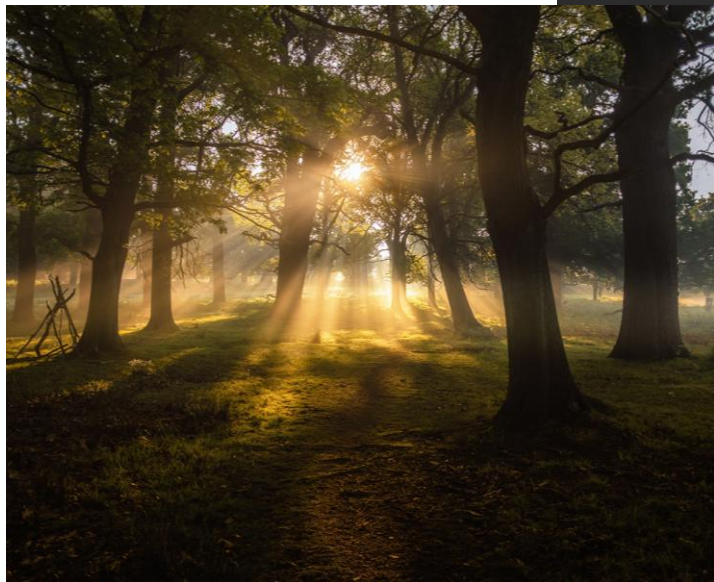
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THANK YOU //

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