



CLADE

BIRCH

LOW NOISE PROPANE HEAT PUMP //
for HEATING AND HOT WATER

October 2025 //



DESIGNED & MADE IN THE UK

BIRCH //

**CLADE**

The **Birch R290 Heat Pump** is the ultimate, 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 Birch can be **upgraded to a High Temperature option** for boiler replacement projects, 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.

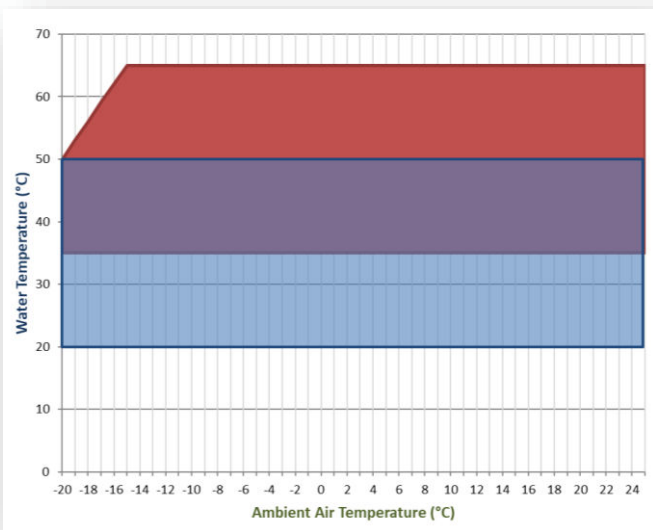
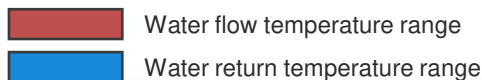


Available in 4 models	-5°C capacity	+7°C capacity	Sound Power
Birch SN 85/50	50KW	85KW	80 dB
Birch SN 120/75	75KW	120KW	81 dB
Birch LN 85/50	50KW	85KW	67 dB
Birch LN 120/75	75KW	120KW	68 dB

- SCOP - Achieves a high Seasonal Coefficient of Performance of 4.34
- 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 65°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 //

Birch r290 operating envelope



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.

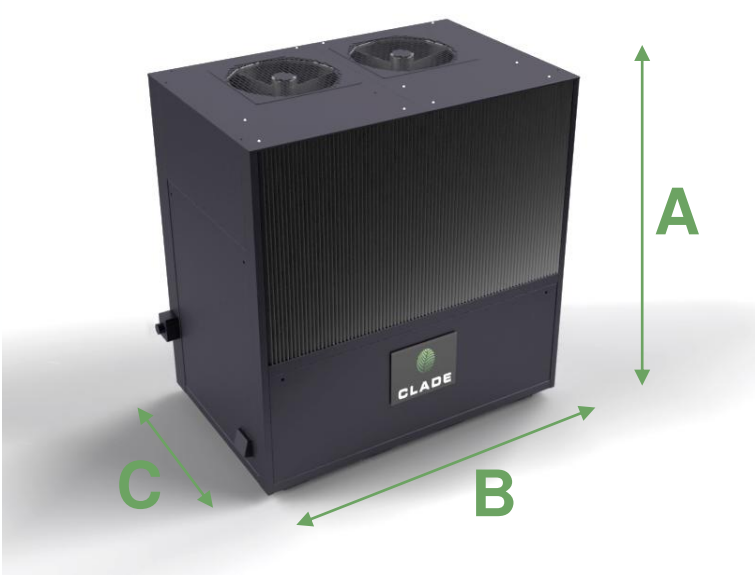
Its high latent heat and superior thermal conductivity enable efficient heat transfer, enhancing the energy efficiency of heat pump systems. R290 operates effectively across a wide range of temperatures, making it suitable for both heating and cooling applications.

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.



DIMENSIONAL INFORMATION //



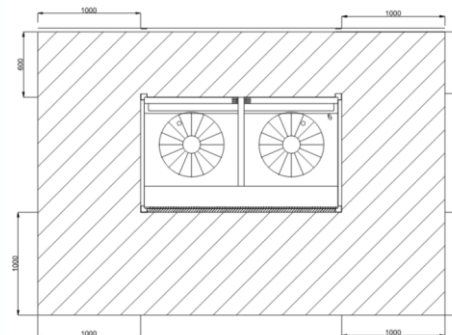
Unit	Height 'A' (mm)	Length 'B' (mm)	Width 'C' (mm)	Operating Weight (kg)	Shipping Weight (kg)
Birch 85/50kW SN	2057	2354	1455	1268	1238
Birch 120/75kW SN	2057	3144	1455	1348	1308
Birch 85/50kW LN	2400	2354	1455	1590	1560
Birch 120/75kW LN	2400	3144	1455	2175	2140



TECHNICAL SPECIFICATION //

Birch Range		Birch 85/50kW		Birch 120/75kW	
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		
Connections waterside Pressure Rating	PN	6			
Waterside Burst Disk (supplied by installer)	PN	6			
Control Methodology		PICV			
Water flow rates					
Nominal dT 20 K	l/s	0.91	1.39		
Nominal dT 15 K	l/s	1.19	1.82		
Nominal dT 10 K	l/s	1.82	2.78		
Minimum Water Flow Rate	l/s	0.46	0.70		
Minimum water volume in heating	l	1586	2239		
Total internal water volume	l	23.3	29.1		

FANS SECTION			
Fans type	-	Axial fans	
N° fans	pcs	2	3
Standard air-flow at highest speed	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 (W65 10K TD)			
Total Absorbed Power (at 7°C ambient)	kW	31.1	40.9
Total Current per phase	A	52.8	71.4
Starting Method	-	Soft Start	
Starting Current	A	27.6	37.5
Total kVA	kVA	36.6	49.5
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 Birch 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 Birch heat pump Range. The A-weighted sound power levels LwA 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.

Birch Range	Birch 85 / 50		Birch 120 / 75	
	Standard	Low Noise	Standard	Low Noise
Sound Power Level, L _{W(A)} (dB)	80	67	81	68
Sound Pressure Level at 10m (dB)	48	35	49	36
Uncertainty (dB)	4	4	4	4



PERFORMANCE BIRCH 85/50 POWER MODE //

POWER MODE (+7°C CAPACITY CONTROL)																							
Model name	Water Temp (°C)	SCO P	-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
BIRCH (SN + LN) 85/50	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
	40/30	3.5	57.4	20.7	2.8	64.6	21.8	3.0	73.6	22.4	3.3	83.7	23.0	3.6	88.1	23.0	3.8	88.1	22.1	4.0	88.1	20.6	4.3
	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
	30/25	3.8	59.4	19.3	3.1	66.6	20.1	3.3	72.7	20.6	3.5	72.7	18.1	4.0	72.7	17.1	4.2	72.7	16.4	4.4	72.7	15.1	4.8
	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
	50/45	3.0	55.9	22.9	2.4	63.1	24.3	2.6	71.9	25.2	2.8	72.7	23.6	3.1	72.7	22.8	3.2	72.7	22.0	3.3	72.7	20.7	3.5
	55/50	2.8	55.1	24.0	2.3	62.4	25.6	2.4	70.9	26.7	2.7	72.7	25.0	2.9	72.7	24.5	3.0	72.7	23.7	3.1	72.7	22.4	3.2
	60/55	2.6	54.4	25.3	2.2	61.7	27.0	2.3	70.1	28.2	2.5	72.7	26.6	2.7	72.7	26.4	2.8	72.7	25.6	2.8	72.7	24.2	3.0
	65/60	2.4	53.8	26.6	2.0	61.1	28.5	2.1	69.3	30.0	2.3	72.7	28.3	2.6	72.7	28.5	2.6	72.7	27.6	2.6	72.7	26.2	2.8



PERFORMANCE BIRCH 85/50 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)	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
BIRCH (SN + LN) 85/50	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
	40/30	3.3	57.4	20.7	2.8	64.6	21.8	3.0	64.6	20.3	3.2	64.6	18.6	3.5	64.6	17.6	3.7	64.6	16.9	3.8	64.6	15.7	4.1
	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
	30/25	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	5.1
	50/45	2.9	55.9	22.9	2.4	63.1	24.3	2.6	63.1	22.8	2.8	63.1	21.2	3.0	63.1	20.2	3.1	63.1	19.5	3.2	63.1	18.3	3.4
	55/50	2.7	55.1	24.0	2.3	62.4	25.6	2.4	62.4	24.1	2.6	62.4	22.5	2.8	62.4	21.5	2.9	62.4	20.8	3.0	62.4	19.6	3.2
	60/55	2.5	54.4	25.3	2.2	61.7	27.0	2.3	61.7	25.5	2.4	61.7	23.9	2.6	61.7	23.0	2.7	61.7	22.2	2.8	61.7	21.0	2.9
	65/60	2.3	53.8	26.6	2.0	61.1	28.5	2.1	61.1	27.1	2.3	61.1	25.5	2.4	61.1	24.5	2.5	61.1	23.8	2.6	61.1	22.5	2.7



PERFORMANCE BIRCH 120/75 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
BIRCH (SN + LN) 120/75	65/55	2.4	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
	40/30	3.5	77.7	27.9	2.8	88.0	29.4	3.0	100.5	30.4	3.3	112.6	31.1	3.6	118.5	31.1	3.8	118.5	30.3	3.9	118.5	28.6	4.1
	35/30	3.6	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
	30/25	3.8	79.5	25.7	3.1	90.0	27.0	3.3	103.4	27.7	3.7	115.9	28.2	4.1	116.3	26.8	4.3	116.3	26.2	4.4	116.3	24.5	4.7
	25/20	4.0	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
	50/45	3.0	76.5	30.9	2.5	86.5	32.8	2.6	98.3	34.1	2.9	110.1	35.2	3.1	115.6	35.4	3.3	115.6	34.6	3.3	115.6	32.9	3.5
	55/50	2.8	75.9	32.5	2.3	85.6	34.5	2.5	97.0	36.0	2.7	108.6	37.3	2.9	113.9	37.5	3.0	113.9	36.7	3.1	113.9	35.0	3.3
	60/55	2.6	75.2	34.2	2.2	84.8	36.4	2.3	95.7	38.1	2.5	107.1	39.5	2.7	112.2	39.8	2.8	112.2	39.0	2.9	112.2	37.2	3.0
	65/60	2.4	74.6	36.1	2.1	84.0	38.5	2.2	94.5	40.2	2.3	105.6	41.9	2.5	110.6	42.2	2.6	110.6	41.4	2.7	110.6	39.6	2.8



PERFORMANCE BIRCH 120/75 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)	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
BIRCH (SN + LN) 120/75	65/55	2.4	74.2	35.7	2.1	83.6	38.1	2.2	83.6	36.2	2.3	83.6	34.3	2.4	83.6	33.1	2.5	83.6	32.4	2.6	83.6	30.8	2.7
	60/50	2.5	74.9	33.9	2.2	84.4	36.0	2.3	84.4	34.2	2.5	84.4	32.2	2.6	84.4	31.0	2.7	84.4	30.4	2.8	84.4	28.8	2.9
	55/45	2.7	75.5	32.2	2.3	85.3	34.2	2.5	85.3	32.3	2.6	85.3	30.3	2.8	85.3	29.1	2.9	85.3	28.5	3.0	85.3	27.0	3.2
	50/40	2.9	76.3	30.6	2.5	86.2	32.4	2.7	86.2	30.5	2.8	86.2	28.6	3.0	86.2	27.3	3.2	86.2	26.7	3.2	86.2	25.2	3.4
	45/35	3.1	77.0	29.2	2.6	87.1	30.9	2.8	87.1	28.9	3.0	87.1	26.9	3.2	87.1	25.7	3.4	87.1	25.1	3.5	87.1	23.6	3.7
	40/30	3.3	77.7	27.9	2.8	88.0	29.4	3.0	88.0	27.4	3.2	88.0	25.4	3.5	88.0	24.1	3.6	88.0	23.6	3.7	88.0	22.1	4.0
	35/30	3.6	78.7	26.9	2.9	89.2	28.3	3.2	89.2	26.2	3.4	89.2	24.3	3.7	89.2	23.0	3.9	89.2	22.5	4.0	89.2	21.0	4.3
	30/25	3.8	79.5	25.7	3.1	90.0	27.0	3.3	90.0	24.9	3.6	90.0	22.9	3.9	90.0	21.7	4.2	90.0	21.1	4.3	90.0	19.6	4.6
	25/20	4.1	80.2	24.7	3.3	90.9	25.8	3.5	90.9	23.6	3.8	90.9	21.6	4.2	90.9	20.4	4.5	90.9	19.8	4.6	90.9	18.3	5.0
	50/45	2.9	76.5	30.9	2.5	86.5	32.8	2.6	86.5	30.9	2.8	86.5	29.0	3.0	86.5	27.7	3.1	86.5	27.1	3.2	86.5	25.6	3.4
	55/50	2.7	75.9	32.5	2.3	85.6	34.5	2.5	85.6	32.7	2.6	85.6	30.7	2.8	85.6	29.5	2.9	85.6	28.9	3.0	85.6	27.4	3.1
	60/55	2.5	75.2	34.2	2.2	84.8	36.4	2.3	84.8	34.6	2.5	84.8	32.7	2.6	84.8	31.4	2.7	84.8	30.8	2.8	84.8	29.3	2.9
	65/60	2.3	74.6	36.1	2.1	84.0	38.5	2.2	84.0	36.7	2.3	84.0	34.7	2.4	84.0	33.5	2.5	84.0	32.8	2.6	84.0	31.3	2.7

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.

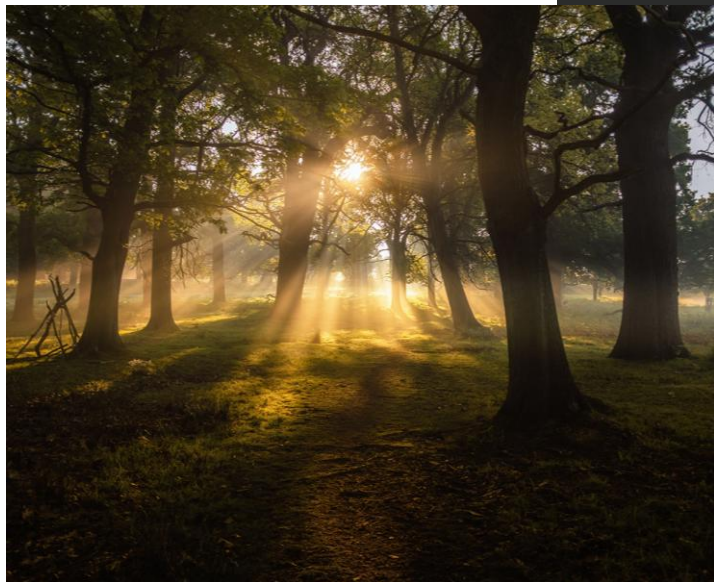
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