Nova Series

Air-water modular heat pump system



Thermonova

In brief

The go-to modular heat pump technology for sustainability-driven retrofits and new builds within the commercial, light-industrial and local heat network domains.



The Nova Series

The Nova Series air-water modular heat pump system represents the cutting edge of sustainable heat pump technology, offering a practical way to reduce emissions without compromising comfort or reliability. It is an essential piece of the puzzle in creating cleaner, more energy-efficient communities.



Outstanding thermodynamic performance



High SCOP (4.19) with minimal energy consumption.



Scalable modular system with cascading option (45 kW to 1,320 kW).



Quiet operation. 42 dB(A) sound pressure at 10 metres.



Flexible Plug & Play solution. Easy installation and maintenance.



All in one box (integrated meters, circulation pump and water connection).



Future proof natural refrigerant R290.



Compact physical footprint. Ideal for tight urban constraints.



Remote control access, monitoring & data logging.



Highly durable and robust design. Quality components.



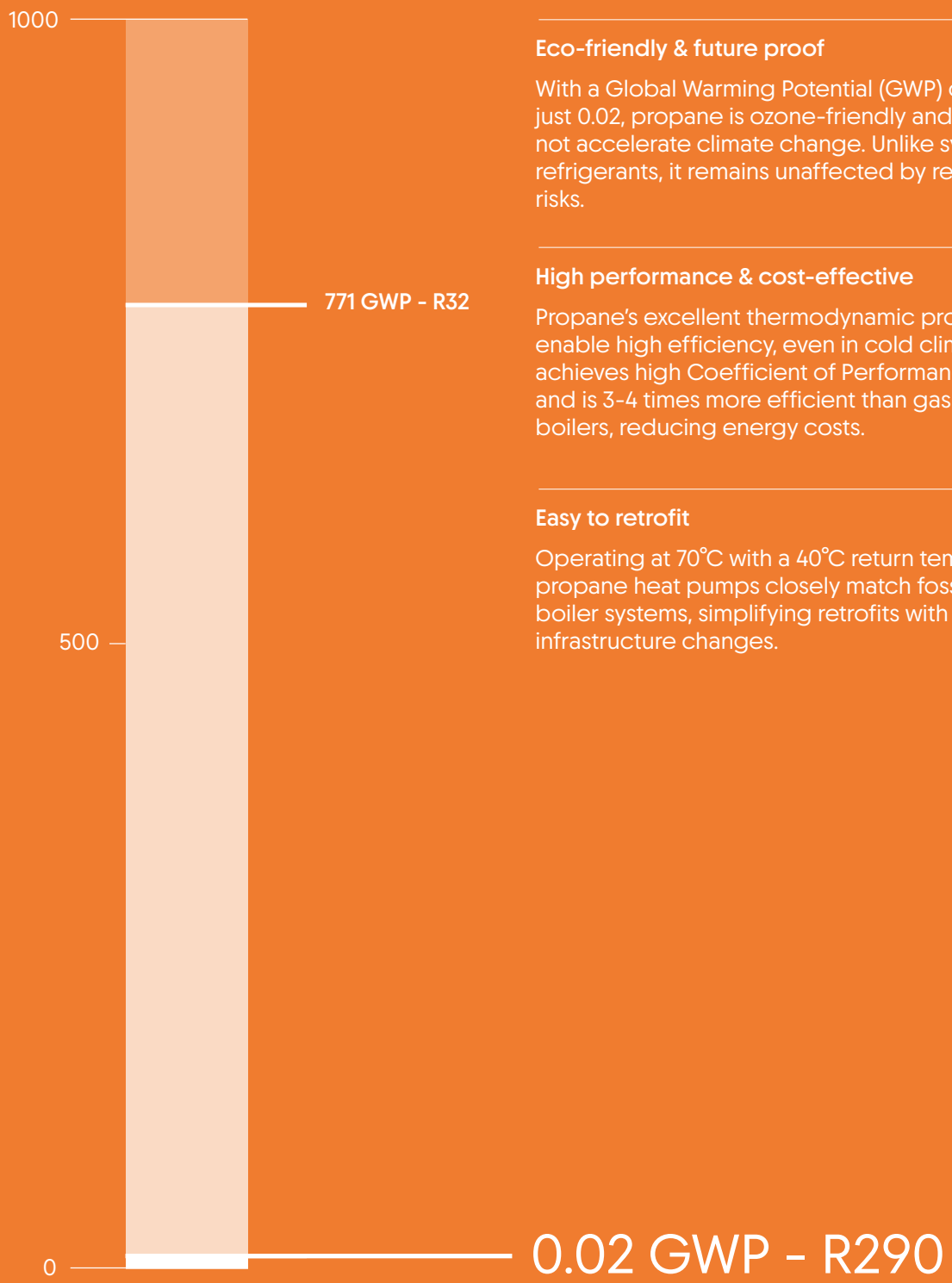
Eco-friendly refrigerant (GWP=0.02, ODP=0). PFAS-free.



Wide operating envelope (-20°C to 42°C ambient / 35°C to 70°C forward).

Engineering a cleaner tomorrow

We've only ever used propane (R290) as a natural refrigerant in the Nova Series heat pump since it was launched in 2019.



Eco-friendly & future proof

With a Global Warming Potential (GWP) of just 0.02, propane is ozone-friendly and does not accelerate climate change. Unlike synthetic refrigerants, it remains unaffected by regulatory risks.

High performance & cost-effective

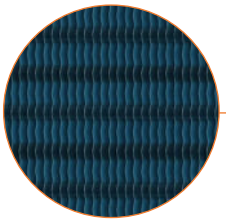
Propane's excellent thermodynamic properties enable high efficiency, even in cold climates. It achieves high Coefficient of Performance (COP) and is 3-4 times more efficient than gas or oil boilers, reducing energy costs.

Easy to retrofit

Operating at 70°C with a 40°C return temperature, propane heat pumps closely match fossil fuel boiler systems, simplifying retrofits with minimal infrastructure changes.

Heat pumps of enduring value

High performance. Precision engineering. Expert craftsmanship.



Evaporators

Low superheating control method to optimise evaporator surface areas, resulting in a higher COP.



Compressor

6-cylinder semi-hermetic suction gas-cooled compressor with variable speed regulation.



Triple heat transfer

Unique triple heat transfer concept for higher COP results.





Fans

EC-fans with owlet tech for low noise emission.

Antenna

For external communication with built-in gateway, modem and SIM card.

Controller

Sealed electrical box, including controller for optimised module management.

Removable panels

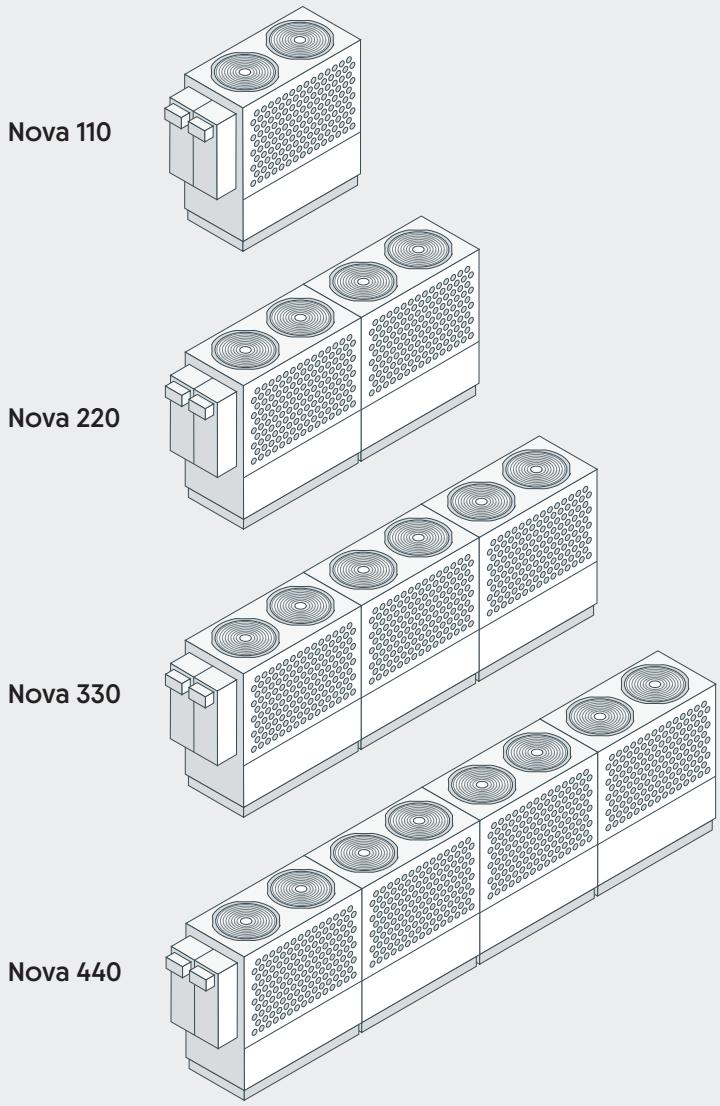
Great accessibility to internal components for service operations.

Adjustable feet

To level each module.

The modular system

The modular design of Nova Series heat pumps allows for up to four modules to be connected in series to form a larger heat pump.



Modularity

When connected in series, one module is referred to as the main module because it plays a special role in terms of control and connectivity.

Any other modules in the series are referred to as connection modules.

If one module needs to be serviced, the other modules can take over the heat load.



34 potential heat pump configurations can cover an extremely diverse range of both spatial and capacity requirements.

Cascading

Up to three Nova heat pump variants (110, 220, 330 and 440) can be combined to work as a single unit. This is commonly known as a cascade or a multiplex cascade. 12 connected modules (three Nova 440 units) would therefore provide a maximum capacity of 1,320kW.

For even greater capacity, the number of Nova Series heat pumps is unlimited if controlled externally via SCADA or BMS.

In a cascade, one heat pump takes the primary role, managing overall load through compressor speed control, while others function in secondary roles without load control.

External control of the cascade operates just like controlling a single Nova heat pump.

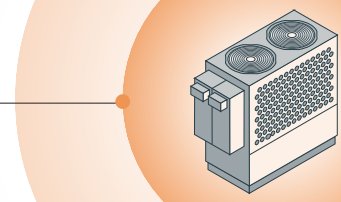
Quiet operation

Ideally suited for urban environments.

10 m
42.0 dB(A) - Library

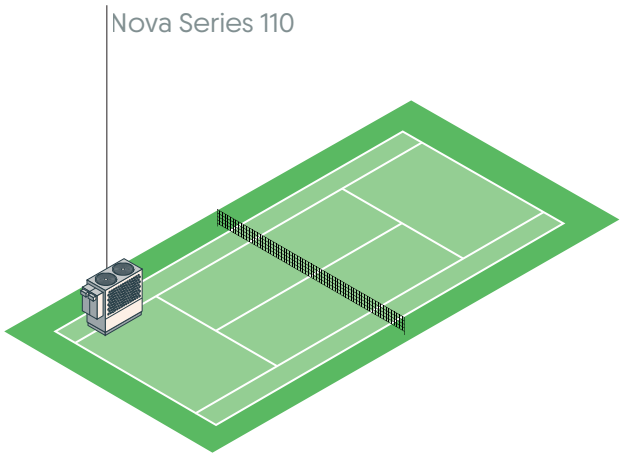
3 m
52.5 dB(A) - Rainfall

1 m
62.0 dB(A) - Conversation



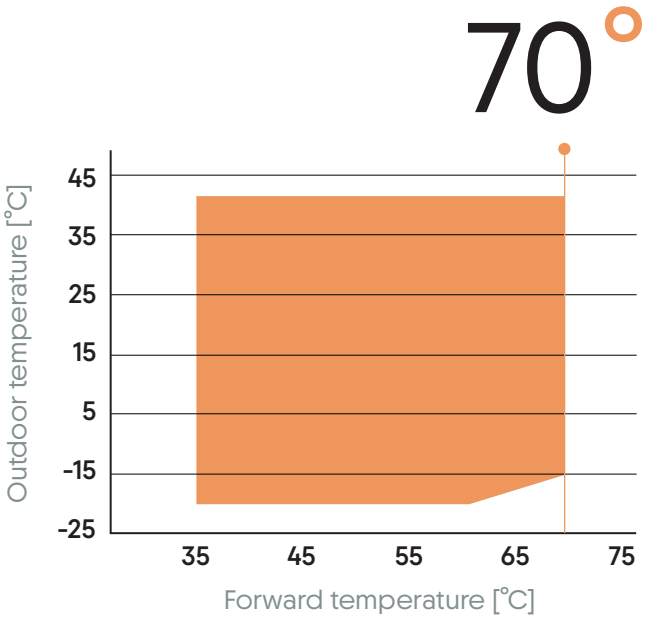
Small physical footprint

3.69m²



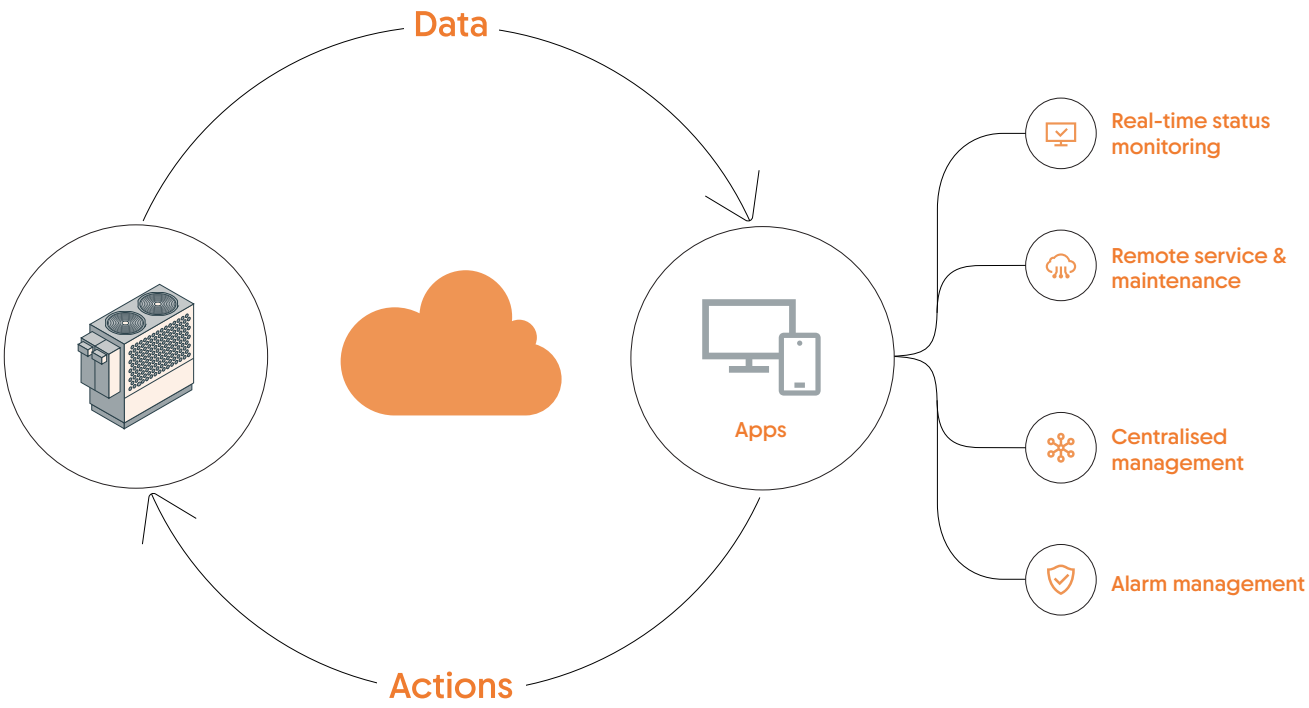
Wide operating envelope

In heating mode



Intelligent heat pump control – anytime, anywhere

With Thermonova Cloud, adjust settings, check status, or analyse performance anytime via PC, tablet, or smartphone.



24/7 digital monitoring

Less stress, more reliability

Optimal performance & longevity

Cut unplanned costs

Lower energy bills

Applications

Versatile solutions across a broad range of solutions.

The Nova Series heat pump offers flexible, efficient solutions for commercial, light-industrial, and heat network applications, meeting diverse needs with optimal performance.



Multi-office buildings



Multi-residential buildings



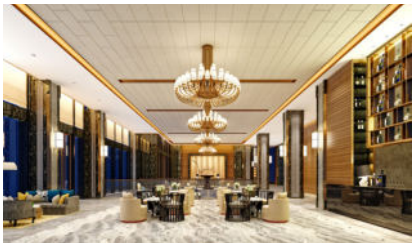
Shopping centres



Healthcare facilities



Educational facilities



Hotels & resorts



Public sector buildings



Sport & leisure facilities



Warehouses / logistics centres



Local heat networks



Industrial facilities



Agricultural facilities

Case

International wholesaler saves €435K in annual heating costs.

As part of its transition to renewable energy sources before the end of 2030, European sourcing and service company Solar Group decided to replace its environmentally-harmful gas boiler technology with the Nova Series heat pump solution when it expanded its central warehouse in Denmark to over 60,000 m².

Challenge

- Underscore and advance the Group's 2030 renewable energy source initiative.
- Reduce annual warehouse heating costs of approx. DKK 3,600,000 / £ 412,000 / € 482,000.
- Reduce annual warehouse CO_2 missions (approx. 370 tons)

Solution

- Direct replacement of boiler technology with Nova Series scalable heat pump solution.
- Compact modular design providing optimal space-saving rooftop installation.
- 11 centrally-controlled modules in 3 rows supplying a 1.2MW delivery at full duty.

Result

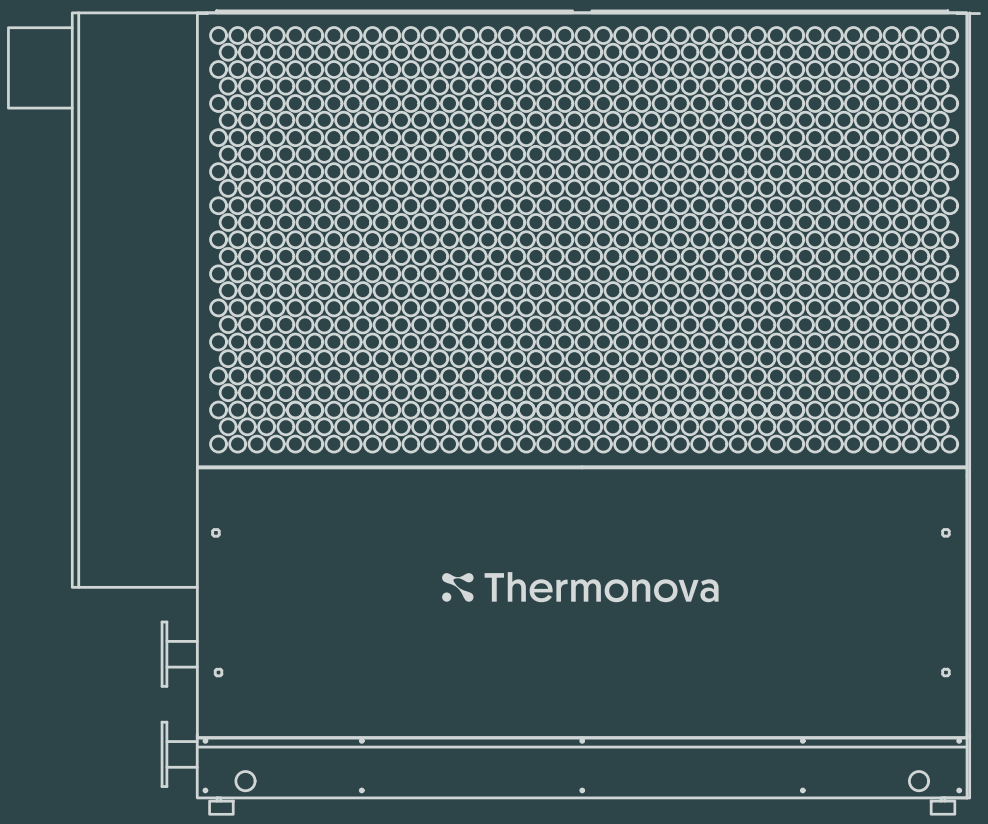
- 90.2% decrease in warehouse heating bill (annual saving: DKK 3.25m / £ 373,927 / €435,782).
- 97.6% decrease in warehouse CO_2 missions (annual reduction: 261 tons).
- 2-year payback period on investment.

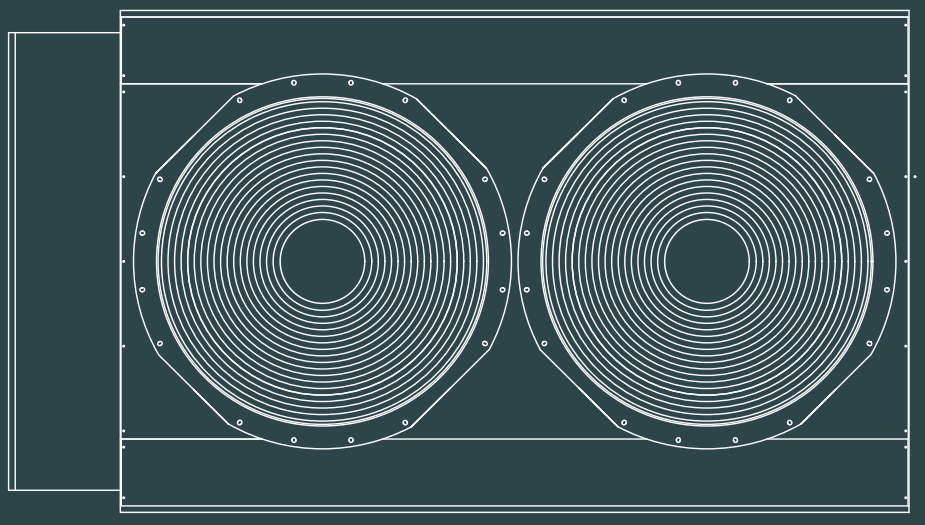




Datasheet

Nova Series 110, 220, 330 & 440





Model		Nova 110	Nova 220	Nova 330	Nova 440
Performance					
Nominal COP (Ambient 7°C, Forward 45°C, Return 30°C)		3.73	3.93	4.01	4.04
Nominal heat capacity (Ambient 7°C, Forward 45°C, Return 30°C)	kW	98.0	193.6	289.8	38.9
Capacity range (min-max)	kW	45-110	45-220	45-330	45-440
ECO Design (per EN 14825:2018)					
Energy class		A++			
SCOP (low temperature application 35 °C)		4.19 (modules connected in parallel)			
SCOP (medium temperature application 55 °C)		3.68 (modules connected in parallel)			
Operating range					
Ambient temperature (air)	°C	-20 to 42			
Forward temperature (heating circuit)	°C	35 to 70[2]			
1) at reduced compressor speed, 2) with sufficiently stable+low return temperature					
NOISE (at full capacity per EN 13487:2019)					
Sound power level (@ source)	dB(A)	81.6	84.6	86.4	87.6
Sound pressure level (@ 1m distance)	dB(A)	62.0	64.4	65.0	66.0
Sound pressure level (@ 3m distance)	dB(A)	52.5	55.5	57.2	58.5
Sound pressure level (@ 10m distance)	dB(A)	42.0	45.0	46.8	48
Dimensions and weight					
Length (not including electrical cabinet)	m	2.4	4.8	7.2	9.6
Width	m	1.54			
Height (without machine levelling shoes)	m	2.44			
Dry weight	kg	1,177	2,419	3,568	4,698
Refrigerant					
Type		R290 (propane)			
Global warming potential (GWP)		0.02			
CO2 equivalent	kg CO2e	24	48	72	96
Charge	kg	1x8	2x8	3x8	4x8
Electrical					
Supply	ph/V/Hz	3 / 400(+N+PE) / 50			
Supply connection (per pole max physical width)	mm	10 (cable pole)	30 M8 connector)	30 M8 connector)	30 M8 connector)
Fuse protection rating	A	63	150	200	250
Input power (max)	kW	38.4	76.8	115.3	153.7
Electric power meter (MID approved)		Included			
Heating circuit					
Forward and return connections 1) delivered with press crimp DN65 flange		1½" nipple	Ø76,1mm[1]	Ø76,1mm[1]	Ø76,1mm[1]
Nominal design flow	l/h	6,000	12,000	17,000	22,000
Largest allowed pressure drop	Bar	0.65	0.75	2	1.0
Minimum recommended buffer tank size	m³	1	2 (1x2)	3 (2x1.5)	4 (2x2)
Energy meter (MID approved)		Included			
Condensation drain					
Connection type		Polypropylene (PP)			
Connection size	mm	Ø40			
Flow volume (max), summer operation, full capacity	l/h	150	300	450	600
Flow volume (max), winter operation, defrost	l/h	50	100	150	200
Communication					
Remote access		4G (SIM card included) or RJ45 option			
Modbus-RTU		RS485			
Main components and specs					
Compressors (semi-hermetic 6 cylinder)	pcs	1	2	3	4
Modulating frequency range	Hz	30-70			
Evaporator fin distance	mm	3.0			
1m-wide ventilators (EC technology)	pcs	2	4	6	8
Condenser plate heat exchangers	pcs	1	2	3	4
Hotgas plate heat exchangers	pcs	1	2	3	4
Subcooling plate heat exchangers	pcs	1	2	3	4
Ventilator - air volume	m³/h	48,000	96,000	144,000	192,000

About Thermonova

Heat pumps of enduring value, crafted in Denmark.

Founded in 2016 by industry veterans Mads Hougaard and Steen Fristrup, Thermonova draws from Scandinavia's rich heritage in pioneering heat pump technology.

We enable commercial, agricultural, and light-industrial end users seeking to reduce carbon emissions, lower heating costs, and achieve climate control excellence.



Where quality reigns

From thermodynamic engineers and data scientists to R&D specialists, mechanics, and fitters, our team has always been dedicated to excellence.

At Thermonova, innovation, precision engineering, and state-of-the-art testing ensure that quality is never compromised.

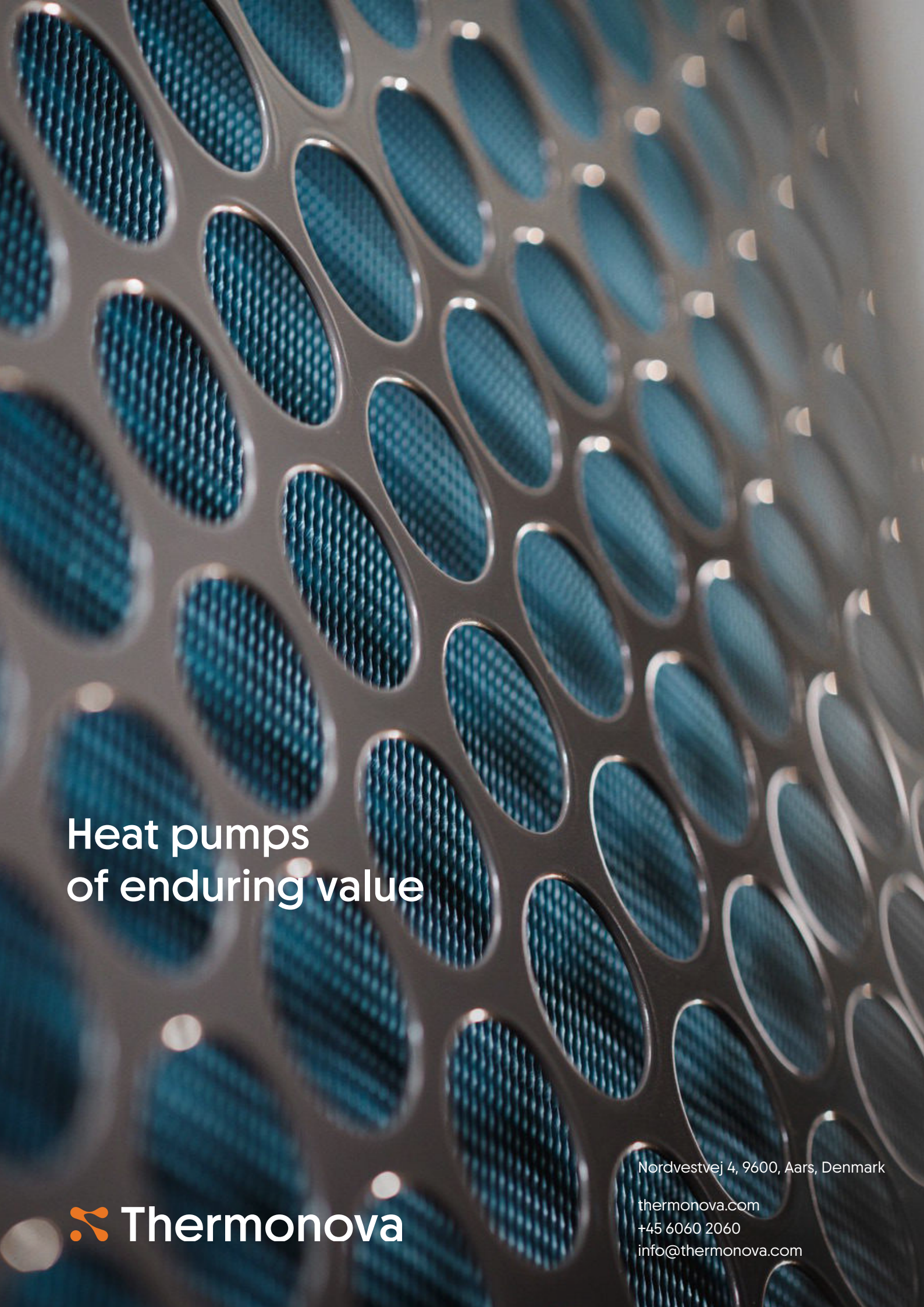


Unique market position

With a focus on natural refrigerants, high efficiency, and uncompromising quality, our Nova Series heat pump was introduced to the Scandinavian market in 2019.

Since then, Thermonova has become the leading choice for modular heat pump solutions, driving sustainability-focused retrofits and new builds.





Heat pumps of enduring value

Thermonova

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