

# AMBiflo

16kW & 20kW Air Source Heat Pumps for Commercial Applications



Working towards  
a cleaner future

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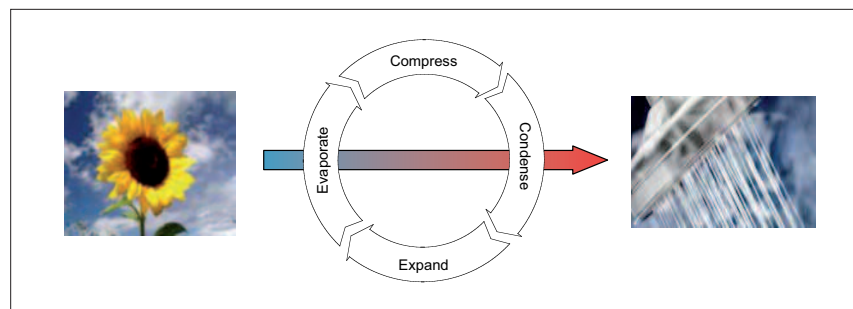
## 16kW & 20kW Air Source Heat Pumps for Commercial Applications

The Andrews Water Heaters AMBiflo is an integrated air source heat pump with all components of the refrigeration cycle contained within a single weatherproof enclosure suitable for outdoor location. The absence of the need for a ground loop to support the operation of the refrigeration cycle means that AMBiflo air source heat pumps can be used for both new-build and retrofit applications, helping to reduce the carbon footprint of new and existing building stock.

### Principle of Operation

Air source heat pumps use the available energy within the ambient air to initiate and sustain a refrigeration cycle within the appliance. This cycle, very much like the domestic refrigerator, comprises four main components – evaporator, compressor, condenser and expansion valve. Unlike refrigerators, air-to-water heat pumps, such as Andrews Water Heaters AMBiflo, use the available heat generated for low temperature space heating or supporting the generation of domestic hot water.

The refrigerant used within air source heat pumps (R407C in the case of AMBiflo) evaporates at relatively low temperatures. As such, operation of air source heat pumps is possible even during periods of low ambient air temperatures.



The AMBiflo air source heat pump contains two heat exchangers:

#### Source side – the evaporator

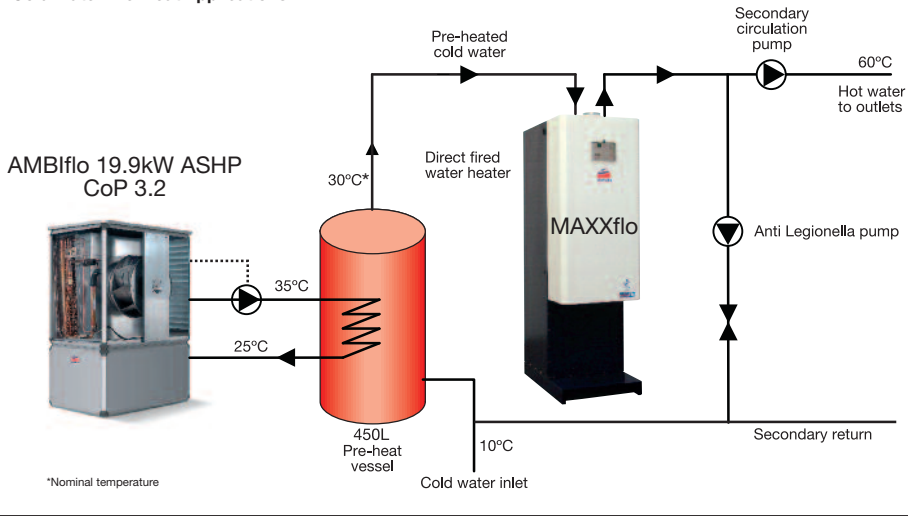
Transfers energy between the ambient air and the liquid refrigerant within the heat exchanger resulting in a change of state into a low pressure gaseous form. This allows the refrigerant pressure and temperature to be raised through compression.

#### Load side – the condenser

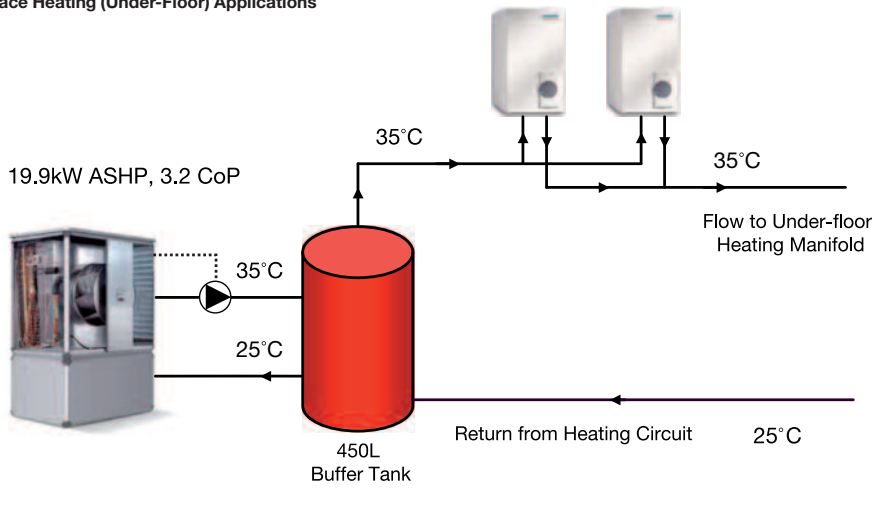
Transfers energy between the post compression high pressure, high temperature refrigerant in gaseous form into the heating/hot water circuit.

The final part of the cycle is passage of the high pressure, low temperature heat transfer fluid through the expansion valve, taking the refrigerant back to its original low pressure liquid state. This process is continual.

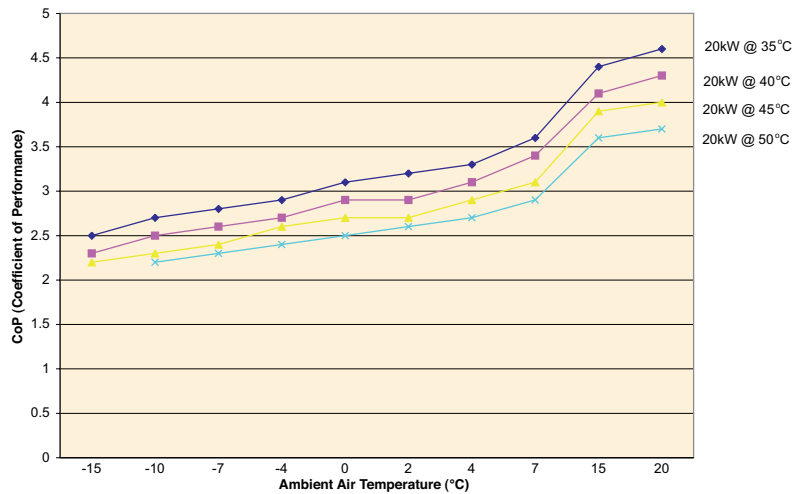
### Cold Water Pre-Heat Applications



### Space Heating (Under-Floor) Applications



### CoP versus Ambient Air Temperature for Varying Water Load Temperatures (20kW version)



## Specification

		16kW model	20kW model
Output (A7, W35)	kW	18.7	22.7
Output (A2, W35)	kW	15.1	19.9
CoP (A7, W35 – BS EN 14511)	–	4.6	3.6
CoP (A2, W35 – BS EN 14511)	–	3.9	3.2
Maximum Power Input	A	14.0	17.0
Starting current with Soft Starter	A	36.0	40.0
Motor Current locked rotor	A	74.0	99.0
Power Supply	V-p-Hz	400-3-50	400-3-50
Protection	A	20.0	20.0
Hot Water Exchanger		Chrome Steel AISI 316, 1.4401	
Hydraulic Connections	Ø	1"	1½"
Nominal Water Flow	l/h	1,461	1,754
Hydraulic Resistance	kPA	5.5	3.7
Air Flow Rate	m³/h	5,000	6,300
Refrigerant		R407C	R407C
Weight of Refrigerant	kg	3.7	5.4
Weight of Heat Pump	kg	277	337
Noise Level at 10 metres	db(A)	40.3	44.1
Height	mm	1,675	1,695
Width	mm	1,195	1,195
Depth	mm	750	880



### AMBiflo Solution Options

- 16kW or 20kW air source (air-to-water) heat pump
- 450 litre unvented, duplex stainless steel, indirect, single coil pre-heat cylinder (hot water applications) complete with cold feed kit including expansion vessel
- 450 litre buffer tank for space heating applications

### Features & Benefits

- Single, fully contained, air source heat pump
- Weatherproof enclosure suitable for outdoor installations
- R407C is used as the refrigerant within a pre-charged sealed circuit
- Anti-vibration mountings included
- Siemens controls platform with Building Energy Management System (BEMS) interface
- Left hand or right hand hydraulic connections
- Multi unit installations possible with up to six heat pumps operating in cascade

### Application Support

- Review of project hydraulic schematic
- Installation and application support including pre-commissioning visit where applicable
- Commissioning and controls set-up of AMBiflo system including primary heating appliances when supplied

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