



Bosch Commercial and Industrial Heating
Gas absorption heat pump
GHP AWO 38
38.3kW



BOSCH

Invented for life



Bosch Thermotechnology Ltd.

For well over a hundred years, the name Bosch has stood for first-class technology and exemplary innovation. Forward-looking gas absorption heat pumps are one of the many areas of expertise at Bosch Thermotechnology Ltd. As one of the leading providers worldwide, we support you with our wide range of products and services used for indoor climate, hot water and decentralised energy management systems.

Whether it be condensing boiler technology, solar thermal energy, heat pumps, biomass boilers or combined heat and power, our innovative solutions and outstanding quality ensure that you can generate heat and hot water in an efficient and environmentally-friendly way. Bosch is a name you can trust.



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Up to 1,500 large-scale and industrial boiler systems are produced annually at our highly modern production sites in Gunzenhausen in Germany and in Bischofshofen in Austria.

Discover Bosch...

Complete heating technology solutions



Bosch is one of the world's leading manufacturers of heating products. In the UK, Bosch Commercial and Industrial Heating is part of Bosch Thermotechnology Ltd., a company that specialises in providing complete system solutions for the commercial and industrial heating sectors, with individual outputs from 38kW to 19.2MW.

Bosch Thermotechnology Ltd. is renowned for providing energy-efficient products and comprehensive support services, working in partnership with heating engineers, contractors and consultants. We pride ourselves on delivering tailored heating solutions that provide tangible benefits to the end-user in the most efficient and practical way possible.

All Bosch Thermotechnology Ltd. products are subject to rigorous quality testing of each and every component, to ensure efficient, reliable and consistent performance throughout its long life. These products are supported by an unrivalled technical support team which is able to help with system design, product specification and installation queries. This ensures our system technology is perfectly matched to meet the precise requirements of each project. From initial consultation to final commissioning, as well as on-going whole-life support, we offer the complete package. Added peace of mind comes from secure guarantees and 10 year spares availability after production of the equipment ceases.



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GHP AWO 38 Gas absorption heat pump

High efficiency commercial heating with a lower carbon footprint

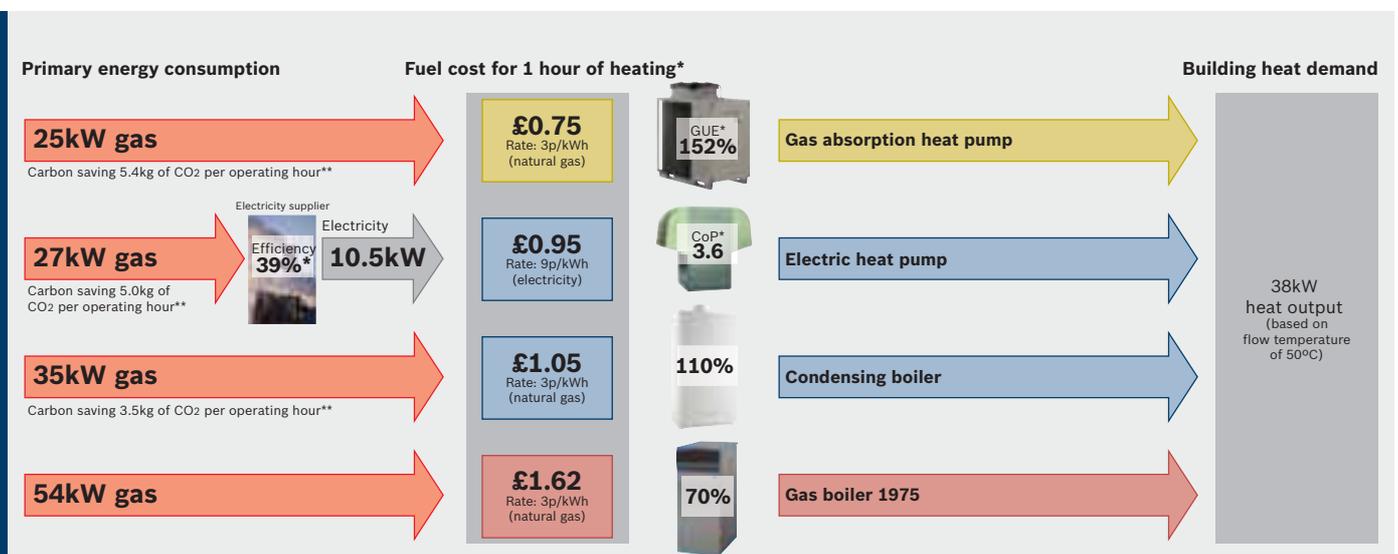
Bosch GHP AWO 38 low-carbon gas absorption heat pumps deliver highly efficient, renewable heating solutions for commercial, industrial and residential applications.



The gas absorption heat pump draws energy from the air using heat pump technology and a highly-efficient, low NOx, gas condensing heat generator. By using gas as the primary energy source directly at the point of use, rather than electricity which is generated largely in coal or gas-fired power stations, the gas absorption heat pump has a significantly smaller carbon footprint.

Gas absorption heat pumps also cut running costs because gas is typically only a third of the price of electricity and the heat pump provides up to 65% additional heat by drawing in free energy from the surrounding air.

As such, they also deliver reduced energy consumption and carbon emissions compared to conventional methods of providing heat to buildings.



*At A7/W50, 7°C air temperature, 50°C flow temperature **At a conversion rate of 0.18523kg of CO₂ per kWh of natural gas (<http://www.carbontrust.co.uk/cut-carbon-reduce-costs/calculate/carbon-footprinting/pages/conversion-factors.aspx>)

Typical applications for the GHP AWO 38

The GHP AWO 38 is the perfect choice for new and existing buildings as both a stand alone solution or combined with a conventional boiler. It is ideal for schools, colleges, office developments, care homes, residential properties and leisure and sports facilities, as well as process heat applications.

New build

With NOx emissions that qualify for BREEAM credits, a Bosch gas absorption heat pump helps achieve targets for renewable technologies required for planning permission, without incurring high installation or operating costs. As the units are designed for external installation there is no requirement to use valuable space for plant rooms, flue gas systems or bulky fuel storage. With the opportunity to design low temperature heating systems in a new building, the maximum benefit of the gas absorption heat pump can be realised.

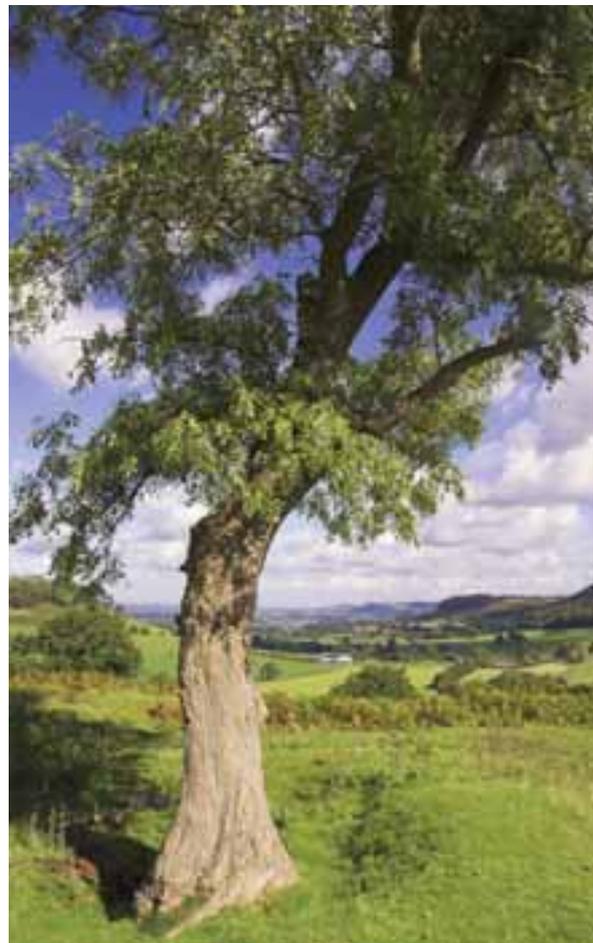
Replacement/refurbishment

Adds value to a building by reducing the running costs and improving the building's energy rating through Energy Performance Certificates (EPCs) and Display Energy Certificates (DECs).

As a low carbon technology, a Bosch gas absorption heat pump offers high efficiencies and carbon saving even when a typical system is operating at higher temperatures. It achieves a maximum flow temperature of up to 65°C for heating and a flow temperature of up to 70°C for the production of domestic hot water. This may allow, where applicable, the heating plant to be updated without having to upgrade the pipe work and heat emitters throughout the building. These benefits are achieved without incurring high operating and maintenance costs.

Integration with existing systems

Gas absorption heat pumps are just as easy to integrate into a heating system as a condensing boiler, with the additional benefits of higher carbon savings, lower environmental impact and reduced running costs. They can be supplied as pre-fabricated cascades of up to 5 units and integrated with other heat sources such as solar thermal and boilers.



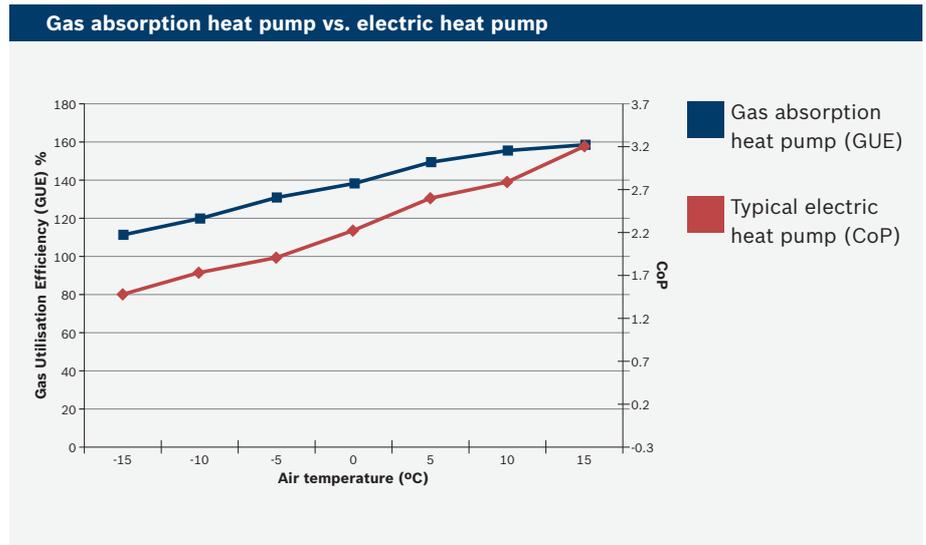
Thanks to their low carbon emissions, gas absorption heat pumps are also compliant with key legislation and energy targets:

- ▶ Building Regulations Part L
- ▶ CRC EES (Carbon Reduction Commitment – Energy Efficient Scheme)
- ▶ EPC (Energy Performance Certificate)
- ▶ DEC (Display Energy Certificate)
- ▶ BREEAM/LEED ratings

High efficiency at all temperature ranges

Gas absorption heat pumps can achieve higher system temperatures and remain efficient even in winter temperatures.

The air around us stores solar energy even when the thermometer shows a negative temperature measured in Celsius. In the UK, the average temperature in the peak heating period (October to March) is 7°C, allowing the heat pump to absorb, on average, 0.5kW of free energy for every 1kW of gas consumed. Even when temperatures are as low as -7°C, the gas absorption heat pump works with an efficiency of 125% in a heating system running at 50°C, and 143% in a system designed to operate at lower temperatures of 35°C.



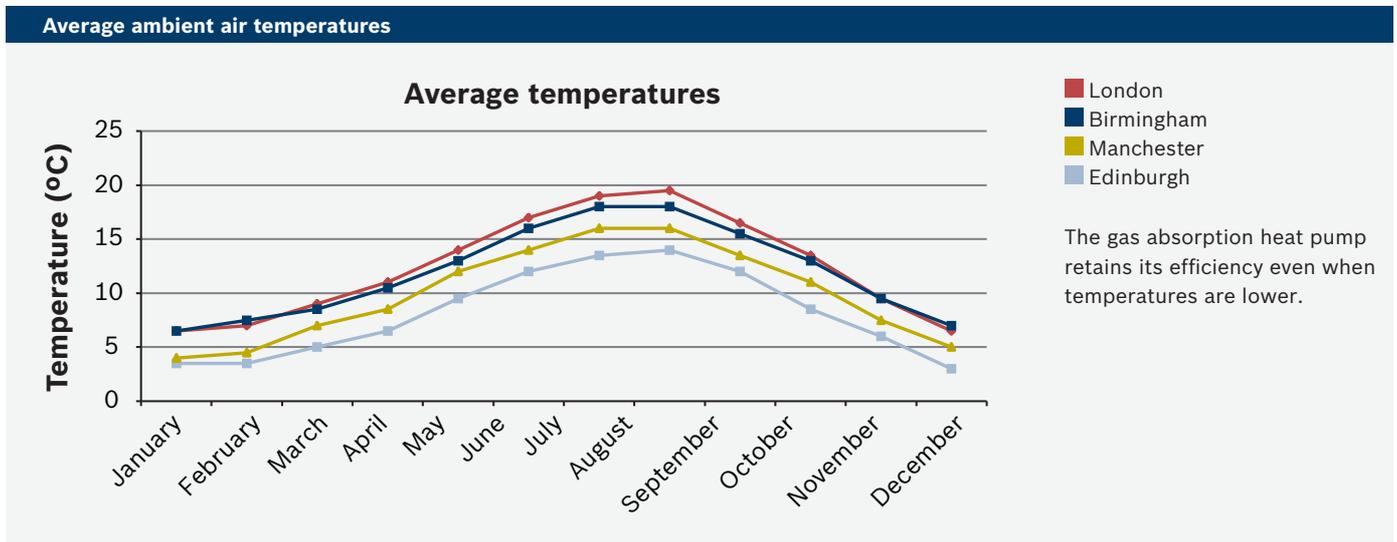
Comparing heat pump performance

The Coefficient of Performance (CoP) of an electric heat pump is higher than the efficiency stated for the gas heat pump which is stated as Gas Utilisation Efficiency (GUE) – however this does not mean that electric heat pumps are more efficient.

The CoPs stated for electric heat pumps often relate to low temperature heating systems and higher air temperatures. In more typical heating systems operating at higher system temperatures in the winter, efficiency rapidly drops off.

The electricity used has typically been generated in the UK from coal

or gas fired power stations and then distributed over long distances. This means that typically, less than 40% of the primary energy actually reaches the electric heat pump. The high cost of generating and distributing electricity is reflected in the price which is typically three times more expensive than gas.



- London
- Birmingham
- Manchester
- Edinburgh

The gas absorption heat pump retains its efficiency even when temperatures are lower.

How gas absorption heat pumps work

Like their electric counterparts, gas absorption heat pumps are able to extract heat from the air. However, unlike electric heat pumps, there is no requirement for an electrical compressor. Instead, the system uses a generator-absorber heat exchange cycle powered by natural gas or LPG.

All heat pumps use the refrigeration cycle and, in gas absorption heat pumps, the working fluid is an ammonia/water solution. The ammonia acts as the refrigerant and the water acts as an absorber. The components of a gas absorption heat pump include an evaporator, a generator, an absorber/regenerator and a condenser/absorber.

Zero global warming

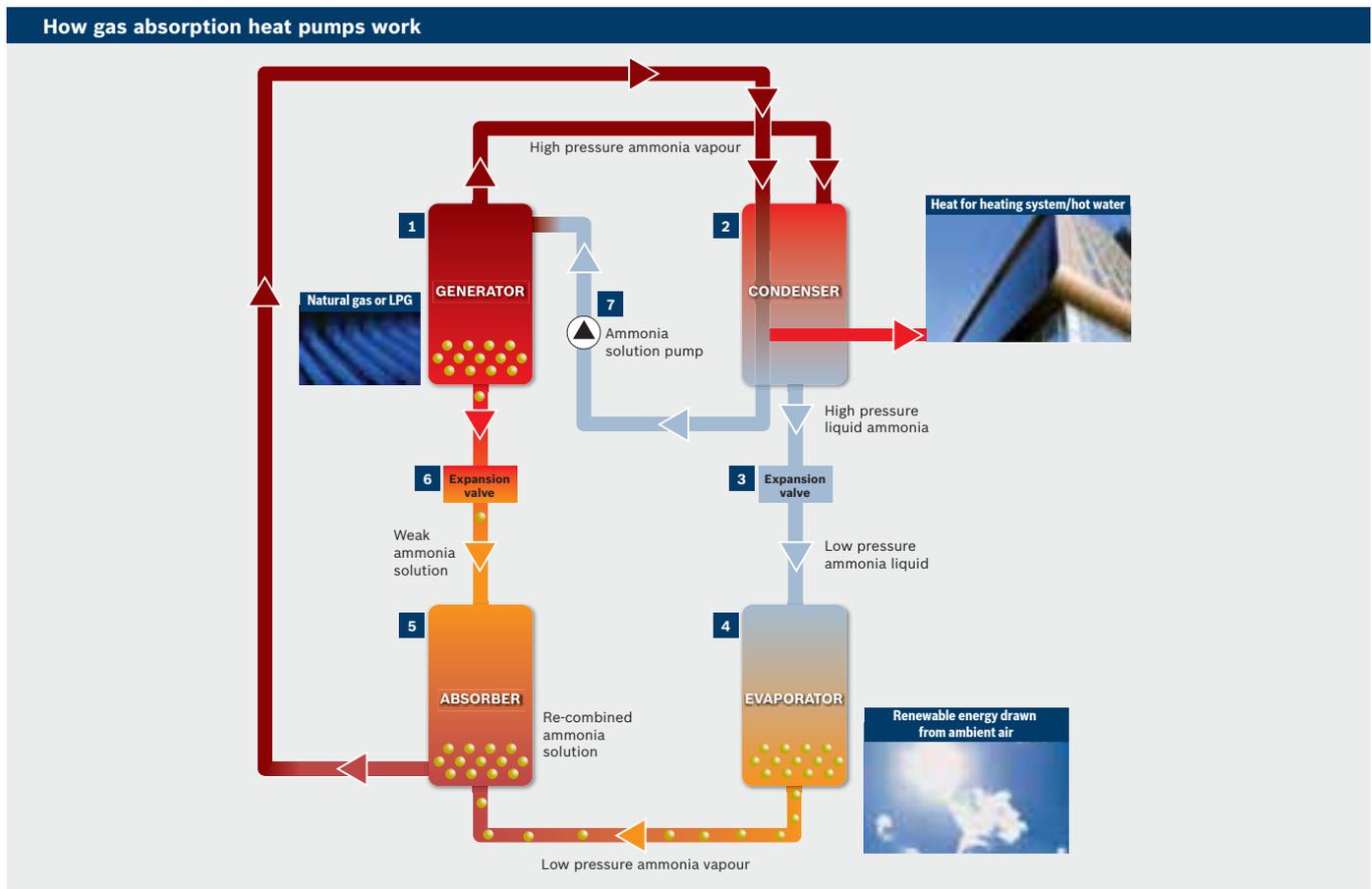
The ammonia refrigerant used in the GHP AWO 38 has zero global warming potential (GWP) and zero ozone depletion potential (ODP). In contrast, the fluorinated refrigerants typically used in electric heat pumps have significant GWP.

Additional features and benefits

Gas absorption heat pumps also offer a number of additional benefits over other heating systems, as summarised below.

- ▶ Suitable for outdoor installation, no need for a plant room
- ▶ Reduced fuel costs due to high efficiency and use of renewable energy
- ▶ Low maintenance requirements
- ▶ Fast return on investment
- ▶ Zero GWP and low NOx operation provides BREEAM credits
- ▶ Improved Building Energy Certificate rating
- ▶ Low electric power requirement reduces reliance on local electricity supply infrastructure
- ▶ No requirement for a chimney as flues are included
- ▶ Reduced requirements to purchase carbon allowances for those organisations participating in the CRC EES

“The GHP AWO 38 is technology at its best – full of innovative, yet practical, features.”



1 Generator

Within the Generator, the low NO_x gas-fired burner heats the ammonia/water solution via a heat exchanger, increasing the temperature and pressure. This causes it to separate into ammonia vapour and a weak ammonia solution. The ammonia vapour travels to the Condenser (2) whilst the weak ammonia solution is circulated to the Absorber (5).

2 Condenser

The now high temperature, high pressure ammonia vapour releases its heat into the heating system in the condenser. In doing so, the vapour changes state, becoming a liquid. This liquid travels to the expansion valve (3) on its way to the Evaporator (4).

3 Expansion valve

The ammonia liquid, still at high pressure, passes through the expansion valve where the pressure falls. Due to reduced pressure, partial evaporation of ammonia liquid takes place, then the mixture moves to the evaporator (4).

4 Evaporator

A fully modulating fan draws ambient air through the fins of the Evaporator. The ambient air contains a high amount of

free, renewable energy from the air. This energy is captured by the ammonia and causes it to evaporate. The now-heated, low pressure vapour passes on to the Absorber (5).

5 Absorber

In the absorber, the weak ammonia solution from the Generator (1) recombines with the heated vapour from the Evaporator (4), having first passed through a second expansion valve (6). As the vapour re-merges with the weak ammonia solution, the vapour changes state into a liquid, releasing further heat to the heating system in the second pass of the condenser. The now-reformed ammonia solution is pumped (7) back to the generator.

6 Second expansion valve

As described above, this second valve controls the flow of the weak solution between the Generator (1) and the Absorber (5).

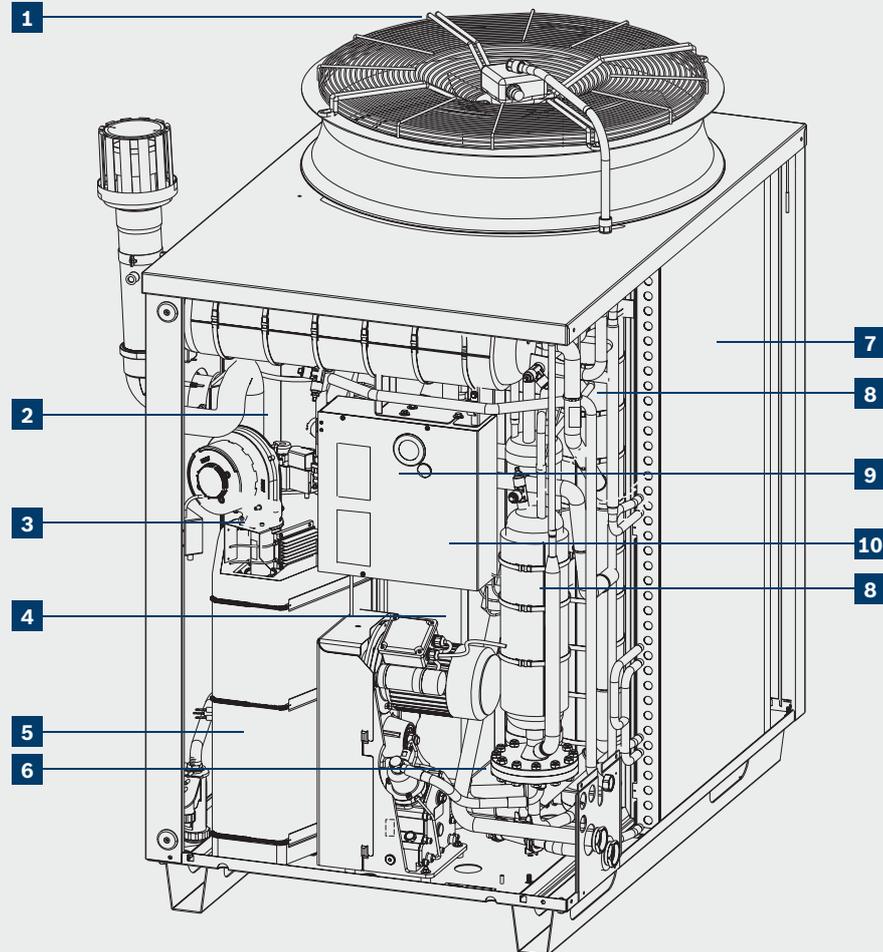
7 Ammonia solution pump

The ammonia solution pump moves the ammonia solution from the Absorber (5) back to the Generator (1) via condenser (2) where the process starts again.

GHP AWO 38 – Technical overview

GHP AWO 38 single unit

Gas absorption heat pump components.



- 1** Modulating air source fan
- 2** Generator
- 3** Gas burner
- 4** Condenser
- 5** Combustion chamber

- 6** Ammonia solution pump
- 7** Evaporator
- 8** Absorber (hidden)
- 9** Defrosting valve (hidden)
- 10** Control unit

GHP AWO 38 gas absorption heat pumps require additional system components such as circulation pumps and expansion vessels.

GHP AWO 38 at a glance:

- ▶ Efficiency (Gas Utilisation Efficiency): 164%*
- ▶ Output single unit: 41.1kW*
- ▶ Output cascade with two units: 82.2kW*
- ▶ Output cascade with three units: 123.3kW*
- ▶ Output cascade with four units: 164.4kW*
- ▶ Output cascade with five units: 205.5kW*
- ▶ NOx emissions: 60mg/kWh
- ▶ Max. flow temperature for heating: 65°C
- ▶ Max. flow temperature for DHW: 70°C
- ▶ For installation outside on a flat roof or at ground level
- ▶ Sound level single unit at 10m: 42dB(A) at max. load, 39dB(A) at min. load
- ▶ Max. gas consumption: 2.72m³/h
- ▶ Electricity consumption single unit: 830W at max. load, 560W at min. load
- ▶ Control interfaces with BMS: Volt-free enable signal or 0 - 10V variable temperature set point
- ▶ Sequence controls available for cascade kits up to sixteen GHP AWO 38
- ▶ Operating weight (single unit): 400kg
- ▶ For use with Bosch CSM 920 controls or Building Energy Management System

*These figures are given at A7W35. This means that the efficiencies and outputs are achieved at an ambient temperature of 7°C, while producing a water flow temperature of 35°C. For other temperatures see the full data table at the end of this brochure.

Multiple heat pump cascade systems

For higher heating demands, the GHP AWO 38 can be supplied in a factory-assembled, rig-mounted multi-heat pump cascade system, pre-configured with flow, return and gas manifold. Each unit has its own modulating primary circulation pump to provide optimum flow rates and efficient operation.

Connected in-line, cascades provide outputs up to 205.5kW for five units, and larger cascade systems are available if required. It is also possible to combine multiple cascades to achieve even higher outputs.

A pre-set cascade controller ensures that high levels of efficiency can be achieved all year round, even when demand for heat is low.



- 1** Individual flue gas systems
- 2** Main electrical cabinet for outdoor conditions to which every unit is electrically connected. The product documentation is sited here
- 3** Condensate drain pipe is protected from freezing by the use of a trace heating cable (15W/m) controlled by a thermostat

- 4** Galvanised steel gas header pipe
- 5** Stainless steel hydraulic manifolds, they are insulated and protected with aluminium panelling for outdoor conditions
- 6** Modulating primary pump (one per unit)

GHP AWO 38 – Technical data

Performance	Air (A) °C	Flow temp (W) °C	Unit	GHP AWO 38	GHP AWO 38 L2 x 2 cascades	GHP AWO 38 L3 x 3 cascades	GHP AWO 38 L4 x 4 cascades	GHP AWO 38 L5 x 5 cascades
Maximum rated heating output (A7W35)	7	35	kW	41.1	82.2	123.3	164.4	205.5
Maximum rated heating output (A7W50)	7	50	kW	38.3	76.6	114.9	153.2	191.5
Maximum rated heating output (A7W65)	7	65	kW	30.0	60.0	90.0	120.0	149.9
Maximum rated heating output (A0W50)	0	50	kW	35.1	70.2	105.3	140.4	175.5
Maximum rated heating output (A-7W50)	-7	50	kW	31.5	63.0	94.5	126.0	157.5
Maximum rated heat input up to a flow temperature of 65°C			kW	25.7	51.4	77.1	102.8	128.5
Efficiency								
Efficiency (A7W35)	7	35	%	164	164	164	164	164
Efficiency (A7W50)	7	50	%	152	152	152	152	152
Efficiency (A7W65)	7	65	%	119	119	119	119	119
Efficiency (A0W50)	0	50	%	139	139	139	139	139
Efficiency (A-7W50)	-7	50	%	125	125	125	125	125
Seasonal space heating energy efficiency (average climate conditions)		55	%	112				
ErP energy efficiency class		55		A+				
ErP energy efficiency class (low temperature application)		35		A				
General data								
Voltage (single phase)			AC ... V	230	400	400	400	400
Frequency			Hz	50	50	50	50	50
Power consumption as delivered at max. load			W	830	1940	2910	4200	5250
Maximum power consumption (stand-by)			W	21	50	72	95	117
Sound pressure level 10m at max. load			dB(A)	42	44	45	45	46
Sound pressure level 10m at min. load			dB(A)	39	41	42	42	43
Maximum DHW flow temperature			°C	70	70	70	70	70
Maximum heating water flow temperature			°C	65	65	65	65	65
Design temperature difference between flow and return			°C	10	10	10	10	10
Minimum return temperature			°C	20	20	20	20	20
Maximum flow rate per appliance			l/h	4000	4000	4000	4000	4000
Minimum flow rate per appliance			l/h	1000	1000	1000	1000	1000
Nominal flow rate per appliance			l/h	3000	3000	3000	3000	3000
Maximum operating pressure			bar	4	4	4	4	4
Nominal heating water pressure drop (A7W50) At ΔT 10K			bar	0.43	0.51	0.51	0.51	0.51
Permissible ambient temperature			°C	-20 ... +40	-20 ... +40	-20 ... +40	-20 ... +40	-20 ... +40
Nominal capacity (heating water)			l	4	18.6	28.6	38.6	49.8
Operating weight			kg	400	989	1464	1959	2445
ErP sound power level, outdoors			dB	75				
Gas supply								
Natural gas			m ³ /h	2.72	5.44	8.16	10.88	13.60
LPG			kg/h	2.00	4.00	6.00	8.00	10.00
Permissible gas supply pressure								
Natural gas			mbar	17 - 25	17 - 25	17 - 25	17 - 25	17 - 25
LPG			mbar	45 - 55	45 - 55	45 - 55	45 - 55	45 - 55

GHP AWO 38 – Technical data continued

Performance		Air (A) °C	Flow temp (W) °C	Unit	GHP AWO 38	GHP AWO 38 L2 x 2 cascades	GHP AWO 38 L3 x 3 cascades	GHP AWO 38 L4 x 4 cascades	GHP AWO 38 L5 x 5 cascades
Flue data									
Flue gas mass flow rate at maximum rated heating output	Natural Gas			g/s	12.5	25	37.5	50	62.5
Flue gas mass flow rate at maximum rated heating output	LPG			g/s	11.7	23.4	35.1	46.8	58.5
Flue gas temperature 50/40 °C at maximum rated heating output				°C	65	65	65	65	65
CO ₂ at maximum rated output	Natural Gas			%	9.2	9.2	9.2	9.2	9.2
CO ₂ at maximum rated output	LPG			%	9.8	9.8	9.8	9.8	9.8
CO ₂ at minimum rated output	Natural Gas			%	8.6	8.6	8.6	8.6	8.6
CO ₂ at minimum rated output	LPG			%	9.4	9.4	9.4	9.4	9.4
CO				ppm	36	36	36	36	36
NOx class				-	5	5	5	5	5
NOx				ppm	25	25	25	25	25
Flue diameter (flue supplied with unit)				mm	80	80	80	80	80
Condensate									
Maximum condensate flow rate (flue gas TR = 30°C)				l/h	4	8	12	16	20
pH level, approx.				-	4.8	4.8	4.8	4.8	4.8
Data as per pressure equipment directive (PED)									
Generator capacity				l	18.6	18.6	18.6	18.6	18.6
Refrigerant drier capacity				l	11.5	11.5	11.5	11.5	11.5
Intermediate refrigerant store capacity				l	4.5	4.5	4.5	4.5	4.5
Pre-absorber capacity				l	6.3	6.3	6.3	6.3	6.3
Absorber/condenser capacity				l	3.7	3.7	3.7	3.7	3.7
Oil pump capacity				l	3.3	3.3	3.3	3.3	3.3
Test pressure (air)				bar (g)	55	55	55	55	55
Safety valve response pressure				bar (g)	35	35	35	35	35
Refrigerant proportion				kg NH ₃ /l	0.146	0.146	0.146	0.146	0.146
Fluid category				-	1	1	1	1	1
Maximum operating pressure in refrigerant circuit				bar	35	35	35	35	35
Refrigerant ammonia R717/water				kg	7/10	7/10	7/10	7/10	7/10

GHP AWO 38 controls – BMS controls

The Bosch GHP AWO 38 is designed for properties where the heating system is controlled by a Building Management System (BMS).

The BMS will communicate the required heat input to the GHP AWO 38 control using a 0-10V or volt-free enable signal and there is an output for operational status. The GHP AWO 38 control system ensures the efficient, reliable and safe operation of the heat pumps and will be provided as part of the supplied system. It also provides information required for maintenance and service.

The supplied GHP AWO 38 control system is made up of two main parts: the programming and sequencing unit (GHMX20) and the BMS interface module (GHMX20T). Both of these should be installed in an electrical switch cabinet, ideally close to the BMS. This allows access to the controls for monitoring without having to access the heat pumps which will be installed externally.

GHMX20

The programming and sequencing unit, GHMX20, controls systems with up to 16 heat pumps, regardless of how these are configured. The controller will automatically recognise all connected heat pumps and communicates with them using CAN-bus. Where the BMS cannot provide weather-compensated control, the GHMX20, fitted with the optional sensor, can provide this to further improve operating efficiency.

GHMX20T

The BMS interface module, GHMX20T, manages communication between the GHMX20 and the building's BMS. It provides separate inputs from the BMS for heating and hot water from the BMS allowing either prioritisation of heating or hot water or for both to operate in parallel.

Further technical details, including wiring diagrams and specification of additional parts of the heating system are available online or in the printed planning guide.

GHMX20



GHMX20T



Further accessories available

There is a range of accessories designed to be used with the Bosch GHP AWO 38 heat pump. These accessories will be offered as appropriate to each project.

- ▶ Outside air temperature sensor for GHMX20
- ▶ Anti-vibration mounts for single appliances and cascade systems
- ▶ Primary pumps for use on single heat pump installations
- ▶ LPG conversion kit for on-site conversion of each unit

GHP AWO 38 controls – 4000 series controls

4000 series modular, digital control units secure the safe function of the boilers, gas absorption heat pumps and solar systems, and allow for the optimum control of the heating system to maximise efficiency.



- ▶ Wide range of control options for maximum flexibility and efficiency
- ▶ Can control virtually any heating system
- ▶ Simple connection into an existing Building Management System
- ▶ Option of remote controls
- ▶ Intelligent controls provide optimum solar and heating functionality

The 4323 comes supplied with a MEC2 digital programmer with clear text display which provides external weather-compensated heating control, perfect for maximising the efficiency of the boilers. The 4323 provides space for an FM444 module for intelligent integration of alternative heat sources. The FM444 manages the temperature levels within the buffer vessel, deciding whether to enable the gas absorption heat pump. If used in combination with our commercial condensing boiler, the FM444 will ensure that the GHP AWO 38 is the primary heat source. The boilers are only enabled to provide additional heat into the system if the gas absorption heat pumps cannot provide 100% of the capacity.

For use within the 4323, the FM444 integrates alternative heat sources into a heating system using an intelligent buffer vessel management system. The FM444 establishes the heat provided by an alternative heat source and establishes whether energy is sufficient to provide 100% of the system heat demand. Only if the alternative heat source cannot deliver all of the heat output required to satisfy the system, the boilers are enabled to supply the remaining portion of energy. This ensures that the alternative heat source is always the main source of heat into the system.

4323



GHMx40



FM444



MEC2

The MEC2 digital programmer is supplied with the 4323 controls. Its simple 'press and turn' operation makes setting and changing heating options easy. A plain text display allows input of system operations and communicates boiler diagnostics. They can be fitted directly to the main control unit or wired to the boiler from the living or working space (as a room thermostat).

BFU Room Thermostat

The BFU is a remote control which allows the temperature to be adjusted from the living or working space. It is supplied with a room temperature sensor.

FM441 Heating and DHW Control Module

For use in 4000 series controls, this module controls one mixed heating circuit (with circulation pump and mixing valve) and one DHW circuit (with cylinder primary and secondary circulation pump). Includes manual controls to switch circuits between on/off/automatic and is supplied with a 9mm DHW temperature sensor. All wiring has colour-coded plugs for quick installation into the main control unit.

FM442 Heating Circuit Control

For use in 4000 series controls, this module controls up to two mixed heating circuits (with circulation pump and mixing valve). Includes manual controls to switch circuits between on/off/automatic. It comes supplied with one temperature sensor for a mixed heating circuit.

FM443 Solar Module

The intelligent FM443 solar module allows optimum solar and heating functionality. With this fully-integrated Energy Management System, the boiler recognises the solar output and delays firing the boiler for as long as possible by continuously monitoring changes in heat demand. By reducing burner start ups by as much as 24%, this not only reduces the wear and tear on the heating system, it can also provide an additional 10% of energy savings.

FM458 Boiler Sequencing Module

The FM458 can control the modulation and sequencing strategy of up to 4 boilers (up to 8 boilers in total when using 2 FM458 controls) and can control one additional unmixed heating circuit. A 0-10V input with provision for a common alarm signal, for use with the BMS control.

MEC2



BFU Room
Thermostat



FM441 Heating
and DHW
Control Module



FM442 Heating
Circuit Control



FM443
Solar Module

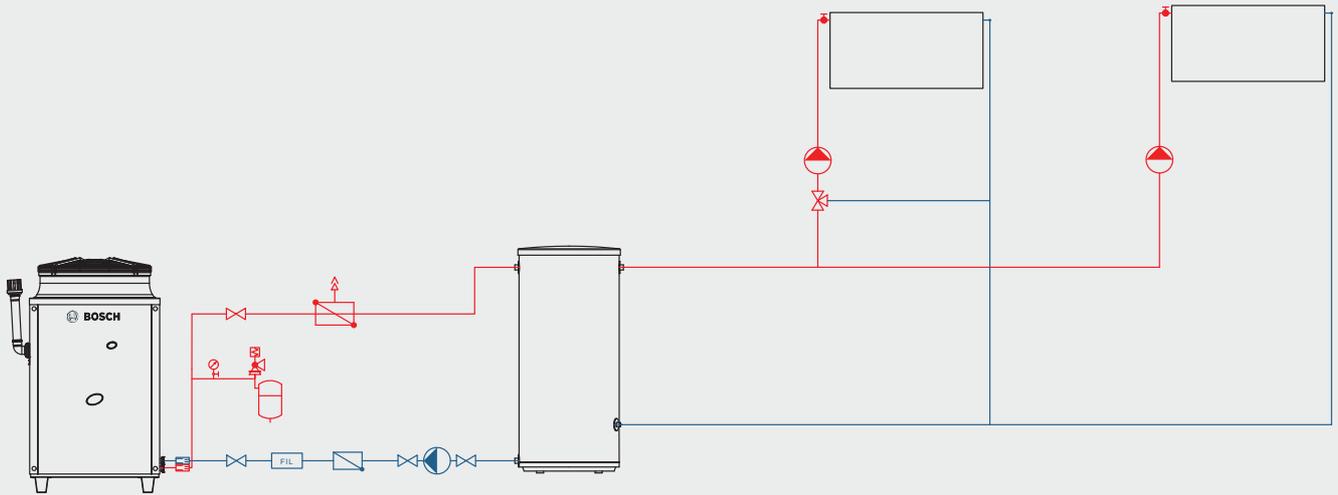


FM458 Boiler
Sequencing Module

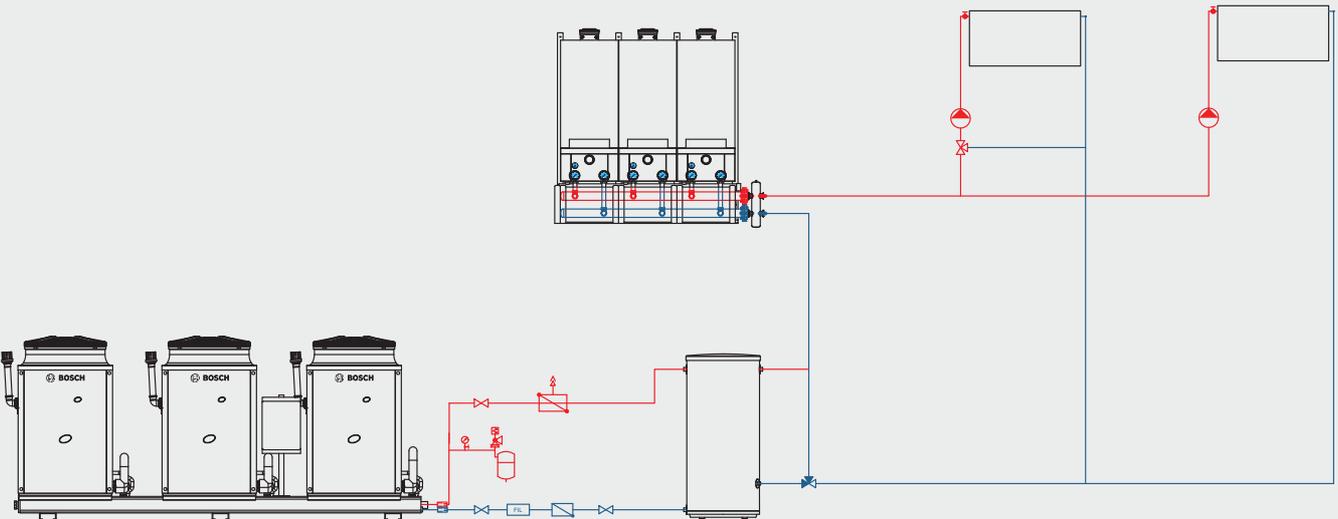


System schematics

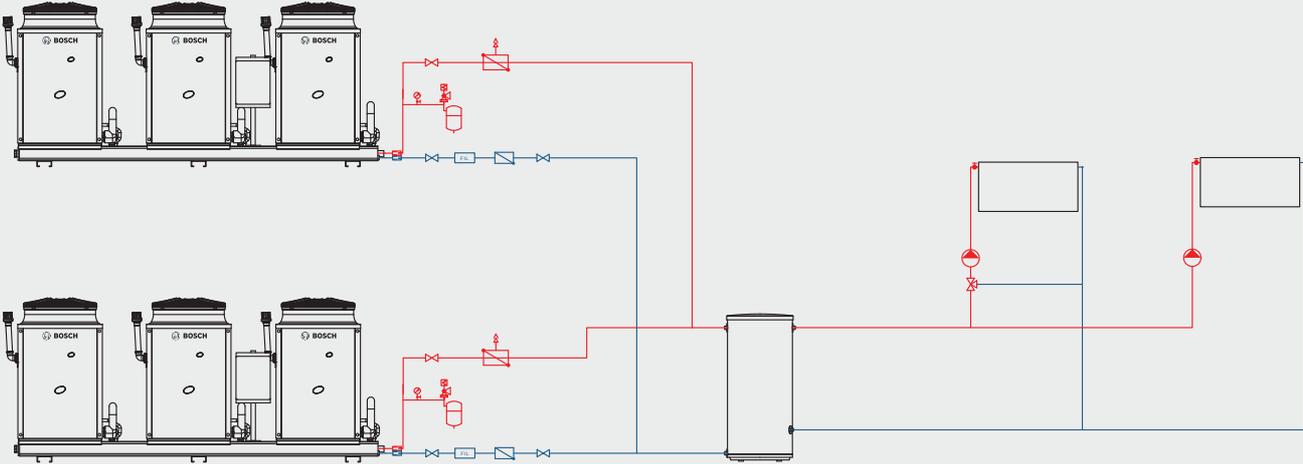
Installation with a single GHP AWO 38 supplying heating circuits



Cascade of GHP AWO 38 working together with a condensing boiler to supply heating



Installation with two cascades of GHP AWO 38 supplying heating system

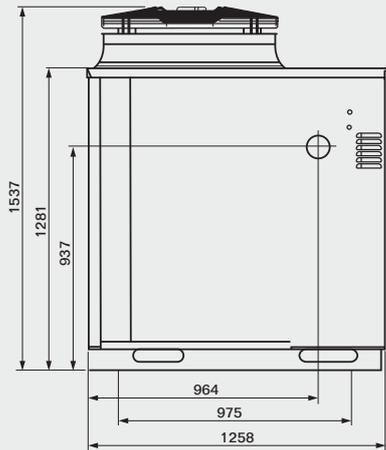


Key	Description
□	Temperature sensor
⊗	Isolating valve
⊗	Lockshield valve
⊗	Expansion vessel
⊗	Air separator
⊗	Non-return valve
+	Drain valve
⊗	Diverter or mixing valve
⊗	Pump
⊗	Temperature gauge
⊗	Pressure release valve

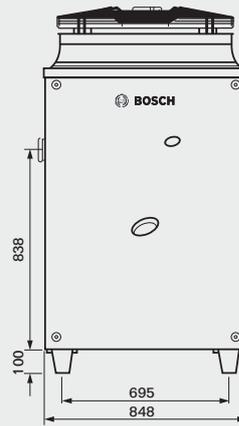
Dimensions and clearances

Dimensions

Side

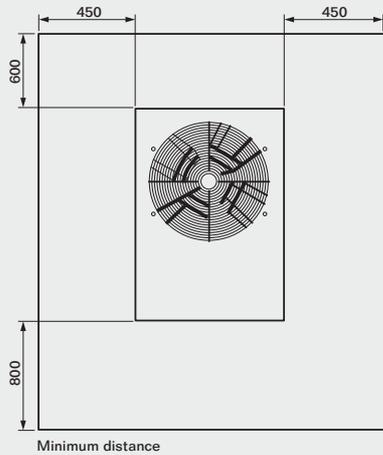


Front

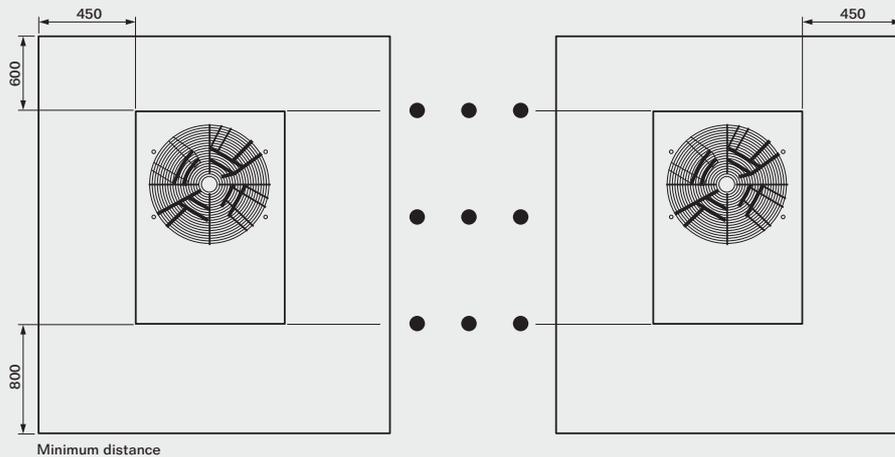


Clearances

GHP AWO 38 single unit



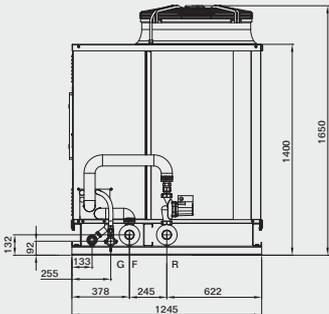
GHP AWO 38 cascade



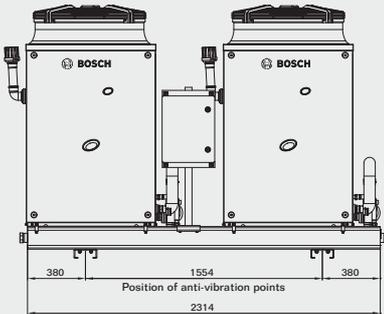
Flexible system solutions

GHP AWO 38 cascade with 2 units

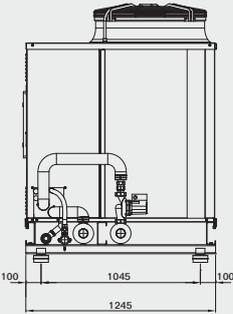
Side



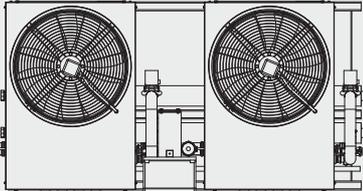
Front



Side (equipped with anti-vibration pads)



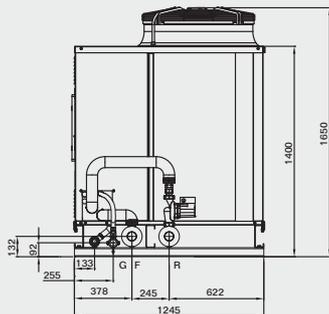
Top



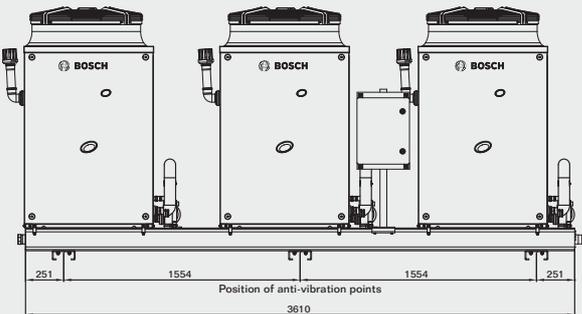
Key	Description
G	Gas supply
F	Flow
R	Return

GHP AWO 38 cascade with 3 units

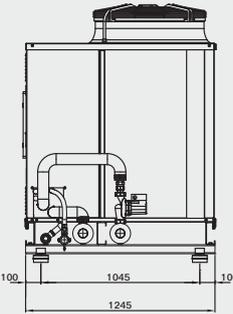
Side



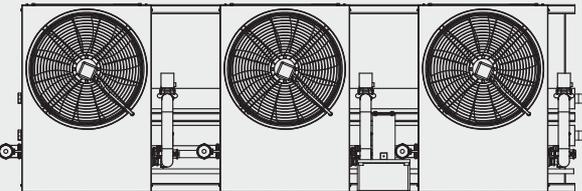
Front



Side (equipped with anti-vibration pads)



Top

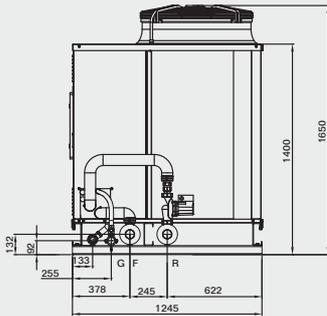


Key	Description
G	Gas supply
F	Flow
R	Return

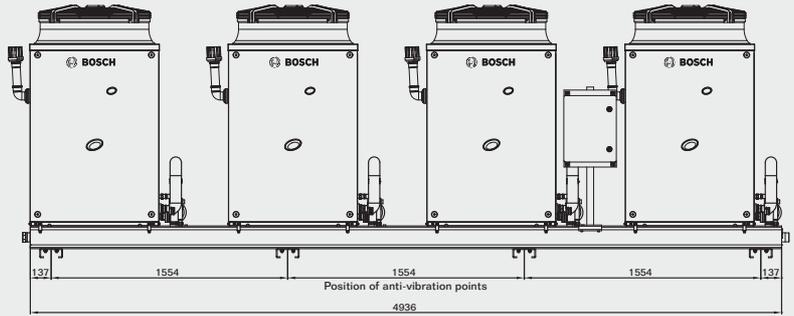
Flexible system solutions – continued

GHP AWO 38 cascade with 4 units

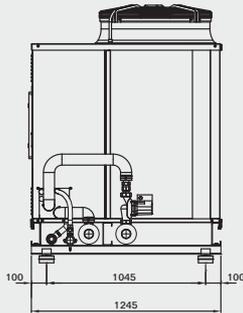
Side



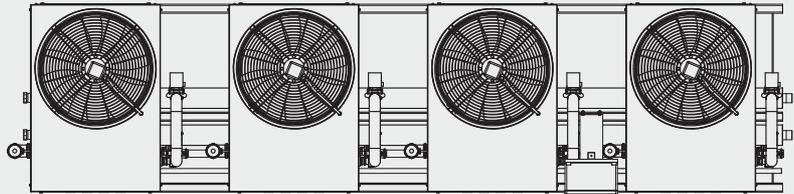
Front



Side (equipped with anti-vibration pads)



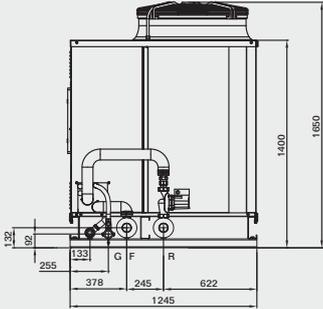
Top



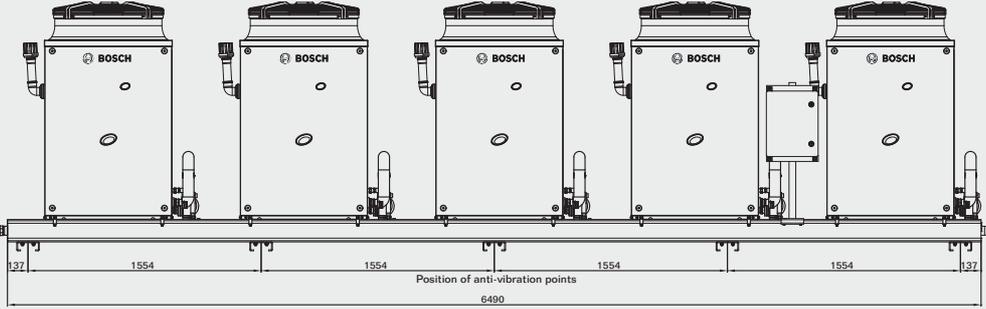
Key	Description
G	Gas supply
F	Flow
R	Return

GHP AWO 38 cascade with 5 units

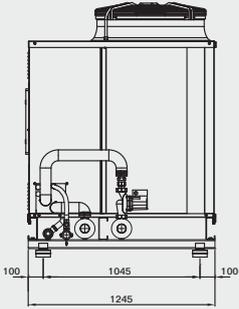
Side



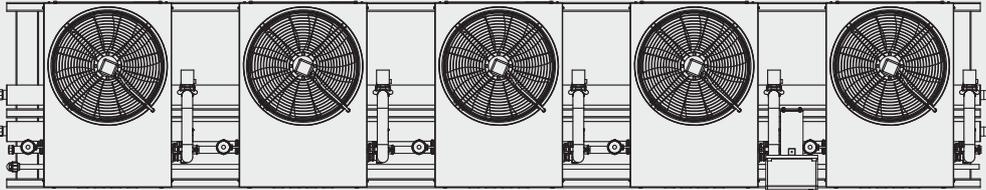
Front



Side (equipped with anti-vibration pads)



Top



Key	Description
G	Gas supply
F	Flow
R	Return

Training – keeping you up to speed with the latest technology

Bosch Thermotechnology Ltd. is as renowned for the quality of its training as it is for the quality of its products. Training that enables specifiers and installers to keep up to speed with the latest regulations, as well as the most recent products to enter the market.



Many Bosch training courses are LOGIC approved



Bosch offers CHP and District Heating CPD training

Our technical training officers, who have many years' experience as heating technicians, combine practical installation tips with heating theory and legislative requirements, ensuring a thorough understanding of all aspects of the application.

State-of-the-art facilities

The home of our training operations is at our purpose-built training facility in Worcester. The Worcester expanded facility includes life-size single-storey buildings with working appliances to simulate real installations.

Bosch also has Training and Assessment academies at West Thurrock and a brand new £1.2 million facility in Wakefield.

All aspects of assembly, installation, fluing and control options are explained in detail. With our help, you will be equipped with the skills to ensure that both you and your customers achieve the maximum benefit from our product range.

We also run certified commercial ACS courses equipping installers with the relevant qualifications for the changeover from domestic to commercial gas work.

Onsite training

As part of our customer offering, we are happy to deliver one-to-one training onsite for commissioning and setting up of controls.

CPD training

Bosch Commercial and Industrial Heating now offers a CIBSE accredited Continuing Professional Development (CPD) for both CHP and District Heating. The training courses, which count towards your CIBSE CPD requirement, can be held at your premises as well as being tailored to meet your exact requirements.

Apply now

If you would like further information, or to book a place, you can contact our training team on **0330 123 0166** or email training@uk.bosch.com



Training courses	Content	Duration
Commercial ACS course CODNC01	Changeover qualification from domestic to commercial, including CIGA1.	5 days
CHP overview course	Product overview, systems and controls.	1 day
CHP CPD	Product overview, module sizing, installation considerations, legislation incentives	½ day
GB162	Features and benefits, energy efficiency and legislation requirements.	1 day
Heat Interface Unit	Product overview, systems, controls, installation and commissioning.	1 day
District Heating CPD	Technology overview, design considerations, integration of renewables, grant funding and guidance available for Local Authorities.	½ day
Continuous flow water heater	Product overview, installation, commissioning, servicing and maintenance.	1 day
Gas Absorption Heat Pump	Product overview, systems, controls, installation and commissioning.	1 day
Solar thermal	Installation of panels, system design, Bosch solar components, commissioning, servicing, basic fault finding.	1 day
Commercial controls	Guide to the varied range of Bosch control options that are available with the commercial boiler range. Controls covered: RC25, RC35, 4000.	2 days

A high performance boiler with a first class service to match

With Bosch industrial heating and our first class service, you are always on the safe side.

Always there for you

Our customer service is there for you and because of our close-knit service support network, we can ensure the quickest possible reaction times. Along with maintenance services, fault finding and repairs, we also offer support with the regular inspection of your system. Bosch after-sales support also allows us to analyse your system and upgrade it if required.

Customer service

Email: commercial.enquiry@uk.bosch.com
or telephone 0330 123 3004

Opening times

Monday - Friday: 7.00am - 8.00pm

Saturday: 8.00am - 5.00pm

Sunday: 9.00am - 12 noon

Reliable supply of spare parts

Genuine spare parts for all supported Bosch appliances are readily available either from stock on a next day delivery basis or delivered direct from Germany.

Opening times

Monday - Friday: 7.00am - 8.00pm

Saturday: 8.30am - 4.00pm

Email: spares.mailbox@uk.bosch.com
or telephone 0330 123 0166.



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Bosch Thermotechnology Ltd. has a policy of continuous research and development and this may necessitate alterations to this specification from time to time. Therefore before preparing for the installation of the appliance it is important that the instructions issued with the unit are carefully read and adhered to. The statutory rights of the customer are not affected. Photographs shown are used for illustrative purpose only. All information is correct at time of going to press. Bosch Thermotechnology Ltd. reserves the right to alter any information where necessary. E&OE.