

Bosch Commercial and Industrial Heating
Combined heat and power modules
CE 19 NA - CE 240 NA

34kWth - 374kWth (19kWe - 240kWe)

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 combined heat and power (CHP) modules 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 decentralized 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.

Contents

Bosch Parkhaus, Stuttgart, is currently one of the largest neon signs in the world and has the second largest lettering to the unlit Hollywood sign. A symbol of Bosch's global brand awareness.

Expertise and trust

As a leading manufacturer and innovator, Bosch Thermotechnology Ltd. specialises in providing energy-efficient commercial heating solutions.

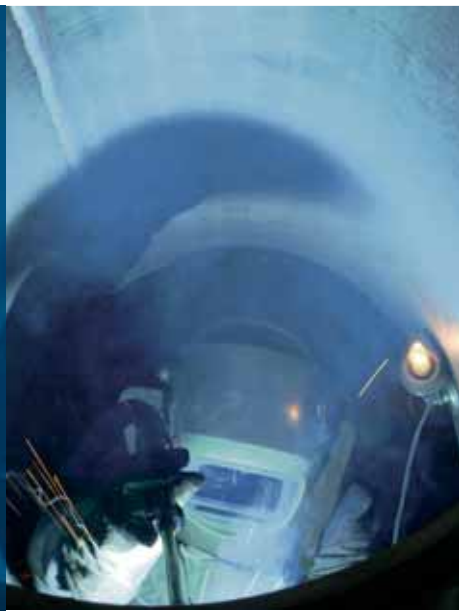
Bosch – a strong brand

It is not only our CHP modules that stand out for their high quality, but also the wide variety of other products and services we offer. Meeting your needs and expectations is our top priority. It is exactly for this reason that we call upon all our knowledge and experience, while measuring ourselves against international standards and our own strict quality guidelines. This enables us to reaffirm our brand's promises every day.

Bosch – we pride ourselves in innovation

Bosch has a long tradition for new, innovative ideas within the commercial and industrial heating industry. This is thanks to thousands of researchers, engineers and technicians, whose knowledge, dedication and creativity allows us to continue to move forward.
We focus our attention equally on developing new products and systematically optimising our existing products. With an average of 16 patents applied for every working day, Bosch is one of the world's most innovative companies.

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 65kW 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.

BOSCH
Invented for life

Environment and efficiency

As a responsible and innovative manufacturer, we dedicate ourselves to environmental protection and the saving of resources. Our sustainable and efficient systems keep CO_2 emissions low and contribute to a reduction in climate change.

Bosch CHP modules deliver efficiency at a whole new level

By simultaneously delivering both heat and electricity, Bosch CHP modules boast particularly high efficiency levels and significantly reduce your energy consumption and costs. When compared with conventional heating systems, Bosch CHP modules can amount to savings of around 30%. Bosch CHP modules achieve a total efficiency of up to 94.2%, which compares more than favourably with the 50% efficiency achieved when generating electricity using conventional power units and producing heat from a standard boiler. Such high levels of efficiency mean that your initial investment costs will be paid back in just a few years.

Good for both the environment and the climate

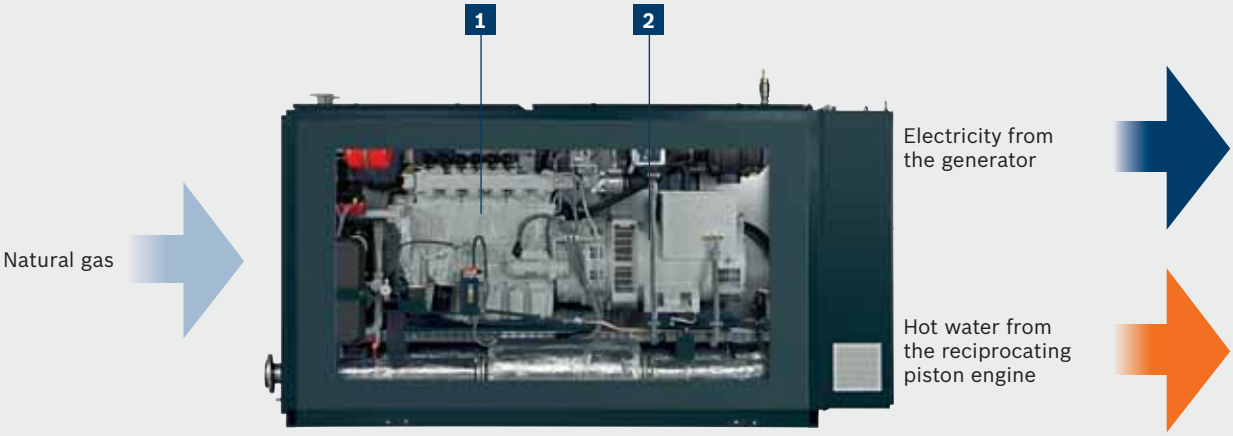
Bosch CHP modules not only help to reduce your energy costs, they also make a positive impact on the environment. This is because less gas is required to generate the same output as a conventional solution and so emissions are also lower. This not only applies to CO_2 emissions, as both NOx and CO emissions are also significantly reduced.

Bosch CHP modules are perfectly matched to your requirements. This saves not only natural resources, but your financial resources as well.

Bosch combined heat and power

Total system solution CHP with high efficiency boilers provides electricity, heat and hot water

Bosch combined heat and power (CHP) offers a more efficient way to generate heat and electrical power, compared to conventional methods.



1 Reciprocating piston engine
2 Generator

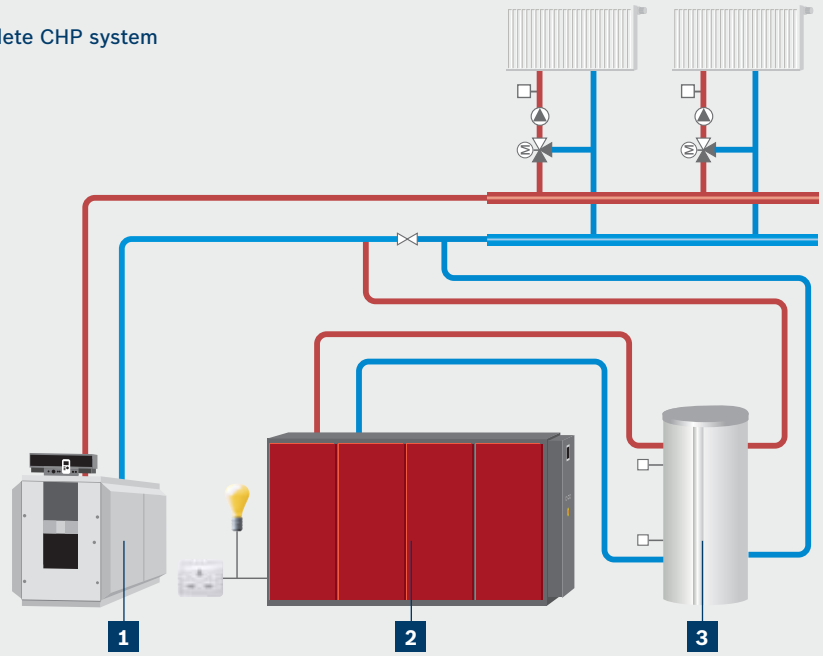
A Bosch CHP module consists of a gas engine, a generator and a heat exchange system. The gas engine drives the generator to produce three-phase electrical power, which feeds into the main low voltage distribution system, where it can be used locally or exported to the national grid.

Heat is produced as a by-product of the power generated, which in a conventional power station would be wasted. However, the heat generated by a Bosch CHP module is used to generate hot water via the integral heat exchangers. This hot water may be used for space heating, process heating or heating of domestic hot water (DHW).

When the hot water is not required immediately, it can be stored in a suitable storage vessel for later use.

CHP systems should be sized upon the thermal base load of the project to ensure maximum efficiency. In order to satisfy peak heating loads, combining the Bosch CHP with Bosch Thermotechnology Ltd. high efficiency boilers, allows for total cost effectiveness to be achieved.

Schematic diagram of a complete CHP system



1 Peak load boiler
2 CHP
3 Buffer cylinder

Bosch CHP key features and benefits:

- High efficiency
  - Overall net efficiencies of up to 94.2%, with higher efficiencies available through optional condensing technology
  - Modulation of output between 50% and 100%
- Highest environmental standards
  - Energy savings
  - CO_2 reduction and primary energy savings through simultaneous use of heat and power
  - Built in catalyser as standard for low NOx
- Proven quality and reliability
  - Bosch renowned standards for manufacturing quality
  - Tried-and-tested components
- Cost-efficient supply of energy on site
- Effective monitoring
  - Communication via remote monitoring modem
  - Interfaces for integration with Building Management Systems
- Quietness
  - Noise levels of 35 dB(A) can be achieved with optional air and exhaust silencers
- Trigeneration
  - The additional heat load for an absorption chiller allows the plant to operate more efficiently
  - It extends the CHP running time and offers an all year round heat demand
  - Absorption cooling operation is possible with CE 50 NA - CE 240 NA
- Bosch Service Support
  - Bosch specialist team providing system designs, product specification and installation queries
  - Choice of service and maintenance plans.

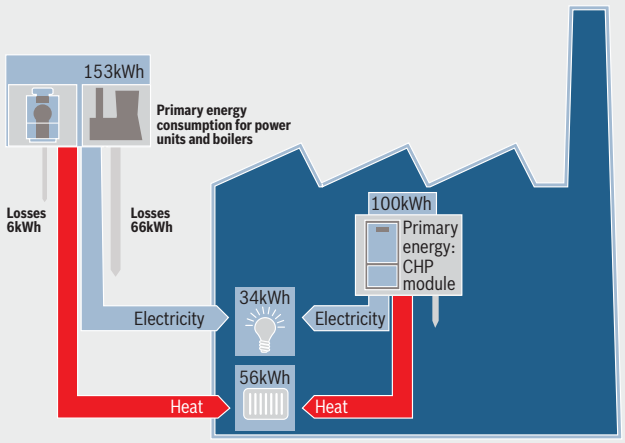
Bosch CHP delivers a range of benefits

The typical efficiency of a large power station ranges from 38% to 52%, as most of the heat produced in the process is wasted.

Reduced carbon emissions for both power and heat
According to the Carbon Trust, when compared to using conventional boiler systems and mains electricity, CHP has the potential to reduce carbon dioxide emissions for power and heat generation by around 30%. In utilising the waste heat from the power generation process, Bosch CHP delivers energy utilisation of around 94%, of which around 30% is in the form of higher value electrical energy.

Safe and secure energy supply
The ability to generate electricity on site provides enhanced security against disruption of the mains electrical supply.

Environmental assessment of a CHP module in comparison to separate energy provision



Bosch CHP delivers a fast return on investment in several ways:

- Improved energy efficiency, therefore reducing the requirement to purchase energy from utility companies
- Locally generating electricity with a Bosch gas powered CHP is more cost-effective than buying mains electricity as the cost of mains gas is considerably lower
- Tax benefits: fuel inputs to CHP are exempt from the Climate Change Levy (CCL)*
- Money saving: Bosch CHP plant and machinery is eligible for Enhanced Capital Allowances (ECA)*
- Carbon Allowance: qualifies for favourable allocations under Phase II of the EU Emissions Trading Scheme (EU ETS)*
- Business Rate Exemption: Bosch CHP power generation plant and machinery is exempt from Business Rates.

*Benefit depends on achieving certain CHPQA quality CHP statuses.

Why choose **Bosch CHP?**

Energy efficient

Bosch CHP are highly efficient generators of both electricity and heat energy, with overall net efficiencies of up to 94.2%.

Individual Bosch CHP modules can modulate outputs from 50% to 100% to match the building's daily heating requirements.

Low cost of ownership

Bosch CHP modules benefit from a manufacturing quality which ensures a robust product with a long, reliable life in line with the company's strict internal quality processes. This is combined with the best-in-class engines from Volkswagen (CE 19 NA) and MAN (CE 50 NA and above) providing further peace of mind for the end user.

Low environmental impact

Bosch CHP modules feature a three-way catalyst and lambda control, ensuring low emissions and enhanced efficiency. They also produce very low noise levels through their integrated sound insulation.

Energy centres

Typically, CHP is combined with other heat sources in an energy centre – an arrangement that enables system designers to achieve maximum energy efficiency. These may include other low-carbon heating technologies such as biomass boilers, solar thermal systems and heat pumps, as well as conventional boilers.

Bosch offers a comprehensive range of heating technologies, backed by intelligent controls and expert technical support to ensure that mixed heat sources are optimised for maximum energy efficiency.

Optional service contracts

Bosch combined heat and power modules are supported with a choice of optional 10* year service contracts – Premium and Premium Plus – which are designed to offer the user complete peace of mind. The contracts are transferable with the ownership of the property, and include scheduled engine overhauls, incorporating parts, labour and engine replacement if necessary, as well as disposing of waste oil in an environmentally friendly manner.

The Premium Plus option is a fully transparent rolling contract, which enables the customer to budget for maintenance and repairs, providing control of the whole life costs of the CHP module from the outset.

If you would like more information about combined heat and power contracts from Bosch, please call **0844 892 3004**.

Typical applications

- Property heating
  - Apartment buildings
  - Hotels, conference centres and restaurants
  - Retirement and nursing homes.
- Public heating
  - Administration and municipal buildings
  - Hospitals
  - Sports complexes or schools with sports facilities
  - Indoor and outdoor pools.
- Industrial heating
  - Commercial buildings – supermarkets, shops etc
  - Production plants, breweries, garden centres etc.
- District and centralised heating (wide-area supply)
  - Residential areas or blocks
  - Business parks
  - Holiday resorts.

*Terms and conditions apply.

Features overview – **Bosch CHP**

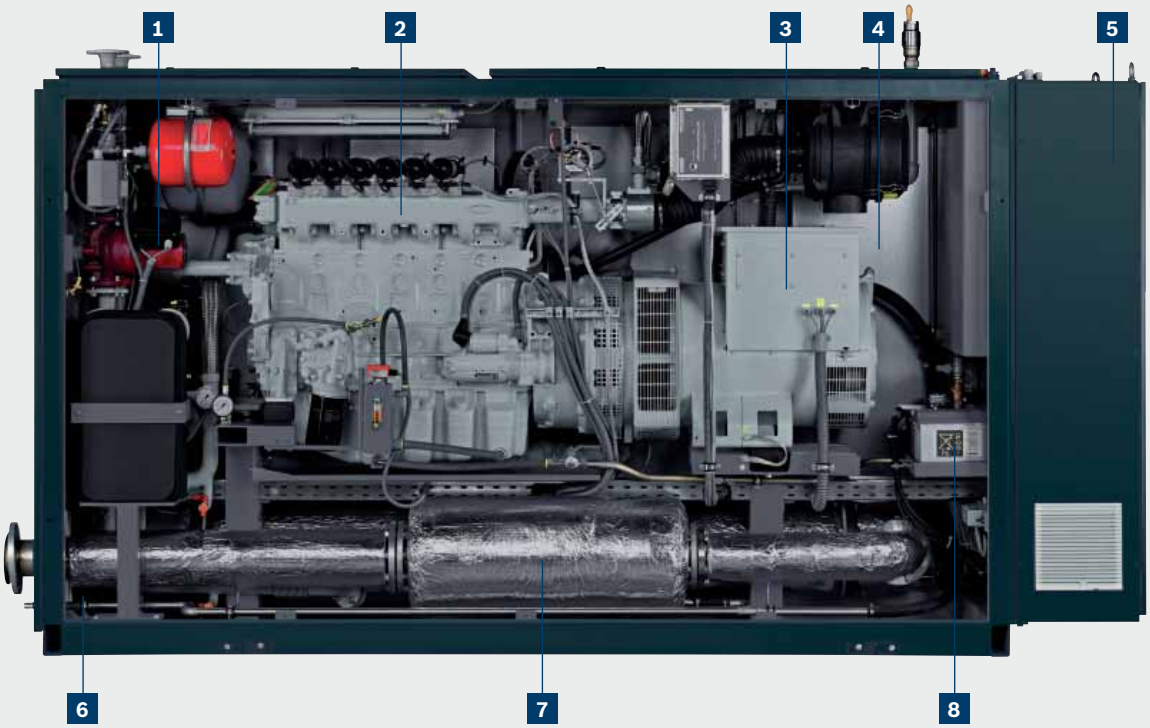
Bosch's highly effective CHP modules are compact power units which, through the clever combination of the reciprocating engine and generator, optimised hydraulics and an intelligent control system, makes them an energy efficient technology for today and tomorrow.

CE 70 NA module

Bosch CHP complete module technology

- High efficiency gas combustion engine from Volkswagen (CE 19 NA module) and MAN (CE 50 NA module and above)
- Heat harvesting via the engine coolant and exhaust gas heat exchangers
- Highly efficient air-cooled synchronous (CE 50 NA module and above) and asynchronous (CE 19 NA module) generator
- Integrated control cabinet with touch screen display and options for remote monitoring
- Primary noise reduction within the acoustic lined module
- Integrated primary gas silencer with options for additional secondary and tertiary silencing
- Primary and secondary air outlet silencers available to provide additional noise reduction (CE 50 NA module and above)
- Integrated lubricated reservoir and starter batteries for security and space saving.

Bosch CHP module



1 **Advanced temperature control**
Fully equipped: heating circuit pump, 3-way valve with actuator, expansion vessel, safety valve and control unit (optional).

2 **Full power**
Industrial gas engines provide reliable power with modulating output.

3 **Always in sync**
Both synchronous (CE 50 NA and above) and asynchronous (CE 19 NA) generator enables mains substitution. The standby operation is available as an accessory (CE 50 NA and above).

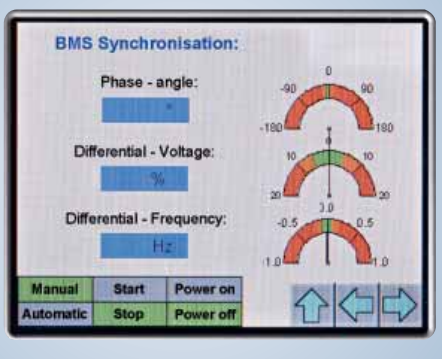
4 **Gently does it**
The Bosch CHP module offers low noise levels thanks to its acoustic lined module casing.

5 **Integrated controls**
Integral touch screen panel for control and monitoring at a glance.

6 **Tightly sealed**
Floor tray is sealed to prevent lubricating oil leakage.

7 **Low noise**
Effective silencers are utilised to increase noise protection even further.

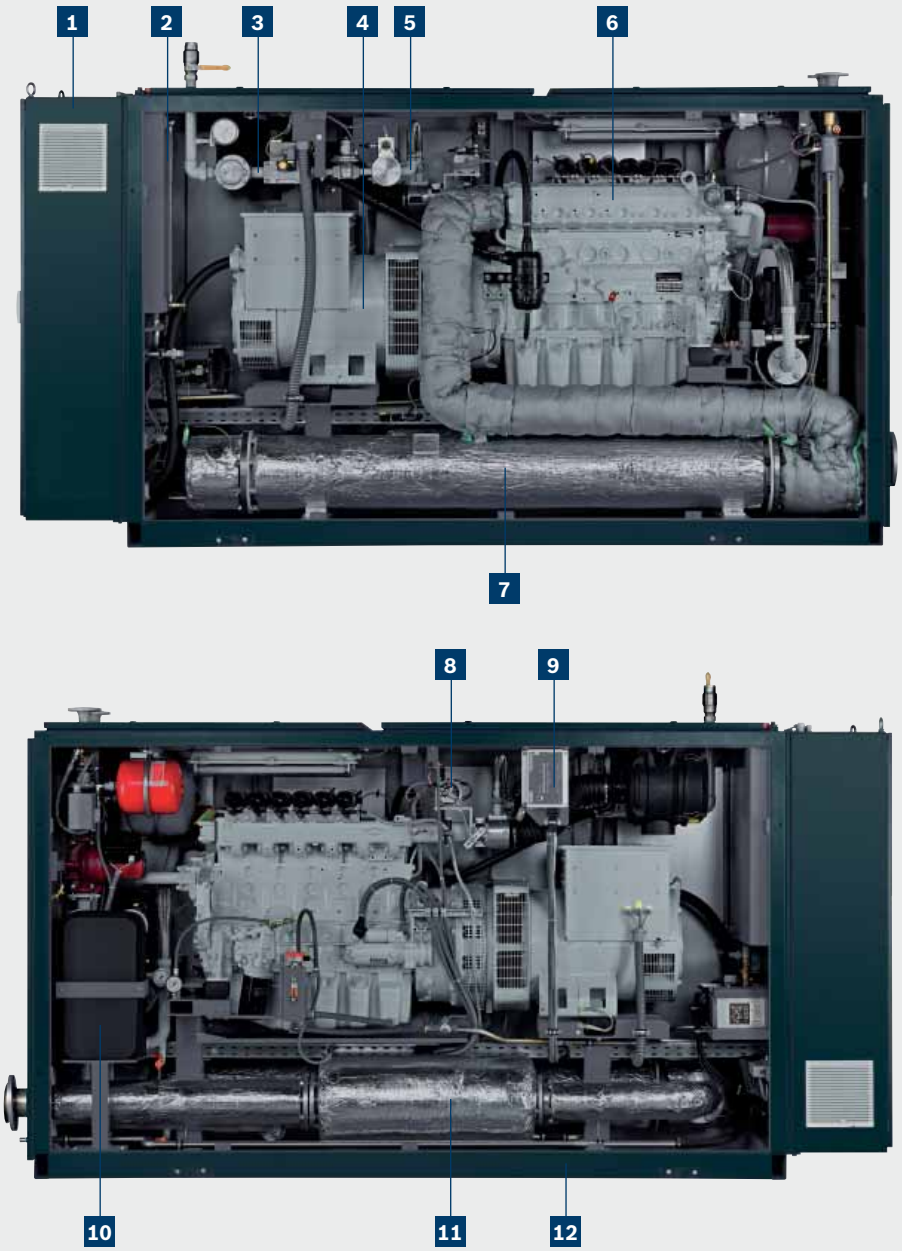
8 **Perfect start**
Starter batteries enable equipment to be started without mains electrical supply or loading.



Integrated intelligent control system
Once commissioned, all Bosch CHP module settings, from synchronisation through to maintenance, can be monitored via the colour touch screen display.

Technical overview – **Bosch CHP**

CE 70 NA module shown



1 Module control cabinet with controls
2 Module oil tank
3 Safety gas train (natural gas)
4 Synchronous generator
5 Lambda control (natural gas)
6 Gas fuelled reciprocating piston engine
7 Exhaust gas heat exchanger
8 Speed/output control
9 Ignition unit
10 Heat exchanger for engine coolant
11 Exhaust gas silencer
12 Base

CE 70 NA module shown

1 Enclosure lighting switch
2 Reset button
3 Service key switch
4 Ventilation air grille for control cabinet
5 Touch screen operation terminal
6 Extract air grille for control cabinet
7 Switch to enable standby operation (optional)
8 Emergency stop push button
9 Special lock for module control cabinet

Everything is under control with **Bosch BMS controls**

Bosch Thermotechnology Ltd. offers a range of controls for single and multi-module systems which can be easily connected into an existing Building Management System (BMS).

Unless there is a constant flow demand, Bosch always recommends the use of a buffer vessel with CHP systems to minimise the risk of cycling.

4000 controller

For single modules where a standard solution is needed, the 4000 controller using an FM444 module can be used. This off the shelf control seamlessly integrates a CHP module with back up boilers, whilst controlling DHW, multiple mixed heating circuits and solar, using expandable modules.

Standard buffer control

The standard buffer control module is for single units where the overall control is from a BMS. The package contains two sensors, top and bottom of a buffer vessel, as well as a matched software module.

Premium buffer control

This module controls up to two CHP modules under overall BMS control. The package contains three buffer vessel sensors, top, middle and bottom, as well as a common flow sensor and matched software module.

Optional BUS connection

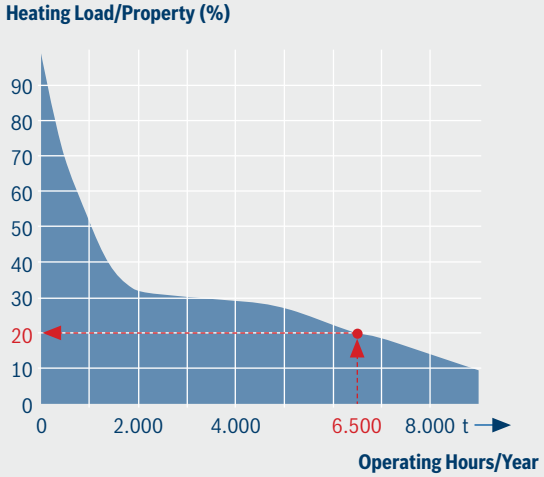
With the optional data BUS connection, the CHP can be connected to a higher control unit such as a BMS, using any common BUS protocol.

Multi-Module System control (MMS)

When a modular configuration of three or more CHP units are being used, the CHP modules and any auxiliary heat sources can be controlled via the MMS (multi-module system).

The MMS is housed in a separate control cabinet, with its own touch screen, and supplied complete with a wide range of standard functions to accommodate the majority of project requirements. When also required, the MMS can be configured to control back up boilers and heat rejection (if required).

Typical annual load curve

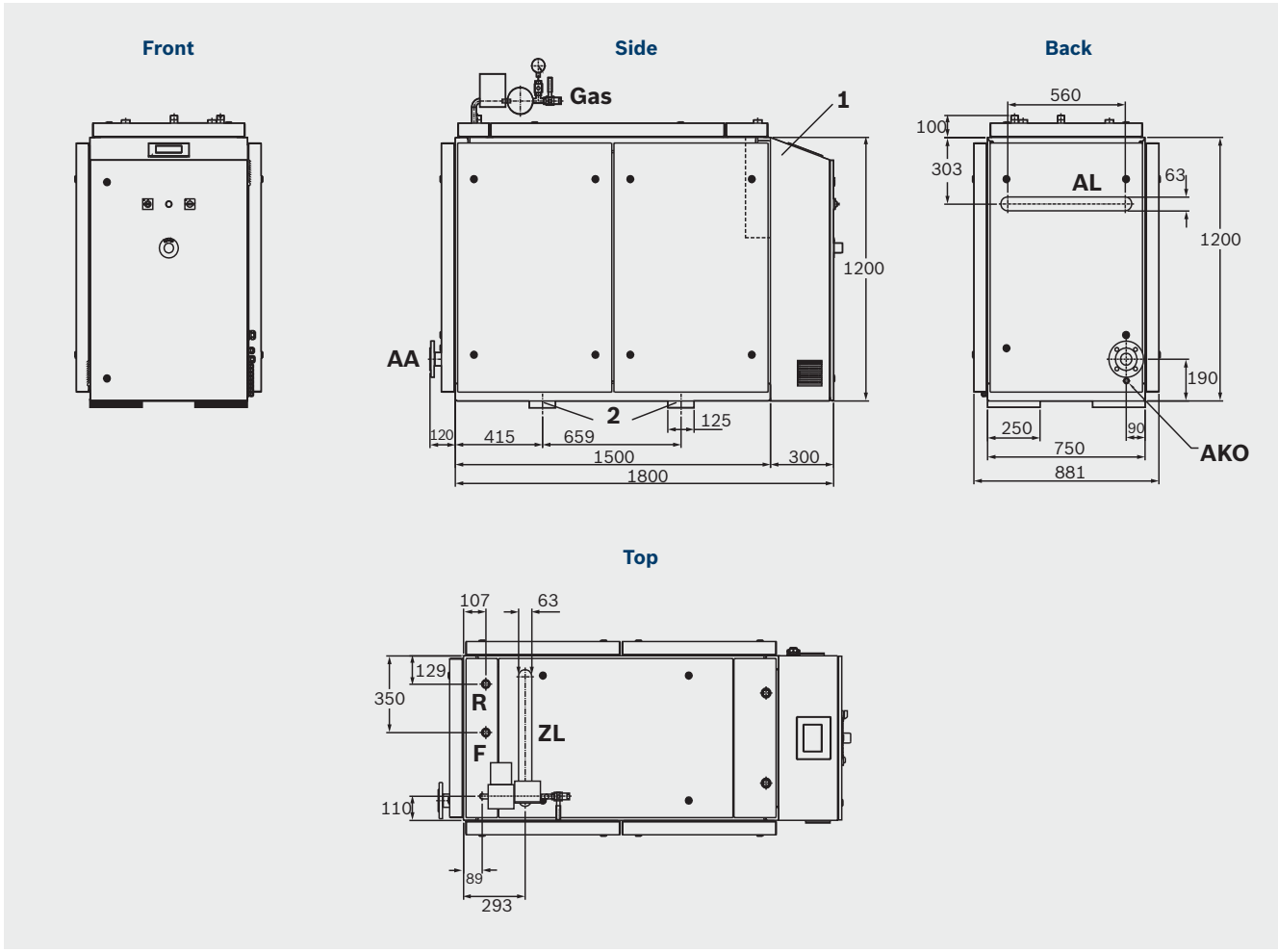


Individual Bosch CHP modules can modulate their output between 50% and 100% to match the base heating load of a building.

To satisfy peak seasonal heat demands, our 4000 controls take the demand communicated from a BMS and optimise the need for back up boilers to ensure maximum CHP run times.

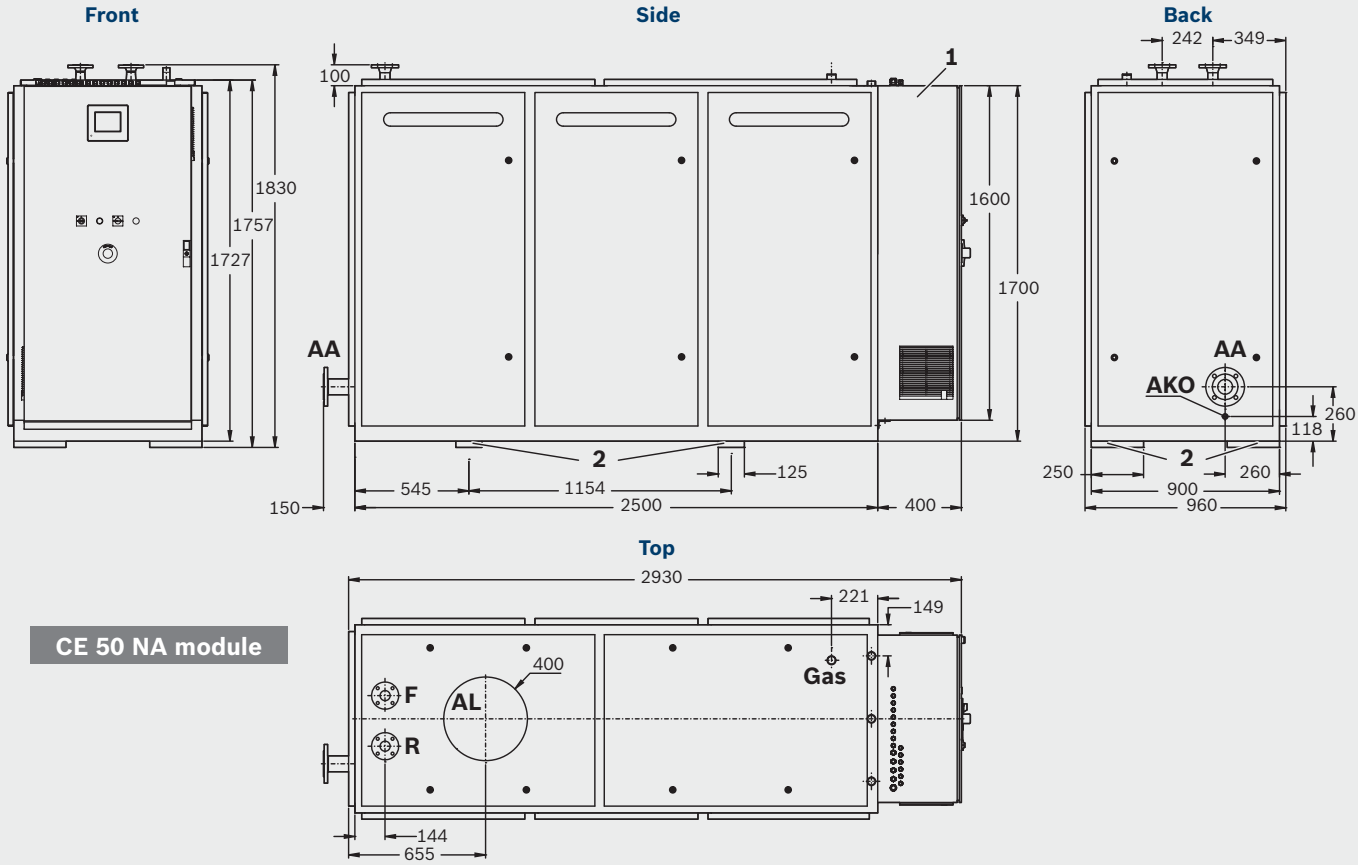
The Bosch CHP system should be sized to approximately 20% of a project's heat load. It will then reliably and efficiently cover the project's heating base load, which corresponds to the majority of the hours run each year. High efficiency boiler systems are then only needed to cover peak heating loads.

Dimensions and connections – **CE 19 NA**

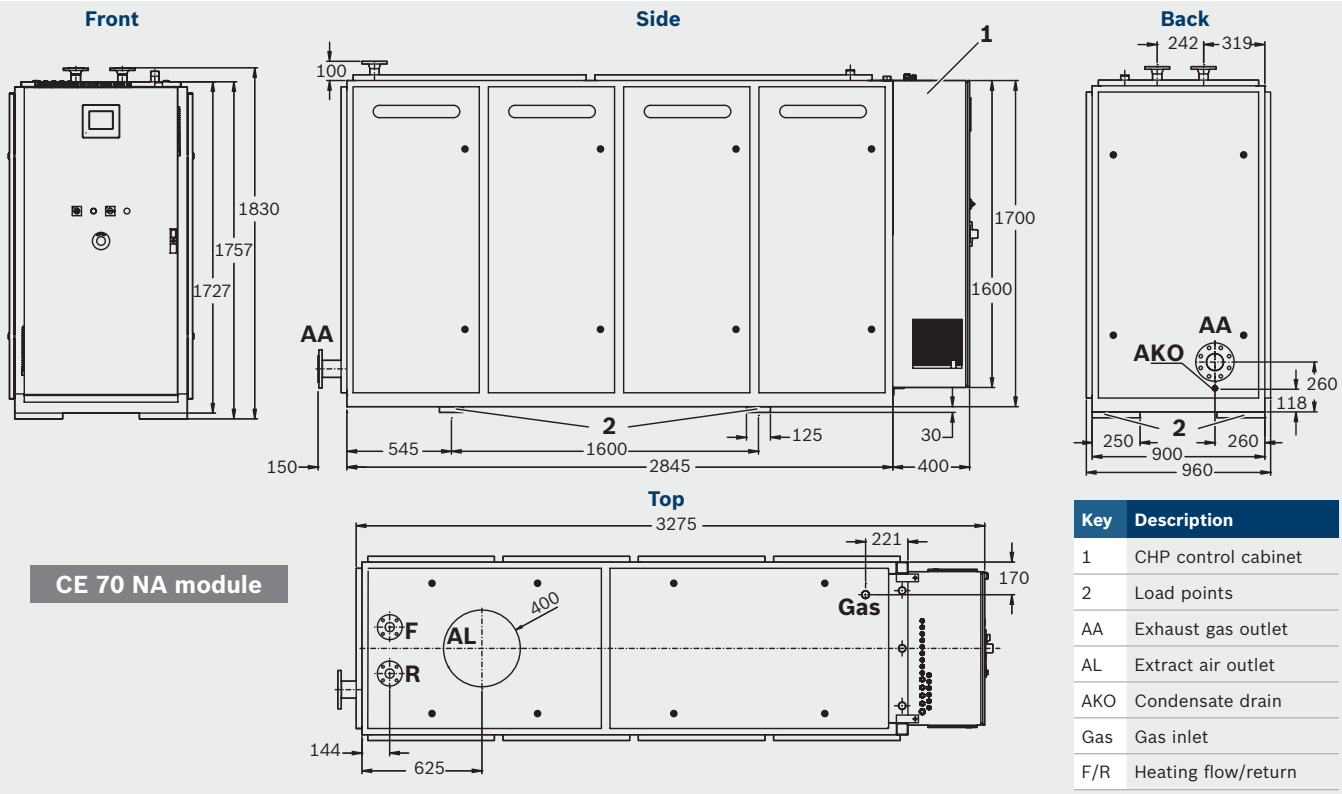


Key	Description
1	CHP control cabinet
2	Load points
AA	Exhaust gas outlet
AL	Extract air outlet
AKO	Condensate drain
Gas	Gas inlet
F/R	Heating flow/return
ZL	Ventilation air inlet

Dimensions and connections – **CE 50 NA & CE 70 NA**



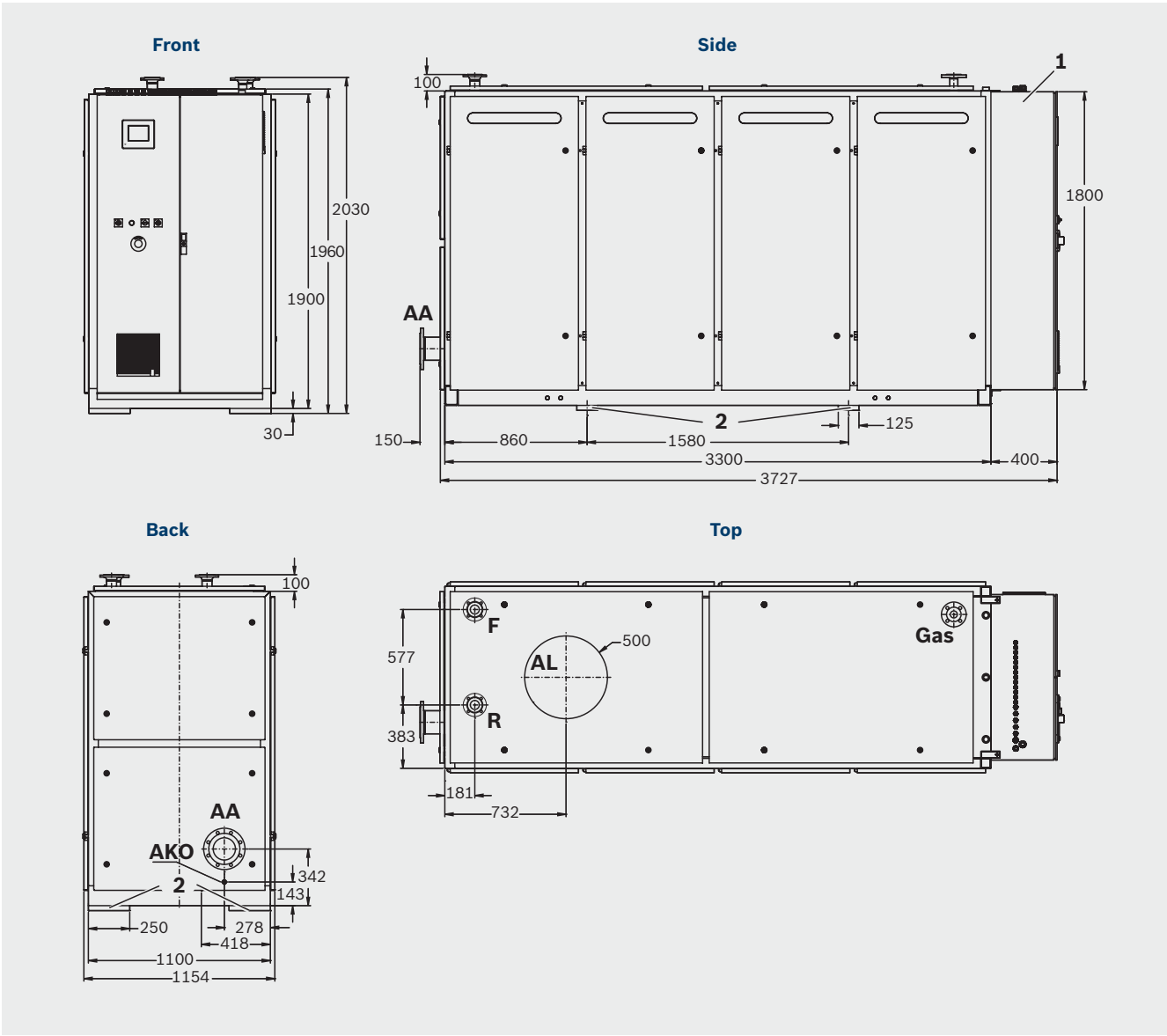
CE 50 NA module



CE 70 NA module

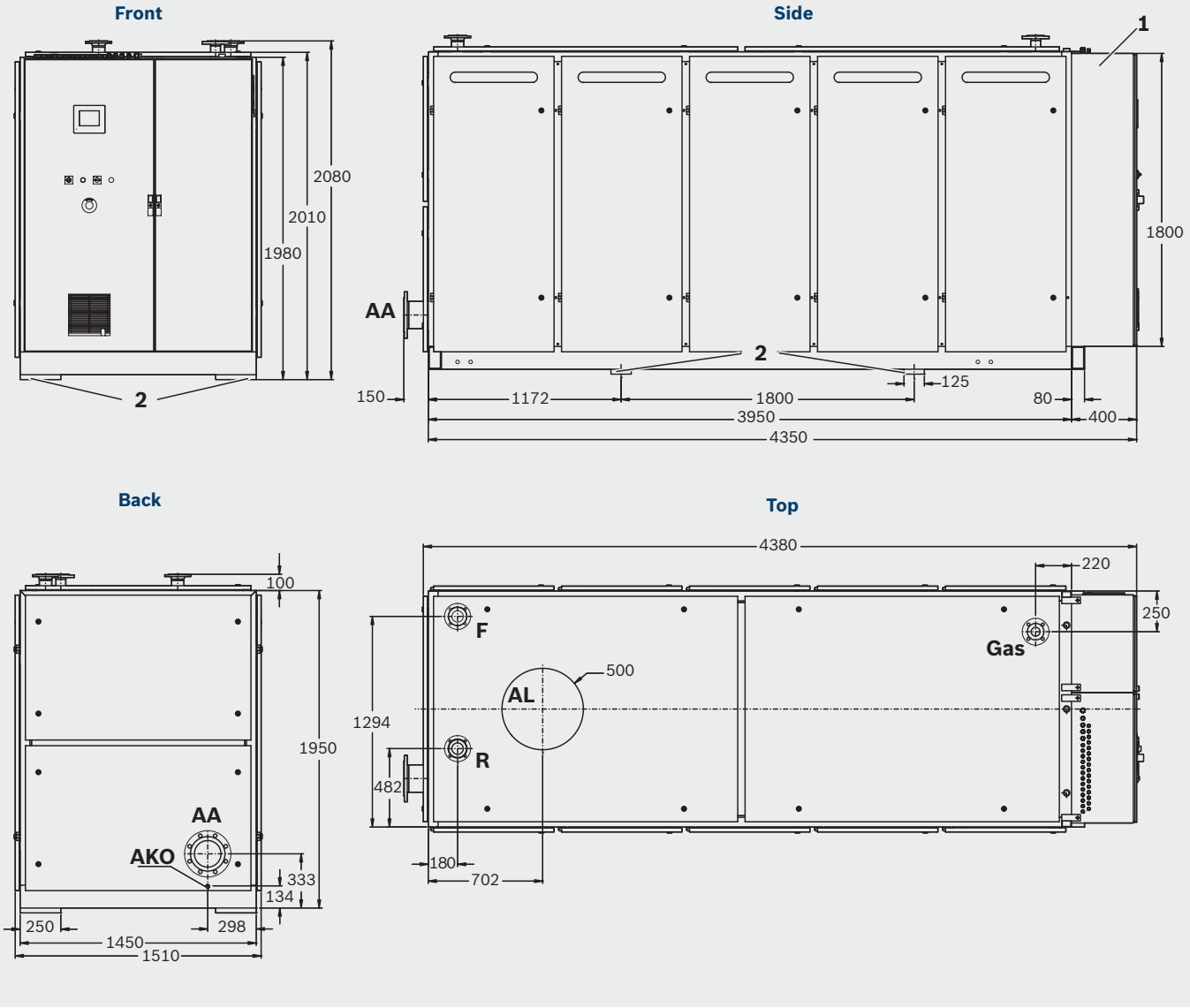
Key	Description
1	CHP control cabinet
2	Load points
AA	Exhaust gas outlet
AL	Extract air outlet
AKO	Condensate drain
Gas	Gas inlet
F/R	Heating flow/return

Dimensions and connections – **CE 140 NA**



Key	Description
1	CHP control cabinet
2	Load points
AA	Exhaust gas outlet
AL	Extract air outlet
AKO	Condensate drain
Gas	Gas inlet
F/R	Heating flow/return

Dimensions and connections – **CE 240 NA**



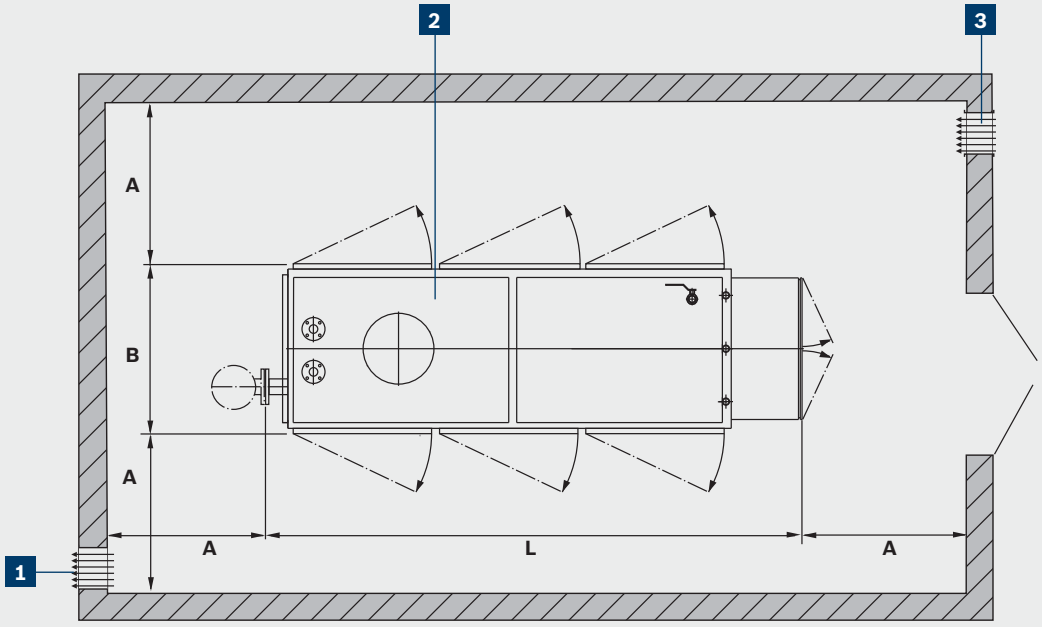
Key	Description
1	CHP control cabinet
2	Load points
AA	Exhaust gas outlet
AL	Extract air outlet
AKO	Condensate drain
Gas	Gas inlet
F/R	Heating flow/return

Technical overview – **clearances**

Room size

The CHP modules must be easily accessible. Sufficient clearance to the wall should be planned on the exhaust gas side. This space is needed for piping and installation of the secondary exhaust gas silencer.

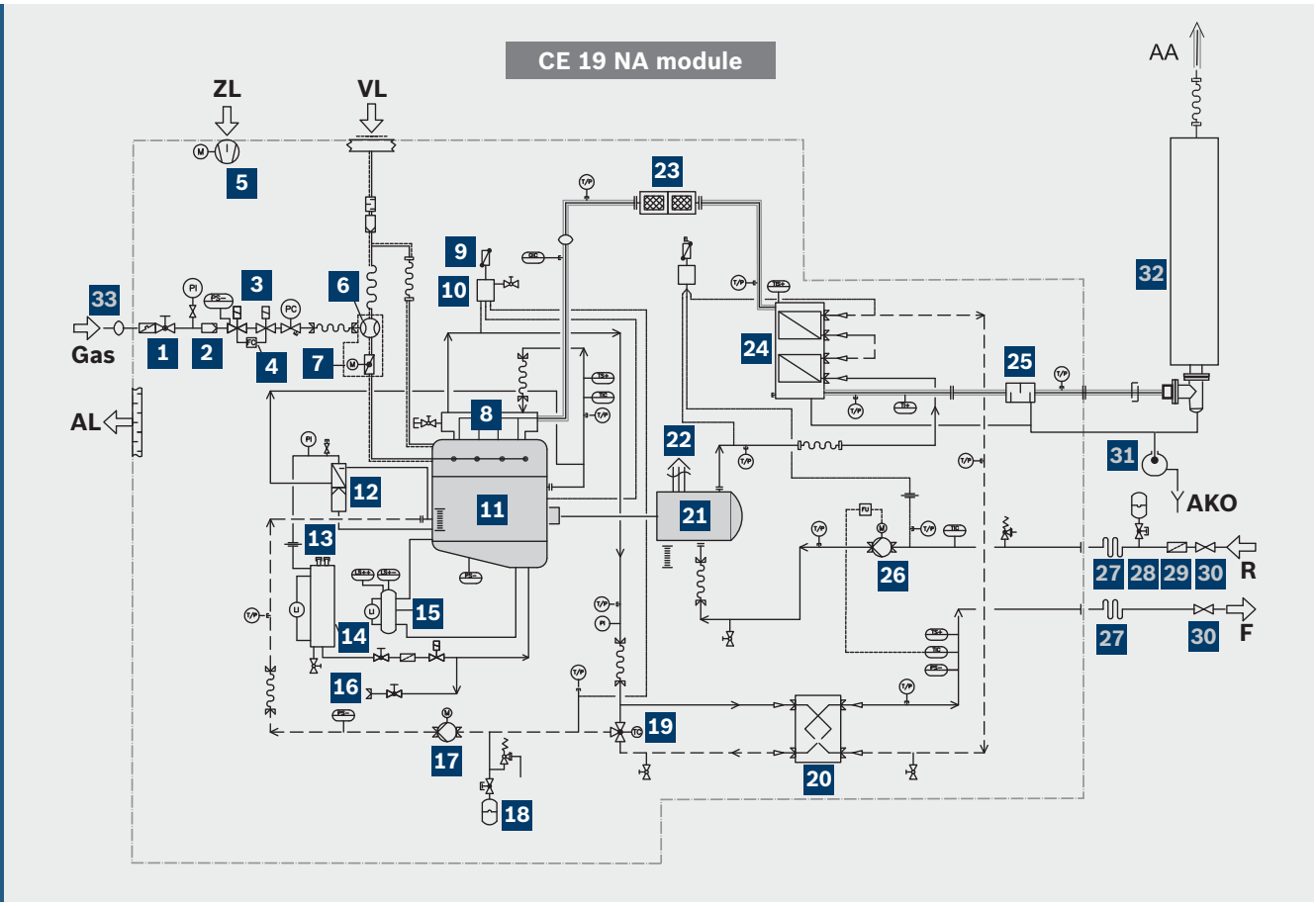
The optimum room size for the individual modules can be found in the corresponding table below.



1 Peak load boiler
2 CHP
3 Buffer cylinder

Dimensions	CE 19 NA	CE 50 NA	CE 70 NA	CE 140 NA	CE 240 NA
Wall clearance A in mm	>900	>900	>900	>900	>1,400
Module width B in mm	900	960	960	1,160	1,510
Module length L in mm	1,900	3,050	3,395	3,850	4,530
Room height H (min.) in mm	2,000	2,500	2,700	2,900	2,900

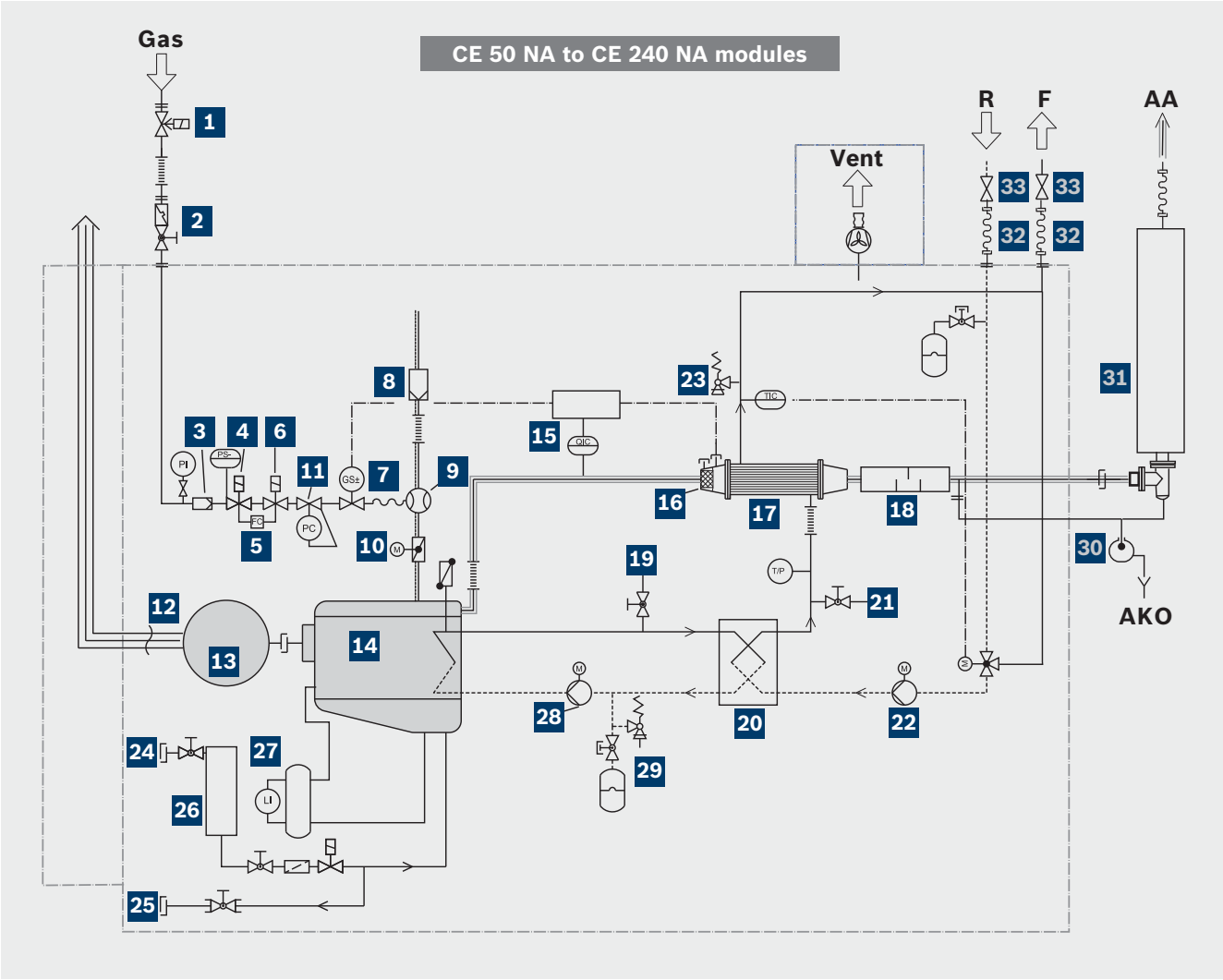
Technical overview – **internal schematics**



AA Exhaust gas outlet
AKO Condensate drain
AL Extract air outlet
Gas Gas inlet
R Heating return
F Heating flow
VL Combustion air inlet
ZL Ventilation air inlet

1 Thermally activated shut-off facility with ball valve
2 Gas filter
3 Double solenoid valve with gas pressure switch
4 Gas valve proving
5 Ventilation air fan
6 Gas-air mixer
7 Speed controller
8 Water-cooled exhaust manifold
9 Air vent valve
10 Bleeding pot, engine coolant
11 Gas fuelled reciprocating engine
12 Oil cooler
13 Oil tank, fill connector
14 Oil tank
15 Automatic oil top up with level indicator
16 Engine oil drain
17 Engine coolant pump
18 Expansion vessel
19 3-way valve
20 Engine coolant heat exchanger
21 Asynchronous generator
22 400V power current
23 Catalyst
24 Exhaust gas/condensing heat exchanger
25 Primary exhaust gas silencer
26 Heating circuit pump
27 Flexible connection*
28 Expansion vessel, secondary circuit*
29 Dirt trap*
30 Shut-off valve*
31 Float trap (with condensate bowl)*
32 Secondary exhaust gas silencer*
33 Gas anti-vibration fitting*

*Not included in standard delivery



AA Exhaust gas outlet
AKO Condensate drain
Gas Gas inlet
R Heating return
F Heating flow
Vent Extract air fan

1 Gas solenoid valve
2 Thermally activated shut-off facility with ball valve
3 Gas filter
4 Solenoid valve
5 Gas valve proving
6 Solenoid valve
7 Lambda servovalve
8 Combustion air filter
9 Gas-air mixer
10 Speed controller
11 Zero pressure regulator
12 400V power current
13 Synchronous generator
14 Gas fuelled reciprocating engine
15 Lambda control
16 Catalyst
17 Exhaust gas heat exchanger
18 Primary exhaust gas silencer
19 Drain & fill valve for engine coolant
20 Engine coolant heat exchanger
21 Drain & fill valve for heating water
22 Heating circuit pump
23 Angle safety valve for heating water
24 Filler neck for oil tank
24 Engine oil drain
26 Reserve oil tank
27 Automatic oil top up with level indicator
28 Engine coolant pump
29 Fuse for engine coolant circuit
30 Float trap (with condensate bowl)*
31 Secondary exhaust gas silencer*
32 Flexible connection*
33 Shut-off valve*

*Not included in standard delivery

CHP technical data

	CHP CE 19 NA module		CHP CE 50 NA to CE 240 NA modules			
	Non-condensing	Condensing	CE 50 NA	CE 70 NA	CE 140 NA	CE 240 NA
General						
Nominal heat output at 80/60°C (kW_{th})	15.5-31	–	–	–	–	–
Nominal heat output at 50/30°C (kW_{th})	–	19-38	–	–	–	–
Nominal heat output at 90/70°C (kW_{th})	–	–	40-80	54.5-109	106-212	187-374
Nominal electrical output at 80/60°C (kW_{el})	9.5-19	9.5-19	–	–	–	–
Nominal electrical output at 90/70°C (kW_{el})	–	–	25-50	35-70	70-140	120-240
Modulation range (turn-down) (%)	50-100	50-100	50-100	50-100	50-100	50-100
Gas input (kW)	27-54	27-54	74-148	102-204	192-384	334.5-669
Net thermal efficiency (%)	57.3	70.2	54.1	53.4	55.2	55.9
Net electrical efficiency (%)	35.1	35.1	33.8	34.3	36.5	35.9
Net overall efficiency (%)	94.2	105.4	87.8	87.7	91.7	91.8
Maximum operating pressure (bar)	6	6	6	6	6	6
Flow temperature (min/max - °C)	80/60	50/30	90/70	90/70	90/70	90/70
Pressure drop @ ΔT 20°C (mbar)	200	200	500	480	550	560
Flow rate @ ΔT 20°C (kg/s)	0.38	0.46	0.96	1.3	2.53	4.47
Module noise level dB(A)	56	56	65	68	71	70
Exhaust with primary silencer noise level (dB(A) in 1m)	66	66	75	79	72	77
Exhaust with primary & secondary silencer noise level (dB(A) in 1m)	35	35	61	64	57	63
Exhaust with tertiary silencer (dB(A) in 1m)	–	–	35	35	35	35
Air outlet silencer segments 1 & 2 (dB(A))	–	–	43	51	59	61
Air outlet silencer segments 1, 2 & 3 (dB(A))	–	–	35	35	35	35
NOx content at 5% oxygen, dry (g NOx/m^3)	≤ 0.125	≤ 0.125	≤ 0.125	≤0.250	≤0.250	≤0.250
Exhaust gas mass flow rate, wet (g/s)	19.7	19.7	53.3	78.1	146.7	255.8
Exhaust gas pressure (Pa)	200	200	750	750	500	500
CO content at 5% oxygen, dry (g CO/m^3)	≤ 0.150	≤ 0.150	≤ 0.150	≤ 0.300	≤ 0.300	≤ 0.300
Design gas supply pressure (mbar)	20-80	20-80	20-80	20-80	20-80	20-80
Operating voltage (V/Hz)	400/50	400/50	400/50	400/50	400/50	400/50
Electrical supply (Phases)	3	3	3	3	3	3
Electrical power consumption (W)	500	500	1,000	1,700	2,500	3,900
Engine						
Engine model	Naturally aspirated “Otto” gas engine					
Principle of operation	Four-stroke	4 in line	4 in line	6 in line	6 in line	V12
Number of cylinders/arrangement	4 in line	4 in line	4 in line	6 in line	6 in line	V12
Gas consumption (m^3/h)	5.4	5.4	14.8	20.4	38.4	66.9
Oil consumption (g/h)	Approx. 2.2	Approx. 2.2	Approx. 40	Approx. 50	Approx. 60	Approx. 100

	CHP CE 19 NA module		CHP CE 50 NA to CE 240 NA modules			
	Non-condensing	Condensing	CE 50 NA	CE 70 NA	CE 140 NA	CE 240 NA
Generator						
Three-phase generator	Asynchronous, water-cooled			Synchronous, air-cooled		
Model output (kVA)	26	26	63	88	175	300
Regulated cos φ	>0.76	>0.76	>0.95	>0.95	>0.95	>0.95
Efficiency under full load cos φ=1 (%)	93.2	93.2	94.2	94.5	95.1	96.1
Stator connection	Star	Star	Star	Star	Star	Star
Maximum ambient temperature (°C)	+60	+60	+40	+40	+40	+40
Voltage (V)	400	400	400	400	400	400
Rated current (A)	37.5	37.5	72	101	202	346
Frequency (Hz)	50	50	50	50	50	50
Speed (rpm)	1,525	1,525	1,500	1,500	1,500	1,500
Cooling	Water			Enclosure air		
Ventilation air fan						
Flow rate (m^3/h)	600	600	400-3,483	400-5,932	400-5,932	400-5,932
Compression (Pa)	180	180	605	605	675	675
Connections						
Flow connection Ø [F] (mm/inch)	DN 25/Rp1"	DN 25/Rp1"	DN 32/ Rp1¼"	DN 40/ Rp1½"	DN 50/ Rp2"	DN 65/ Rp2½"
Return connection Ø [R] (mm/inch)	DN 25/Rp1"	DN 25/Rp1"	DN 32/ Rp1¼"	DN 40/ Rp1½"	DN 50/ Rp2"	DN 65/ Rp2½"
Exhaust connection Ø [AA] (mm)	DN 50	DN 50	DN 65	DN 100	DN 125	DN 150
Extracted air connection Ø [AL] (mm)	–	–	DN 400	DN 400	DN 500	DN 500
Gas connection Ø [GAS] (mm/inch)	Rp½" internal	R½" internal	DN 25/ Rp1"	DN 32/ Rp1¼"	DN 40/ Rp1½"	DN 50/ Rp2"
Condensate connection Ø [AKO]	Hose 18mm	Hose 18mm	Hose ferrule 19mm	Hose ferrule 19mm	Hose ferrule 19mm	Hose ferrule 25mm
Dimensions						
Length (mm)	1,900	1,900	2,930	3,275	3,730	4,380
Width (mm)	900	900	960	960	1,160	1,510
Height (mm)	1,300	1,300	1,730	1,730	1,930	1,980
Service clearances						
Front (mm)	>900	>900	>900	>900	>900	>900
Back (mm)	>900	>900	>900	>900	>900	>900
Right side (mm)	>900	>900	>900	>900	>900	>1400
Left side (mm)	>900	>900	>900	>900	>900	>1400
Width for access (mm)	>750	>750	>960	>960	>1,160	>1,510
Weights						
Weight in operation (kg)	1,115	1,115	Approx. 2,360	Approx. 2,800	Approx. 4,000	Approx. 5,200
Weight at shipping (kg)	Approx. 970	Approx. 970	Approx. 2,200	Approx. 2,500	Approx. 3,900	Approx. 4,400

Bosch Thermotechnology Ltd. training – keeping you up to speed with the latest technology

Many Bosch training courses are LOGIC approved

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 – such as CHP modules.

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 of CHP modules.

State-of-the-art facilities

CHP training is carried out at our new, purpose-built training facilities in Worcester. The facility has been expanded with the opening of a new 400m^2 unit which includes life-size single-storey buildings with working appliances to simulate real installations.

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 Bosch CHP technology.

The training centre also runs certified commercial ACS courses equipping installers with the relevant qualifications for the changeover from domestic to commercial gas work.

Who can benefit from our CHP training course?

Commercial sector installers, engineers and specifiers with the desire to learn and apply new skills, by keeping abreast of industry developments and discover how to best capitalise on the needs of the commercial industry.

Apply now

If you would like further information or to book a place you can contact our training team on **01905 752526**.

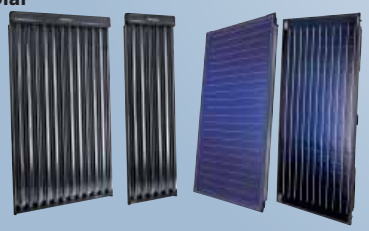
Training courses	Content	Duration
Commercial ACS course CODNC01	Changeover qualification from domestic to commercial, including CIGA1.	5 days
CHP overview course	Product overview, systems and controls.	1 day
CHP training course	Product overview, systems, controls, installation and commissioning.	3 days*
GB162 training course	Features and benefits, energy efficiency and legislation requirements.	1 day
GB162 cascade training course	Product overview, installation, commissioning, service & maintenance.	1 day
Gas-fired instantaneous water heater training course	Product overview, installation, commissioning, servicing and maintenance.	1 day
GB312 & GB402 training course	Product overview, installation, commissioning, service & maintenance.	1 day
Solar product training course	Installation of panels, system design, Bosch solar components, commissioning, servicing, basic fault finding.	1 day
Commercial controls training course	Guide to the varied range of Bosch control options that are available with the commercial boiler range. Controls covered: RC20, RC35, 4000.	2 days

*Subject to charge

Overview of the **Bosch Thermotechnology Ltd. range**

With an extensive product range of energy efficient cast iron boilers, stainless steel boilers, the latest aluminium condensing boilers and an extensive renewable range, we can provide the complete heating and hot water solution. For more information please call **0844 892 3004** or visit **www.bosch-thermotechnology.co.uk**

Range Overview	Outputs	Description
Condensing Pre-mix Aluminium 	90 - 280kW	GB312 A compact floor standing, condensing gas boiler, the GB312 is suitable for room sealed or open flue systems and is fitted with a cast aluminium heat exchanger.
	180 - 560kW	GB312 Cascades Available as a two boiler cascade where higher outputs are required.
	320 - 620kW	GB402 A floor standing, condensing gas boiler, the GB402 is fitted with a cast aluminium heat exchanger and thermally insulated boiler body.
	640 - 1,240kW	GB402 Cascades Can be used as a multiple boiler cascade where higher outputs are required.
Condensing Stainless Steel 	50 - 115kW 145 - 640kW 790 - 1,200kW	SB315 SB615 SB745 High-performance gas condensing boilers with precision engineered condensing heat exchangers made of high-quality stainless steel and with compact dimensions for easy installation.
Steel with Stainless or Galvanised Steel Secondary Heat Exchanger 	650 - 19,200kW	UNIMAT UT-M and UT-L with ECO6/7 A versatile multi-fuel boiler for larger industrial applications with internal/external stainless steel or galvanised steel condensing heat exchanger.
	500 - 17,500kW	UNIMAT UT-M LN and UT-L LN with ECO6/7 Special “Low NOx” variant of the UNIMAT UT-M and UT-L specified with larger combustion chamber for reduced emissions.
High Efficiency Steel 	650 - 19,200kW	UNIMAT UT-M and UT-L Powerful multi-fuel steel boilers for industrial and high demand usage.
	500 - 17,500kW	UNIMAT UT-M LN and UT-L LN Special “Low NOx” variant of the UNIMAT UT-M and UT-L specified with larger combustion chamber for reduced emissions.

Range Overview	Outputs	Description
High Efficiency Cast Iron 	68 - 83kW 86 - 230kW 201 - 510kW 511 - 1,200kW	G215 GE315 GE515 GE615 The GE range is particularly well suited for replacement boilers, or where access to the boiler room is restricted. They offer high efficiency and allow very simple, cost-effective hydraulic system design.
Condensing wall hung 	65 - 100kW	GB162 The GB162 is a stylish and remarkably compact condensing gas boiler. Up to 110% efficiency, quiet and easy to install and maintain.
	Up to 800kW	GB162 Cascades Boilers can be installed in an innovative in-line or back-to-back cascade system of up to 8 boilers, with just 4 boilers back-to-back giving a 400kW output in just 1m^2.
Instantaneous Water Heater 	50kW	CWi47 With an output of 50kW, the CWi47 instantaneous water heater is ideal for use in high end residential, and both small and large commercial applications.
	Up to 600kW	CWi47 Cascades Up to 12 appliances can be cascaded in parallel offering a combined flow rate of up to 250 lts/min.
Gas Absorption Heat Pump 	38.3kW	GWPL 38 The GWPL 38 is a low carbon solution for the delivery of highly efficient, renewable heating for commercial, industrial and residential applications.
	76.6 - 205.5kW	GWPL Cascade System For higher heat demands, the GWPL 38 can be supplied in a factory-assembled rig-mounted multi heat pump cascade of up to 205.5kW, and larger cascade systems are available if required.
Solar 		SKR6 and SKR12 Evacuated tube portrait collectors.
		SKS 4.0 and SKN (Lifestyle) Flat plate collectors offering both portrait and landscape orientation.
Biomass 		Biomass Heating Bosch has formed an alliance with leading biomass specialist Econergy to deliver low carbon heating solutions to the commercial sector.

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