High Efficiency and Condensing Boilers and Cascade Systems

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In the UK, Buderus is a trading name of BBT Thermotechnology UK Ltd.
Buderus' policy is one of continuous research and development and this may necessitate alterations to the specification from time to time. Therefore, when preparing for the installation of your appliance it is important that the instructions issued with the unit are carefully read and followed.

All information is correct at time of going to press. Buderus reserves the right to alter any information where necessary. E&OE.
Discover Buderus...

Buderus is one of the largest heating brands world-wide and enjoys a market-leading position in sales of gas condensing boilers across Europe. The German owned heating technologies brand has a manufacturing heritage stretching back over 275 years and has been developing and distributing advanced commercial condensing boilers in the European market for decades.

Rigorous quality testing of each and every component is carried out to ensure that each Buderus boiler delivers high levels of fuel efficiency, consistent heating and hot water performance and a long operational life.

Buderus commercial boilers are manufactured in Germany and Holland, with the main plants being in Lollar, Eibelshausen and Deventer. Condensing boilers without inputs of up to 19 megawatts are available.

In the UK the Buderus brand is part of BBT Thermotechnology UK Ltd, a company at the forefront of heating and hot water technology in the domestic and commercial market sectors. It has a diverse portfolio of heating products and brands, with an international focus and a commitment to the development of sustainable heating technology solutions for the future.
Modern condensing boiler technology provides an economic solution for heating thanks to significantly lower fuel consumption. The reduced heating costs mean that the overall cost of installing a gas condensing boiler can often be recovered within a few years. A modern boiler system also adds value to the building by increasing its rentable value. In addition, installing a condensing boiler is a key measure in meeting modern building regulations regarding the installation of environmentally friendly technology.

**Get up to 15% extra**

The basic principle of condensing technology is that it utilises the energy which would otherwise be lost through the flue in a conventional heating system – i.e. the flue gases contain “latent heat”. Flue gases are intensively cooled on the heat exchanger surfaces allowing the water vapour contained in the flue gases to condense in the boiler. This releases additional energy which is then used for heating. As a result of this Buderus boilers can achieve up to 110% nett efficiency (NCV – Nett Calorific Value).

In comparison with conventional systems, a Buderus condensing boiler can save up to 15% of heating costs with gas, and up to 10% with oil. Potential savings are significantly higher when comparisons are made with older boilers.

**Low return temperature for greater efficiency**

Condensation only starts to occur when the return temperature is below the dew point of the combustion gases. The basic benefit of a condensing boiler results from having the lowest possible flue temperature. Low flue gas temperatures are achieved with highly efficient heat exchanger surfaces, two stage or modulating burners, and also by appropriate operating conditions such as low return temperatures.

**Economical throughout the year**

With all Buderus controls it is possible for the return temperature to remain below the dew point, meaning the boiler is in condensing mode for more than 90% of the year.

If a heating system has a maximum designed temperature of 75/60°C to account for the coldest weather conditions, the use of modulating controls allows the boiler to condense for more than 96% of the year. In new buildings with good thermal insulation even lower flow and return temperatures can be used, further increasing the potential savings created by condensing boiler technology through the whole year.

**Investments that make sense**

Compared with a conventional boiler, the investment costs of a modern condensing boiler are normally higher. However, for medium and higher output ranges, these investments soon pay for themselves. Condensing gas boilers save so much energy in daily use that the costs of the heating system are recovered in a few years.

**For use anywhere**

Whether you are planning projects for private, local authority housing, or commercial premises, the wide range of outputs offered by Buderus means you are certain to find a condensing heating system to suit your needs. From a simple apartment building to a large block of flats, from schools, sports centres or office buildings, right through to larger commercial premises and production facilities.
The 800 Range of light commercial condensing boilers represents over 25 years of research and development by Buderus. These versatile boilers can be combined and controlled as part of a multi-boiler cascade system, and are designed to provide flexible and energy-efficient heating solutions for light commercial applications. The variety of outputs available in the 800 Range means that individual boilers are also suitable for large domestic installations with high demands for heat.

**Flexibility and high efficiency**

The 800 Range cascade system is designed to provide a simple and flexible solution for multiple boiler applications, enabling the installation to be tailored to meet the space and energy requirements of the customer. Cascade kits are available with all of the necessary support frames, pipe connections, valves and headers to ensure fitting is straightforward and reliable.

The 800 Range is available in outputs of 43 and 60 kW and in a cascade system combined outputs of up to 120 kW.

**Cascade, multi-boiler solutions**

The Cascade system provides many advantages for commercial installations. The output can better match the demand for heating throughout the year by controlling the number of boilers in operation at any one time. This creates significant energy savings and more consistent levels of comfort.

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**Heat Exchanger**
- Tried and tested, high quality aluminium heat exchanger
- Up to 109% efficiency
- SEDBUK band ‘A’ rating

**Gas-air Unit**
- Always a perfect gas-air mixture
- Fan and gas valve integrated into one unit
- Simple to service

**Ignition and Ignition**
- Glowplug ceramic pin reaches 1,200°C, ensuring first time reliable ignition

**Burner**
- Made of hard ceramic material for cleaner low NOx combustion
- Modulation down to 30%

**Pump**
- Variable speed energy saving pump to match system demand

**Controls - UBA Control Box**
- Provides detailed status information on service display
- Communicates with Buderus room thermostatic controls
- The 800 boiler is fitted with an RTH converter as standard to allow use with 230V controls

The 800 Cascade systems are available with their own dedicated control system. The MBC2 controller is suitable for use with the Buderus thermostat and the Buderus IRT30 timer for Cascades of up to two boilers. The MBC unit offers sequence control of the boiler modules to allow the output demand to evenly spread through the entire boiler installation. Optimised and weather compensated options make Cascades the most energy-efficient solution for commercial heating installations. Cascade control systems can provide definitive energy management solutions to ensure both comfort and economy.
GB162

Compact power

The compact dimensions and lightweight wall-mounted boilers in the GB162 range provide an innovative solution where space is limited. Persuasively low investment costs and excellent energy efficiency make the GB162 the perfect answer to installations where space is at a premium but demand for a modern heating solution is high.

Setting standards with condensing boiler technology

Modern condensing boiler systems from Buderus set new standards in heating efficiency by using an Energy Management System (EMS) which saves energy and reduces emissions. Buderus boilers achieve their outstanding performance thanks to the large heat exchanger surfaces which optimise the condensing process and maximise energy usage. With a system designed at 70-50 °C, condensing performance can be achieved all year round.

Easy planning

The GB162 can be simply integrated into any system design. For example, when renovating an older boiler room the compact GB162 is an excellent choice. The boiler is wall mounted, so removes the need for large floor standing boilers and has an extremely flexible flue system allowing it to be installed easily in a variety of locations.

Depending on conditions in the buildings, the flue system can be room sealed or open vented. The room sealed standard flue uses a concentric pipe-in-pipe system where the flue gas flows through the inner pipe and fresh air required for combustion is drawn in through the outer pipe.

Higher quality for a longer life

Selection of the highest quality components and the robust construction of Buderus boilers is immediately apparent on close inspection of our products, and it is this philosophy that makes the GB162 particularly durable. The compact finned aluminium heat exchanger made using ALU plus technology, is an excellent example of Buderus engineering and design working in perfect harmony. The surface of the aluminium has been treated using plasma polymerisation and a silicon compound to keep maintenance and cleaning costs to a minimum. This process also helps to maintain the efficiency of the boiler as the heating surfaces remain clean even after long periods of usage, and the spiral-cut tube helps generate optimum transfer of heat.

Features and benefits of the GB162 at glance:
- Innovative ALU plus technology condensing boiler heat exchanger for the longest possible life and easy servicing
- High quality ALU plus heat exchanger stays clean making maintenance simple
- Compact dimensions: 100 kW output in a small space, with a lift weight of only 70 kg
- In cascades up to 800 kW: 400 kW in 1m²
- Quick-Install: innovative cascade concept for easy installation
- Efficiency of up to 110% (NCV)
- Ideal for smaller commercial buildings and large domestic properties
- No minimum flow rate required
- Whisper quiet
- Low flue gas emissions
- Integrated BC10 boiler control with space for the optional RC30 Digital Programmer and extension modules
- Modulation down to 19% of total output

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**GB162**

**Compact multi-boiler solutions**

High output boilers do not necessarily require lots of space. The GB162 with ALU plus is a perfect example of this. This extremely compact, wall-mounted gas condensing boiler with 100 kW output is particularly suitable for commercial buildings. As heating demand increases, the GB162 range simply grows to suit. For example, an 8 boiler cascade provides outputs from 19 kW to 800 kW. 400 kW can be installed in just in 1m².

**Simply efficient with no minimum flow rate**

GB162 boilers don’t have a minimum flow rate. This makes designing a system much simpler. Savings are also made on the electrical running costs. Modulating fans and optional Buderus pump groups adjust their output to match the actual system demand and as such overall electricity consumption can fall by up to 40% in some cases. The GB162 is also incredibly quiet in operation, due to the low resistance of water flowing through the boiler and the excellent insulation. This is a particular benefit for those boilers being installed in, or in close proximity to, living areas. The comprehensive range of Buderus accessories provides the best solution. They are pre-calculated to give the best performance and are simple and quick to install, reducing installation costs.

**Better solutions with cascade, multi-boiler options**

The GB162 is suitable for cascade operation and so the system design options increase substantially. In large buildings you can connect up to eight boilers in a cascade to achieve a heat output of up to 800 kW, with a modulation down to only 19 kW or less than 2.5% of total output.

The Buderus 4121 control system has everything you need to ensure maximum operating efficiency from your GB162 boiler. Adding the FM 456 cascade module, it will control up to two additional boilers, with module FM 457 up to four additional boilers. With an extra 4122 and FM 457, up to eight boilers can be controlled or additional modules can be added to control more heating circuits.

The Buderus modular control system provides a solution for any heating system and is a cost-effective alternative to installing a Building Management System. A low loss header should be installed to separate the boilers from the rest of the heating system. This, together with the optional Buderus modulating boiler pump group, ensures that flow volumes are balanced, efficiency is high and hydraulic performance is optimised.

**Quick and simple to install**

The innovative cascade design used with the GB162 range means that it is particularly installation-friendly, saving fitting time and costs. The boiler connection kit is supplied with all the necessary fittings and accessories, so the installer simply builds the framework and joins everything together. A quick and easy job. After installation everything fits together perfectly, pipework is tidy, and the boilers are ready to be connected to the main heating system.

**The full cascade kit:**
- Available in back-to-back (TR) or in-line (TL) for up to 8 boilers.
- Kit includes:
  - Mounting frames
  - Support legs
  - Main gas pipe
  - Flow and return headers
  - Low loss header
  - Boiler connecting pipework
  - Full insulation

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**Condensing wall-mounted GB162 boilers with a cascade kit**

**GB162 four boiler back-to-back cascade with up to 400 kW in 1m². Boilers shown with Buderus pump groups and the full cascade kit.**

**Buderus cascade kits and pump groups**

**1st step:**
- Set up frame

**2nd step:**
- Install individual connecting parts

**3rd step:**
- Mount boilers and connect with the hydraulic system using the pump groups
GB312

High quality gas condensing boilers

A compact and modern floor-standing commercial condensing boiler, solidly built to provide reliable and efficient heating performance year after year. The GB312 is an excellent choice for medium-large buildings, office blocks and commercial installations that require the very latest in environmentally friendly heating technology. Buderus uses a high performance condensing aluminium heat exchanger in the GB312 range to help maximise heat transfer and maintain efficiency levels, even when demand for heat is low. This results in a very impressive price/performance ratio by reducing fuel consumption and ensuring a quick pay back of initial investment costs.

Flexible installation options

The GB312 range provides the design engineer with a high degree of flexibility as it can be operated as a room sealed or open vented boiler. The compact dimensions of the boiler frame and low weight of the boiler make replacement installations straightforward. At only 612mm wide without the casing the boiler fits through most doorways. The optimised hydraulic resistance of the boiler means a simple system design is possible. As with all high output, compact boilers, water quality must be managed. In areas with water defined as moderately hard or harder, it is necessary to fill the heating system with treated water. Buderus recommends the use of Sentinel X100.

GB312 with water storage heater

Water storage heater

GB312 heating systems are straightforward and unproblematic to design. The boilers can be installed with room sealed or open vented flues to ensure a high level of installation flexibility.

100% quality, inside and out

As with all Buderus boilers the GB312 is subject to the highest quality checks and standards to ensure reliability, safety and a long service life.

Buderus carefully select high quality components that work in harmony with one another to obtain even more efficiency from the boiler. The modulating pre-mix gas burner for example uses a controlled firing system (SAFe) to exactly match its output to the heating demand. The burner is linked to a digital combustion control that continually monitors the system’s heat requirement so that energy is not wasted when demand for heat drops. The burner can operate between 30% and 100%. Burners are also factory set, so once installed, the boiler is ready to operate immediately. A fully modulating pre-mix burner also means the boiler is significantly quieter in operation, as there is no need for continuous on/off burner cycling.

The Buderus Service Diagnostic System (SDS) is equipped as standard, and is designed to assist the heating engineer in identifying the current operating status as well as any potential irregularities in the heating system.

Simple to service

Buderus GB312 boilers are designed so that all components can be easily serviced and maintained from the front. Heating surfaces can be easily accessed if mechanical cleaning is required.

GB312 heating systems are straightforward and unproblematic to design. The boilers can be installed with room sealed or open vented flues to ensure a high level of installation flexibility.

Flexible installation options

Water storage heater

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Whisper quiet

Cascade: multi-boiler solutions

If demand for heat is high, it is also possible to install the GB312 as a two boiler cascade system offering potential heat outputs of up to 560 kW. The cascade system contains all parts necessary for the installation and can be simply and quickly connected to the existing pipe system, saving time and installation costs.
SB Range

The premium condensing boiler for the most demanding commercial and industrial heating systems

With efficiencies of up to 109%, it is not surprising that the SB315, SB615 and SB735 stainless steel condensing boilers are considered top of the range models in the Buderus commercial boiler range. Wherever there is a need for efficient heat production, they are the optimum solution, delivering maximum energy savings. The high water content makes these boilers tolerant of very large volume heating systems.

High quality in a compact space
The three pass construction with a water cooled combustion chamber provides the most efficient combustion in the smallest space. Integration of the condensing heat exchanger after the main combustion chamber makes the boiler particularly compact. A smaller boiler is easier to transport and install so the SB Range is ideal for installations where space is limited. Corrosion-resistant stainless steel is used in all parts that come into contact with hot flue gas and condensate for added efficiency and durability.

Lower emissions
The SB315, SB615 and SB735 offer more than just first class efficiency. In combination with a two-stage or modulating gas burner, they also provide very low levels of emissions.

Effective sound insulation
The SB boiler range has been carefully designed to ensure the quietest possible operation. Acoustic performance has been enhanced by introducing several noise reduction measures within the heat exchanger.

Simplification of system design
The SB range has no minimum requirements for flow rate, operating temperature or burner output. Heating circuit flow and return pipes can be simply connected as there is no need for additional equipment such as flow monitors, mixing valves or shunt pumps. Separate return pipe connections ensure optimum condensation allowing efficiencies of up to 109% to be achieved. The boiler allows both high and low temperature heating circuits to be connected in the best possible way. Buderus condensing boilers come with two return connections as standard, and by separating high and low temperate returns, further energy savings can be made.

Kondens+© heating surfaces
With its patented Kondens+© heating surface technology, Buderus has introduced yet another innovative idea for even better energy utilisation.

The heat exchanger surfaces are precisely crimped to enable the greatest possible quantity of water vapour to condense. The crimped tube creates micro-turbulence which brings almost the entire volume of hot flue gases into contact with the cold heat exchanger surfaces. This effect is enhanced as the diameter of the heat exchanger tube decreases along its length therefore maintaining the speed of the flue gases moving through the heat exchanger, resulting in minimal pressure loss and optimum heat transfer. With this unique system efficiency can be increased by up to 10% when compared with smooth heat exchanger surfaces and flue temperatures which are only 5 to 10°C above the return temperature. The flow of water through the boiler is also optimised as the main volume of water flows in the opposite direction to the hot flue gases. This means that the flue gas always meets the coldest part of the return water. An additional benefit is that the heating surfaces are practically self-cleaning, as the condensate simply runs away.

Features and benefits of the SB Range at a glance:
- Efficiencies of up to 109% (NCV)
- Stainless steel combustion and heat exchanging surfaces
- 2 return connections for separation of high and low temperature heating circuits
- Low hydraulic resistance
- Low flue resistance
- 3 pass construction
- Combustion chamber optimised for lower emissions
- For use with gas pressure jet burners
- Kondens+© heating surfaces

The lower temperature return from an underfloor heating system or hot water cylinder is separated from the main heating circuit return. This improves the efficiency of the whole heating system and is the best way to operate a condensing boiler.

SB315
SB615
SB735

* The boiler is shown with a burner cover (not available in the UK)
GE PLUS Range

Cast iron condensing systems

External condensing heat exchangers from Buderus turn an Ecostream cast iron boiler into a high-performance condensing boiler. These systems can be installed in almost any location as the boiler is delivered in sections for assembly in the boiler room. The GE PLUS range is best used in conjunction with a gas burner, but is also suitable where oil is used as an emergency back-up fuel for short periods.

The technology of cast iron boilers with condensing heat exchangers makes systems easy to design with many installation options available.

Split system solutions
Where space is restricted, cast iron boilers fitted with external condensing heat exchangers are ideal. The narrow condensing heat exchanger will fit through any door and the cast iron boiler sections can be transported separately and assembled where the boiler is to be installed making the GE315, GE515 and GE615 PLUS range the perfect choice for replacement jobs in older properties.

Environmentally friendly technology
The three pass construction with a water cooled combustion chamber means that a Buderus Ecostream boiler fitted with an environmentally friendly gas burner helps to achieve lower flame temperatures and therefore lower emissions. Patented Thermostream technology also provides uniform temperature distribution throughout the boiler, even when demand is very high, and so creates the optimum conditions for economic and robust operation of the system.

Higher performance with less energy
Ecostream boilers fitted with external heat exchangers produce energy savings that you can actually see. Specially developed Kondens+ heating surfaces increase the amount of condensation and boiler efficiency. The innovative design of the high quality stainless steel Kondens+ heat exchanger surfaces makes the boiler extremely fuel efficient and cost-effective. This results in efficiency of up to 107% (NCV). The high level of energy savings means that users will quickly recover the investment costs for the GE PLUS range.

Easier planning
Buderus Thermostream technology simplifies the planning and specification process for Ecostream boilers as it is not necessary to take either the minimum return temperature or the minimum flow rate into account. Low return temperatures are the basis for achieving optimum condensing performance. All gas condensing heat exchangers have two separate return connections as standard to enable heating circuits at different temperature levels to be connected separately. The systems are suitable for gas installations where oil is used for limited periods as a back-up fuel. Low hydraulic resistance allows boilers and heat exchangers to be connected in series so that the whole flow volume is running though the condensing system. Separate headers or heating circuit pumps are in most cases unnecessary, this substantially reduces investment and energy costs, as well as planning and installation costs.

Features and benefits of the GE PLUS Range at a glance:
- Ecostream boiler
- Thermostream technology – no minimum flow volume and no minimum return temperature necessary
- Low investment costs
- High efficiencies of up to 107% (NCV) with external condensing heat exchangers
- Simple system hydraulics
- Compatible with oil when used as a back-up fuel for limited periods
- Easy to install, even in cramped conditions, as cast iron sections are supplied separately
SB825L and SB825L LN

Reliable technology

The most important characteristics of a large industrial heating system are maximum economy and reliable operation. The SB825L and SB825L LN are extremely robust and energy-efficient. From manufacture through to commissioning, high quality standards are applied and continually monitored.

Condensing technology for increased efficiency and economy

The flue gas temperatures in the condensing heat exchanger are just above the return temperature, this gives the best level of condensing performance.

Switch to oil on peak load

If the gas supply is temporarily unavailable, the SB825L condensing boiler can be switched to oil for up to 4 weeks. The prerequisite for this is that the system is equipped with a dual fuel oil/gas burner and the operating conditions are suitable for oil firing. A flexible fuel system will allow a continuous operation even when gas supplies are interrupted.

SB825L LN – Low NOx industrial boilers

The SB825L LN is specially designed for when extremely low flue emissions are required. The large combustion chamber reduces the flame temperature and subsequently lowers harmful emissions.

Make the most of your energy

The size of the condensing heat exchanger can be optimised according to the type of building to be heated. The compact dimensions of the condensing heat exchanger means that the condensing version of the SB825L boiler does not require significantly more space than the high efficiency S825L version.

Optimise efficiency: three pass technology

Three pass technology and effective design of the heating system provide the best conditions for low emissions and high efficiency. The optimal control of water flow in the boiler and the control of burner modulation without the requirement for a minimum burner output, ensure particularly effective operation. Both will effectively reduce the need for on/off cycling of the burner.

Service and cleaning made easy

Even Buderus’ largest boilers can be cleaned and maintained easily. The heating surfaces and the combustion chamber can be accessed through the main door; the large number of smooth steel smoke tubes in the heat exchanger make the use of baffles unnecessary and so cleaning and maintenance can be carried out quickly and thoroughly.
High Efficiency Cast Iron Boilers

Thermostream and cast iron – a revolution in boiler technology

Buderus cast iron boilers are a sound investment. Whether you are using gas, oil or a combination of both, cast iron can provide a very economic and effective method of heating.

Buderus cast iron technology – robust and reliable

When the boiler is fired from cold in low temperature conditions, condensate can form initially and attack the surfaces which come into contact with flue gases. This is why Buderus uses a special cast iron that is particularly resistant to condensate.

Cast iron is also very easy to mould and shape and allows the combustion chamber and heat surfaces to be designed to ensure optimum transfer of heat and the best possible use of energy.

Compact performance

The compact dimensions of the GE boiler makes the footprint extremely small in relation to its output. The components of Buderus cast iron boilers can also be supplied in unassembled sections to further assist transportation and installation of the product.

Thermostream technology – high efficiency with built-in boiler protection

Buderus use thermostream technology in its GE315, GE515 and GE615 cast iron boilers.

In a conventional cast iron boiler additional pumps and mixing valves are required in order to keep the return temperature high enough to prevent condensate forming inside the boiler. If condensate builds up in a cast iron boiler, thermal stress can occur within the boiler sections causing them to fail and energy is wasted burning off this condensate. Thermostream technology removes this situation by partially mixing the cold return water with the warmer water that is already flowing through the heat exchanger. This method increases the temperature of the return water before it comes in contact with the combustion chamber; therefore the conditions for condensation cannot occur during normal operation as the temperatures on the heat exchanger surface remain above the dew point.

The boiler has built-in protection. With other boilers you have to pay to provide this protection.

Conventional Cast Iron Boilers

Buderus Ecostream Cast Iron Boiler

Hydraulic diagram of a heating system with mixing pump and actuators

With an Ecostream boiler, system planning is easier and material and labour costs are reduced.

Cast iron technology – for ultimate flexibility in design and construction:

- Simple design without the need to increase return temperature
- Economic low temperature operation
- High efficiencies of up to 96% (NCV)
- Lower electricity costs, as no shunt pump or mixing valve are required
- Reliable operating because of the simple system design. Fewer parts means less maintenance
- Low investment and installation costs
G/GE Range – High Efficiency Cast Iron

Gas, oil or both, with the G215, GE315, GE515, GE615 Range

Depending on your project requirements, the versatile G and GE range of cast iron boilers can be operated with an oil or gas burner. It is also possible to use a dual fuel burner which can be switched over from gas to oil when the gas supply is interrupted.

G/GE Range

High Efficiency

Cast Iron

Features and benefits of the G/GE Range at a glance:

- Variable outputs of 78 to 1,200 kW
- Economical with standard utilisation rates of up to 96% (NCV)
- Three pass construction for lower emissions
- Compact boiler dimensions
- Easy maintenance and cleaning
- Buderus thermostream technology provides a simple system which is very reliable in low temperature operation and does not require a minimum return temperature to be maintained
- Boilers shown with optional Buderus 4000 control units

Economic and efficient

The Buderus modern cast iron boiler design helps to create optimum combustion conditions: efficiency rates of up to 96% (NCV) are possible with low flue gas temperatures and effective all-round thermal insulation.

Cleaner combustion

Combustion chambers for all Buderus cast iron boilers have a large front door and are therefore easily accessible making maintenance quick and simple. Combustion gas channels can also be easily cleaned from the front.

Every single cast iron component in the GE range of cast iron boilers fulfils an important function: it extracts heat from the combustion gases and transfers this energy to the system water. Small fins in the combustion chamber absorb the radiated heat and the larger fins in the heat exchanger absorb convected heat. The cast iron components precisely control the distribution and flow of combustion gases optimising the heat exchange.

A flexible sealing strip made of butyl rubber is pressed into the sealing grooves to ensure that each component is safely connected with a gas-proof seal.
S825L and S825L LN Range

Economical from start to finish

The Buderus S Range of steel boilers really come into their own when they are used as peak load boilers for dual-boiler systems, e.g. in industrial applications which often have to be run at higher operating temperatures. These boilers have been designed to maximise return on investment with very high levels of efficiency, low maintenance costs and excellent compatibility with modern heating systems.

Optimum combustion conditions

The length and diameter of the combustion chamber in the S825L range is precision-designed to suit the flame geometry and delivered heat output. Matching the combustion chamber dimensions to the required output will also help to reduce NOx emissions.

The right price and performance

The S Range is a high performance commercial boiler that provides excellent value for money and a quick return on investment. Intelligent boiler design, the selection of the right burner, the large dimensions of the heat exchanger surfaces for low flue gas temperatures and the effective thermal insulation result in an excellent price/performance ratio.

Optimum efficiency: Three pass technology

The three pass technology incorporated in Buderus steel boilers together with the effective heat exchanger design, offer the best conditions for low emissions and efficiencies of up to 94% (NCV). The optimal control of water flow in the boiler and the control of burner modulation without the requirement for a minimum burner output, ensure particularly effective operation. Both will effectively reduce the need for on/off cycling of the burner.

S825L LN – Low NOx industrial boilers

The S825LN is specially designed for when extremely low flue emissions are required. The large combustion chamber reduces the flame temperature and subsequently lowers harmful emissions.

Fluing and Accessories

Flexible siting options for your heating system

Modern heating technology can be fitted practically anywhere, and as Buderus condensing boilers can be used with a variety of flue gas systems, installers and specifiers enjoy a high degree of flexibility when it comes to siting the boiler.

Open flue systems

Boilers which work using open flues draw the oxygen necessary for combustion from the area surrounding the boiler, which has to be sufficiently ventilated. The flue gases are carried away through a corrosion-resistant flue pipe or a chimney which is suitable for the type of boiler being used. Condensing boilers require a special flue due to the condensate produced.

Room sealed systems

The concentric Buderus flue system works by moving flue gases through the inner pipe, whilst the necessary combustion air enters the system via the outer pipe. To ensure maximum reliability, quality and safety all Buderus flue gas systems are rigorously tested to the latest industry standards.

Whole system solutions

Buderus offers a wide range of accessories to assist with the installation of the boiler range contained within this brochure. This includes all safety and control equipment to ensure that you get the best performance from your Buderus boiler.
Buderus 4000 Control System and EMS

The Buderus GB162 and GB312 are equipped as standard with an Energy Management System (EMS). This state-of-the-art technology allows the heating engineer quick and easy access to all functions of the boiler and has a standard operating system that works in harmony with Buderus’ extensive range of controls. For larger commercial heating projects even greater control possibilities are available with the modular 4000 series.

Using the RC30 and RC20 the heating can be conveniently controlled from virtually anywhere. The RC30 can be installed in the boiler or away from the boiler where it can also work as a room thermostat. The RC20 can be added to additional areas as a room thermostat to control a second heating circuit.

Controls that adapt to your needs
EMS allows the control system and the automatic firing system in the boiler to communicate with one another. This ensures smooth interaction between the boiler and the burner, and a much smoother and more efficient operation of the system. If a fault should occur, it is detected at an early stage by the integral Buderus Service Diagnostic System (SDS) and shown clearly on the RC30 digital text display. These control units are designed to control up to two heating circuits in smaller commercial installations or in large detached houses with high requirements for heat. In larger commercial heating systems or where the applications are more complex, EMS communicates directly with the high-performance Buderus 4121, 4122 or 4323 control systems.

Invest in the future: 4000 Series controls. The function of a BMS system at a fraction of the cost
The Buderus 4000 series of controllers provides a wide range of control options for single and multi-boiler systems. The 4000 series can control virtually any heating system, whether an 8 boiler cascade or a simple connection into an existing building management system.

Applications for EMS with 4000 series:
- Cascade switching
- Extendable - Control up to 256 heating circuits
- Use in conjunction with other heat sources such as solid fuel boilers, heat pumps etc.

Simple to use controls RC30 and MEC2
MEC2 and RC30 Digital Programmers have a plain text display for the input of heating system operations and for communication of boiler diagnostics and servicing messages. They can be fitted either on the boiler or wired to the boiler from the living or working space. The MEC2 is supplied with the 4211, 4311, 4121 and 4323 controls.

Boiler control integrated as standard in GB162 and GB312

4000 series control units
<table>
<thead>
<tr>
<th>Condensing boilers with external condensing heat exchanger</th>
<th>Condensing boilers with internal condensing heat exchanger</th>
<th>Gas burners one/two step / modulating</th>
<th>Free module plug points</th>
<th>Heating circuits with mixers (max. possible)</th>
<th>Cascade systems</th>
<th>Programmer connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>4211, 4311, 4121, 4312, 4122, 4121/4122, 4323</td>
<td>*</td>
<td>*</td>
<td>2</td>
<td>4</td>
<td>–</td>
<td>+, –</td>
</tr>
</tbody>
</table>

* with additional unit ZM 427
1) Only in conjunction with heating circuit mixers and function module FM 442
2) Used as constant control equipment in conjunction with master control
3) Only with modulating burners with EMS

Convenient and easy to use with a modern design and functionality
The MEC2 Digital Programmer with its simple ‘press and turn’ operation makes setting and changing options easy. The BFU is a remote control which allows the boiler to be adjusted from the living or working space. It is supplied with a room temperature sensor.

Invest in the future: 4000 Series controls. The function of a BMS system at a fraction of the cost
The Buderus 4000 series of controllers provides a wide range of control options for single and multi-boiler systems. The 4000 series can control virtually any heating system, whether an 8 boiler cascade or a simple connection into an existing building management system.

Applications for EMS with 4000 series:
- Cascade switching
- Extendable - Control up to 256 heating circuits
- Use in conjunction with other heat sources such as solid fuel boilers, heat pumps etc.

Simple to use controls RC30 and MEC2
MEC2 and RC30 Digital Programmers have a plain text display for the input of heating system operations and for communication of boiler diagnostics and servicing messages. They can be fitted either on the boiler or wired to the boiler from the living or working space. The MEC2 is supplied with the 4211, 4311, 4121 and 4323 controls.

Boiler control integrated as standard in GB162 and GB312

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<table>
<thead>
<tr>
<th>Condensing boilers with external condensing heat exchanger</th>
<th>Condensing boilers with internal condensing heat exchanger</th>
<th>Gas burners one/two step / modulating</th>
<th>Free module plug points</th>
<th>Heating circuits with mixers (max. possible)</th>
<th>Cascade systems</th>
<th>Programmer connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>4211, 4311, 4121, 4312, 4122, 4121/4122, 4323</td>
<td>*</td>
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* with additional unit ZM 427
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### Technical Data

#### SR12 (Single Boiler)

<table>
<thead>
<tr>
<th>kW</th>
<th>40</th>
<th>60</th>
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<tbody>
<tr>
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<td>109</td>
<td>110</td>
</tr>
<tr>
<td>Nominal Heat Output kW 40/30°C</td>
<td>12.9-42.9</td>
<td>23.7-60</td>
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<tr>
<td>Max Flow Temperature (°C)</td>
<td>45-45</td>
<td>45-45</td>
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<tr>
<td>Height (mm)</td>
<td>805</td>
<td>685</td>
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<td>Width (mm)</td>
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#### SR12/S (Single Boiler)

<table>
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<tr>
<th>kW</th>
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<td>Efficiency % (NCV) 50/30°C</td>
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<td>25.5-95.5</td>
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<td>Max Flow Temperature (°C)</td>
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#### SR12/SB (Single Boiler)

<table>
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<td>109</td>
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<td>109</td>
<td>109</td>
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<tr>
<td>Nominal Heat Output kW 40/30°C</td>
<td>50</td>
<td>70</td>
<td>90</td>
<td>115</td>
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<tr>
<td>Nominal Heat Output kW 50/30°C</td>
<td>45.2</td>
<td>63.5</td>
<td>81.8</td>
<td>104.7</td>
</tr>
<tr>
<td>Max Flow Temperature (°C)</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
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<tr>
<td>Max Working Pressure (bar)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Weight (kg)</td>
<td>295</td>
<td>390</td>
<td>414</td>
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<td>1522</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>894</td>
<td>894</td>
<td>894</td>
<td>894</td>
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<tr>
<td>Depth for access (mm)</td>
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<td>812</td>
<td>812</td>
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<tr>
<td>Length (without burner) (mm)</td>
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#### SR13 (Single Boiler)

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<td>109</td>
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<tr>
<td>Nominal Heat Output kW 40/30°C</td>
<td>50</td>
<td>70</td>
<td>90</td>
<td>115</td>
</tr>
<tr>
<td>Nominal Heat Output kW 50/30°C</td>
<td>45.2</td>
<td>63.5</td>
<td>81.8</td>
<td>104.7</td>
</tr>
<tr>
<td>Max Flow Temperature (°C)</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
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<tr>
<td>Max Working Pressure (bar)</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Weight (kg)</td>
<td>295</td>
<td>390</td>
<td>414</td>
<td>519</td>
</tr>
<tr>
<td>Height with controls (mm)</td>
<td>1522</td>
<td>1522</td>
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<tr>
<td>Width (mm)</td>
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<tr>
<td>Depth for access (mm)</td>
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<tr>
<td>Length (without burner) (mm)</td>
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#### SR13/S (Single Boiler)

<table>
<thead>
<tr>
<th>kW</th>
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<td>109</td>
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<tr>
<td>Nominal Heat Output kW 40/30°C</td>
<td>50</td>
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<td>90</td>
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<td>81.8</td>
<td>104.7</td>
<td>141.7</td>
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<tr>
<td>Max Flow Temperature (°C)</td>
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<td>120</td>
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<tr>
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#### SR15/5 (Series 5)

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<td>109</td>
<td>109</td>
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<tr>
<td>Nominal Heat Output kW 40/30°C</td>
<td>790</td>
<td>970</td>
<td>1200</td>
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<td>Nominal Heat Output kW 50/30°C</td>
<td>723</td>
<td>898</td>
<td>1080</td>
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<tr>
<td>Max Flow Temperature (°C)</td>
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<td>Max Working Pressure (bar)</td>
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<td>Weight (kg)</td>
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<tr>
<td>Width (mm)</td>
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<td>Length (without burner) (mm)</td>
<td>2808</td>
<td>3016</td>
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</tbody>
</table>

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*+40mm for sound absorbing base.*

**CASCADE SYSTEMS AVAILABLE FOR UP TO 8 BOILERS. FOR FULL DETAILS ON CASCADE SYSTEM SPECIFICATIONS PLEASE VISIT WWW.BUDERUS-COMMERCIAL.CO.UK.
### Technical Data

#### Technical Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>kW 405</th>
<th>kW 470</th>
<th>kW 625</th>
<th>kW 670</th>
<th>kW 1305</th>
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<td>Nominal Heat Output (35ºC)</td>
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<td>1115</td>
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<td>559</td>
<td>608</td>
<td>600</td>
<td>652</td>
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</table>

#### Additional Information

- **SB825L**: Available in Condensing Low NOx SB825LN, High Efficiency S825L, and High Efficiency Low NOx S825LN.

For full details on the entire steel boiler range please visit [www.buderus-commercial.co.uk](http://www.buderus-commercial.co.uk).
### Technical Data

#### GE515 – Supplied in sections

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<th>Model</th>
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<th>640</th>
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<th>920</th>
<th>1020</th>
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<tr>
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<td>96</td>
<td>96</td>
<td>96</td>
<td>96</td>
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<td>Max Flow Temperature (ºC)</td>
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<td>120</td>
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<td>Max Working Pressure (bar)</td>
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<td>96</td>
<td>96</td>
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<tr>
<td>Nominal Heat Output (kW)</td>
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<td>661-740</td>
<td>741-820</td>
<td>821-920</td>
<td>921-1020</td>
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<td>Max Flow Temperature (ºC)</td>
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<td>Max Working Pressure (bar)</td>
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<td>141-170</td>
<td>171-200</td>
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<td>Max Flow Temperature (ºC)</td>
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<td>120</td>
<td>120</td>
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</tr>
<tr>
<td>Max Working Pressure (bar)</td>
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Continued…

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Continued…