

Technical product catalogue

Biofuel, Multifuel and Biogas Burners





Our aim is to ensure the highest quality of our products



Quality is built-in

Bentone started production of burners in Sweden in 1954, and our brand has been a hallmark of quality and performance ever since then. All Bentone products are still designed and produced in Ljungby in Sweden. The fact that all the company functions of R&D, production, planning, sales and technical support are located on the same site, makes us uniquely suited to solving problems and challenges for our customers. This includes new legislation and requirements of certification. Our skilled and loyal workforce will then ensure world class standards of manufacturing and quality assurance.

Over the years, Bentone has built up a multitude of partners who distribute and sell our products in every corner of the world. Our partners and of course the end customers appreciate our dedication to prompt and reliable supply of first class products to each and every market.

Welcome to be part of the Bentone world!



Helene Richmond
CEO
Enertech AB

Medium Combustion Plant Directive MCP

The Medium Combustion Plant Directive (MCPD) regulates pollutant emissions from the combustion of fuels in plants with a rated thermal input equal to or greater than 1 Megawatt thermal (MWth) and less than 50 MWth.

Medium Combustion Plant Directive MCP

The MCPD was proposed as part of the Clean Air Policy Package in 2013. The work to assess the impacts of the Clean Air Policy Package identified cost-effective emission reduction measures for MCPs thus demonstrating a potential for EU source legislation in this area.

This Directive fills the regulatory gap at EU level between large combustion plants (> 50 MWth), covered by the Industrial Emissions Directive (IED) and smaller appliances (heaters and boilers <1 MWth) covered by the Ecodesign Directive.

The MCPD regulates emissions of SO₂, NO_x and dust to air. It aims to reduce those emissions and the resultant risks to human health and the environment. It also requires monitoring of carbon monoxide (CO) emissions. The emission limit values set in the MCPD apply from 20 December 2018 for new plants and 2025 or 2030 for existing plants, depending on their size. The flexibility provisions for district heating plants and biomass firing ensure that climate and air quality policies are consistent and their synergies are maximised.

The MCPD addresses the potential need for Member States to apply stricter emission limit values in areas where this can improve local air quality in a cost effective way.

The Commission will help Member States deal with such hotspots by providing information on the lowest emissions achievable with the most advanced techniques.

Directive 2015/2193/EC (MCP)

Medium Combustion Plant Directive (MCPD) regulates pollutant emissions from the combustion midsize combustion plants was implemented on the 20 of December 2018 (MCP).

Emission class

- Oil burners < 200 mg/Nm³ class 2
- Natural gas burners < 100 mg/Nm³ class 3
- LPG burners < 200 mg/Nm³ class 2



Bentone Ecodesign

The Ecodesign Directive aims at reducing the environmental impact. The Directive actual purpose is to lay down the general principles of ecodesign and to define conditions and needs for setting specific requirements.

Ecodesign Directive

The Ecodesign Directive aims at reducing the environmental impact of products, including their energy consumption throughout their entire cycle of life. The production, distribution, use and end-of life management of energy using products have significant negative effects on the environment.

The Directive actual purpose is to lay down the general principles of ecodesign and to define conditions and needs for setting specific requirements. These requirements can then be researched and tailored to specific product groups and published relatively quickly, and they will relate to environmentally relevant product characteristics, such as energy consumption.

Bentone launched low NOx burners already in 2003 and we have continued to develop and introduce new low NOx burners and will continue to set new standards for years to come.

Ecodesign Directive 2009/125/EC (ErP)

Boilers fitted with an oil- or a gas burner in capacities up to 400 kW for residential heating shall comply according to Ecodesign rules from the 26 of September 2018.

Emission class

- Oil burners < 120 mg NOx/kWh class 4
- Gas burners < 56 mg NOx/kWh class 5



**Ecodesign
2018**
Residential heating



Bentone Bio Fuel Burners

Unlike other renewable energy sources, biomass can be converted directly into liquid fuels, called “biofuels,” these fuels are aimed for the heating of residential homes but will also work as a substitute for the transportation sector. The two most common types of biofuels in use today are ethanol and biodiesel, both of which represent the first generation of Biomass-based biodiesel fuels.

RME

RME or Rapeseed Oil Methyl Esters or FAME (Fatty Acid Methyl Esters) is the most common biofuel in Europe and it is forecasted that the scale of production and consumption of this fuel will continue to increase as a result of the growing demand for diesel fuels. Currently, FAME is added to regular diesel fuels in the amount of up to 10 %.

Bentone was a pioneer especially in Northern Europe where we introduced RME burners to the market already in the early 2100 st century. RME is widely used in the Nordic countries for the heating of residential homes but also as truck diesel where it replaces older types of fuel.

HVO

Hydrotreated vegetable oils (HVO) do not have the detrimental effects of ester type biodiesel fuels, like increased NOx emission, deposit formation, storage stability problems, more rapid aging of engine paraffinic hydrocarbons that are free of aromatics, oxygen and sulfur and have high cetane numbers.

HVO has been used as a substitute fuel in the Nordic countries for several years and Bentone quickly saw the advantages with less consumption of fuel and lower NOx levels. For years we have perfected and tested our range of burners to handle these new Biofuels and we can proudly say that our range of burners are from now on fossil free.



Bio Fuel Burners 15–90 kW

BF 1 Range

Bentone burners are a type of Bio Fuel burner that are commonly used in residential heating systems. There are several benefits associated with using Bentone burners for residential applications.



Benefits

- **High efficiency:**
Bentone burners are highly efficient and can provide a high level of heat output while consuming less fuel than other types of burners. This can result in significant savings on energy costs over time.
- **Low emissions:**
Bentone burners are designed to produce low emissions, which can help to reduce the environmental impact of residential heating systems. This is achieved through advanced combustion technology that produces fewer pollutants than traditional burners.
- **Easy Maintenance:**
Bentone burners are relatively easy to maintain, which can help to minimize the need for repairs and prolong the life of the burner. They are designed to be durable and reliable, and can be serviced by qualified technicians.
- **Versatility:**
Bentone burners can be used with a wide range of fuels, including diesel, kerosene, and biofuels. This makes them a versatile option for residential heating systems, as they can be adapted to meet the specific needs of individual households.

Models 1 stage	Capacity kW
BF 1 FU	15 – 55
BF1 FUV*	15 – 55
BF 1 FUV RME*	15 – 55
BF 1 KS	35 – 90
BF 1 KSV*	35 – 90
BF 1 KSV RME*	35 – 90

Bentone Bio Fuel burners are designed for HVO and RME. The burners also work with older types of fuel.

* V stands for preheater.

Bio Fuel Burners 14–157 kW

Sterling Range

Bentone Sterling burners are known for their high-quality and efficient combustion technology, making them a popular choice for ovens and furnaces.



Benefits

- **Energy efficiency:**
Bentone Sterling burners are designed to provide efficient combustion, resulting in lower fuel consumption and reduced energy costs.
- **Low emissions:**
Bentone Sterling burners are equipped with advanced combustion controls that help to minimize emissions of harmful pollutants such as NOx and CO.
- **Consistent performance:**
Bentone Sterling burners are built to provide consistent and reliable performance, ensuring that your oven or furnace operates at peak efficiency.
- **Flexibility:**
Bentone Sterling burners are available in a range of sizes and configurations, making them suitable for a wide range of oven and furnace applications.
- **Easy maintenance:**
Bentone Sterling burners are designed for easy maintenance, with simple and accessible components that can be quickly replaced if needed.

Models 1 stage	Capacity kW
ST 108 R	14 - 47
ST 108 RV*	14 - 47
ST 120 R	17 - 51
ST 120 RV*	17 - 51
ST 120 KA	24 - 66
ST 133 S	36 - 90
ST 133 SV	36 - 90
ST 133 K	48 - 118
ST 146 KS	39 - 119
ST 146 B30	60 - 157

Bentone Bio Fuel burners are designed for HVO and RME. The burners also work with older types of fuel.

* V stands for preheater.

Bio Fuel Burners 55–2500kW

Bentone produces large burners for various applications, such as industrial processes, small and large-scale applications, power generation and heating systems. Bentone burners are known for their high efficiency, reliability and durability, making them suitable for both small and large-scale applications.

Bentone burners are typically used in commercial and industrial settings to generate heat or power. They can burn a variety of fuel and the burners are designed to provide high heat output while maintaining low emissions, which makes them environmentally friendly.

Bentone burners come in different models and sizes to meet the needs of various applications and can generate heat output ranging from 55 kW to 2500 kW. These burners are equipped with advanced control systems that ensure optimal combustion efficiency and allow for precise control of fuel and air supply, enabling optimal combustion efficiency and reduced emissions. Overall, Bentone burners are a reliable and efficient solution for a range of industrial and commercial applications that require high heat output and low emissions.

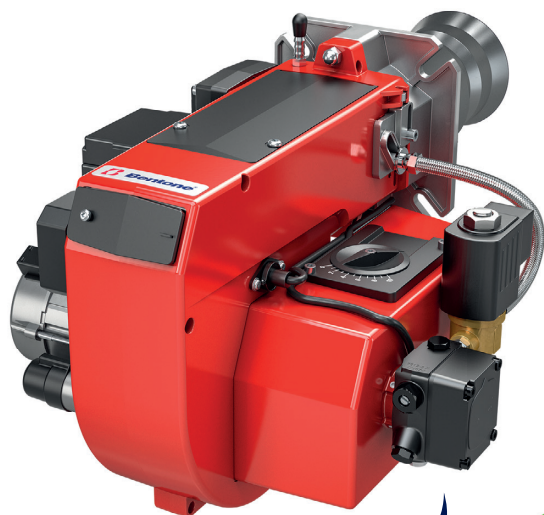


Benefits

- **High efficiency:**
Bentone burners are designed to provide high combustion efficiency, which means they can effectively convert fuel into heat energy. This helps to reduce fuel consumption and lower operating costs.
- **Low emissions:**
Bentone burners are known for their low emission levels. They are designed to operate with a minimum of pollutants, such as carbon monoxide and nitrogen oxide, which makes them environmentally friendly.
- **Reliable operation:**
Bentone burners are designed to operate reliably over an extended period. They are easy to maintain and repair, which makes them ideal for use in commercial and industrial settings.
- **Flexible installation:**
Bentone burners can be installed in a variety of applications, including boilers, heaters, and furnaces. They are adaptable to different types of fuels, including Bio Fuels.
- **Versatility:**
Bentone burners can operate at a range of output levels, from low to high, which makes them ideal for a wide range of applications. They can also be easily adjusted to meet specific heating requirements.



Bio Fuel Burners 55-540 kW



Models 1 stage	Capacity kW
B 30 A	72 - 200
B 30 A RME	72 - 200
B 40	107 - 350
B 40 A	107 - 350
B 40 A RME	107 - 350
Models 2 stage	
B 30 2A	72 - 200
B 30 A2.2	55 - 175
B 30 A2.2 RME	55 - 175
B 30 A2.2H	55 - 175
B 40 A2.2	110 - 320
B 40 A2.2 RME	110 - 320
B 40 A2.2H	110 - 320

Models 1 stage	Capacity kW
B 45 A	96 - 520
Models 2 stage	
B 45 A2.2	102 - 540
B 45 A2.2 RME	102 - 540
B 45 A2.2H	102 - 540



Bentone Bio Fuel burners are designed for HVO and RME. The burners also work with older types of fuel.
 *** Equipped with a regulator.

Bio Fuel Burners 155–2500kW



Models 2 stage	Capacity kW
B 55 - 2	155 - 800
B 55 - 2 RME	155 - 800
B 55 - 2H	155 - 800
B 65 - 2	260 - 1180
B 65 - 2 RME	260 - 1180
B 65 - 2H	260 - 1180
Models 3 stage	
B 55 - 3R	155 - 760
B 55 - 3R R316 ***	155 - 760
B 65 - 3R	285 - 1170
B 65 - 3R R316 ***	285 - 1170

Models 3 stage	Capacity kW
B 70 - 3R	490 - 1650
B 70 - 3R R316 ***	490 - 1650
B 80 - 3R	600 - 2500
B 80 - 3R R316***	600 - 2500



Bentone Bio Fuel burners are designed for HVO and RME. The burners also work with older types of fuel.

*** Equipped with a regulator.

Multi Fuel Burners 65–570 kW

Bentone Multi Fuel burners are designed to operate on various bio fuels of both fossil and biological origin including rapeseed oil (FAME) Our range of Multi Fuel burners are equipped with a preheater and include suitable components for bio-oil.

Multi Fuel Range

Bio-oil are becoming more and more popular and Bentones Multi Fuel burners are designed and constructed to handle bio-oils which have a higher viscosity. The burners are designed according to EN 267 with pure rapeseed oil, with a max viscosity of 75 cSt at 20 °C.



Benefits

- Energy-efficient
- Fuel-efficient
- Compatible with environmental requirements
- Designed for easy maintenance
- Approved according to EN 267 and DIN 51605
- Designed for oils with higher viscosity

Models 1 stage	Capacity kW
B 40 MF	65 – 300
Models 2 stage	
B 45 – 2 MF	90 – 570



Bentone Bio Gas Burners



When you mix methane, CO₂ and small quantities of other gases usually from anaerobic digestion of organic origin in an oxygen-free environment the final product is referred to as a biogas. The exact composition of biogas depends on the type of mix which are used in biogas plants all over the world but they all use the following main technologies.

Biodigesters

These are airtight systems (e.g. containers or tanks) in which organic material, diluted in water, is broken down by naturally occurring micro-organisms. Contaminants and moisture are usually removed prior to use of the biogas.

Landfill gas recovery systems

The decomposition of municipal solid waste (MSW) under anaerobic conditions at landfill sites produces biogas. This can be captured using pipes and extraction wells along with compressors to induce flow to a central collection point.

Wastewater treatment plants

These plants can be equipped to recover organic matter, solids, and nutrients such as nitrogen and phosphorus from sewage sludge. With further treatment, the sewage sludge can be used as an input to produce biogas in an anaerobic digester.

Biomethane

Is a renewable natural gas and has a near-pure source of methane produced either by a upgraded biogas (a process that removes any CO₂ and other contaminants present in the biogas) or through the gasification of solid biomass followed by methanation.



Upgrading biogas

This accounts for around 90% of total biomethane produced worldwide today. Upgrading technologies make use of the different properties of the various gases contained within biogas to separate them, with water scrubbing and membrane separation accounting for almost 60% of biomethane production globally today.

Thermal gasification of solid biomass followed by methanation

Woody biomass is first broken down at high temperature (between 700–800°C) and high pressure in a low-oxygen environment. Under these conditions, the biomass is converted into a mixture of gases, mainly carbon monoxide, hydrogen and methane (sometimes collectively called syngas).

To produce a pure stream of biomethane, this syngas is cleaned to remove any acidic and corrosive components. The methanation process then uses a catalyst to promote a reaction between the hydrogen and carbon monoxide or CO₂ to produce methane. Any remaining CO₂ or water is removed at the end of this process. Bentone launched our range of biogas burners several years ago and they are used on boilers, ovens and for heating all over the world. Our biogas burners are designed for a dry biogas with a minimum content of 45 % Methan gas and our components are approved for a dry biogas with a maximum H₂S content of 0.1.



Bio Gas Burners 15–100 kW

Bentone specializes in manufacturing and supplying burners for a range of applications, including small gas burners. Their smaller gas burners are designed for use in residential and light commercial heating applications. These burners are typically compact in size and offer high levels of energy efficiency, making them ideal for use in a variety of heating applications. They can be used in boilers, water heaters, and other heating equipment, and are suitable for use with a range of fuels, including Natural Gas and LPG and Bio Gas.

Bentone's smaller gas burners are designed to be easy to install and operate, with a range of safety features to ensure reliable and safe operation. They are also designed to be easy to maintain and service, with many models featuring modular components that can be easily replaced if required.

BFG 1 Range

Bentone specializes in manufacturing and supplying burners for a range of applications, including small gas burners. Their smaller gas burners are designed for use in residential and light commercial heating applications.



Benefits

- **High efficiency:**
Bentone burners are highly efficient and can provide a high level of heat output while consuming less fuel than other types of burners. This can result in significant savings on energy costs over time.
- **Low emissions:**
Bentone burners are designed to produce low emissions, which can help to reduce the environmental impact of residential heating systems. This is achieved through advanced combustion technology that produces fewer pollutants than traditional burners.
- **Easy Maintenance:**
Bentone burners are relatively easy to maintain, which can help to minimize the need for repairs and prolong the life of the burner. They are designed to be durable and reliable, and can be serviced by qualified technicians.
- **Versatility:**
Bentone burners can be used with a wide range of fuels, including Natural Gas, LPG and Bio Gas. This makes them a versatile option for residential heating systems, as they can be adapted to meet the specific needs of individual households.

Models 1 stage	Capacity kW
BFG 1 H1	15 – 60
BFG 1 H2	15 – 65
BGF 1 H3	25 – 100
Models 2 stage	
BFG 1 – 2 H3	25 – 100

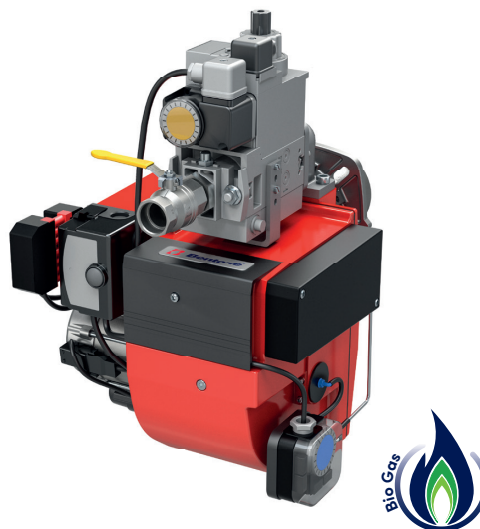
Biogas will affect the output and the components of the burner.

Bio Gas Burners 12-144 kW

Bentone Sterling burners exist in various models and are designed for ovens and industrial applications. Our Sterling range of burners are made of aluminium and are designed especially for a tough environment in an industrial process.

Sterling Range

Our range of Sterling gas burners are very popular for ovens and melting furnaces. The small compact design combined with our combustion efficiency makes it the obvious choice for customers all over the world.



Benefits

- **High efficiency:**
Bentone Sterling burners are designed to provide high combustion efficiency with gas fuel, resulting in reduced fuel consumption and lower operating costs.
- **Low emissions:**
Bentone Sterling burners are equipped with advanced combustion controls that help to minimize emissions of harmful pollutants such as NO_x and CO, making them a cleaner choice for gas-fired equipment.
- **Precise control:**
Bentone Sterling burners feature advanced control systems that allow for precise adjustment of flame shape, size, and temperature, ensuring optimal performance for your gas-fired oven or furnace.
- **Reliable ignition:**
Bentone Sterling burners are equipped with reliable ignition systems that ensure consistent and safe start-up of your gas-fired equipment.
- **Easy maintenance:**
Bentone Sterling burners are designed for easy maintenance, with simple and accessible components that can be quickly replaced if needed.

Models 1 stage	Capacity kW
STG 120/1	12 - 51
STG 120/2	15 - 70
STG 146/1	24 - 65
STG 146/2	41 - 144

Biogas will affect the output and the components of the burner.

Bio Gas Burners 50–3200 kW

Bentone produces large burners for various applications, such as industrial processes, small and large-scale applications, power generation and heating systems. Bentone burners are known for their high efficiency, reliability and durability, making them suitable for both small and large-scale applications.

Bentone burners are typically used in commercial and industrial settings to generate heat or power. They can burn a variety of fuel and the burners are designed to provide high heat output while maintaining low emissions, which makes them environmentally friendly.

Bentone's burners come in different models and sizes to meet the needs of various applications and can generate heat output ranging from 50 kW to 3200 kW. These burners are equipped with advanced control systems that ensure optimal combustion efficiency and allow for precise control of fuel and air supply, enabling optimal combustion efficiency and reduced emissions. Overall, Bentone burners are a reliable and efficient solution for a range of industrial and commercial applications that require high heat output and low emissions.

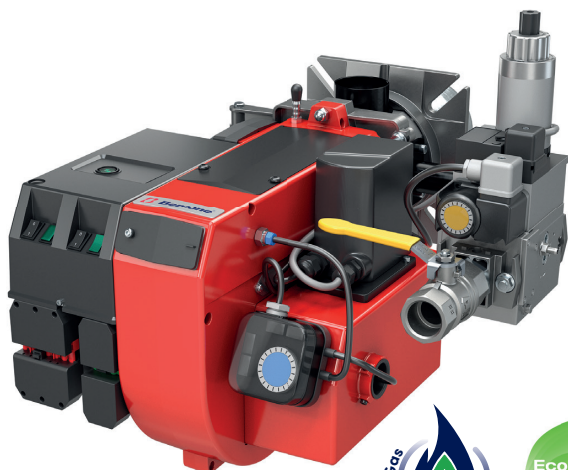


Benefits

- **High efficiency:**
Bentone burners are designed to provide high combustion efficiency, which means they can effectively convert fuel into heat energy. This helps to reduce fuel consumption and lower operating costs.
- **Low emissions:**
Bentone burners are known for their low emission levels. They are designed to operate with a minimum of pollutants, such as carbon monoxide and nitrogen oxide, which makes them environmentally friendly.
- **Reliable operation:**
Bentone burners are designed to operate reliably over an extended period. They are easy to maintain and repair, which makes them ideal for use in commercial and industrial settings.
- **Flexible installation:**
Bentone burners can be installed in a variety of applications, including boilers, heaters, and furnaces. They are adaptable to different types of fuels like Natural Gas, LPG and Bio Gas.
- **Versatility:**
Bentone burners can operate at a range of output levels, from low to high, which makes them ideal for a wide range of applications. They can also be easily adjusted to meet specific heating requirements.



Bio Gas Burners 50–550 kW



Models 1 stage	Capacity kW
BG 300	50 - 200
BG 400	61 - 340
Models 2 stage	
BG 300-2	50 - 200
BG 400-2	61 - 350
Models Modulating	
BG 300 M	50 - 200
BG 400 M	61 - 350
BG 400 LN	56 - 171

Models 2 stage	
BG 450-2	120 - 550
Models Modulating	
BG 450 M	120 - 550
BG 450 M R316 ***	120 - 550
BG 450 LN	90 - 449



Biogas will affect the output and the components of the burner.

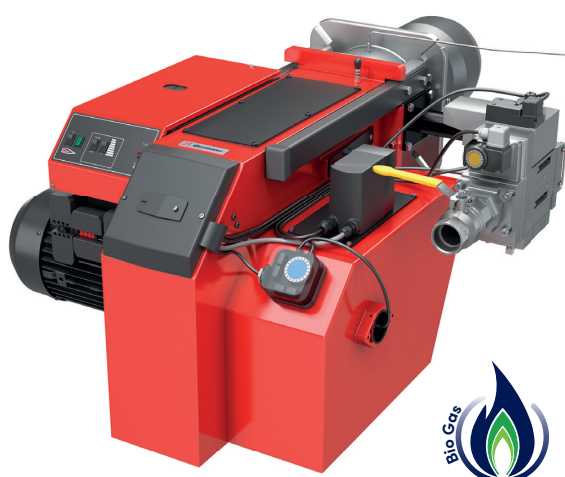
*** Equipped with Jumo 316 regulator.

Bio Gas Burners 140–3200 kW



Models 2 stage	Capacity kW
BG 550-2	140 - 650
BG 650-2	200 - 1125
Models Modulating	
BG 550 M	140 - 650
BG 550 M R316***	140 - 650
BG 550i M	140 - 650
BG 550 LN	140 - 640
BG 650 M	200 - 1125
BG 650 M R316***	200 - 1125
BG 650i M	200 - 1125

Models 2 stage	Capacity kW
BG 700-2	300 - 1650
Models Modulating	
BG 700 M	300 - 1650
BG 700 M R316***	300 - 1650
BG 700i M	300 - 1650
BG 800 M	380 - 2400
BG 800 M R316***	380 - 2400
BG 800i M	380 - 2400
BG 950 M	500 - 3200
BG 950 M R316***	500 - 3200
BG 950i M	500 - 3200



Biogas will affect the output and the components of the burner.

*** Equipped with Jumo 316 regulator.

Providing sustainable energy solutions worldwide

Enertech AB is the holding company of Bentone, CTC, Giersch, Nu-Way, Osby Parca, Turboflame, VEÅ and Waterkotte. We started already as a manufacturer of boilers in 1923 in Gothenburg in Sweden.

Bentone was founded in Ljungby in 1954 and from the start we were focused on optimizing burners to always perform better than our competitors. Performance, high quality and reliability continue to be our main focus.

Today with our new financially strong owner Nibe we have the perfect opportunity to continue to develop more fuel efficient and low NOx burners suitable for different markets all over the world from Brazil to China.



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