



BETAKAZAN
BETA KAZAN Boiler Company



BSG MODEL

Liquid-Gas Fueled Three Pass Steam Boiler

Technical Specifications

Your Industrial Energy Strength



www.betakazan.com



About the Company

With a solid 16 years' experience in the industry, BETA KAZAN Boiler Company offers energy solutions for domestic and industrial applications of all sizes thanks to its extensive portfolio and activities that include steam, hot water and thermal oil boilers, solid fuel and waste burning systems, heat exchangers, feed water preparation systems, chimney heat recuperation systems, filtration systems and dust collection.

BETA KAZAN Boiler Company is dedicated to swiftly fulfill its commitments, even amidst competitive market conditions, as well as to fully meet customers' expectations while offering top tier services thanks to its professional team, consequently establishing the company as a trusted partners in more than 1.000 projects both locally and internationally.

All BETA KAZAN Boiler Company's products are built in the capital Ankara which makes it easy to deliver at all kinds of points throughout the Middle East, Eastern Europe and Western and Central Asia.

BETA KAZAN Boiler Company is proud to be certified in TS EN ISO 9001, reflecting its commitment to quality management; TS EN ISO 14001, demonstrating its dedication to effective environmental management; and TS EN ISO 45001, showcasing its focus on maintaining a safe and healthy work environment. These certifications affirm the company's adherence to top international standards in quality, sustainability, and occupational health and safety.

BETA KAZAN Boiler Company is a member of:



kbsb

KAZAN VE BASINÇLI KAP
SANAYİCİLERİ BİRLİĞİ DERNEĞİ

— 1985 —

**Boiler and Pressure Vessel
Industrialists Association**



**Turkish HVAC&R
Exporters Association**



BSG Model Steam Boiler Technical Specifications

General Information:

BSG Model steam boiler has been **BETA KAZAN Boiler Company's** primary product line for many years. This boiler is designed for many different applications including central heating, manufacturing centers, food processing plants,

It consists of a horizontal three pass, fire tube, wet back design and is built according to TS EN12953 standards with. In addition to that, the boiler meets the requirements of 2014/68/EU Pressure Equipment Directive with B and F modules (CE document can be issued).

It has been developed for higher operational efficiency while performing reliably.

It can be liquid, gas and solid fueled depending on the demands of the customer.

This boiler has a steam output range of 600 kg/h to 30,000 kg/h which corresponds to a heating capacity range of 400 kW to 19,500 kW under a pressure range of 0.5 bar and 20 bar with an efficiency up to 91%.

BETA KAZAN Boiler Company apply their own quality procedures that comply with the requirements of TS EN ISO 9001.

Construction:

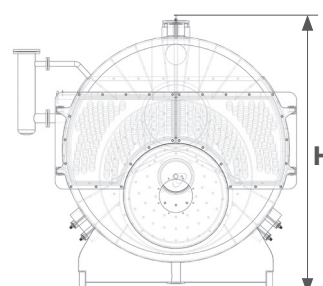
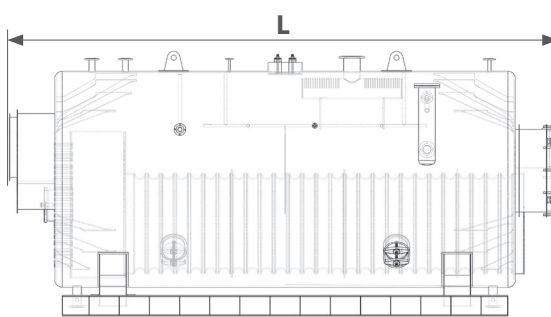
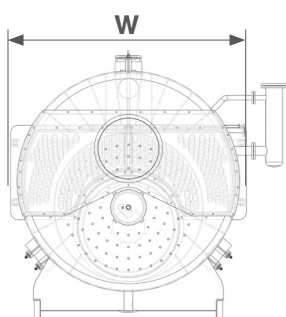
All steel plates (Outer shell, furnace, front mirror, middle mirror, rear mirror, support plate, reversal chamber shell, doors) used in the boiler are marked, cut and profiled by a computer-controlled laser cutting machine to ensure the correct alignment and compliance with construction standard requirements. Optionally, the furnace is corrugated. Weld preparation for the plates, fire tubes and stay bars are also undertaken by the laser cutting machine for strict tolerances.

The shell, furnace and reversal chamber sheets are then rolled, assembled, machine welded with the other sheets and supported by supporting plates and stay rods in addition to the fire tubes, all according to standard specifications. After that, flame tubes access doors are installed after adding hinges and flame boxes. High temperature refractory cement is added to the doors for extra protection. In addition to that, metal strips are welded to the shell of the boiler to accept insulation and outer sheets.

For inspection purposes, elliptical manhole openings are provided on the top and in the lower quadrants of the boiler. To permit observation and access into the furnace, a flame viewing sight port is provided. Also, refractory cement is added to this port.

Mountings and controls are fitted to pads, standpipes and bosses welded to boiler shell.

Jacking points are provided on the support structure to assist in offloading, positioning and maneuvering the boiler.





Steam Capacity (kg/h)	Heating Capacity		Heating Surface (m ²)	Width W (mm)	Length L (mm)	Height H (mm)	Weight (kg)	Chimney Outlet Diameter ø (mm)	Water Volume (lt)	Backpressure (mbar)
	(kcal/h)	(kW)								
675	378.000	440	15	1.600	2.900	1.900	2.500	220	1.800	5
1.100	615.000	715	25	1.800	3.500	2.000	3.300	300	2.500	5
1.350	755.000	880	30	1.900	3.700	2.150	3.600	300	3.600	5.5
1.800	1.008.000	1.170	40	2.100	4.000	2.400	5.200	350	4.600	6
2.250	1.260.000	1.465	50	2.100	4.400	2.400	5.800	400	5.500	6
2.700	1.512.000	1.760	60	2.200	4.400	2.500	6.300	400	6.100	6.5
3.150	1.764.000	2.050	70	2.300	4.450	2.600	6.700	400	6.300	6.5
3.600	2.020.000	2.350	80	2.400	4.600	2.700	7.500	450	7.200	7
4.000	2.250.000	2.600	90	2.450	4.900	2.750	8.200	500	8.500	7
4.500	2.520.000	2.930	100	2.500	5.000	2.800	8.900	500	8.600	7
5.000	2.800.000	3.255	110	2.500	5.400	2.800	10.200	530	10.000	7.5
5.600	3.150.000	3.660	125	2.600	5.600	2.900	10.800	600	11.200	7.5
6.000	3.360.000	3.900	135	2.600	5.900	2.900	12.000	600	11.800	8
7.000	3.920.000	4.560	155	2.800	6.050	3.100	13.500	650	12.900	8
8.000	4.480.000	5.120	180	2.900	6.150	3.200	15.200	700	13.800	8
9.000	5.040.000	5.860	200	3.000	6.500	3.300	16.200	750	15.900	8
10.000	5.600.000	6.510	235	3.100	6.700	3.400	1.800	800	18.000	8.5
11.250	6.300.000	7.325	250	3.200	7.000	3.500	18.600	850	19.800	9
12.000	6.720.000	7.810	275	3.300	7.075	3.600	20.300	900	21.600	9
13.500	7.560.000	8.790	300	3.300	7.200	3.600	21.900	900	22.500	9.5
15.000	8.400.000	9.765	335	3.600	7.300	3.900	27.600	900	25.200	10
16.000	8.960.000	10.415	350	3.700	7.400	4.000	28.400	950	26.100	10.5
18.000	10.080.000	11.720	400	3.750	7.600	4.050	31.800	1.000	29.500	11
20.000	11.200.000	13.023	450	3.800	7.750	4.100	34.300	1.000	30.500	11.5
23.000	12.600.000	14.650	500	4.200	7.800	4.500	38.000	1.050	32.800	12
25.000	14.000.000	16.280	550	4.200	8.100	5.370	43.500	1.100	33.400	13
27.000	15.120.000	17.580	600	4.300	8.100	5.520	50.400	1.100	36.800	14
30.000	16.800.000	19.535	650	4.500	8.150	5.720	53.200	1.200	38.300	14.5

Materials:

Parts	Materials
Pressure Steel Plates (Outer shell, furnace, front mirror, middle mirror, rear mirror, support plate and reversal chamber shell) + Lifting Points	TS EN 10028-2 P265GH or P355GH (Depending on the design)
Doors and Flame Boxes	TS EN10025-2 S235JR
Fire Tubes	TS EN 10216-2+A1 P235GH Seamless Boiler Tubes
Stay Rods	TS EN10025-2 S275JR
Flanges	TS EN1092-1 P235GH
Nozzles	TS EN10216-2 P235GH

Insulation	Outer Insolation	TS EN 13167+A1 100 mm thick 80 kg/m ³ density rock wool covered with 0.8 mm embossed aluminum sheet coating	
	Joints	Doors	E-Glass Fiberglass Braided Rope
		Manholes	Graphite Laminate Gasket
		Rear Access Door's Viewing Sight Port	Graphite Laminate Gasket + Silicone Sealant
	Refractory	ATB50 Refractory Cement	

Boiler's Accessories:

■ Steam & Water Fittings:

As standard, the valves and gauges we offer comply with TS EN 12953 and are fitted to the boiler with suitable nozzles according to TS EN10216 standards and flanges according to TS EN1092 standards. Flange fixing is by metric studs and nuts or bolts. Standard valves and fitting are as below:

Fittings	Qty.
Steam Main Outlet Valve (Globe)	1
Feed Water Inlet Valve (Globe)	1
Feed Water Inlet Check Valve (Disco)	1
Level Columns Connection Valves (Globe)	4
Level Columns Blowdown Valves (Globe)	2
Air Discharge Valve (Globe)	1
Bottom Manual Blowdown Valve (Full Bore Ball)	1
Secondary Bottom Blowdown Valve (Full Bore Ball)	1
Upper Blowdown Valve (Globe)	1
Upper Blowdown Check Valve (Disco)	1
Full Lift Spring Loaded Safety Relief Valves	2



Globe Valve
Brand: BONETTI



Disco Check Valve
Brand: VALFTEK



Full Bore Ball Valve
Brand: VALFTEK



Full Lift Spring Loaded Safety Relief Valve
Brand: TERMO/ARI/LESER

Feedwater Fittings:

Fittings	Qty.
Mechanically Sealed Vertically Mounted Stainless Centrifugal Feedwater Pump	2
Pump Inlet Valve (Full Bore Ball)	2
Pump Outlet Discharge Valve (Full Bore Ball)	2
Column Discharge Valve (Stainless Full Bore Ball)	2
Pump Inlet Strainer	2
Pump Outlet Check Valve (Disco)	2
Manometer	1
Three-Way Manometer Tap	1
Manometer Siphon	1



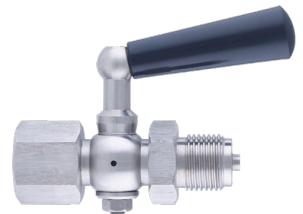
Feedwater Pump
Brand: MASDA/GRUNDFOS/
LOWARA



Y-Type Strainer
Brand: VALFTEK



Manometer
Brand: PAKKENS



Manometer Tap
Brand: PAKKENS



Manometer Siphon
Brand: PAKKENS



Stainless Full Bore Ball Valve
Brand: AYVAZ

Boiler Water Management:

Standard Fittings

Fittings
Water Level Indicator with Reflex Glass
On-Off Level Control System
Signals:
▪ Pump On/Off
▪ High Level Alarm
▪ Low level Alarm

Optional Fittings

Fittings
Magnetic Water Level Indicator
Secondary Water Level Alarm System
Signals:
▪ Extremely High Level Alarm
▪ Extremely Low level Alarm
Modulating Level Control
Surface & Bottom Blowdown Control System
Components:
▪ Controllers
▪ Conductivity Sensor
▪ Surface and Bottom Control Valve
Sample Cooler



Reflex Glass Level Indicator
Brand: AYVAZ



On-Off Level Control System
Brand: ATECH/
SPIRAX SARCO



Magnetic Level Indicator
Brand: AYVAZ



Modulating Level Control
Brand: ATECH/
SPIRAX SARCO



Sampling Container
Brand: ATECH



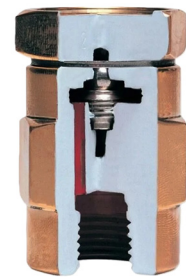
Blowdown Control System
Brand: ATECH/SPIRAX SARCO

■ Pressure Control:

Control Instruments
Vacuum Breaker
High Pressure Alarm Pressure Switch



High Pressure Alarm Pressure Switch
Brand: DANFOSS



Vacuum Breaker
Brand: AYVAZ

Notes:

- Fittings' materials are provided for the rating, pressure and temperature requirements.
- Different brands and additional fittings can be provided according to the customer's wishes.

Combustion Equipment:

The preferred brand for BETA KAZAN Boiler Company is **elco**. “ELCO”, a German manufacturer with more than 90 years of experience in the design and production of burners and part of the Ariston Group, is a leading brand in the development of innovative combustion technologies, especially in the industrial sector. ELCO offers a wide range of power as well as fuels (Gas, light oil, heavy oil and dual fuel) and modulation types (electronic, mechanical and pneumatic).



Note:

BETA KAZAN Boiler Company is burner neutral, that is a wide variety of manufacturers of burners can be adapted depending on the wishes of the customer.

Electrical Control Panel:

The panel will have a cabinet type construction with necessary electrical components to ensure combustion, operation and safety controls by centrally controlling all devices used in the steam boiler and feed water pump system.

Elements such as fuses, thermals, contactors, signal lamps, etc. of all motors and electrical devices are included in the panel while providing safe connections between the panel and the devices. On the panel, boiler saturated steam pressure, saturated steam temperature, flue gas temperature can be visually monitored instantly on a screen with the help on pressure and temperature transmitters.

Paint Colors:

Surfaces are degreased prior to painting and one coat of primer, one coat of undercoat and one finishing coat is applied. Standard colors are as follows:

Section	Color
Base frame, all Valves, Platform and Ladder (when fitted)	Black
Front and Rear Casings	Black
Doors	Red
Sheeting	Embossed Aluminum
Burner	Manufacturer's Standard
Control Panel	Light Grey / White

Optional Adds-Ons:

Condensate Tank:

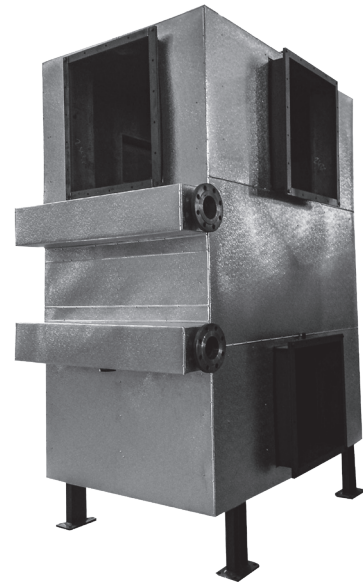
It is manufactured as a horizontal or vertical type with a capacity suitable for the boiler with a design pressure of 0.2 bar and a test pressure of 0.8 bar. Manufacturing will be in accordance with DIN 6616 norm. St37 sheet metal will be used in accordance with DIN 17100 norm in addition to condensate water inlet and outlet flanged connections. The tank will be insulated by 50 mm thick glass wool having density of 14 kg/m³ and covered with galvanized, aluminum, cold rolled steel or stainless sheet, according to the customer's preference. In cases where it is necessary to heat the water in the tank, heating coils are added.



Economizer:

Waste flue gas is reused to obtain hot water or hot air, fed to the boiler. It is calculated to bring fuel savings of 3 - 8% and break even its investment in a short time.

The economizer will have St 37 steel drawn pipes with elbow rotation in appropriate size to provide sufficient heating surface, and its body will be manufactured from St 37 steel. Flue gas path and feed water connection flanges will be installed with cleaning covers. The coils section will be insulated with 50 mm thick rockwool covered 0.80 mm embossed aluminum sheet.



Deaerator:

The deaerator dome will be made from DIN EN SS 304 stainless steel and will accommodate horizontal trays to remove corrosive gases such as free Oxygen (O₂) and Carbon Dioxide (CO₂) dissolved in the steam boiler feed water. The dome will be insulated with 50 mm thick stone wool covered with 0.80 mm thick embossed aluminum sheet.

the lower storage tank will be manufactured according to DIN 6616 and TS EN 12285-2 horizontal steel tank standards with a construction suitable to accommodate spraying and heating coils. The storage tank will be made from EN 10025-P2-04 S235JR sheet metal and coil pipes are P235GH quality pipes conforming to EN 10216-3.1 norms. After the hydrostatic test control is carried out, the body will be insulated with 50 mm thick stone wool insulation, then with 0.80 mm thick embossed aluminum sheet.





■ Water Softener System:

To ensure optimal boiler performance and longevity, a water softening system can be integrated to remove hardness-causing minerals, preventing scale buildup inside the boiler. Complementing this, a chemical dosing unit can also be included for further water treatment.

■ Chimney & Horizontal Ducts:

The chimney and ducts are self-supporting type, manufactured from St 37.2 sheet metal or stainless steel, and the required height is achieved by combining the parts with electric arc welding as a flanged connection.

The chimney will be manufactured with a base plate, rain cap and cleaning cover, and a horizontal ducting connection of appropriate size and diameter.

■ Steam Header:

The steam header will be constructed from TSE 346/1 compliant St37 quality pipe, closed on both sides with a curved shape of appropriate size with condensate pocket and all necessary connection ports.



Additional Notes:

BETA KAZAN Boiler Company prioritizes seamless operation by building with non-proprietary parts. Most of the time, a ready stock of necessary parts is maintained with very competitive price rates in order to eliminate downtime. However, in case providing the parts in a timely manner is not possible, the customer is able to service and source them from other vendors at their convenience.

Products produced by **BETA KAZAN Boiler Company** or by other manufacturers will comply with EN - DIN - TSE norms and standards.

Boiler General Arrangement Drawing and *Electrical Wiring Diagrams* are provided.

Certificate of Compliance (CE) is provided, certified by independent Inspection Authority.

Operation and Maintenance Manual is provided.

After the system is commissioned, the warranty duration is **2 (two) years** against manufacturing and workmanship defects. The warranty does not cover damages that may occur due to the cessation of the system's operation, except those related to material defects and workmanship errors. Materials/accessories sourced from outside the company are under the warranty of the manufacturers or importers.



Recent Projects:

Steam Capacity	Operating Pressure	Fueling	Industry	Installation Site
8.000 kg/h	8 bar	Natural Gas	Food Processing	ERPİLİÇ Bolu- Türkiye
10.000 kg/h	10 bar	Natural Gas	Food Processing	ETİ GIDA (Milk Powder Plant) Konya - Türkiye
3.000 kg/h	10 bar	Natural Gas	Chemicals	HİCRİ ERCİLİ Balıkesir- Türkiye
5.000 kg/h	8 bar	Natural Gas	Utility	MOSUL IBN SENA HOSPITAL Mosul - Iraq
4.000 kg/h	8 bar	Natural Gas	Food Processing	AKVATEK A.Ş. İzmir- Türkiye
6.000 kg/h	8 bar	Natural Gas	Food Processing	ÇAYKUR Rize- Türkiye
5.000 kg/h	8 bar	Natural Gas	Chemicals	MKS DEVO KİMYA Balıkesir- Türkiye
5.000 kg/h	6 bar	Natural Gas	Chemicals	GÖLTAŞ ÇİMENTO Isparta- Türkiye
3.000 kg/h	16 bar	Natural Gas	Automotive	SAMPA OTOMOTİV Samsun- Türkiye
6.000 kg/h	12 bar	Natural Gas	Food Processing	AKŞEKER (Meat Facility) Konya - Türkiye
15.000 kg/h	10 bar	Natural Gas	Process	GÜNSER MAKİNA Malatya- Türkiye
5.000 kg/h	6 bar	Natural Gas	Process	GÜNSER MAKİNA Malatya- Türkiye
4.000 kg/h	6 bar	Natural Gas	Process	SEMTES MÜHENDİSLİK Georgia
2.000 kg/h	6 bar	Natural Gas	Process	SEMTES MÜHENDİSLİK Georgia
1.000 kg/h	6 bar	Natural Gas	Process	SEMTES MÜHENDİSLİK Georgia
1.500 kg/h	6 bar	Diesel	Process	ERD ENDÜSTRİYEL Kütahya- Türkiye
3.000 kg/h	6 bar	Natural Gas	Process	TEKNOPROSES MÜHENDİSLİK Uzbekistan
4.500 kg/h	6 bar	Natural Gas	Process	TEKNOPROSES MÜHENDİSLİK Ankara- Türkiye
4.000 kg/h	6 bar	Natural Gas	Utility	Ministry of National Defense - 4th Main Maintenance Factory Directorate Ankara- Türkiye
8.500 kg/h	6 bar	Natural Gas	Utility	Ministry of National Defense - Fortification School and Training Center Command İzmir- Türkiye
3.000 kg/h	6 bar	Natural Gas	Utility	Ministry of National Defense - Land Forces Logistics Command Ankara- Türkiye
1.000 kg/h	6 bar	Natural Gas	Utility	National Security Council Ankara- Türkiye
4.000 kg/h	6 bar	Natural Gas	Utility	Ministry of National Defense - Land War College Command Ankara- Türkiye
3.000 kg/h	6 bar	Natural Gas	Utility	Ministry of National Defense - 3rd Air Force Construction Command Ankara- Türkiye



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