AKKAYA
BOILERS

# PRODUCTS

# AKKAYA HEATING INSTRUMENTS MANUFACTURING INC.

AKKAYA HEATING INSTRUMENTS MANUFACTURING INC. located in Konya / Turkey is a family owned company that has been involved in boiler production since its establishment in 1964. Activities of the company are being carried out in Konya plant having a 13000 $m^2$ open and a 10000 $m^2$ closed area. Nearly 80% of company's annual production is being exported over 50 countries all over the world.

In addition to its continuous production of conventional gas, oil or electric fired systems for more than half a century, main interest of the company has been designing, manufacturing and exporting innovative Steam, Hot Water and Thermal Oil boilers using various kinds of solid fuel including biomass/biogas from recovered wastes over the last decade.

Thanks to many years of experience in heating field and strong engineering base, AKKAYA INC. has improved valuable solutions for providing highly effective biomass fired boiler designs, fuel combustion systems, exhaust gas filtration systems, exhaust gas heat recovery systems, overall system efficiency and safety controls.

Company R&D studies are being carried out continuously and quite a big part of its turnover is being invested at this field each year.

Regarding the global need for renewable energy systems AKKAYA INC. also aims to provide steam, hot water and thermal oil systems that are using recovered energy sources, to new age power generation plants all over the world.

Having a strong awareness for environmental concerns AKKAYA INC. is prepared to serve the world with best effort of providing relevant products.

# SERVICES

AKKAYA INC. provides turnkey boiler room solutions to customers where the installed systems include all accessories and safety/control equipment necessary for systems' operation.

Company's own sales and after sales team is at customer's service regardless of the installation location. Besides at site services via our agents and solution partners all over the world is an option. Start-up and commissioning supervisions or main tasks are also provided by company's staff.

AKKAYA INC. provides up to 5 years of guarantee for its own manufacturing and boiler lifetime guarantee for spare parts supply.

Recommended lifetime for boilers must be considered as 10 years (relevant to international norms.) However, most of AKKAYA boilers have been operated for more than 10 years, as long as the user instructions that AKKAYA has provided are followed by our loyal customers.
For all pressurized equipment manufactured by AKKAYA INC. EU norm (PED 2014/68) is followed and products are supplied with CE certification. In case of different specific norms are required, AKKAYA can provide them, too.

Welding are carried out by AKKAYA INC. staff certified according to EN9606 norm.

UT tests are carried out by AKKAYA Inc. level II certified NDT staff.

# PRODUCTS

## STEAM BOILERS
Liquid - Gas - Electricity - Solid Fuel - Biomass
Biogas and Waste Heat as Fuel

## THERMAL OIL HEATERS
Liquid - Gas - Solid Fuel - Biomass
Biogas and Waste Heat as fuel

## HOT / SUPERHEATED WATER BOILERS
Liquid - Gas - Electricity - Solid Fuel - Biomass
Biogas and Waste Heat as fuel

## SOLID FUEL / BIOMASS FUEL FEEDERS AND COMBUSTION SYSTEMS

## BOILER ROOM AUXILIARIES

# CERTIFICATES

KYS – Quality Management System Certificate ISO9001:2015

Certificate of Conformity to Turkish Standards TS 377

HYB – Service Qualification Certificate

European Conformity Certificates PED2014/68

WPQ – Welder Performance Qualification EN9606

WPQR – Welding Procedure Qualification Record EN15614

WPS – Welding Procedure Specification - EN15609

NDT Non Destructive Testing Personnel Certificates - EN9712


# SBK & TFB SCOTCH TYPE STEAM BOILERS

**Steam Production Capacity (SBK)**
320 kg/h - 18.000 kg/h
**Steam Production Capacity (TFB)**
20.000 kg/h -30.000 kg/h
**Operating Pressure**
0,5-20 Bar
**Fuel Type:**
Natural Gas, LPG, Diesel, Heavy Fuel Oil

AKKAYA
BOILERS

SBK & TFB model boilers are designed and manufactured according to the system which transfers more of the usable heat to the water to increase the steam production efficiency by the "3 pass" principle of fire and smoke inside the boiler. This model is also known as "SCOTCH TYPE".

SBK & TFB model boilers are suitable to be used with gas and oil burners.

TFB model boilers have larger steam generation capacities by the help of double furnace design. This type boilers that have double burner design also provide fuel saving thanks to its steam generation modulation in a wide range.

The exhaust gas temperature is decreased to an optimum level, so the operating efficiency &lifetime of the boiler is increased.

The heat transfer area of the boiler is indicated precise and it is the net area along where, the heat is transferred inside the boiler. (Approximately 40 kg steam is obtained from 1 $m^2$ of heating area.)

The design of SBK type boilers allows to obtain steam, approximately twice in amount, compared with the same heat transfer area of a solid fuel fired steam boiler.

For the high operating pressure values; the furnace is produced in corrugated form to eliminate the thermal expansions and to obtain sufficient strength. SBK model boilers can be produced for an operating pressure range of 0,5 bar – 20 bar. Boiler is supplied with all necessary accessories, control devices and auxiliary equipment on customer's request.

Isolation of the boiler is specially made to minimize the thermal energy loss. Special covering plates are used on the surface, to protect the shell of the boiler from outdoor conditions and to prevent tearing.

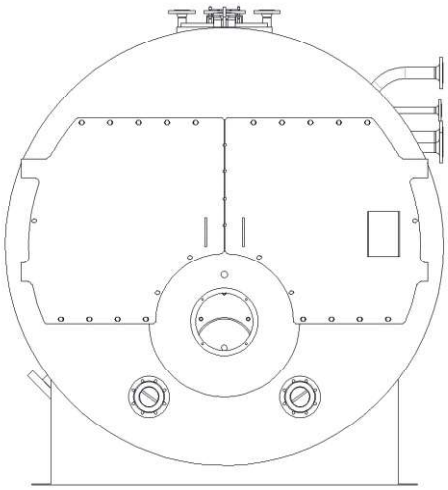
SBK boiler body consists of: Cylindrical, 3 pass, wet back main body with fire tubes and plain or corrugated furnace at proper thickness, according to the boiler's operating pressure. EN12953 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

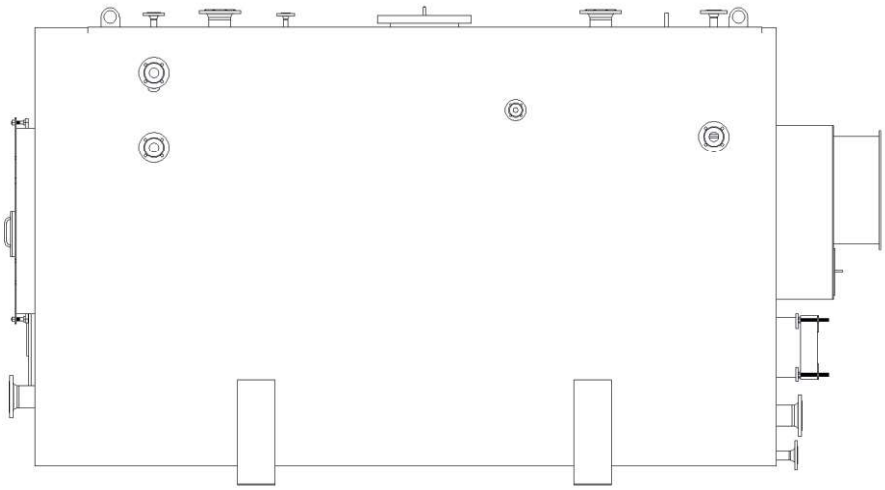
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR SBK MODEL BOILERS



FRONT VIEW

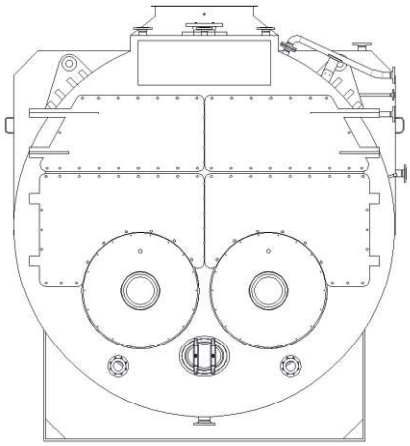


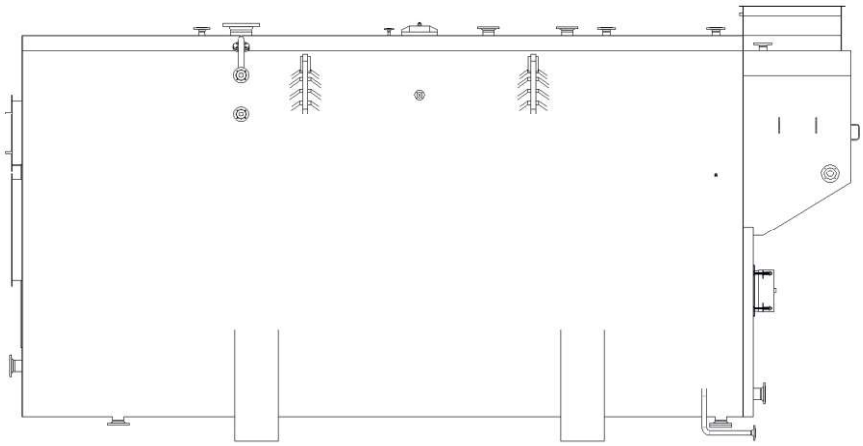
LEFT VIEW

| **Model** | **Maximum Thermal Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h) | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)* |
|---|---|---|---|---|---|---|
| SBK 8 | 320 | 200.000 | 2200 | 1500 | 1700 | 1350 |
| SBK 10 | 400 | 250.000 | 2400 | 1500 | 1700 | 1400 |
| SBK 15 | 600 | 375.000 | 2500 | 1900 | 2200 | 2350 |
| SBK 20 | 800 | 500.000 | 3000 | 1900 | 2200 | 2700 |
| SBK 30 | 1200 | 750.000 | 3200 | 2100 | 2400 | 3800 |
| SBK 40 | 1600 | 1.000.000 | 3800 | 2100 | 2400 | 4350 |
| SBK 50 | 2000 | 1.250.000 | 3900 | 2400 | 2700 | 5400 |
| SBK 60 | 2400 | 1.500.000 | 4400 | 2400 | 2700 | 6200 |
| SBK 70 | 2800 | 1.750.000 | 4900 | 2400 | 2700 | 6850 |
| SBK 80 | 3200 | 2.000.000 | 4700 | 2400 | 2600 | 7300 |
| SBK 90 | 3600 | 2.250.000 | 5200 | 2400 | 2600 | 7962 |
| SBK 100 | 4000 | 2.500.00 | 5600 | 2400 | 2600 | 8573 |
| SBK 125 | 5000 | 3.125.0000 | 5100 | 2700 | 3100 | 11100 |
| SBK 150 | 6000 | 3.750.0000 | 5800 | 2700 | 3100 | 12500 |
| SBK 175 | 7000 | 4.375.000 | 6500 | 3100 | 3300 | 15850 |
| SBK 200 | 8000 | 5.000.000 | 7100 | 3100 | 3300 | 18700 |
| SBK 250 | 10000 | 6.250.000 | 7000 | 3100 | 3400 | 19350 |
| SBK 300 | 12000 | 7.500.000 | 8000 | 3100 | 3400 | 23000 |
| SBK 350 | 14000 | 8.750.000 | 7700 | 3500 | 4100 | 27500 |
| SBK 400 | 16000 | 10.000.000 | 8500 | 3500 | 4100 | 31050 |
| SBK 450 | 18000 | 11.250.000 | 8700 | 3500 | 4100 | 33650 |

***10 bar & empty W/O accessories**

# TFB MODEL BOILER

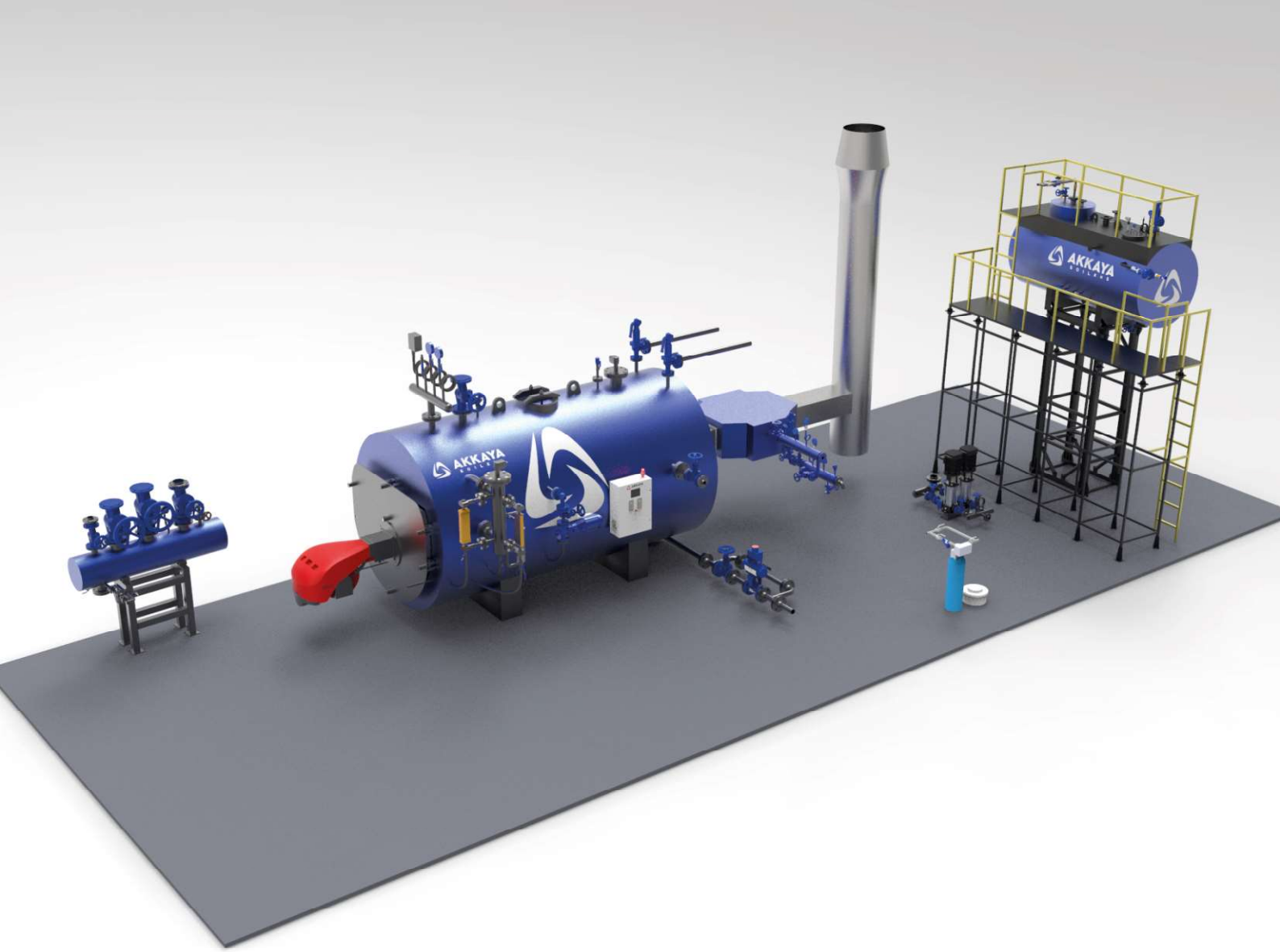





## CAPACITIES AND DIMENSIONS TABLE FOR TFB MODEL BOILERS

| **Model** | **Max. Thermal Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h) | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)* |
|---|---|---|---|---|---|---|
| TFB 20 | 20000 | 12.500.000 | 7600 | 4000 | 4700 | 36000 |
| TFB 22 | 22000 | 13.750.000 | 8400 | 4000 | 4700 | 40000 |
| TFB 24 | 24000 | 15.000.000 | 7750 | 4300 | 5000 | 44000 |
| TFB 25 | 25000 | 15.625.000 | 8250 | 4300 | 5000 | 46000 |
| TFB 26 | 26000 | 16.250.000 | 8600 | 4300 | 5000 | 48000 |
| TFB 28 | 28000 | 17.500.000 | 8800 | 4300 | 5000 | 52000 |
| TFB 30 | 30000 | 18.750.000 | 9200 | 4300 | 5000 | 54000 |

*10 bar & empty W/O accessories




# KBB-E REVERSE FLAME STEAM BOILERS

**Steam Production Capacity:**
300 kg/h - 4.000 kg/h
**Operating Pressure**
0,5-20 Bar
**Fuel Type:**
Natural Gas, LPG, Diesel, Heavy Fuel Oil

AKKAYA BOILERS

KBB model boilers are designed and manufactured according to the system which transfers the usable heat of fire and smoke inside the boiler to the water by the 2 pass principle. This model is also known as 'REVERSE FLAME'.

The size of KBB model is smaller than the same capacity 3 pass boilers which allows an easy installation and decreases the initial investment cost. To increase the boiler efficiency, stainless steel turbulators are placed inside fire tubes.

The heat transfer area of the boiler is indicated definite and it is the net area along where, the heat is transferred inside the boiler.

KBB model boilers are suitable for operating with high pressure gas and oil burners.

For the high operating pressure values. For the high operating pressure values; the furnace is produced in corrugated form to eliminate the thermal expansions and to obtain sufficient strength. KBB model boilers can be produced for an operating pressure range of 0,5 bar – 20 bar. Boiler is supplied with all necessary accessories, control devices and auxiliary equipment on customer's request.

Isolation of the boiler is specially made to minimize the thermal energy loss. Special covering plates are used on the surface, to protect the shell of the boiler from outdoor conditions and to prevent tearing.

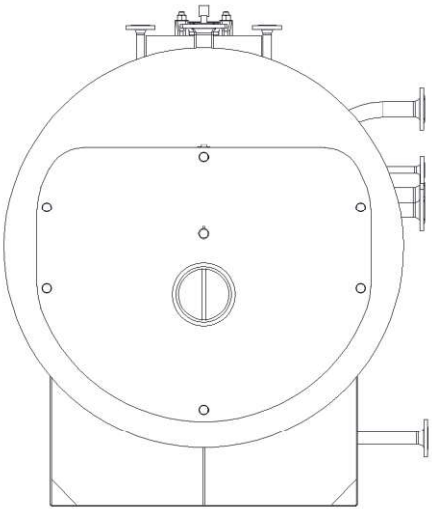
KBB boiler body consists of: Cylindrical, 2 pass, wet back main body with fire tubes and plain or corrugated furnace at proper thickness, according to the boiler's operating pressure. EN12953 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

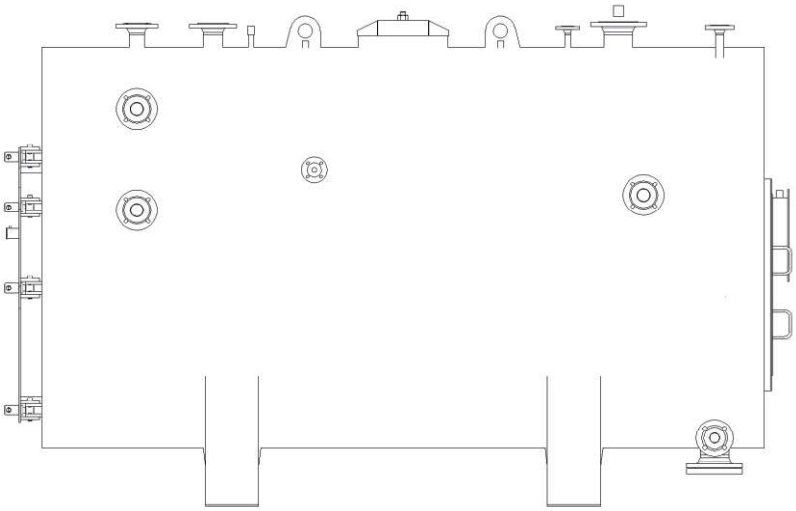
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR KBB MODEL BOILERS



FRONT VIEW



SIDE VIEW

| **Model** | **Maximum Steam Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h) | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)* |
|---|---|---|---|---|---|---|
| KBB 300-E | 300 | 180.000 | 2250 | 1450 | 1750 | 2800 |
| KBB 500-E | 500 | 300.000 | 2650 | 1450 | 1750 | 3000 |
| KBB 750-E | 750 | 450.000 | 2650 | 1600 | 1900 | 3500 |
| KBB 1000-E | 1000 | 600.000 | 3250 | 1600 | 1900 | 3600 |
| KBB 1250-E | 1250 | 750.000 | 3250 | 1900 | 2200 | 4250 |
| KBB 1500-E | 1500 | 900.000 | 3650 | 1900 | 2200 | 4650 |
| KBB 2000-E | 2000 | 1.200.000 | 4000 | 2100 | 2400 | 5300 |
| KBB 2500-E | 2500 | 1.500.000 | 3650 | 2250 | 2700 | 5950 |
| KBB 3000-E | 3000 | 1.800.000 | 4100 | 2500 | 2700 | 6800 |
| KBB 3500-E | 3500 | 2.100.000 | 4000 | 2500 | 2700 | 7500 |
| KBB 4000-E | 4000 | 2.400.000 | 4200 | 2500 | 2750 | 8250 |

***10 bar & empty W/O accessories**


# PSB SERIES
## PACKAGED TYPE KBB MODEL STEAM BOILERS

**Steam Production Capacity:**
300 kg/h - 4.000 kg/h
**Operating Pressure**
0,5-20 Bar
**Fuel Type:**
Natural Gas, LPG, Diesel, Heavy Fuel Oil

AKKAYA BOILERS

PSB series steam boilers are packaged type of KBB model boilers for easy installation and operation.

This configuration is preferred due to low investment costs.

Thanks to the customized package design, which can be produced at different operating pressures, all auxiliary equipment is pre-installed and the system is ready to use. By this way, start-up is quick and easy.

Space requirement is smaller due to their compact design and this minimizes investment cost for boiler room.

Best solution for rental applications.

Safe and stable operation thanks to high-quality safety equipments.

PLC controlled control board with touch screen provides easy operation and remote access that allows technical support to any point in the world quickly. Factory tests are carried out by completing cabling and piping between the components.

Quick and high-quality steam generation due to its high efficiency design.

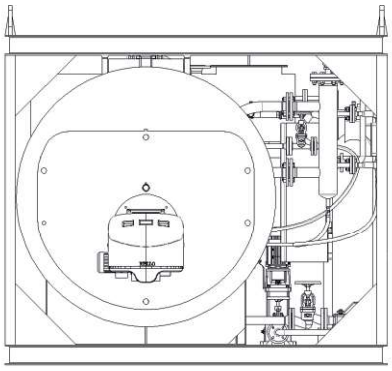
The robust steel frame allows easy transport and possible damaging risks that may occur during the transportation are eliminated.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953requirements and S235J – S355J carbon steel for non-pressurized parts

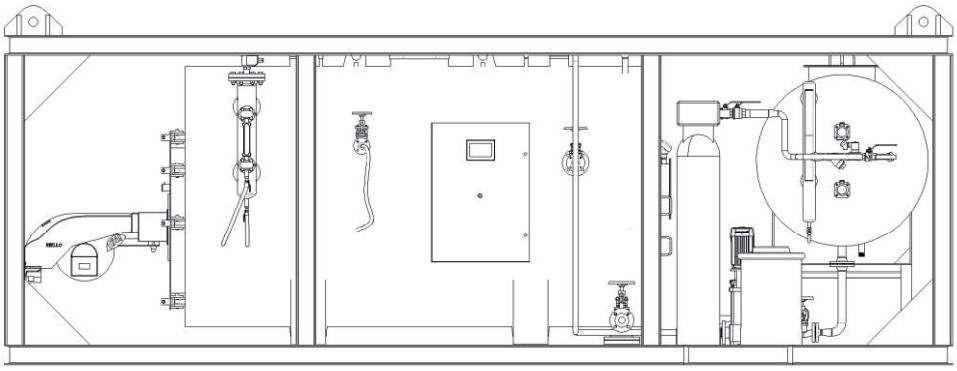
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR PSB SERIES BOILERS



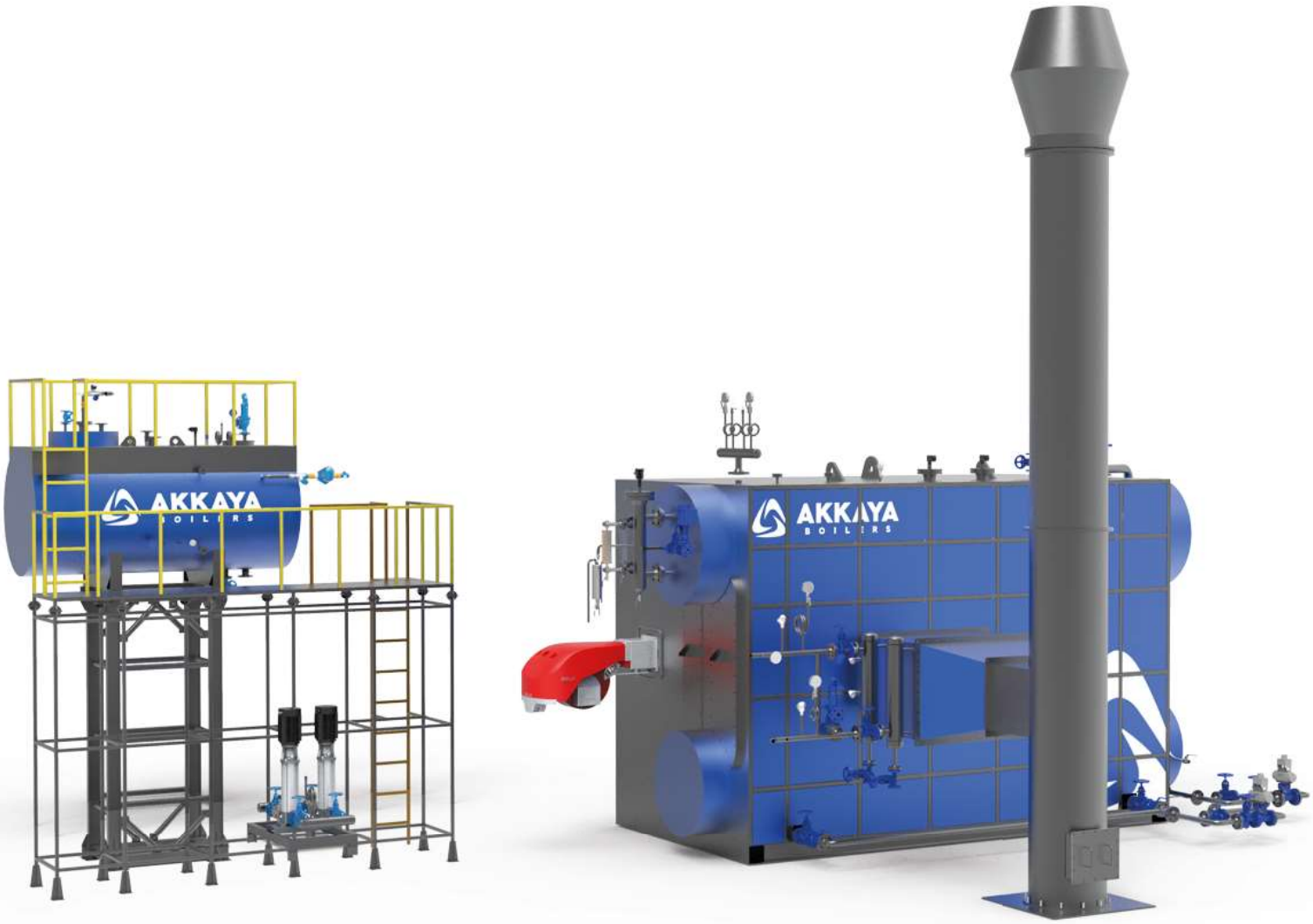
FRONT VIEW



LEFT VIEW

| | PSB300 | PSB500 | PSB750 | PSB1000 | PSB1250 | PSB1500 | PSB2000 | PSB2500 | PSB3000 | PSB3500 | PSB4000 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Steam Generation Capacity (kg/h) | 300 | 500 | 700 | 1000 | 1250 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 |
| Operating pressure (bar g) | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Thermal Capacity (kW) | 209 | 349 | 523 | 698 | 872 | 1047 | 1395 | 1744 | 2093 | 2442 | 2791 |
| Thermal Capacity (ckal/h) | 180K | 300K | 450K | 600K | 750K | 900K | 1.2M | 1.5M | 1.8M | 2.1M | 2.4M |
| Burner Heating Capacity (kW) | 246 | 410 | 616 | 821 | 1026 | 1231 | 1642 | 2052 | 2462 | 2873 | 3283 |
| Steam Outlet Connection (PN16) | DN32 | DN50 | DN50 | DN65 | DN65 | DN80 | DN100 | DN100 | DN125 | DN125 | DN125 |
| Electricity Consumption 380V-3Phs-50Hz (kW) ** | 1,22 | 1,70 | 2,70 | 2,70 | 3,10 | 3,50 | 7,60 | 7,90 | 7,90 | 8,50 | 9,00 |
| Fuel Consumption/ Diesel (kg/h) | 21 | 35 | 52 | 69 | 87 | 104 | 138 | 173 | 208 | 243 | 278 |
| Fuel Consumption/Natural Gas @ 300 mbar (Nm3/h) | 26 | 43 | 64 | 86 | 107 | 128 | 171 | 214 | 257 | 299 | 342 |
| Fuel Consumption/LPG @ 300 mbar (kg/h) | 19 | 32 | 48 | 64 | 80 | 96 | 128 | 160 | 193 | 222 | 253 |
| Water Consumption @ 6 bar (kg/h) | 300 | 500 | 750 | 1000 | 1250 | 1500 | 2000 | 2500 | 3000 | 3000 | 4000 |
| Length (L) (mm) | 4500 | 5000 | 5500 | 5800 | 6200 | 6700 | 7200 | 7500 | 8000 | 8200 | 9000 |
| Width (W) (mm) | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | 2300 | 2500 | 2500 | 2500 | 2600 |
| Height(H)(mm)* All Accessories Assembled) | 2300 | 2300 | 2400 | 2400 | 2550 | 2550 | 2800 | 3000 | 3000 | 3000 | 3000 |
| Weight (Kg) | 3000 | 3500 | 4000 | 4850 | 5500 | 5800 | 8000 | 9400 | 10250 | 11250 | 12250 |

**Transport height can be reduced by approx. 200 mm by removing some accessories.**
**** Technical specifications are based on diesel burner.**
**Akkaya Inc reserves the right to make changes to the specifications.**




# WTB-D D TYPE WATER TUBE STEAM BOILERS

**Steam Production Capacity:**
15.000 kg/h - 120.000 kg/h
**Operating Pressure**
0,5-40 Bar
**Fuel Type:**
Natural Gas, LPG, Diesel, Heavy Fuel Oil

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BOILERS

WTB-D D type water tube, steam boilers consist of a mud drum and an upper steam drum. The design is a well proven and reliable design for high pressure and high capacity steam producing systems.

The large and sufficient combustion chamber allows the use of different types of oil and gas fuel efficiently.

The structure of the combustion chamber consists of membrane wall type water tube sections. The flue gas travels inside the tube bundle convection heat transfer section and then leaves the boiler from the side smoke exit channel.

Super heater or economiser can be placed in the boiler system on customers' request.

The steam drum design is very important in water tube steam boilers. Akkaya has developed its own cylone separator design with the help of computer aided analysing.

The heat transfer area of the boiler is indicated definite and it is the net area along where, the heat is transferred inside the boiler.

WTB-D model boilers can be produced for an operating pressure range of 0,5 bar – 40 bar.

Boiler is supplied with all necessary accessories, control devices and auxiliary equipment on customer's request.

Isolation of the boiler is specially made to minimize the thermal energy loss. Special covering plates are used on the surface, to protect the shell of the boiler from outdoor conditions and to prevent tearing.

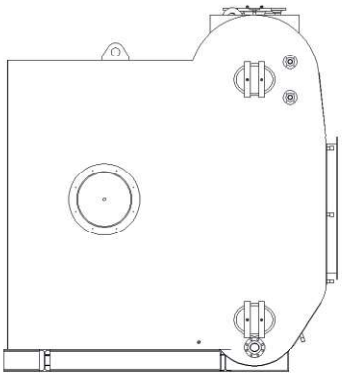
AKK-WTB boiler consists of: Mud drum, steam drum and water tubes at proper thickness, according to the boiler's operating pressure optional integrated superheater application can be made. EN12952 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

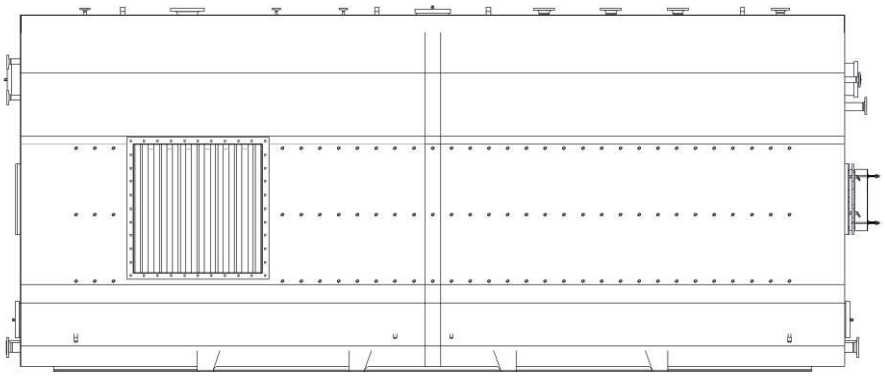
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR WTB-D MODEL BOILERS



FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Steam Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h) | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)* |
|---|---|---|---|---|---|---|
| AKK-WTB 15 | 15000 | 9.000.000 | 6000 | 4000 | 4100 | 23000 |
| AKK-WTB 20 | 20000 | 12.000.000 | 7000 | 4000 | 4100 | 26000 |
| AKK-WTB 25 | 25000 | 15.000.000 | 8500 | 4000 | 4100 | 30000 |
| AKK-WTB 30 | 30000 | 18.000.000 | 10000 | 4000 | 4100 | 36000 |
| AKK-WTB 40 | 40000 | 24.000.000 | 11000 | 4000 | 4500 | 75000 |
| AKK-WTB 50 | 50000 | 30.000.000 | 12000 | 4000 | 4500 | 81500 |
| AKK-WTB 60 | 60000 | 36.000.000 | 10000 | 4500 | 5300 | 85500 |
| AKK-WTB 70 | 70000 | 42.000.000 | 11500 | 4500 | 5300 | 94000 |
| AKK-WTB 80 | 80000 | 48.000.000 | 12500 | 4500 | 5300 | 103500 |
| AKK-WTB 90 | 90000 | 54.000.000 | 10000 | 6000 | 6500 | 149500 |
| AKK-WTB 100 | 100000 | 60.000.000 | 11500 | 6000 | 6500 | 162500 |
| AKK-WTB 110 | 110000 | 66.000.000 | 12500 | 6000 | 6500 | 177000 |
| AKK-WTB 120 | 120000 | 72.000.000 | 14000 | 6000 | 6500 | 177000 |

**Akkaya Inc reserves the right to make changes to the specifications.**
**Depends on operating pressure and superheater addition**

# YSB - SEMI CYLINDRICAL SOLID FUEL FIRED STEAM BOILERS

**Steam Production Capacity:**
150 kg/h - 3.750 kg/h
**Operating Pressure**
0,5-8 Bar
**Fuel Type:**
Biomass, Coal, Pellet

AKKAYA BOILERS

YSB model boilers are designed and manufactured according to the well known, three pass design that allows obtaining adequate heating surface and lower exhaust gas temperature compared with two pass design. The half cylindrical compact design brings installation and cost advantages without any sacrifice from heating surface.

YSB model boilers are specially designed for high efficiency at operating pressures up to 5 bar. For higher operating pressures (up to 10 bar) special production can be carried out, upon customer's request.

The indicated heat transfer surface for each capacity is completely correct and it shows the net area along where the heat is transferred to water inside the boiler.

20-25 kg/h steam is obtained from 1 $m^2$ heating surface. Boiler is supplied with all necessary accessories, control devices and auxiliary equipment on customer's request.

A wide range of fuel types such as; wood, coal, olive seeds, pellets, nut shells and other types of biomass can be used with this model along with traditional solid fuels like coal.

By implementing an automatic stoker feeding system or an automatic water cooled vibrating grate to the boiler, small sized solid fuel types are easily used for firing.

Isolation of the boiler is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

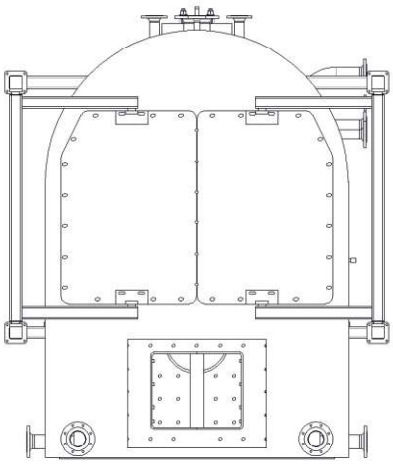
Boiler consists of a half cylindrical, 3 pass, fire tube, wet back main body and furnace at proper thickness, according to the boiler's operating pressure. EN12953 and TS497 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

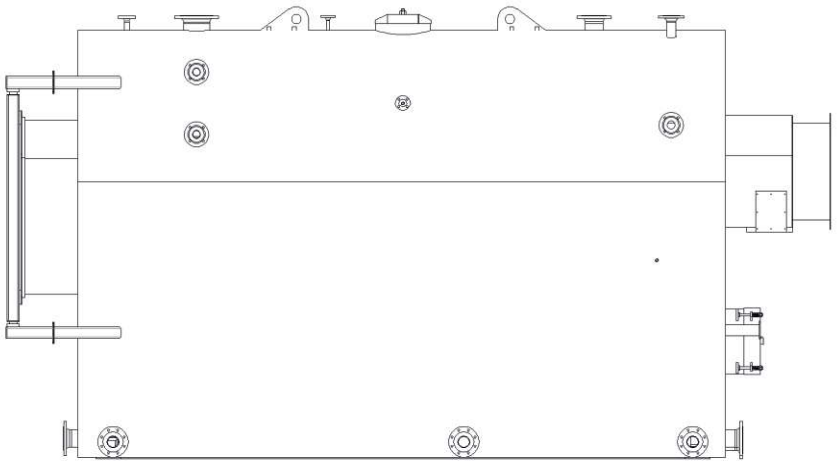
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR YSB MODEL BOILERS



FRONT VIEW



SIDE VIEW

| **Model** | **Max. Steam Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h)* | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)** |
|---|---|---|---|---|---|---|
| YSB6 | 150 | 90.000 | 1700 | 1010 | 1600 | 1169 |
| YSB8 | 200 | 120.000 | 2100 | 1010 | 1600 | 1412 |
| YSB10 | 250 | 150.000 | 2050 | 1110 | 1680 | 1637 |
| YSB15 | 375 | 225.000 | 1950 | 1210 | 1950 | 2075 |
| YSB20 | 500 | 300.000 | 2370 | 1210 | 1950 | 2266 |
| YSB25 | 625 | 375.000 | 2400 | 1410 | 2160 | 3118 |
| YSB30 | 750 | 450.000 | 2700 | 1410 | 2160 | 3227 |
| YSB40 | 1000 | 600.000 | 2600 | 1610 | 2300 | 4000 |
| YSB50 | 1250 | 750.000 | 3050 | 1610 | 2300 | 4499 |
| YSB60 | 1500 | 900.000 | 2650 | 1810 | 2700 | 5780 |
| YSB70 | 1750 | 1.050.000 | 2950 | 1810 | 2700 | 5479 |
| YSB80 | 2000 | 1.200.000 | 3250 | 1810 | 2700 | 5977 |
| YSB90 | 2250 | 1.350.000 | 3250 | 2010 | 2860 | 8037 |
| YSB100 | 2500 | 1.500.000 | 3430 | 2010 | 2860 | 8210 |
| YSB110 | 2750 | 1.650.000 | 3680 | 2010 | 2860 | 8360 |
| YSB 120 | 3000 | 1.800.000 | 3930 | 2010 | 2860 | 8449 |
| YSB 150 | 3750 | 2.250.000 | 4730 | 2010 | 2860 | 10650 |

*** According to solid fuel with 4500 kcal/kg LHV**

****5 bar & empty W/O accessories**


# EBS SERIES

## EASY EXPORT PACKAGED YSB MODEL STEAM BOILERS

**Steam Production Capacity:**
250 kg/h - 2.000 kg/h
**Operating Pressure**
0,5-8 Bar
**Fuel Type:**
Biomass, Coal, Pellet

AKKAYA
BOILERS

EBS series steam boilers are packaged type of YSB model boilers for easy installation and operation.

EBS series boilers are designed for operation at 8 bar. It can be manufactured for higher operating pressures up to 10 bar or lower operating pressures upon customer' s request.

This configuration is preferred to provide low investment cost.

By packaged design all auxiliary equipment is pre-installed and the system is ready to use. By this way, start up is quick and easy.

There is no need to build a refractory foundation in the boiler room which is necessary for solid fired boilers since the packaged system already has it.

Space requirement is smaller due to their compact design and this minimizes investment cost for boiler room.

Best solution for rental applications.

Safe and stable operation thanks to high-quality safety equipments.

PLC controlled control board with touch screen provides easy operation and remote access that allows technical support to any point in the world quickly.

Quick and high-quality steam generation due to its high efficiency design.

The robust steel frame allows easy transport and possible damaging risks that may occur during the transportation are eliminated.

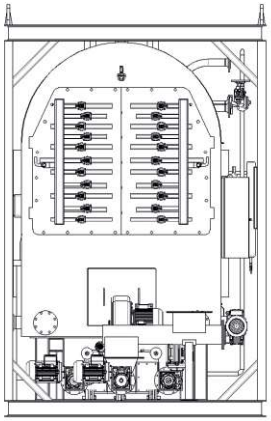
Factory tests are carried out by completing cabling and piping between the components.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

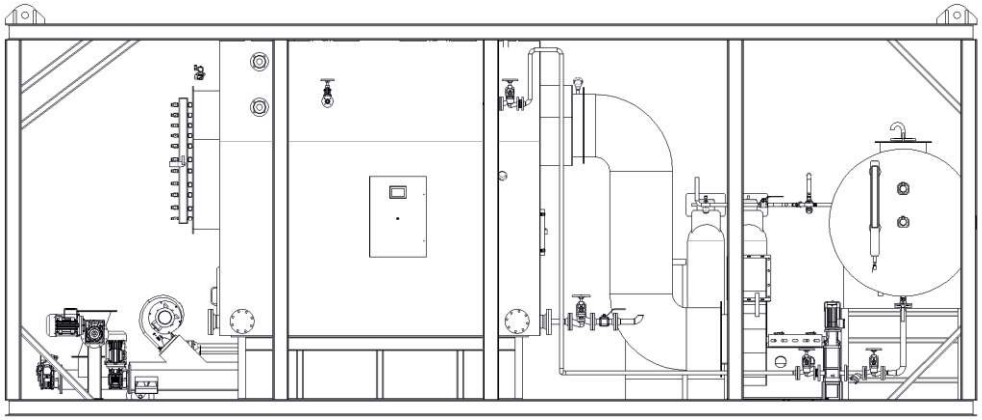
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost1

**Isolation:** 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR EBS SERIES BOILERS



FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Steam Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h) | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)* |
|---|---|---|---|---|---|---|
| EBS 250 | 250 | 150.000 | 5800 | 2200 | 2550 | 4200 |
| EBS 375 | 375 | 225.000 | 5800 | 2200 | 2800 | 4600 |
| EBS 500 | 500 | 300.000 | 6100 | 2200 | 2800 | 5100 |
| EBS 625 | 625 | 375.000 | 6500 | 2300 | 3050 | 6000 |
| EBS 750 | 750 | 450.000 | 6850 | 2300 | 3050 | 6300 |
| EBS 1000 | 1000 | 600.000 | 7400 | 2300 | 3150 | 7400 |
| EBS 1250 | 1250 | 750.000 | 7850 | 2300 | 3150 | 8200 |
| EBS 1500 | 1500 | 900.000 | 7500 | 2300 | 3550 | 9300 |
| EBS 1750 | 1750 | 1.050.000 | 8100 | 2300 | 3550 | 9600 |
| EBS 2000 | 2000 | 1.200.000 | 8400 | 2300 | 3550 | 9900 |

*** According to solid fuel with 4500 kcal/kg LHV**
****For 5 bar operating pressure**
***Transport height can be reduced by approx. 200 mm by removing some accessories.**
***According to the situation where all system motors are activated at the same time.**
***Akkaya Inc reserves the right to make changes to the specifications.**


# YHYB- SEMI HYBRID SOLID FUEL FIRED STEAM BOILERS

**Steam Production Capacity:**
1.500 kg/h - 20.000 kg/h
**Operating Pressure**
0,5-20 Bar
**Fuel Type:**
Biomass, Coal, Pellet
(Natural Gas, LPG, Diesel, Heavy Fuel Oil - Optional)

AKKAYA BOILERS

YHYB model boilers are designed and manufactured according to the system that provides adequate heat transfer surface, sufficient steam storage and grate surface for solid fuel applications by connection of the water tube combustion chamber of the hybrid type boilers to a 2 pass fire tube shell boiler.

The water tube type combustion chamber is engineered according to the volumetric load for the solid fuels. Sufficient furnace volume and grate surface area is achived in order to get maximum combustion efficiency. Fire tube boiler section is working as evaporation heat transfer area. This high volume water chamber allows the boiler to respond peak loads. With high steam chamber volume the boiler can supply dry steam. The flame return chamber 's sides are water cooled. This brings higher life time, less refractory maintenance and increased efficiency. As the restart intervals of the boiler, after consuming the steam is increased by the design, the fuel consumption is also optimized. By the help of fire tube boiler's design, gas speed is increased and a cleaner tube surface is obtained.

The increased heating surface of the system by the front combustion chamber allows the indicated steam capacity to be relative with the indicated heating surface value. Approximately 20-25 kg/h steam is produced from 1 $m^2$ heating area of YHYB boilers.

(The steam production capacity mostly depends on the LHV of the solid fuel used.)

YHYB model boilers can be used efficiently at operating pressures up to 20 bar. Boiler is supplied with all necessary accessories, control devices and auxiliary equipment on customer's request.

A wide range of solid fuel types such as; wood, coal, olive seeds, pellets, nut shells and other types of biomass can be used with YHYB boilers. By implementing an automatic stoker feeding system or an automatic water cooled vibrating grate to the combustion chamber small sized solid fuel types are easily used for firing.

Isolation of the boiler is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

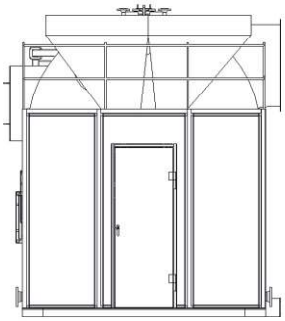
YHYB boiler body consists of a cylindrical, 2 pass, fire tube, wet back main body with plain or corrugated furnace at proper thickness, according to the boiler's operating pressure and a half cylindrical, water tube front combustion chamber. EN12952 and EN12953 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12952 and EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

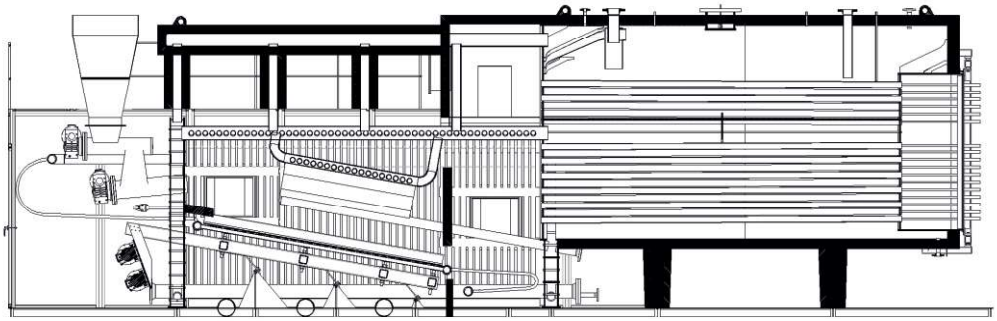
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR YHYB MODEL BOILERS



FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Steam Capacity** F&A 100 °C (kg/h) | **Max. Thermal Capacity** (kcal/h)* | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)** |
|---|---|---|---|---|---|---|
| YHYB500 | 500 | 300.000 | 4500 | 1750 | 2750 | 6000 |
| YHYB1000 | 1000 | 600.000 | 5500 | 1850 | 3000 | 7500 |
| YHYB1500 | 1500 | 900.000 | 6000 | 2160 | 3110 | 9800 |
| YHYB2000 | 2000 | 1.200.000 | 7500 | 2160 | 3110 | 11500 |
| YHYB2500 | 2500 | 1.500.000 | 8850 | 2160 | 3310 | 13750 |
| YHYB3000 | 3000 | 1.800.000 | 8500 | 2610 | 3600 | 18000 |
| YHYB3500 | 3500 | 2.100.000 | 9000 | 2610 | 3600 | 19500 |
| YHYB4000 | 4000 | 2.400.000 | 9500 | 2610 | 3600 | 20600 |
| YHYB5000 | 5000 | 3.000.000 | 9500 | 2810 | 3750 | 27750 |
| YHYB6000 | 6000 | 3.600.000 | 10100 | 2810 | 3750 | 30100 |
| YHYB7000 | 7000 | 4.200.000 | 10900 | 2810 | 3750 | 32700 |
| YHYB8000 | 8000 | 4.800.000 | 12100 | 3200 | 3950 | 39300 |
| YHYB10000 | 10000 | 6.000.000 | 13200 | 3200 | 3950 | 45300 |
| YHYB12000 | 12000 | 7.200.000 | 16250 | 3200 | 4950 | 53800 |
| YHYB14000 | 14000 | 8.400.000 | 18450 | 3200 | 4950 | 60500 |
| YHYB16000 | 16000 | 9.600.000 | 17000 | 3600 | 5250 | 70000 |
| YHYB18000 | 18000 | 10.800.000 | 18300 | 3600 | 5250 | 75500 |
| YHYB20000 | 20000 | 12.000.000 | 18000 | 3800 | 5750 | 82000 |

*** According to solid fuel with 4500 kcal/kg LHV**
****6 bar & empty W/O accessories**


# ELKBJ ELECTRICAL STEAM GENERATORS

**Steam Production Capacity:**
6 kg/h - 2.000 kg/h
**Operating Pressure:**
0,5 Bar - 20 Bar
**Fuel Type:**
Electric

AKKAYA
BOILERS

The system is delivered with all necessary accessories and auxiliary equipment as a package in order to provide easy installation and push button start-up.

The system configuration is selected according to the required operating pressure. For 0-3 bar range, low pressure ELKBJLP series and for 4-20 bar range ELKBJHP models are provided.

Regarding the application areas such as pharmaceutical or food industry where steam can be in direct contact with the products, complete stainless steel models are provided.

Isolation of the boiler is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

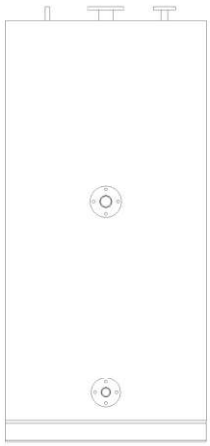
ELKBJ steam generator body consists of a: Vertical, tubeless inner body furnished with Cr-Ni, high quality, wet type, electrical resistance heaters. EN12953 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH - and S235J – S355J carbon steel for non-pressurized parts or AISI304 / AISI316 stainless steel according to EN12953 and customer requirements

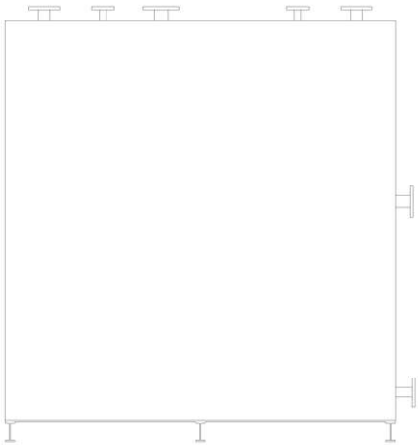
**Resistance Heaters:** Wet type , Cr-Ni

**Isolation:** 50 or 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR ELKBJ MODEL BOILERS



ÖNDEN GÖRÜNÜŞ / FRONT VIEW



SAĞDAN GÖRÜNÜŞ / RIGHT VIEW

| **Model** | **Max. Steam Capacity** F&A 100 °C (kg/h) | **Power** (kW) | **Length** (L) (mm)* | **Width** (W) (mm)* | **Height** (H) (mm)* | **Weight** (kg)** |
|---|---|---|---|---|---|---|
| ELKBJ06 | 6 | 4,2 | 850 | 850 | 850 | 113 |
| ELKBJ30 | 30 | 21 | 1060 | 1060 | 1440 | 153 |
| ELKBJ50 | 50 | 36 | 1100 | 1100 | 1900 | 175 |
| ELKBJ75 | 75 | 54 | 1100 | 1100 | 1900 | 210 |
| ELKBJ100 | 100 | 72 | 1250 | 1250 | 1900 | 276 |
| ELKBJ125 | 125 | 90 | 1250 | 1250 | 2200 | 315 |
| ELKBJ150 | 150 | 108 | 1250 | 1250 | 2200 | 315 |
| ELKBJ200 | 200 | 144 | 1350 | 1350 | 2200 | 377 |
| ELKBJ250 | 250 | 180 | 1700 | 1700 | 2350 | 675 |
| ELKBJ300 | 300 | 216 | 1700 | 1700 | 2350 | 675 |
| ELKBJ400 | 400 | 288 | 1700 | 1700 | 2350 | 675 |
| ELKBJ500 | 500 | 360 | 1700 | 1700 | 2350 | 675 |
| ELKBJ750 | 750 | 540 | 2000 | 2000 | 2500 | 1353 |
| ELKBJ1000 | 1000 | 720 | 2000 | 2000 | 2500 | 1353 |
| ELKBJ1250 | 1250 | 864 | 2000 | 2000 | 2150 | 1562 |
| ELKBJ1500 | 1500 | 1056 | 2000 | 2000 | 2150 | 1562 |
| ELKBJ1750 | 1750 | 1248 | 2300 | 2300 | 2350 | 2220 |
| ELKBJ2000 | 2000 | 1392 | 2300 | 2300 | 2350 | 2220 |
| ELKBJ2500 | 2500 | 1740 | ** | ** | ** | ** |
| ELKBJ3000 | 3000 | 2160 | ** | ** | ** | ** |
| ELKBJ4000 | 4000 | 2880 | ** | ** | ** | ** |
| ELKBJ5000 | 5000 | 3600 | ** | ** | ** | ** |
| ELKBJ6000 | 6000 | 4320 | ** | ** | ** | ** |
| ELKBJ8000 | 8000 | 5760 | ** | ** | ** | ** |
| ELKBJ10000 | 10000 | 7200 | ** | ** | ** | ** |

**Empty W/O accessories
** Please ask for dimension information for these capacities.

# EES SERIES

## EASY EXPORT PACKAGED ELKBJ MODEL

# ELECTRIC POWERED STEAM GENERATORS

**Steam Production Capacity:**
6 kg/h - 2.000 kg/h
**Operating Pressure**
0,5-20 Bar
**Fuel Type:**
Electric

AKKAYA BOILERS

EES series steam boilers are packaged type of ELKBJ model boilers for easy installation and operation.

EES series boilers are designed for operation at 8 bar. It can be manufactured for higher working pressures up to 18 bar or lower operating pressures upon customer' s request.

This configuration is preferred due to low investment cost.

Thanks to packaged design customized for the plants that require a relatively lower amount of steam, all auxiliary equipment is pre-installed and the system is ready to use. By this way, start-up is quick and easy. This type of boilers can also be used in different processes by being manufactured at different operating pressures.

It has sufficient steam and water volume designed for continuous and reliable steam generation.

Space requirement is smaller due to compact design and this minimizes investment cost for boiler room.
Best solution for rental applications.

Safe and stable operation thanks to high-quality safety equipments.

PLC controlled control board with touch screen provides easy operation and remote access that allows technical support to any point in the world quickly.

Factory tests are carried out by completing cabling and piping between the components.

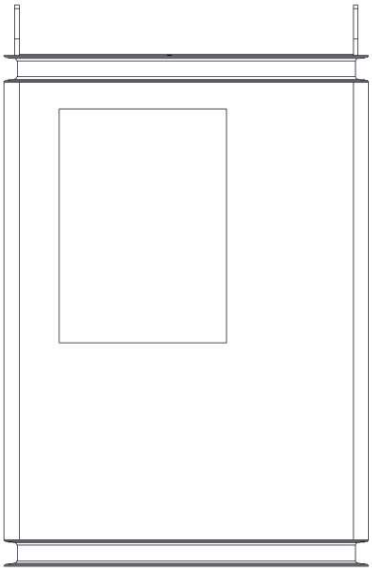
The robust steel frame allows easy transport and possible damaging risks that may be happened during the transportation is eliminated by the help of this frame.

**Steel Materials:** P265GH – P295GH -P355GH - and S235J – S355J carbon steel for non-pressurized parts or AISI304 / AISI316 stainless steel according to EN12953 and customer requirements

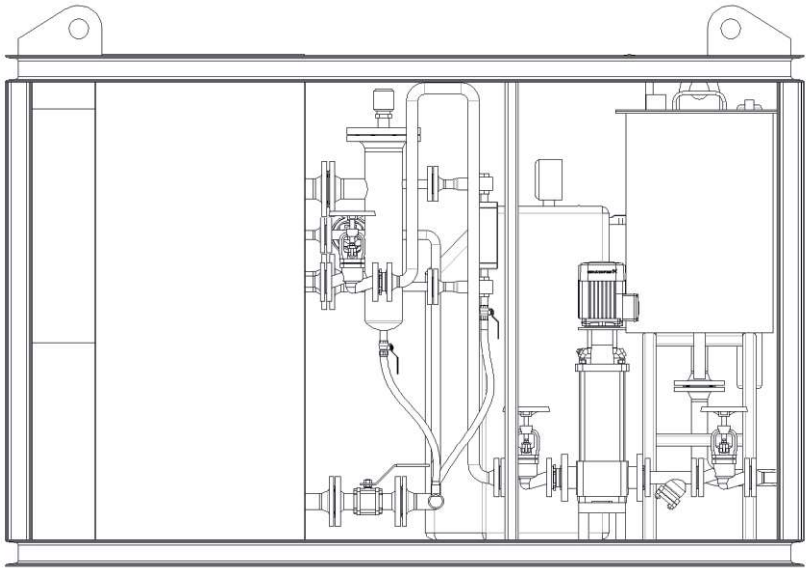
**Resistance Heaters:** Wet type , Cr-Ni

**Isolation:** 50 or 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR EES SERIES BOILERS



FRONT VIEW



LEFT VIEW

| **Model** | **Max. Steam Capacity** F&A 100 °C (kg/h) | **Power** (kW)** | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm)* | **Weight** (kg) |
|---|---|---|---|---|---|---|
| EES06 | 6 | 5 | 1750 | 850 | 850 | 383 |
| EES30 | 30 | 22 | 1960 | 1060 | 1440 | 484 |
| EES50 | 50 | 36 | 2440 | 1100 | 1900 | 575 |
| EES75 | 75 | 53 | 2440 | 1100 | 1900 | 610 |
| EES100 | 100 | 71 | 2640 | 1250 | 1900 | 790 |
| EES125 | 125 | 88 | 3090 | 1250 | 2200 | 895 |
| EES150 | 150 | 106 | 3090 | 1250 | 2200 | 895 |
| EES200 | 200 | 141 | 3290 | 1350 | 2200 | 1010 |
| EES250 | 250 | 176 | 3690 | 1700 | 2350 | 1450 |
| EES300 | 300 | 211 | 3800 | 1700 | 2350 | 1478 |
| EES400 | 400 | 281 | 3900 | 1700 | 2350 | 1506 |
| EES500 | 500 | 350 | 4000 | 1700 | 2350 | 1523 |
| EES750 | 750 | 525 | 5600 | 2000 | 2500 | 2536 |
| EES1000 | 1000 | 700 | 5700 | 2000 | 2500 | 2580 |
| EES1250 | 1250 | 874 | 6660 | 2000 | 2150 | 2899 |
| EES1500 | 1500 | 1049 | 6760 | 2000 | 2150 | 2948 |
| EES1750 | 1750 | 1223 | 7200 | 2300 | 2350 | 3834 |
| EES2000 | 2000 | 1398 | 7300 | 2300 | 2350 | 3877 |

*** The transportation height can be reduced about 200 mm by disassembly of some accessories**

**** For the case when all the motors on the system run**

# KYK H
# HORIZONTAL THERMAL OIL HEATERS

**Thermal Capacity:**
300 kW - 8.720 kW
**Max. Oil Output Temperature:**
350°C
**Fuel Type:**
Natural Gas, LPG, Diesel, Heavy Fuel Oil

AKKAYA
BOILERS

KYK H model horizontal thermal oil heaters are designed to obtain adequate heat transfer surface by using spiral shaped oil tubes inside which can be single or double sectors according to the required capacity.

The design calculations are carried out to provide correct circulation velocity for the thermal oil inside the heater which is vital to prevent overheating of the oil, cracking and deformation in the heater tubes, heat transfer property loss of the thermal oil and overall efficiency loss.

To increase the heater efficiency, hot smoke / fire circulates by 3 pass system around the spiral oil tubes and so stack temperature is decreased and the useful heat is transferred more.

KYK H model heaters are suitable to be used with gas and oil burners. Boiler is supplied with all necessary accessories, control devices and auxiliary equipment on customer's request.

Heater capacity, total heat transfer surface, used tube length, thermal oil flowrate and pressure loss are precisely calculated during design stage.

(Approximately 25000 kcal/h heat is obtained from 1 $m^2$ heating surface)

Isolation of the heater is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

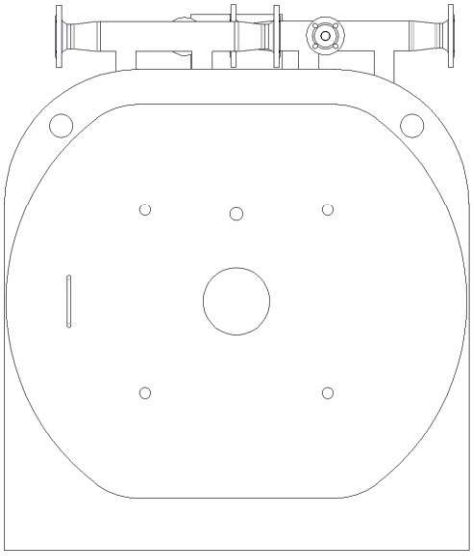
KYK H boiler body consists of a horizontal cylindrical body including spiral shaped single or double coil oil tubes. EN12952 is taken as reference for design calculations where applicable.

**Steel Materials:** S235J – S355J carbon steel according to EN12952 requirements

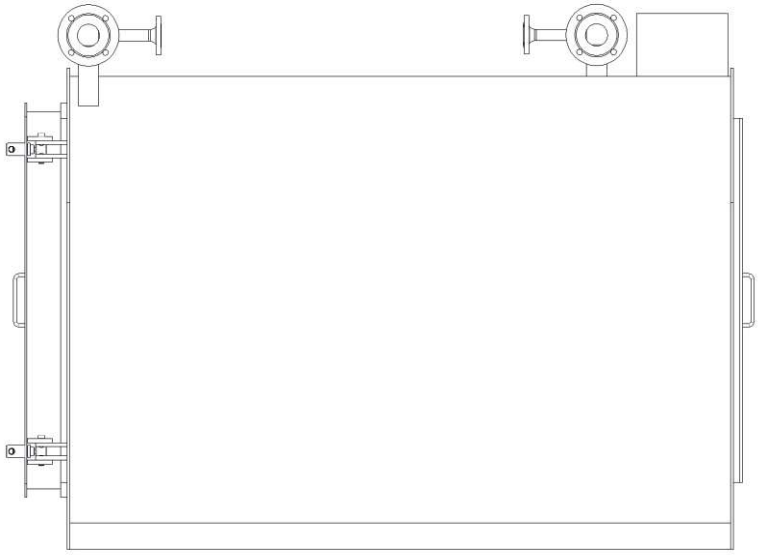
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR KYKH MODEL BOILERS



FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Thermal Capacity** F&A 100 °C (kg/h) | **Min. Oil Flow Rate** ($m^3/h$)* | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)** |
|---|---|---|---|---|---|---|
| KYKH300 | 258.000 | 35 | 1950 | 1100 | 1350 | 1400 |
| KYKH500 | 500.000 | 50 | 2250 | 1400 | 1600 | 2500 |
| KYKH750 | 750.000 | 75 | 2700 | 1650 | 1750 | 3000 |
| KYKH1000 | 1.000.000 | 100 | 3000 | 1600 | 1800 | 3500 |
| KYKH1250 | 1.250.000 | 130 | 3200 | 1800 | 2000 | 3800 |
| KYKH1500 | 1.500.000 | 160 | 3800 | 1900 | 2100 | 4200 |
| KYKH1750 | 1.750.000 | 185 | 4100 | 1900 | 2100 | 4700 |
| KYKH2000 | 2.000.000 | 210 | 4300 | 2000 | 2200 | 5000 |
| KYKH2500 | 2.500.000 | 260 | 4700 | 2200 | 2400 | 5200 |
| KYKH3000 | 3.000.000 | 300 | 4800 | 2250 | 2450 | 5400 |
| KYKH3500 | 3.500.000 | 370 | 4000 | 2700 | 2900 | 5600 |
| KYKH4000 | 4.000.000 | 420 | 4300 | 2800 | 3000 | 5800 |
| KYKH4500 | 4.500.000 | 475 | 6000 | 2700 | 2900 | 6000 |
| KYKH5000 | 5.000.000 | 525 | 6400 | 2700 | 2900 | 6200 |
| KYKH5500 | 5.500.000 | 580 | 5100 | 3100 | 3300 | 6400 |
| KYKH6000 | 6.000.000 | 630 | 5300 | 3200 | 3400 | 6600 |
| KYKH6500 | 6.500.000 | 685 | 5500 | 3200 | 3400 | 6800 |
| KYKH7000 | 7.000.000 | 735 | 5700 | 3300 | 3500 | 7000 |
| KYKH7500 | 7.500.000 | 790 | 5850 | 3350 | 3550 | 7300 |

*For $\Delta T = 20^\circ C$
**Empty W/O accessories


# KYK-HLZ HELICOIDAL THERMAL OIL HEATERS

**Thermal Capacity For Oil/Gas Fuel:**
233 kW - 8721 kW
**Thermal Capacity For Biomass Fuel:**
116 kW - 4360 kW
**Max. Oil Output Temperature:**
350°C
**Fuel Type:**
Biomass, Coal, Pellet
(Natural Gas, LPG, Diesel, Heavy Fuel Oil - Optional )

AKKAYA BOILERS

KYK HLZ model helicoidal thermal oil heaters are designed to obtain adequate heat transfer surface by using wet type helicoidal tube bundles connected at sufficient number of groups according to the required capacity.

To increase the heater efficiency, hot smoke / fire circulates around the helicoidal oil tubes to travel a longer distance and so stack temperature is decreased and the useful heat is transferred more.

KYK HLZ model heaters are suitable to be used with gas / oil burners and with a wide range of solid fuel types such as; wood, coal, olive seeds, pellets, nut shells, seeds of various plants, dried manure, dried pomace and other types of biomass. Boilers designed specially for higher capacity requirements of our customers can be provided. Boiler is supplied as packaged with all necessary accessories, control devices and auxiliary equipment on customer's request.

Heater capacity, total heat transfer surface, used tube length, thermal oil flowrate and pressure loss are precisely calculated and during design stage. (Approximately 25000 kcal/h heat is obtained from 1 $m^2$ heating surface with oil/gas fuel types and 12500 kcal/h with solid fuel types).

Isolation of the heater is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

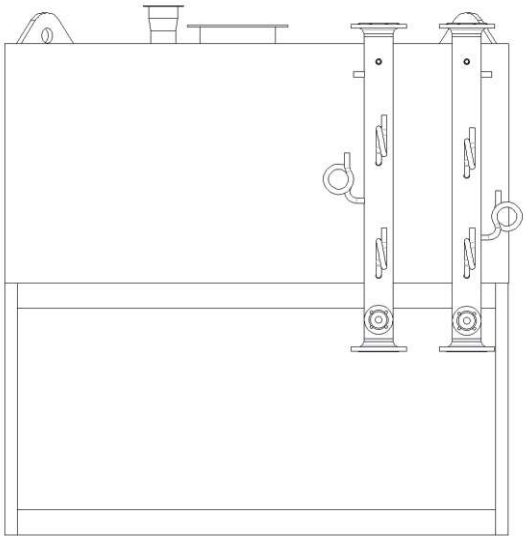
KYK HLZ boiler body consists of a vertical body including helicoidal shaped oil tubes. EN12952 is taken as reference for design calculations where applicable.

**Steel Materials:** S235J – S355J carbon steel according to EN12952 requirements

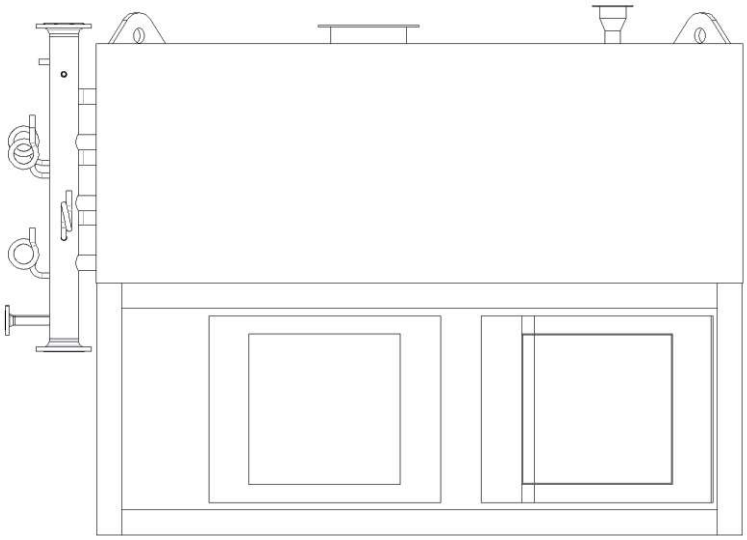
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR KYK HLZ MODEL BOILERS



FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Thermal Capacity** for Oil / Gas (kg/h) | **Max. Thermal Capacity** For Solid Fuel (kg/h)* | **Min. Flow Rate** Rate for Oil/Gas (m/h)** | **Min. Flow Rate** Rate for Solid Fuel m/h)** | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)*** |
|---|---|---|---|---|---|---|---|---|
| KYKHLZ 20-10 | 200.000 | 100.000 | 20 | 18 | 2000 | 1600 | 1750 | 1500 |
| KYKHLZ 25-12 | 250.000 | 125.000 | 30 | 18 | 2000 | 1600 | 2000 | 1700 |
| KYKHLZ 50-25 | 500.000 | 250.000 | 55 | 50 | 2500 | 2000 | 2000 | 2750 |
| KYKHLZ 75-37 | 750.000 | 375.000 | 80 | 70 | 2750 | 2000 | 2250 | 3000 |
| KYKHLZ 100-50 | 1.000.000 | 500.000 | 110 | 100 | 2750 | 2000 | 2700 | 3800 |
| KYKHLZ 125-62 | 1.250.000 | 625.000 | 130 | 100 | 3400 | 2500 | 2250 | 4300 |
| KYKHLZ 150-75 | 1.500.000 | 750.000 | 160 | 100 | 3400 | 2500 | 2500 | 4700 |
| KYKHLZ 200-100 | 2.000.000 | 1.000.000 | 210 | 120 | 3400 | 2500 | 2750 | 5100 |
| KYKHLZ 250-125 | 2.500.000 | 1.250.000 | 180 | 130 | 4600 | 2500 | 3000 | 5800 |
| KYKHLZ 300-150 | 3.000.000 | 1.500.000 | 205 | 160 | 5600 | 2500 | 3250 | 6500 |
| KYKHLZ 350-175 | 3.500.000 | 1.750.00 | 240 | 180 | 5600 | 2500 | 3500 | 7500 |
| KYKHLZ 400-200 | 4.000.000 | 2.000.000 | 280 | 205 | 6400 | 2500 | 3700 | 8500 |
| KYKHLZ 500-250 | 5.000.000 | 2.500.000 | 350 | 260 | 6400 | 2500 | 4400 | 10000 |
| KYKHLZ 750-375 | 7.500.000 | 3.750.000 | 510 | 400 | 6400 | 2500 | 5900 | 14000 |

*** According to solid fuel with 4500 kcal/kg LHV**

****For △T = 20 ° C and 30 ° C (for the oil/gas boiler with capacities higher than model 250-125)**

*****Empty W/O accessories**


# SKK – SCOTCH TYPE HOT/SUPERHEATED WATER BOILERS

**Thermal Capacity:**
232 kW - 14.535 kW
**Fuel Type:**
Natural Gas, LPG, Diesel, Heavy Fuel Oil

AKKAYA BOILERS

SKK model boilers are designed and manufactured according to the system which transfers more of the usable heat to the water to increase the hot water production efficiency by the "3 pass" principle of fire and smoke inside the boiler. This model is also known as "SCOTCH TYPE".

SKK model boilers are suitable to be used with gas and oil burners.

The exhaust gas temperature is decreased to an optimum level, so the operating efficiency &lifetime of the boiler is increased.

The heat transfer area of the boiler is indicated precise and it is the net area along where, the heat is transferred inside the boiler. (Approximately 25000 kcal/h heat is obtained from 1 $m^2$ of heating area.)

For the high operating pressure values; the furnace is produced in corrugated form to eliminate the thermal expansions and to obtain sufficient strength. SKK model boilers can be produced for an operating pressure range of 0,5 bar – 20 bar. Boiler is supplied as packaged with all necessary accessories, control devices and auxiliary equipment on customer's request.

Isolation of the boiler is specially made to minimize the thermal energy loss. Special covering plates are used on the surface, to protect the shell of the boiler from outdoor conditions and to prevent tearing.

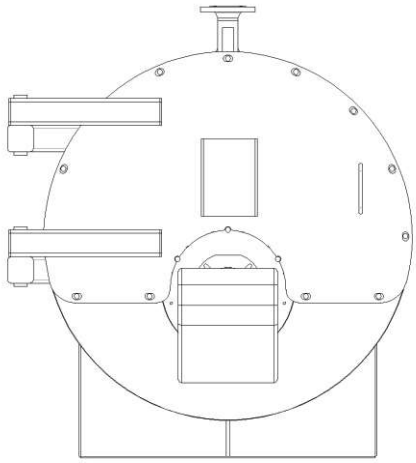
SKK boiler body consists of: Cylindrical, 3 pass, wet back main body with fire tubes and plain or corrugated furnace at proper thickness, according to the boiler's operating pressure. EN12953 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

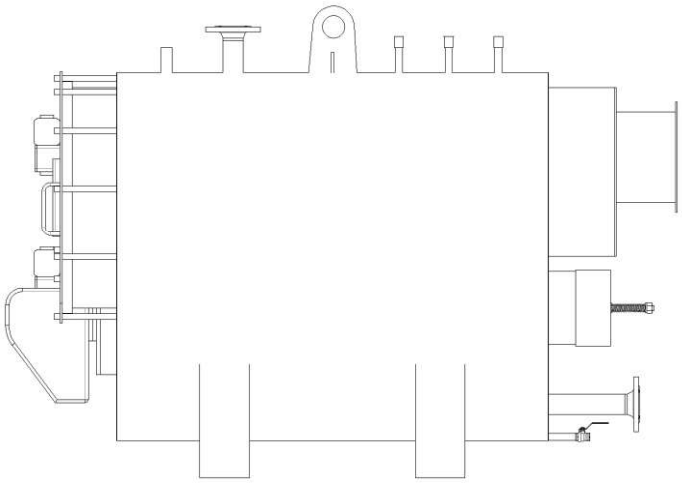
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR SKK MODEL BOILERS



FRONT VIEW



RIGHT VIEW

| Model | Max. Thermal Capacity (kcal/h) | Min. Water Flow Rate (m/h)* | Length (L) (mm) | Width (W) (mm) | Height (H) (mm) | Weight (kg)* |
|---|---|---|---|---|---|---|
| SKK 8 | 200.000 | 10 | 1900 | 1150 | 1500 | 1350 |
| SKK 10 | 250.000 | 13 | 2150 | 1150 | 1500 | 1450 |
| SKK 15 | 375.000 | 19 | 2450 | 1400 | 1750 | 2350 |
| SKK 20 | 500.000 | 25 | 3050 | 1400 | 1750 | 2800 |
| SKK 30 | 750.000 | 38 | 2950 | 1750 | 2100 | 4400 |
| SKK 40 | 1.000.000 | 50 | 3650 | 1750 | 2100 | 5250 |
| SKK 50 | 1.250.000 | 63 | 3650 | 1950 | 2300 | 6700 |
| SKK 60 | 1.500.000 | 75 | 4200 | 1950 | 2300 | 7500 |
| SKK 70 | 1.750.000 | 88 | 4750 | 1950 | 2300 | 8250 |
| SKK 80 | 2.000.000 | 100 | 4600 | 2200 | 2550 | 10550 |
| SKK 90 | 2.250.000 | 113 | 5050 | 2200 | 2550 | 11350 |
| SKK 100 | 2.500.000 | 125 | 5450 | 2200 | 2550 | 12100 |
| SKK 125 | 3.125.000 | 157 | 5100 | 2400 | 2850 | 14050 |
| SKK 150 | 3.750.000 | 188 | 5850 | 2400 | 2850 | 15580 |
| SKK 175 | 4.375.000 | 219 | 6300 | 2600 | 3050 | 20650 |
| SKK 200 | 5.000.000 | 250 | 7000 | 2600 | 3050 | 22700 |
| SKK 250 | 6.250.000 | 313 | 7300 | 2750 | 3250 | 26450 |
| SKK 300 | 7.500.000 | 375 | 8450 | 2750 | 3250 | 30250 |
| SKK 350 | 8.750.000 | 438 | 7650 | 3150 | 3700 | 36150 |
| SKK 400 | 10.000.000 | 500 | 8500 | 3150 | 3700 | 39900 |
| SKK 450 | 11.250.000 | 563 | 8950 | 3150 | 3700 | 41200 |
| SKK 500*** | 12.500.000 | 625 | 9700 | 3150 | 3700 | 44650 |

*Approximate flow rate for △T = 20 ° C

**10 bar & empty W/O accessories

***This model has a double furnace to obtain sufficient and safe heat transfer surface


# YS-SEMI CYLINDRICAL SOLID FUEL FIRED HOT/SUPERHEATED WATER BOILERS

**Thermal Capacity:**
70 kW – 1.744 kW
**Fuel Type:**
Biomass, Coal, Pellet

AKKAYA
BOILERS

YS model boilers are designed and manufactured according to the well-known, three pass design that allows obtaining adequate heating surface and lower exhaust gas temperature compared with two pass design. The half cylindrical compact design brings installation and cost advantages without any sacrifice from heating surface.

YS model boilers are specially designed for high efficiency at operating pressures up to 5 bar. For higher operating pressures (up to 10 bar) special production can be carried out, upon customer's request.

The indicated heat transfer surface for each capacity is completely correct and it shows the net area along where the heat is transferred to water inside the boiler.

Approximately 10000 kcal/h heat is obtained from 1 $m^2$ heating surface. Boiler is supplied as packaged with all necessary accessories, control devices and auxiliary equipment on customer's request.

YS model boilers are suitable to be used with gas / oil burners and with a wide range of solid fuel types such as; wood, coal, olive seeds, pellets, nut shells, seeds of various plants, dried manure, dried pomace and other types of biomass. By implementing an automatic stoker feeding system or an automatic water cooled vibrating grate to the boiler, small sized solid fuel types are easily used for firing.

Isolation of the boiler is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

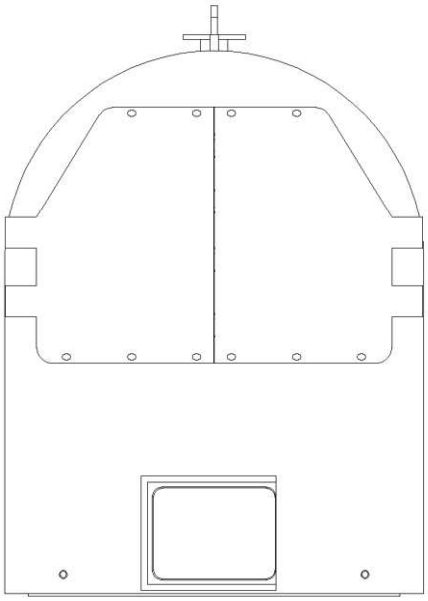
Boiler consists of a half cylindrical, 3 pass, fire tube, wet back main body and furnace at proper thickness, according to the boiler's operating pressure. EN12953 and TS497 are taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12953 and TS497 requirements and S235J – S355J carbon steel for non-pressurized parts

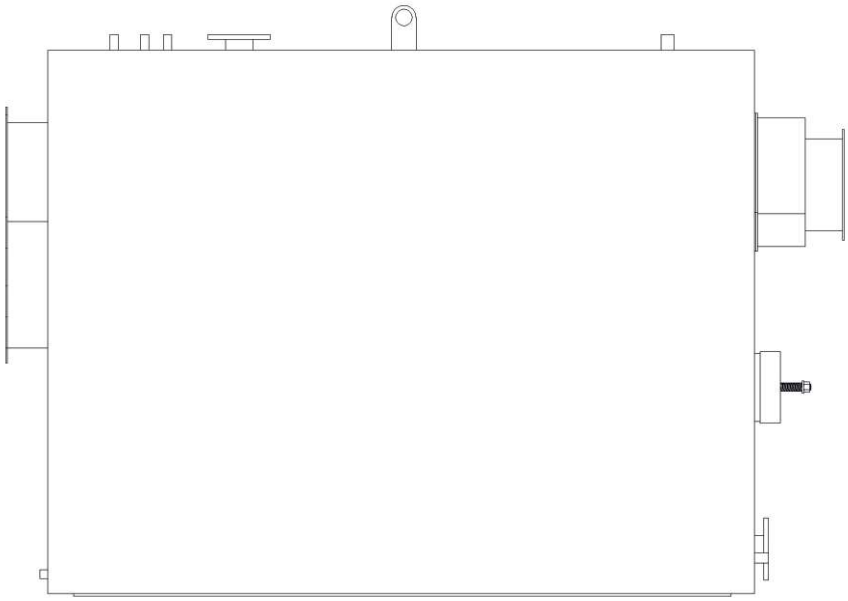
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request

# CAPACITIES AND DIMENSIONS TABLE FOR YS MODEL BOILERS



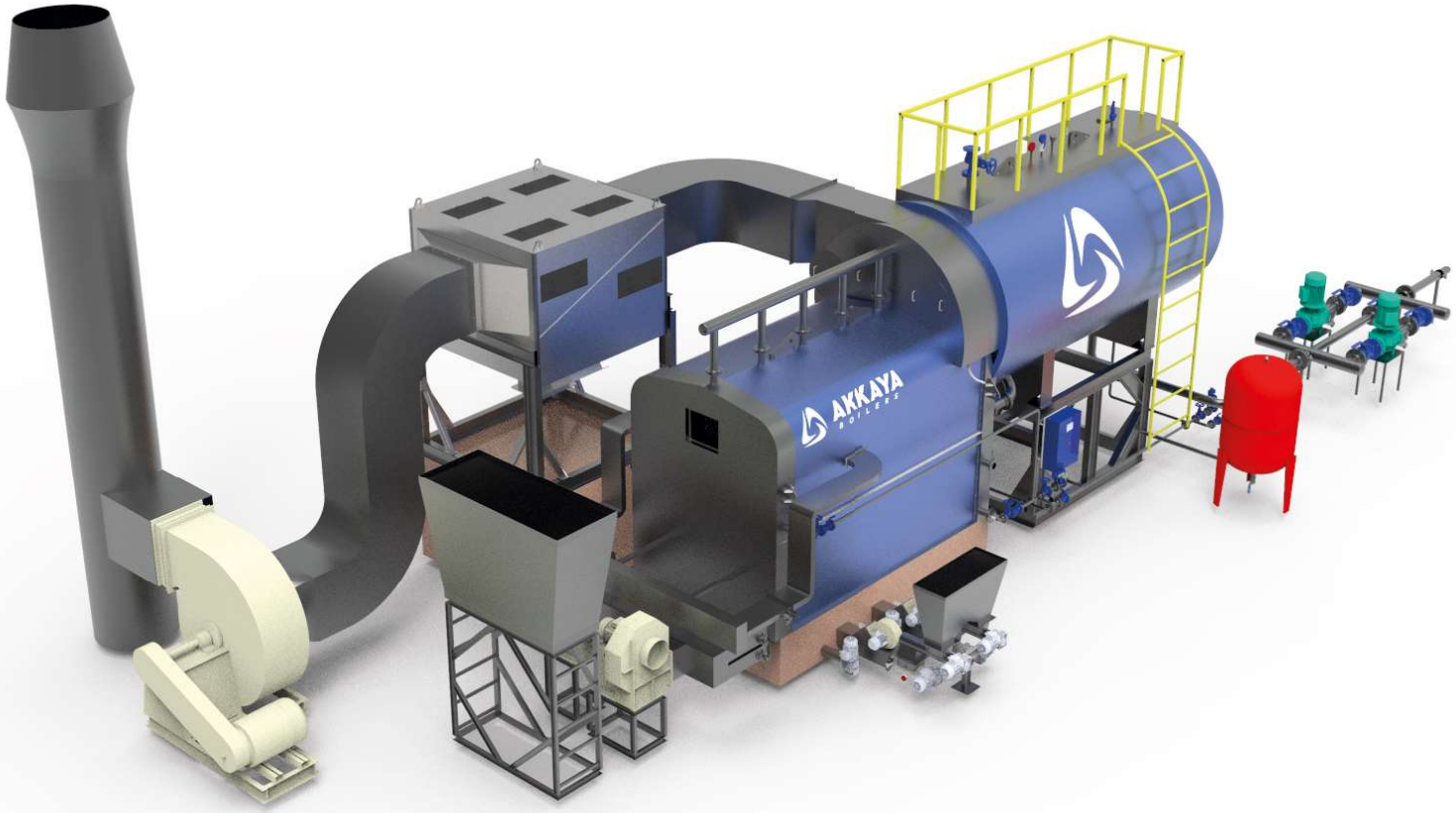
FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Thermal Capacity** (kcal/h)* | **Min. Water Flow Rate** (m/h)** | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)*** |
|---|---|---|---|---|---|---|
| YS6 | 60.000 | 3 | 1700 | 960 | 1400 | 800 |
| YS8 | 80.000 | 4 | 2100 | 960 | 1400 | 950 |
| YS10 | 100.000 | 5 | 2050 | 1060 | 1480 | 1050 |
| YS15 | 150.000 | 8 | 1950 | 1160 | 1750 | 1400 |
| YS20 | 200.000 | 10 | 2370 | 1160 | 1750 | 1650 |
| YS25 | 250.000 | 13 | 2400 | 1360 | 1900 | 2100 |
| YS30 | 300.000 | 15 | 2700 | 1360 | 1900 | 2350 |
| YS40 | 400.000 | 20 | 2600 | 1560 | 2040 | 3000 |
| YS50 | 500.000 | 25 | 3050 | 1560 | 2040 | 3500 |
| YS60 | 600.000 | 30 | 2650 | 1760 | 2460 | 3900 |
| YS70 | 700.000 | 35 | 2950 | 1760 | 2460 | 4350 |
| YS80 | 800.000 | 40 | 2950 | 1760 | 2460 | 4850 |
| YS90 | 900.000 | 45 | 3250 | 1960 | 2460 | 5500 |
| YS100 | 1.000.000 | 50 | 3430 | 1960 | 2570 | 6300 |
| YS110 | 1.100.000 | 55 | 3680 | 1960 | 2570 | 6650 |
| YS120 | 1.200.000 | 60 | 3930 | 1960 | 2570 | 7000 |
| YS150 | 1.500.000 | 75 | 4730 | 1960 | 2570 | 10650 |

*** According to solid fuel with 4500 kcal/kg LHV**
****Approximate flow rate for △T = 20 ° C**
*****5 bar & empty W/O accessories**




# YHYBWB

## SEMI HYBRID SOLID FUEL FIRED HOT/SUPERHEATED WATER BOILERS

**Thermal Capacity:**
737 kW - 11671 kW
**Fuel Type:**
Biomass, Coal, Pellet
(Natural Gas, LPG, Diesel, Heavy Fuel Oil - Optional)

AKKAYA
BOILERS

YHYBWB model boilers are designed and manufactured according to the system that provides adequate heat transfer surface, and grate surface for solid fuel applications by connection of the water tube combustion chamber of the hybrid type boilers to a 2 pass fire tube shell boiler.

The water tube type combustion chamber is engineered according to the volumetric load for the solid fuels. Sufficient furnace volume and grate surface area is achived in order to get maximum combustion efficiency. Fire tube boiler section is working as heat transfer area. This high volume water chamber allows the boiler to respond peak loads. The flame return chamber 's sides are water cooled. This brings higher life time, less refractory maintenance and increased efficiency. By the help of fire tube boiler's design, gas speed is increased and a cleaner tube surface is obtained.

The increased heating surface of the system by the front combustion chamber allows the indicated capacity to be relative with the indicated heating surface value. Approximately 10000 kcal/h heat is obtained from 1 $m^2$ heating area of YHYBWB boilers.

YHYBWB model boilers can be used with high efficiency at operating pressures up to 20 bar.

Boiler is supplied as packaged with all necessary accessories, control devices and auxiliary equipment upon customer's request.

YHYBWB model boilers are suitable to be used with gas / oil burners and with a wide range of solid fuel types such as; wood, coal, olive seeds, pellets, nut shells, seeds of various plants, dried manure, dried pomace and other types of biomass. By implementing an automatic stoker feeding system or an automatic water cooled vibrating grate to the boiler, small sized solid fuel types are easily used for firing.

Isolation of the boiler is specially made to minimize the thermal loss. On the surface; special covering plates are used to protect the outer shell from weather conditions and tearing at maximum level.

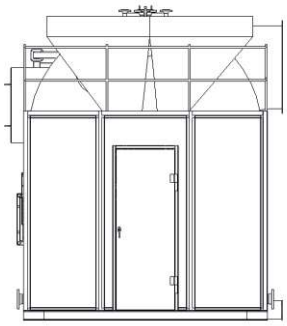
YHYBWB boiler body consists of a cylindrical, 2 pass, fire tube, wet back main body with plain or corrugated furnace at proper thickness, according to the boiler's operating pressure and a half cylindrical, water tube front combustion chamber. EN12952 and EN12953 is taken as reference for design calculations where applicable.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12952 and EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

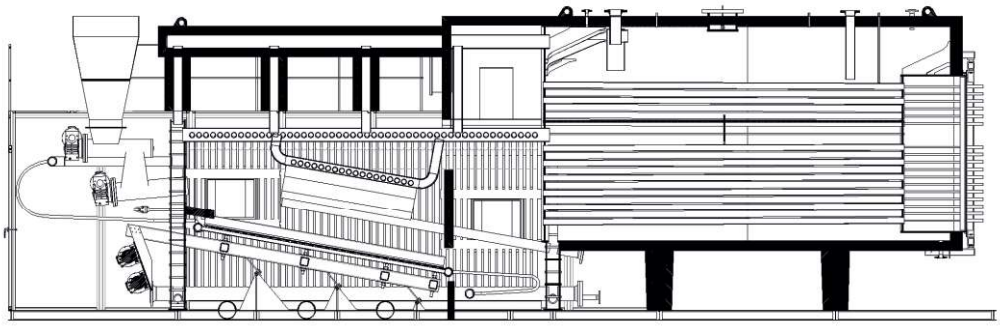
**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/$m^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request
request

# CAPACITIES AND DIMENSIONS TABLE FOR YHYBWB MODEL BOILERS



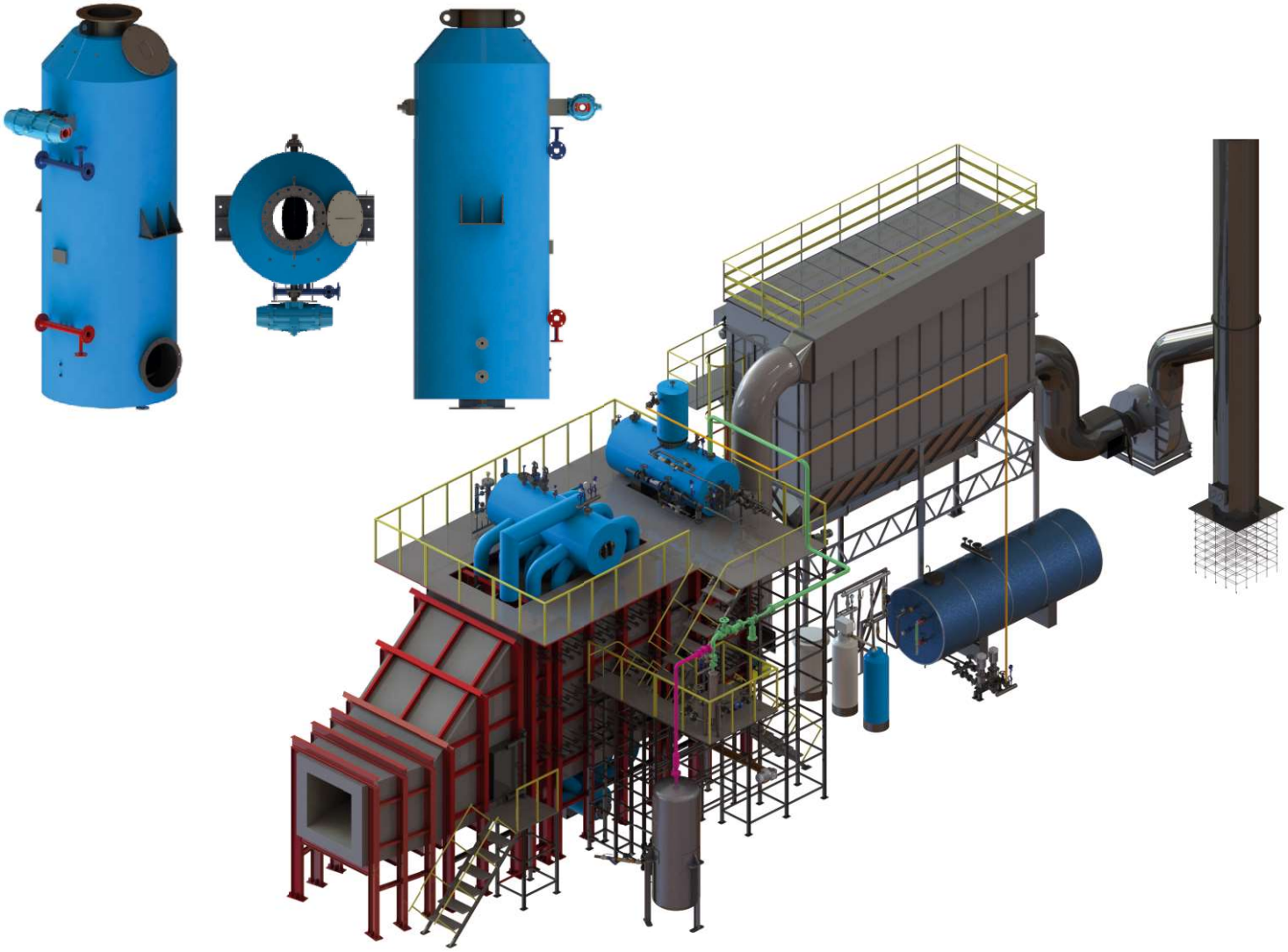
FRONT VIEW



RIGHT VIEW

| **Model** | **Max. Thermal Capacity** (kcal/h)* | **Min. Water Flow Rate** (m/h)** | **Length** (L) (mm)*** | **Width** (W) (mm)*** | **Height** (H) (mm)*** | **Weight** (kg)*** |
|---|---|---|---|---|---|---|
| YHYBWB1500 | 633.900 | 32 | 6000 | 2160 | 3110 | 9800 |
| YHYBWB2000 | 854.400 | 43 | 7500 | 2160 | 3110 | 11500 |
| YHYBWB2500 | 1.100.800 | 55 | 8850 | 2160 | 3310 | 13750 |
| YHYBWB3000 | 1.511.600 | 76 | 8500 | 2610 | 3600 | 18000 |
| YHYBWB3500 | 1.736.000 | 87 | 9000 | 2610 | 3600 | 19500 |
| YHYBWB4000 | 1.946.200 | 98 | 9500 | 2610 | 3600 | 20600 |
| YHYBWB5000 | 2.634.200 | 132 | 9500 | 2810 | 3750 | 27750 |
| YHYBWB6000 | 3.021.800 | 151 | 10100 | 2810 | 3750 | 30100 |
| YHYBWB7000 | 3.538.500 | 177 | 10900 | 2810 | 3750 | 32700 |
| YHYBWB8000 | 4.088.500 | 205 | 12100 | 3200 | 3950 | 39300 |
| YHYBWB10000 | 5.101.600 | 255 | 13200 | 3200 | 3950 | 45300 |
| YHYBWB12000 | 6.113.600 | 306 | 16250 | 3200 | 4950 | 53800 |
| YHYBWB14000 | 7.178.100 | 359 | 18450 | 3200 | 4950 | 60500 |
| YHYBWB16000 | 8.025.400 | 402 | 17000 | 3600 | 5250 | 70000 |
| YHYBWB18000 | 9.024.800 | 452 | 18300 | 3600 | 5250 | 75500 |
| YHYBWB20000 | 10.037.090 | 502 | 18000 | 3800 | 5750 | 82000 |

*** According to solid fuel with 4500 kcal/kg LHV**
****Approximate flow rate for △T = 20 ° C**
*****6 bar & empty W/O accessories and with WCVG type fuel feeding system. Weight without burner**



# HRTOH, HRSG & HRHWB WASTE HEAT RECOVERY BOILERS

AKKAYA BOILERS

HRTOH model boilers are designed and manufactured for the systems which the process exhaust gases, biogas/syngas obtained from gasifiers or similar burners are used as the fuel source to produce heat.

The wet type helicoidal tube bundles are connected at adequate number of groups in paralel connected towers to obtain necessary heat transfer surface. Towers are combined with sufficient number of cyclones that has wet tube parts to let the gas enter to the heater as clean as possible and to contribute to the heat transfer surface at the same time.

As the heat transfer tube bundles can be combined to each other as many as required, the capacity design of the heat recovery systems is quite flexible. Special designed system are offered to the customers according to their heat source amount to be recovered and their need for steam, thermal oil or hot water amount.

Each tower has an automatic ash distractor auger system installed at the bottom. There is a pneumatic boiler cleaning system with which the gaps between tube bundles can be cleaned by pressurized air blowing.

The system guarantees a continuous operation. In case there is a problem (like leakage or corrosion) in any of the independent bundles, the damaged bundle can be blinded and the system can continue to operate until that bundle is replaced with a new one during general service period

Helicoidal type design patented (TPE-2006-00598) – especially has some advantages for thermal oil heating applications. Design prevents the oil to be stable in the boiler for a long period so the cracking or corruption of the oil can hardly occur. Due to the design properties, the length of the tubes that the oil circulates in is obtained exactly the same with the calculated size.

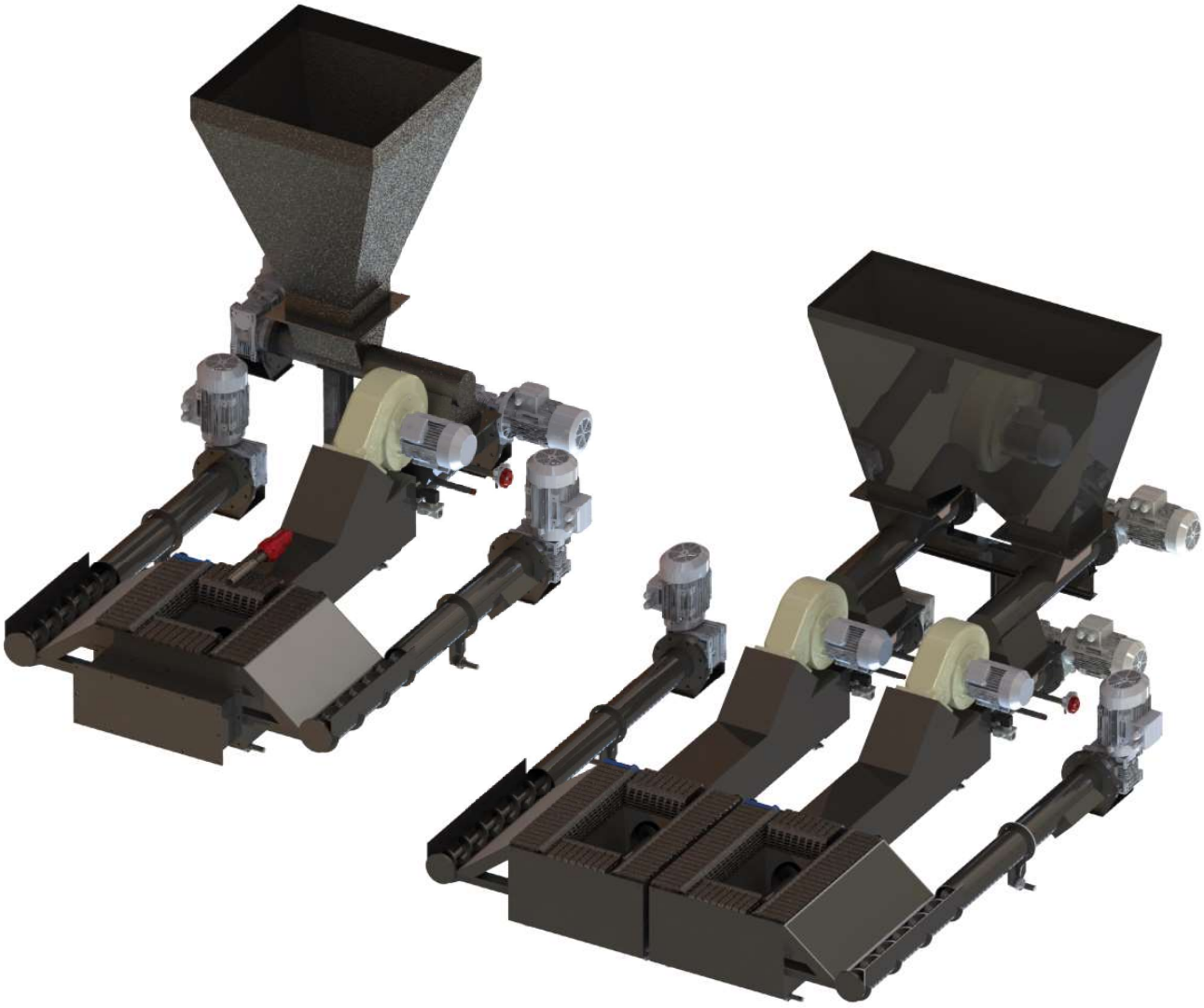
HRTOH boilers body consists of parallel connected towers with serially connected tube bundles inside and wet cyclones. EN12952 and EN12953 is taken as reference for design calculations where applicable.

HRSG-WT type are designed and manufactured for saturated or superheated steam generation by utilizing waste heat at your plant. It is also preferred with the purpose of power (electricity) generation from the waste in additon to industrial heating. Limit emission values specified by the regulations can be achieved easily by the help of filtration system selected properly according to the chemical composition of the waste gas. By the help of modular design structure; it can be designed for desired capacity and features, it reduces installation time on the site, it eliminates possible damaging risks that may occur during transportation. The refractory material which is determined in accordance with operating temperature provides long life and minimum maintenance cost as a result of high-quality
material usage and correct application.

**Steel Materials:** P265GH – P295GH -P355GH according to EN12952 and EN12953 requirements and S235J – S355J carbon steel for non-pressurized parts

**Tubes:** Seamless tubes (EN10216, ASTM A106 Gr.B or St35.8 & Gost10)

**Isolation:** 100 mm thick and 80 kg/m$^3$ rock wool is covered with PVC coated galvanized steel, aluminum or stainless steel according to Customer's request



# STOKER
# AUGER TYPE SOLID FUEL FEEDERS

AKKAYA BOILERS

Stoker is an equipment with which the solid fuel is transported into the combustion pot by an auger and burning is obtained on the upper side of the pot.

The system can be used with YSB, YHYB model steam boilers, KYK HLZ model thermal oil heaters and YS, YHYBWB model hot water boilers. The size and number of the stoker can be selected and produced according to the boiler model and capacity.

Minimum 5 mm and maximum 50 mm sized solid fuel, with a maximum humidity level of 20% and having low ash formation is recommended to be used in stoker systems.

Stoker body is manufactured of cast material which is durable for high temperatures.

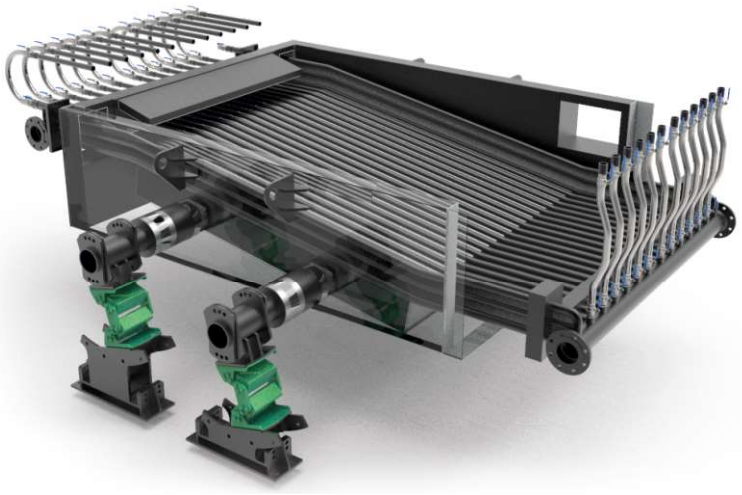
Auger leaves are made of thick material and the shaft mill is of full material.

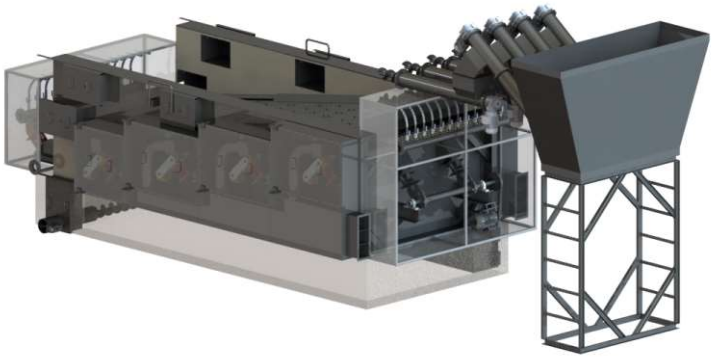
Problem free operation is obtained by using a reducer with proper capacity.

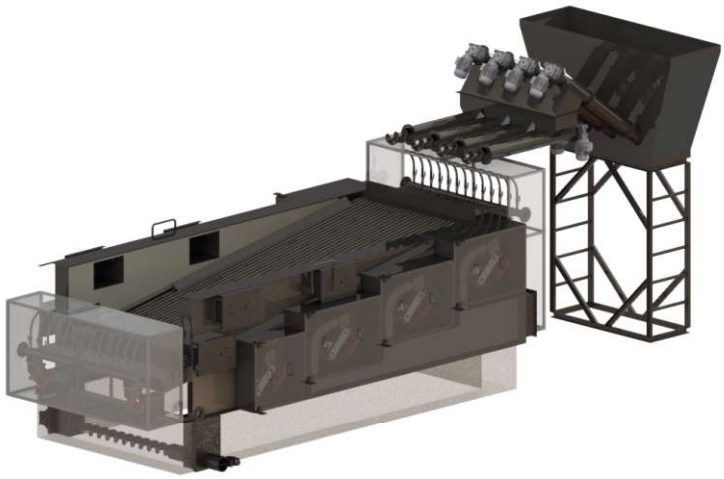
In our stokers there is a 2 stages fire extinguishing system, mechanical water cooled fire return prevention system and fuel bunker discharging system operating with electrical temperature controller and fire pushing system. The system is protected by the help of fire return prevention systtem even at power cut occasions.

Fuel level control automation can be provided for the bunker on request.

There are primary and secondary air fans to provide homogenious and proper combustion.







# WCVG
# WATER COOLED VIBRATING GRATE

AKKAYA BOILERS

WCVG system is a new technology for combustion of various solid fuels. With its water cooled grate area, higher furnace temperatures can be obtained without damaging the system. System brings flexibility for using various kinds of solid fuel and biomass. Also, WCVG provides low maintenance costs and longer periodical service intervals due to its decreased mechanical hardware compared with similar systems.

The vibrating grate system has been developed by AKKAYA Inc. for high efficiency and reliable operation.

The system can be used with YSB, YHYB model steam boilers and YS, YHYBWB model hot water boilers. The size of the system can be selected and produced according to the boiler model and capacity.

Minimum 5 mm, maximum 50 mm sized solid fuel with a maximum 20-55% humidity (depending on the fuel structure) and low ash formation is recommended to be used in WCVG systems. Fuel is transferred from bunker on to the grate with the help of auger system, pneumatic conveying or hydraulic push pull systems. There is primary and secondary air fans and dampers in the pre-combustion chamber of the boiler.

## SOME BIOMASS TYPES CAN BE BURNT IN AKKAYA WATER COOLED VIBRATING GRATE SYSTEMS


Woodchips


Apple Pomace


Wood Pallet


Seed Husk


Coconut Shell


Sawdust


Forest Residues


Corn Cop


Palm Kernel Shell


Wood Waste


Wheat Straw


Manure


Paper Mill Waste


Olive Pits


Olive Pomace


Energy Crops


Wood Briquette


Rice Straw


Bamboo Waste


RDF - Pellet

# AKK-MC
# MULTI CYCLONES

AKKAYA
BOILERS

AKK-MC model multicyclones are manufactured for the exhaust gas line of boilers, to hold +10 micron sized, heavy particules inside the exhaust gas.

AKK-MC Multicyclones are made of small cyclones which are brought together in one body and are made of heat and corrosion resistant material.

Its smoke inlet has special shaped wings. These wings help to give direction to the smoke flow. By this way efficiency is increased.

AKK-MC multicyclones are supplied with a pneumatic cleaning system to provide longer operation life for the equipment.

The size of the multicyclones are calculated and manufactured according to each boiler model and capacity.


# AKK-KT CONDENSATE TANKS

AKKAYA
BOILERS

Condensate tank is necessary to feed initial water to the boiler by feed pumps and to store the returning condensate from the condensate line of the consumer plant. Maintaining a closed circle with a condensate tank by circulating a certain amount of hot, de-calcinated, boiler water increases the fuel consumption efficiency.

AKK-KT condensate/ feed water tanks are made of St37 carbon steel with adequate thickness and perfectly isolated with 50 mm thick glasswool and PVC coated galvanized steel after painting with corrosion durable dye.

Condensate tank is furnished with a magnetic water level indicator, electrical water level controller and water inlet line with solenoid valve.

AKK-KT tanks can be manufactured and supplied according to the boiler model and capacity for all types of Akkaya hot water and steam boilers.


# AKK-TDG THERMIC DEAERATORS

AKKAYA BOILERS

For the systems where boiler water stays uncirculated for minimum 15 minutes (which is enough time for the corrosive gasses to be dissolved in feed water) a thermic deaerator system is recommended to be installed on top of the feed water tank.

AKK-TDG thermic deaerator consists of a deaerator dome and a deaerator water tank. Deaerator tank is made of St37 steel and perfectly isolated with 100 mm thick rockwool covered with PVC coated, galvanized steel. The deaerator dome is made of stainless steel and it is also perfectly isolated with 100 mm thick rockwool covered with PVC coated, galvanized steel.

System is supplied together with pressure reducing group, pump group and thermostatic valve groups as a package.

Various capacities according to the boiler model and capacity can be manufactured and supplied.


# SSD SERIES SPRAY-SCRUBBER TYPE COMPACT DEAERATOR SYSTEM

AKKAYA
BOILERS

Akkaya AKK-SSD (Spray-Scrubber Type Compact Deaerator System) is designed to remove the dissolved gases and oxygen from the boiler feed water by properly mixing condensate, steam and cold feed water.

The main elements of AKK-SSD system are; deaerator tank, deaerator dome, steam injection elements, pressure reducing valve group and water inlet valve group.

AKK-SSD systems are offered as a package with all accessories .

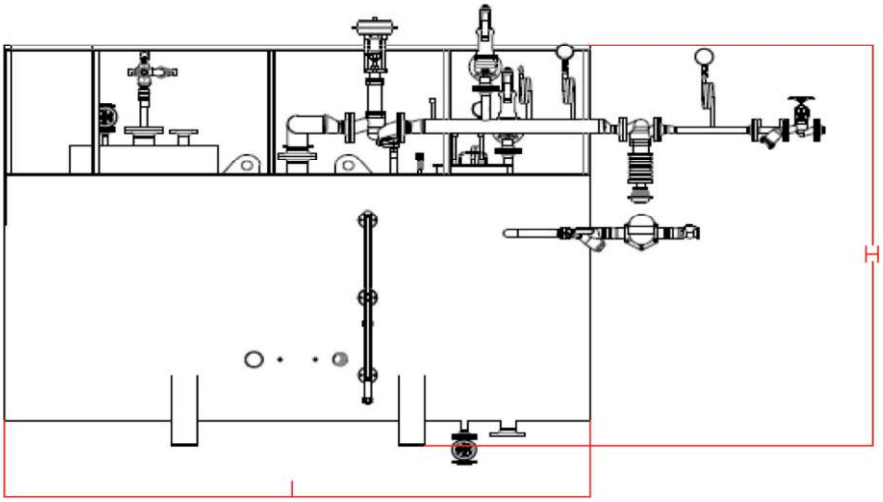
Deaerator systems are produced at proper capacity according to selected boiler's capactiy.

While an external condensate tank, deaerator dome and pump group are needed in thermic deaerator systems, there is no need for these additional equipments in the compact deaerator system. In this way, compact deaerator systems do not occupy much space in boiler rooms and reduce additional equipment costs.

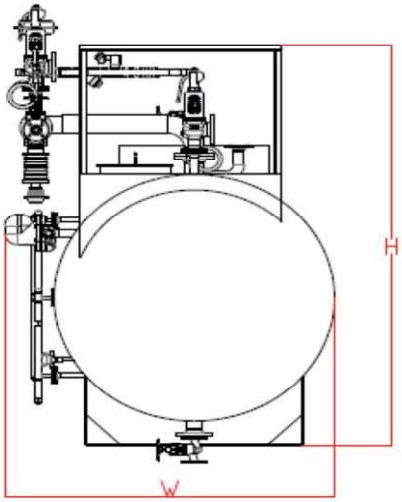
## SYSTEM ELEMENTS

- Akkaya Compact Deaerator System AKK-SSD
- Compact Deaerator Tank
- Compact Deaerator Spray Section
- Compact Deaerator Magnetic Water Level Indicator
- Compact Deaerator Drain Valve
- Compact Deaerator Air Vent Valve
- Compact Deaerator Steam Injection Inlet Valve
- Compact Deaerator steam Injection Inlet Filter
- Compact Deaerator Water Level Controller & Water level Probe ((On-off or Proportional Water Level Control)
- Compact Deaerator safety valve
- Compact Deaerator Pressure Transmitter
- Compact Deaerator Temperature Transmitter
- Pressure Control Valve
- Temperature Control Valve
- Steam Trap Group
- Water Inlet Solenoid Valve Group
- Walking platform, stairs, catwalk


# CAPACITIES AND DIMENSIONS TABLE FOR SSD MODEL SPRAY-SCRUBBER TYPE COMPACT DEAERATOR




SIDE VIEW




FRONT VIEW

| **Model** | **Capacity** (kg / h) | **Deaerator Tank Volume** (lt) | **Length** (L) (mm) | **Width** (W) (mm) | **Height** (H) (mm) | **Weight** (kg)*** |
|---|---|---|---|---|---|---|
| SSD2000 | 2000 | 2000 | 3300 | 1200 | 2500 | 1500 |
| SSD2500 | 2500 | 2500 | 3000 | 1450 | 2750 | 1650 |
| SSD3000 | 3000 | 3000 | 3350 | 1450 | 2750 | 1850 |
| SSD4000 | 4000 | 4000 | 3600 | 1600 | 2900 | 2200 |
| SSD5000 | 5000 | 5000 | 4300 | 1600 | 2900 | 2600 |
| SSD6000 | 6000 | 6000 | 4100 | 1800 | 3100 | 2900 |
| SSD7000 | 7000 | 7000 | 4600 | 1800 | 3100 | 3250 |
| SSD8000 | 8000 | 8000 | 5100 | 1800 | 3100 | 3600 |
| SSD10000 | 10000 | 10000 | 5200 | 2000 | 3800 | 4100 |
| SSD12000 | 12000 | 12000 | 5950 | 2000 | 3800 | 4750 |
| SSD13000 | 13000 | 13000 | 5400 | 2200 | 4000 | 4750 |
| SSD15000 | 15000 | 15000 | 6100 | 2200 | 4000 | 5400 |
| SSD16000 | 16000 | 16000 | 5600 | 2400 | 4200 | 5450 |
| SSD20000 | 20000 | 20000 | 6700 | 2400 | 4200 | 6500 |
| SSD25000 | 25000 | 25000 | 7500 | 2500 | 4300 | 7650 |
| SSD30000 | 30000 | 30000 | 8100 | 2600 | 4400 | 8600 |
| SSD40000 | 40000 | 40000 | 9100 | 2800 | 4600 | 10500 |

**Akkaya Inc reserves the right to make changes to the specifications.**
**Please contact to our sales department for higher capacities.**

# BFD SERIES BIOMASS FUEL DRYER

**Fuel Types:**
All desired products and raw materials, especially wood chips, pomace, chicken manure, fruit pulp, cotton stalk, pulp can be dried.

AKKAYA BOILERS

Akkaya Biomass Fuel Dryer is developed to meet the needs of the industry for utilizing waste heat in flue gases from boilers.

Our dryers are custom designed to suit the unique processing needs of your material. Regardless of your fuel type, AKKAYA's design team can design a fuel dryer for your own application.

With Akkaya-BFD, all desired products and raw materials, especially wood chips, pomace, chicken manure, fruit pulp, cotton stalk, pulp can be dried.

It maximizes the energy efficiency of your system by using the waste heat from the flue gases as drying energy.

Reduces fuel consumption.

Low maintenance cost.

Decreases biomass humidity below 35% or less and increases the heating value of your biomass

Reduces boiler combustion air requirements.

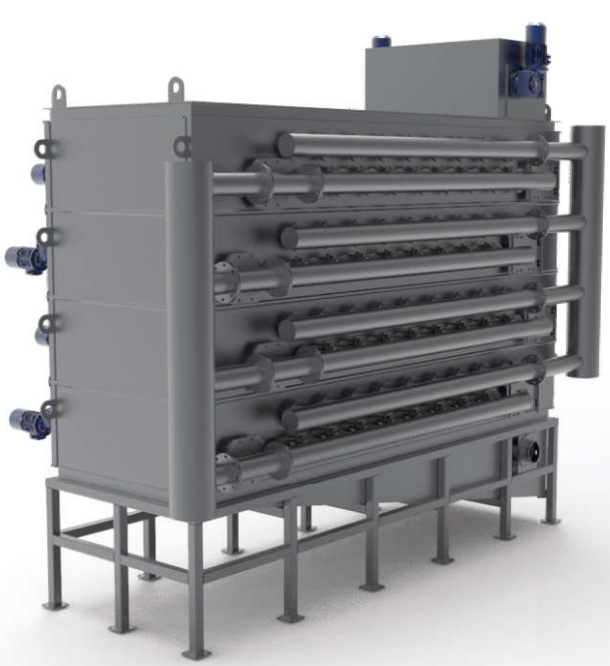
Improve boiler combustion efficiency by 20% or more.

Reduces greenhouse gas emissions.

It provides reduced environmental impact with lower energy costs and significantly increased profitability.

## SYSTEM ELEMENTS

- Exhaust Gas Heat Recovery Fuel Dryer / Akkaya BFD (Biomass Fuel Dryer)
- Fuel inlet bunker and exit port
- Flue gas inlet & outlet ports
- Fuel transfer mechanism inside the drier
- Control board and its instruments



# AKK-ATC AUTOMATIC TUBE CLEANING SYSTEM

AKKAYA BOILERS

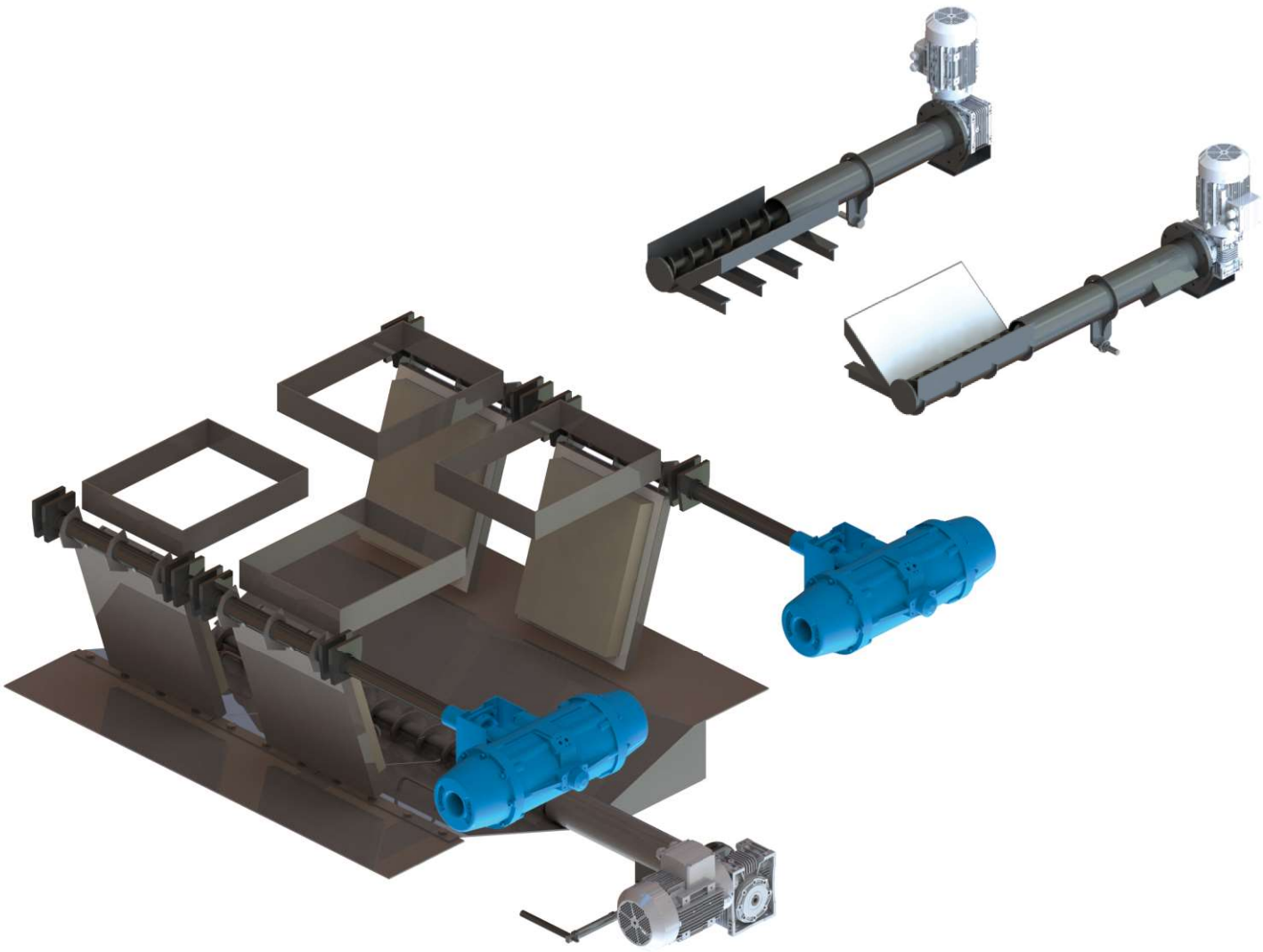
The fire-smoke tubes inside the boiler shell are filted by fume and soot in time and must be cleaned occasionally. This cleaning operation is usually neglected when done manually. With AKK-ATC automatic tube cleaning system this operation can be realised automatically and without human care need.

The system consists of cleaning tubes mounted on the boiler door and placed releative with the boiler tubes and penumatic solenoid valves to control the cleaning air inlet.

In AKK-ATC system, pressurized air is collected by a collector to be distributed through the boiler smoke tubes. Collected pressurized air is transported from collector to double diaphragms solenoid valve through cleaning tubes installed on the boiler door. Residual water content in the air flow is discharged with a valve
Pressurized air coming from compressor enters the collector from a nozzle.
(Sufficient compressor shall be supplied by the customer).

A Pressure indicator is installed to show the pressure value in the air system. A pulse solenoid valve is used to transport the pressurized air flow through smoke tubes by open and close operation. A digital time controller (AKTCO) is used to control the system for pneumatic cleaning of fire tubes of the boilers. This device is capable of 25 signal outputs with adjustable time intervals.

The system is manufactured together with the boiler and all Akkaya boiler models can be supplied with an AKK-ATC.



# AKK-AAR AUTOMATIC ASH REMOVING

AKKAYA BOILERS

For a fully automatic operation, ash that is formed as a result of combustion, are carried out of the boiler by the help of auger type tranporters. By automatic ash remover installation, labour need and cost is reduced for boiler operation.

Formed ash of the fuel is collected under the boiler and/or cyclone after combusiton is completed. Then the ash is taken out from the ash holes by the auger type transporters. (After ash extraction there must be a storage and take away system that shall be supplied by the customer.)

Ash removers are manufactured and supplied for the suitable boiler models according to the boiler capacity and fuel properties.

# AKK-WF
# WET FILTER SYSTEM FOR EXHAUST GAS TREATMENT

AKKAYA BOILERS

A Wet filter system can be provided with the Akkaya boilers, aiming to lower the flue gas emissions at the exit of the heater.

The system consists of a water storage tank with water level and temperature controlling automatic valves, a tower at adequate hight and dimension according to the exhaust gas amount, proper water spraying nozzles, trays, mist holders water pumping group of 2 pumps (one stand by) with proper valves, filters and check valves and a control panel for the level, temperature and pump control.

The water storage, tower, trays and mist holders are made of AISI316 stainless steel.

During the operation of wet filter; flue gas passes through the water spray tower. Tower has trays with water holding filters. At the same time water circulates from water storage to the tower to have the particles and dirt dissolved. Some amount of water evaporates during circulation so fresh water at evaporated amount is fed to the water storage by the help of level controller.

# COGENERATION SYSTEMS

Cogeneration can be described as the conversion of the heat -which is obtained by burning of the solid fuel, biomass or gases- into different types of energy, especially electricity.

Akkaya Inc. with its European suppliers provides solutions for ORC (Organic Rankine Cycle) or steam-operated cogeneration plant investments with solid fuel/biomass fired or waste heat recovery boilers.

AKKAYA BOILERS

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