

Max series boilers
fired with solid fuels
75 - 900 kW



MAX series boilers for each project

The offer of DEFRO products includes also boilers with medium and high power, which are intended for heating of the central heating systems and preparation of domestic hot water in residential buildings and public utility buildings. MAX series boilers meet the requirements of PN-EN-303-5:2012 and the Ecodesign in line with the Directives of the European Union. They have been designed for combustion of fuels with division into hard coal, eco-pea coal assortment, and biomass in form of pellet and they ensure continuous operation of the equipment during the heating season.

Continuous research works and permanent control on the design and production stage made that the boilers won approval in many projects in Poland and abroad.

MAX series boilers require fulfilling the guidelines related to the assembly and execution of the thermal protection. Proper operation of the equipment ensures its effective operation. Boiler power should be selected based on the energy audit and the assembly carried out by the qualified personnel acc. to the recommendations in line with the Polish Standard and guidelines of the manufacturer included in the operation and maintenance manual of the boiler.

Each boiler of this series may be adapted by our construction department to the requirements of the project, both concerning technical issues and additional equipment. We provide also professional technical advisory, warranty and post-warranty service. MAX series boilers distinguish with the robust design and great quality of workmanship. Electronic controller of the boiler is used to control the combustion process. The controller makes continuous temperature measurements and adapts the operation of the feeder and fan and controls the operation of the pumps and other components responsible for the equipment operation, therefore the boiler does not require continuous visual inspection.



Defro has huge production capacities and modern equipment resources. Therefore, the offer of the MAX series boilers allows extending the range of equipment for the range from 500 to 900 kW. Prepared documents and designs by our own design office allow producing the high power boilers supported by constant inspection on the early stages of production. Offers for boilers with power exceeding 500 kW can be prepared on request. Therefore you are asked for direct consultation which will allow selecting a proper boiler for the individual requirements of the project.





Ecodesign requirements fulfilled for all powers.

The boilers meet the requirements of the class 5 acc. to the PN-EN 303-5:2012 for all powers.

Fuel: Hard coal assortment of pea type 5-25 mm.



4 years of warranty for heat exchanger tightness, 2 years for the remaining components and efficient operation of the boiler.



Retort burner - solution protected by the patent Pat. 224952.



Heat exchanger made of certified high-grade steel.



Radiator plate afterburning the flammable gases and distributing uniformly heat in the combustion chamber.



High energy efficiency from 90.2% to 90.6% thanks to increased heat recovery from flue gases.



Controlled distribution of primary and secondary air.



Servicing six pumps (central heating, domestic hot water, valve, 2 pumps - additional output). Control of two mixing valves (option to connect two additional valves through the modules I-1 or I-1M). PID function. Weekly operation programme and weather compensated control, thermal protection of the return - valve function. ON-LINE change and a preview of parameters of the main controller through installed internet module with RJ-45 socket; Possibility to connect room controller - extra paid option.



"FIRE FIGHTER II" - an automatic system intended for fire suppression with water from the water supply system, intended as a protection against flashback to fuel feeder system.



Pneumatic cleaning system for heat exchanger - extra paid option.



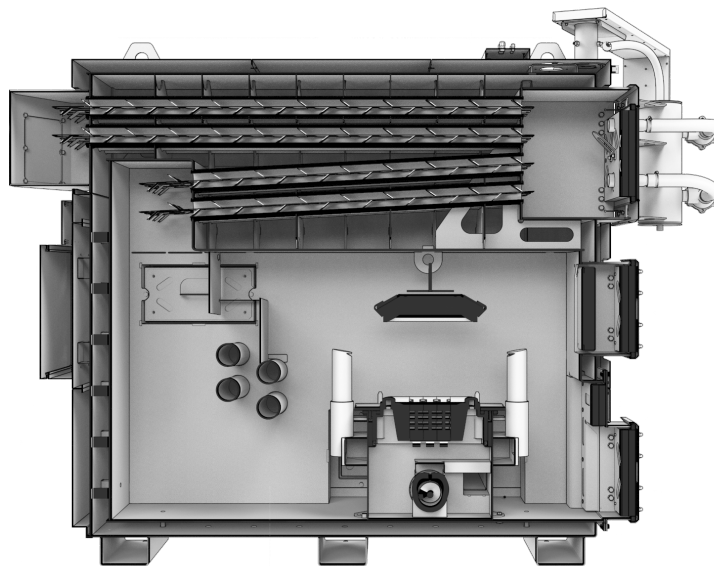
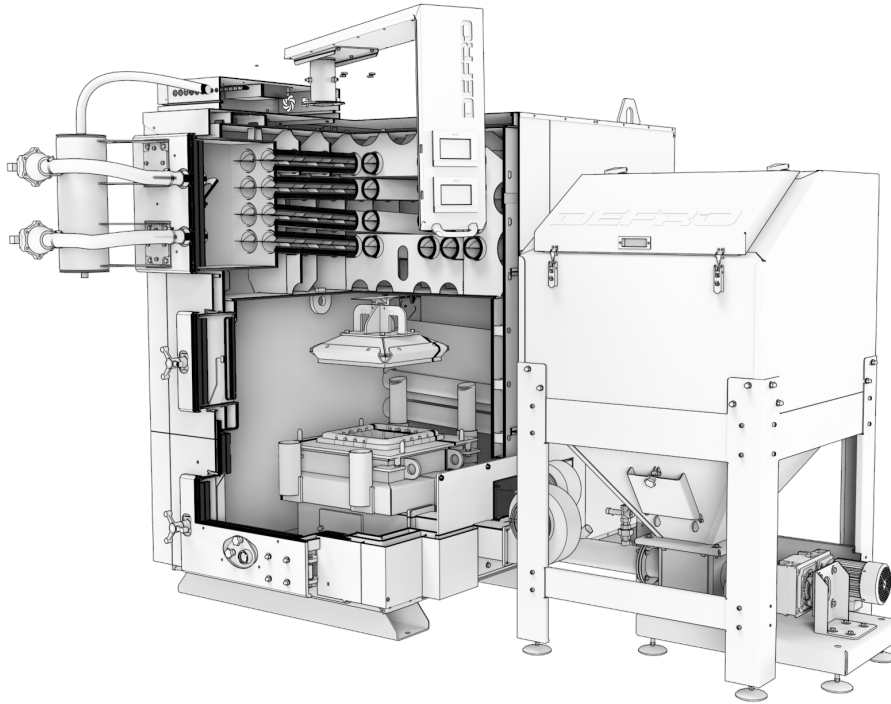
It is equipped with handles facilitating loading with a hoist.



Boiler adapted for operation in the central heating system in the open and closed system provided the protections have been installed in accordance with the operation and installation manual of the boiler.



It is possible to adapt the boiler with respect to technical properties and additional equipment to the requirements of the given project.



Advantages of boiler:

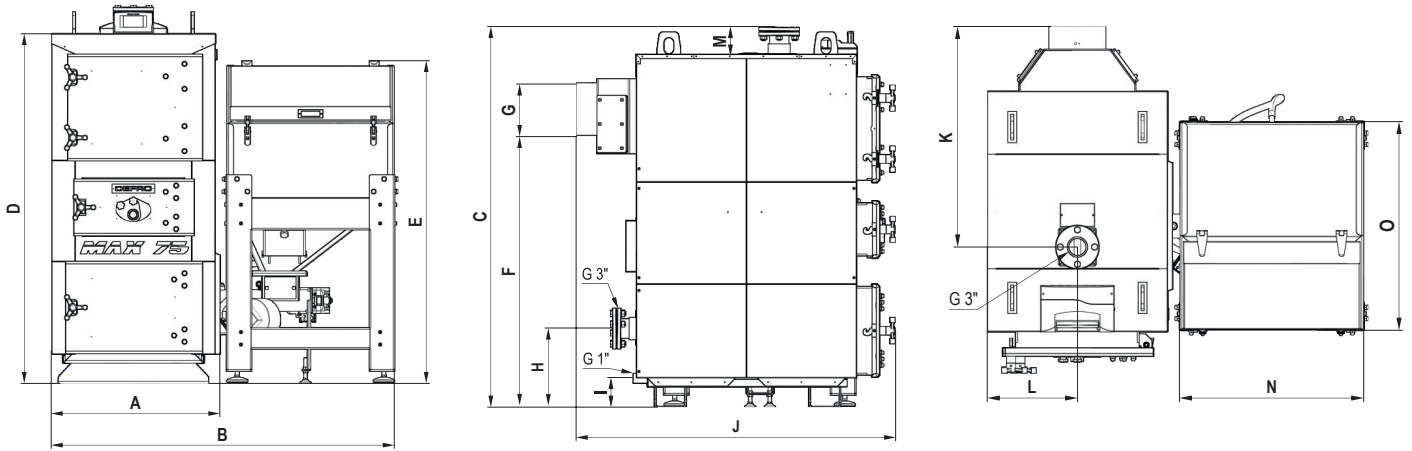
- design of boiler with fuel feeding system protected by the patent Pat. 224952,
- made of the high-quality certified steel sheets.
- combustion process and control of equipment operation is performed through the electronic controller,
- safety temperature limited in case of increase in temperature in the boiler, above 95°C,
- the furnace is equipped with retort burner, where all combustion processes with air supplied by the blowing fans with division into primary and secondary air, takes place,
- radiator plate installed above the burner, afterburning the flammable gases and distributing uniformly flue gas to the heat exchanger,
- the body consists of, among others, crosswise water tubes ensuring reception of considerable amount of heat just behind the burner and the convection part, where two-draught horizontal smoke tube heat exchanger changes into the flue,
- arrangement of the inspection doors facilitates operation and maintenance operations,
- automatic water "FIRE FIGHTER II" fire suppression system - protection against flashback to fuel feeder system.

Trouble-free operation of the EKO MAX boiler is ensured by the use of the fuel with adequate quality and grain size. It is forbidden to use the fuel containing moisture and excessive amounts of fine fractions of fuel or foreign matter. The boiler-room should meet the applicable requirements given in the Regulation of the Minister of Infrastructure and by in compliance with the provisions and conditions included in the Polish Standard. MAX series boilers require special attention if there is no electrical power, mainly due to stoppage of pumps operation and other control automation *.

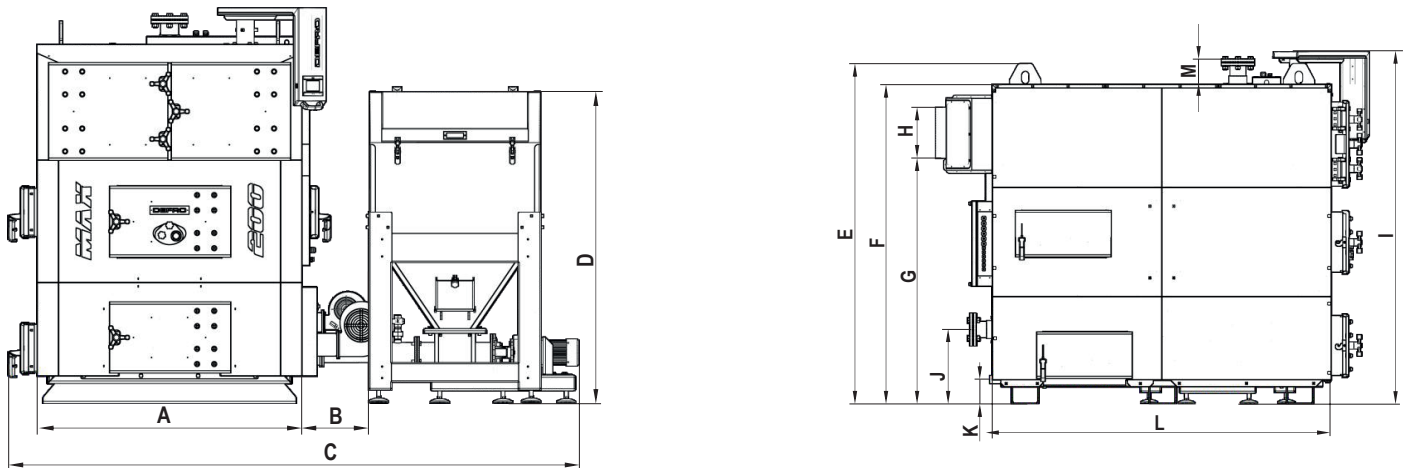
*The user's manual is an integral part of the product. You should read carefully guidelines and hints related to assembly and operation. The boiler should be assembled by qualified personnel acc. to the recommendations in line with the Polish Standard and guidelines of the manufacturer.



EKO MAX 75 kW dimensions:



EKO MAX 100 - 300 kW dimensions:



DIMENSIONS IN MM				
Dimension	75 kW	150 kW	200 kW	300 kW
A	786	1194	1394	1624
B	1652	401	400	605
C	1817	2830	3031	3569
D	1680	1633	1633	1757
E	1540	2005	2005	2479
F	1296	1883	1885	2358
G	246	1501	1451	1925
H	376	246	296	296
I	140	2078	2078	2551
J	1517	440	440	272
K	965	146	146	147
L	394	2001	2001	2001
M	138	145	145	139
N	806	2517	2517	2583
O	912	1786	1786	733
P	-	1492	1695	1932
R	-	599	699	814
S	-	906	906	1106
T	-	912	912	1112

EKO MAX 75-300 kW

TECHNICAL DATA / PRODUCT TYPE B					
Specification / boiler type	unit	75	150	200	300
5 class acc. to PN-EN 303:5-2012	-	✓	✓	✓	✓
Ecodesign	-	✓	✓	✓	✓
Heating area	m ²	9,5	17	23,5	31
Area of heated rooms ¹	m ²	to 750	to 1500	to 2000	to 3000
Capacity of fuel container ²	kg	~360	~530	~530	~880
Fuel consumption ³	kg/h	11,1	20,7	27,0	43,4
Burn time	h	~32	~26	~20	~20
Efficiency for nominal power	%	90,2	90,0	90,6	90,1
Efficiency for minimum power	%	89,0	88,2	89,1	88,0
Max. permissible work pressure	bar	2,0			
Required flue gas draught	mbar	0,38	0,44	0,46	0,50
Max. water supply temperature	°C	65/80			
Min. return water temperature	°C	55			
Boiler weight	kg	~1017	~2892	~2920	~4663
Container weight	kg	~148	~173	~173	~223
Feeder weight	kg	~85	~95	~97	~134
System weight (boiler, container, feeder)	kg	~1250	~3160	~3190	~5020
Boiler water tank capacity	l	700	1200	1350	1950
Chimney section	cmxcm	25x25	32x32	37x37	45x45
Chimney section	Ø mm	280	365	415	505
Minimum chimney height	m	11	14	14,5	15,5
Diameter of supply and return	cal	3"			
Release socket diameter	cal	1"			
Flue size	mm	246	246	296	296
Power supply	V/Hz/A	~230/50/0,9		400/50/0,9	
Power consumption	W	195	1315	1315	1710
Noise level	dB	<75			

¹ Maximum heated area has been calculated based on individual demand for heat $q=100 \text{ W/m}^2$.

² Charging density of eco-pea coal 0.8 kg/dm^3 .

³ Fuel consumption for eco-pea coal with calorific value $28000 \pm 300 \text{ kJ/kg}$.

ADDITIONAL EQUIPMENT / PRODUCT TYPE C	
Name	additional equipment
K1P MAX controller	standard equipment
Weather compensated control	standard equipment
PID function	standard equipment
Leveling legs	standard equipment
Internet module	standard equipment
Primary air forced draught fan	standard equipment
Secondary air forced draught fan;	standard equipment
FIRE FIGHTER II fire suppression system	standard equipment
Pneumatic cleaning system for the heat exchanger with ST-980 control	individual pricing ¹
Room controller SPK LUX	extra paid option
Room controller SPK LUX, wireless	extra paid option
ST-292 v3 room controller	extra paid option
ST-292 v2 room controller	extra paid option
I-1 module	extra paid option
I-1M module	extra paid option
Set for wireless communication RS	extra paid option

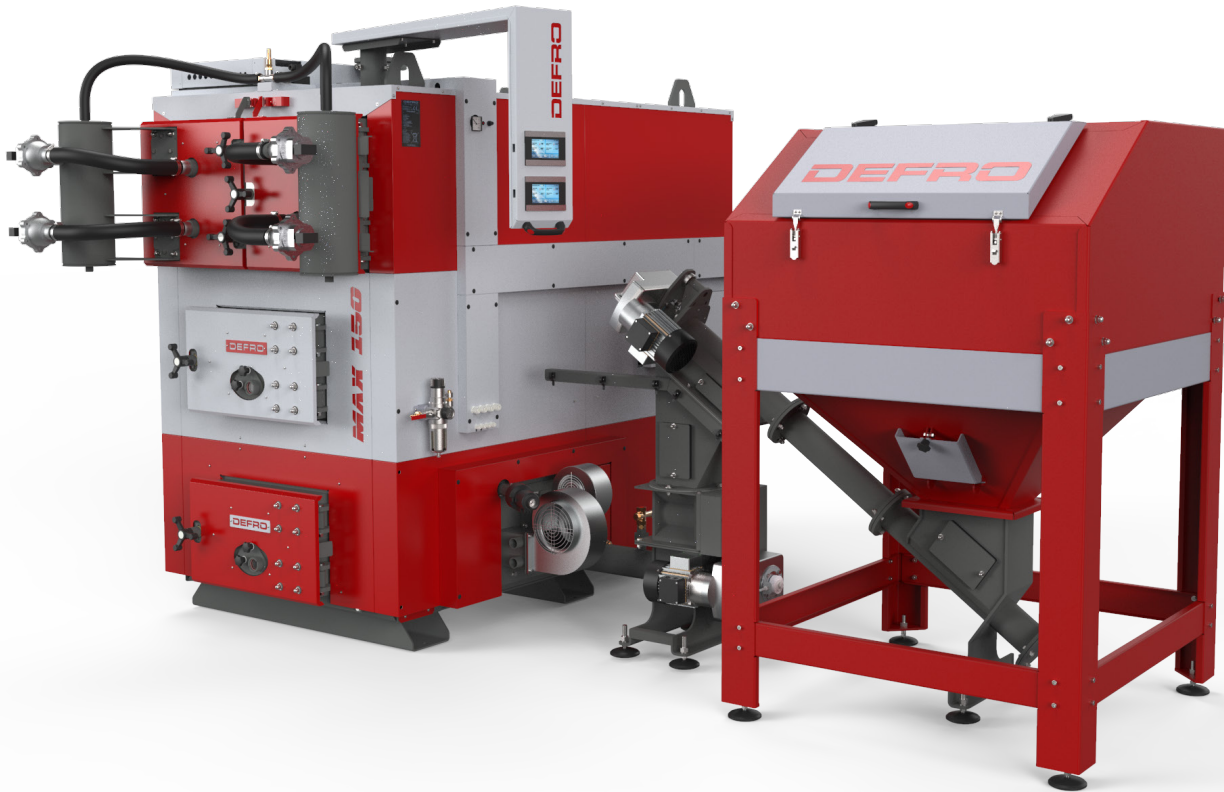
¹ The price depends on the power of the boiler and the number of pneumatic valves.



Ecodesign requirements fulfilled for all powers.

The boilers meet the requirements of the class 5 acc. to the PN-EN 303-5:2012 for all powers.

Fuel: wood pellet 6-8 mm.



4 years of warranty for heat exchanger tightness, 2 years for the remaining components and efficient operation of the boiler.



Retort burner - solution protected by the patent Pat. 224952.



Heat exchanger made of certified high-grade steel.



Radiator plate afterburning the flammable gases and distributing uniformly heat in the combustion chamber.



High energy efficiency from 90.0% to 91.5% thanks to increased heat recovery from flue gases.



Controlled distribution of primary and secondary air.



Servicing four pumps (central heating, domestic hot water, 1 pump - additional output.) PID function. Weekly operation programme and weather compensated control. ON-LINE change and a preview of parameters of the main controller through installed internet module with RJ-45 socket; Possibility to connect room controller - extra paid option. Possibility to connect two mixing valves using the modules (I-1, I-1M).



"FIRE FIGHTER II" - an automatic system intended for fire suppression with water from the water supply system, intended as a protection against flashback to fuel feeder system.



Pneumatic cleaning system for heat exchanger - extra paid option.



It is equipped with handles facilitating loading with a hoist.

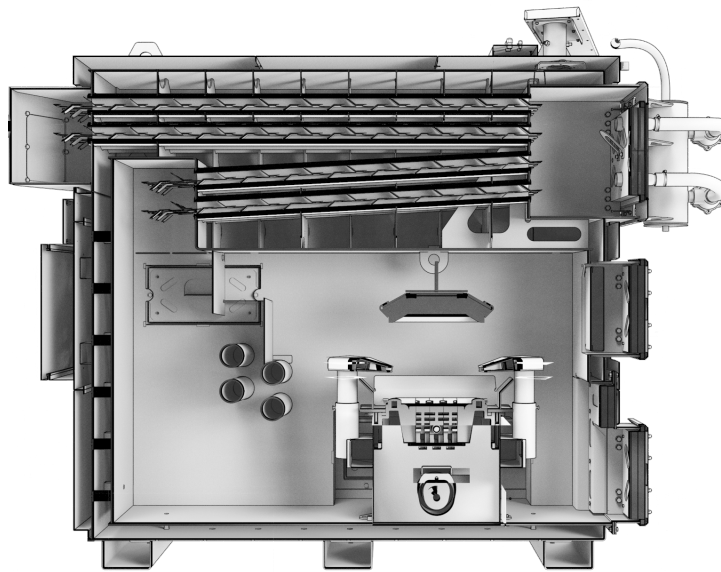
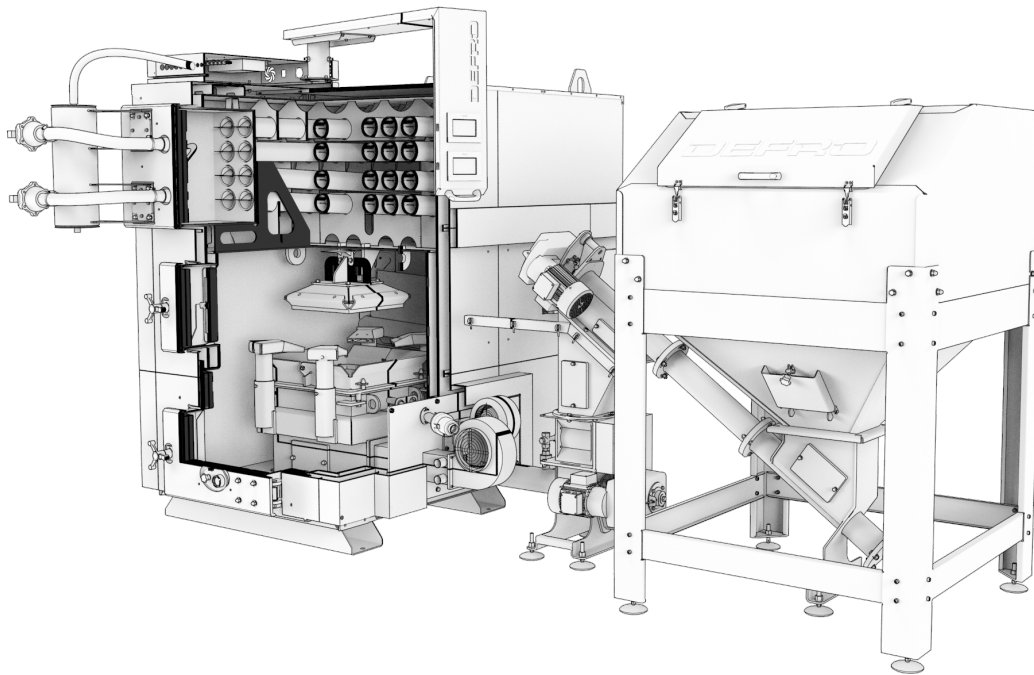


Boiler adapted for operation in the central heating system in the open and closed system provided the protections have been installed in accordance with the operation and installation manual of the boiler.



It is possible to adapt the boiler with respect to technical properties and additional equipment to the requirements of the given project.

EKOPELL MAX | 75-300 kW



Zalety kotta:

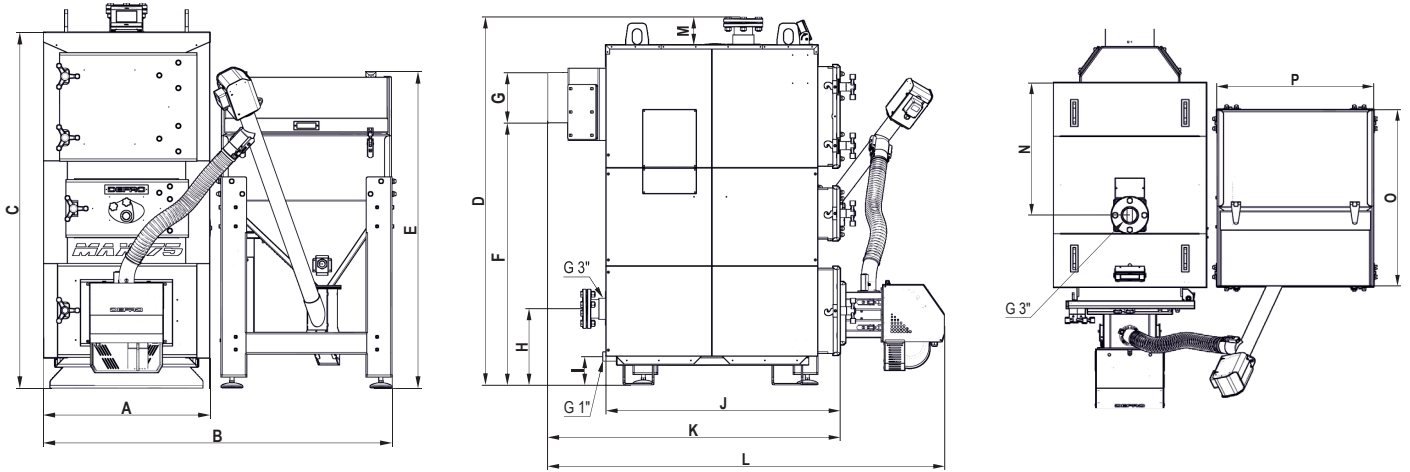
- design of boiler with fuel feeding system protected by the patent Pat. 224952,
- made of the high-quality certified steel sheets. Intended for combustion of pellet with a 6-8 mm diameter.
- combustion process and control of equipment operation is performed through the electronic controller,
- safety temperature limited in case of increase in temperature in the boiler, above 95°C,
- equipped with automatic blowing igniter,
- the furnace is equipped with retort burner, where all combustion processes with air supplied by the blowing fans with division into primary and secondary air, takes place,
- radiator plate installed above the burner, afterburning the flammable gases and distributing uniformly flue gas to the heat exchanger,
- the body consists of, among others, crosswise water tubes ensuring reception of considerable amount of heat just behind the burner and the convection part, where two-draught horizontal smoke tube heat exchanger changes into the flue,
- arrangement of the inspection doors facilitates operation and maintenance operations,
- the rotary feeder used protects against flashback towards the container,
- automatic water "FIRE FIGHTER II" fire suppression system - protection against flashback to fuel feeder system.

Trouble-free operation of the EKOPELL MAX boiler is ensured by the use of the pellet with adequate quality and grain size. It is forbidden to use substitute fuel in form of: kernels, shells, grains. The boiler-room should meet the applicable requirements given in the Regulation of the Minister of Infrastructure and by in compliance with the provisions and conditions included in the Polish Standard. MAX series boilers require special attention if there is no electrical power, mainly due to stoppage of pumps operation and other control automation *.

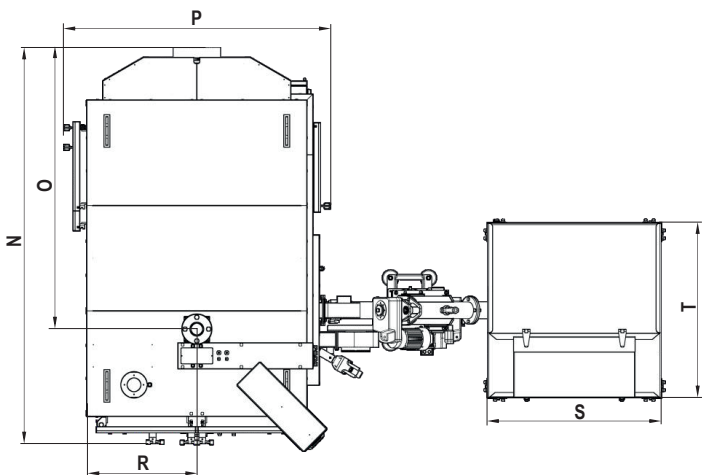
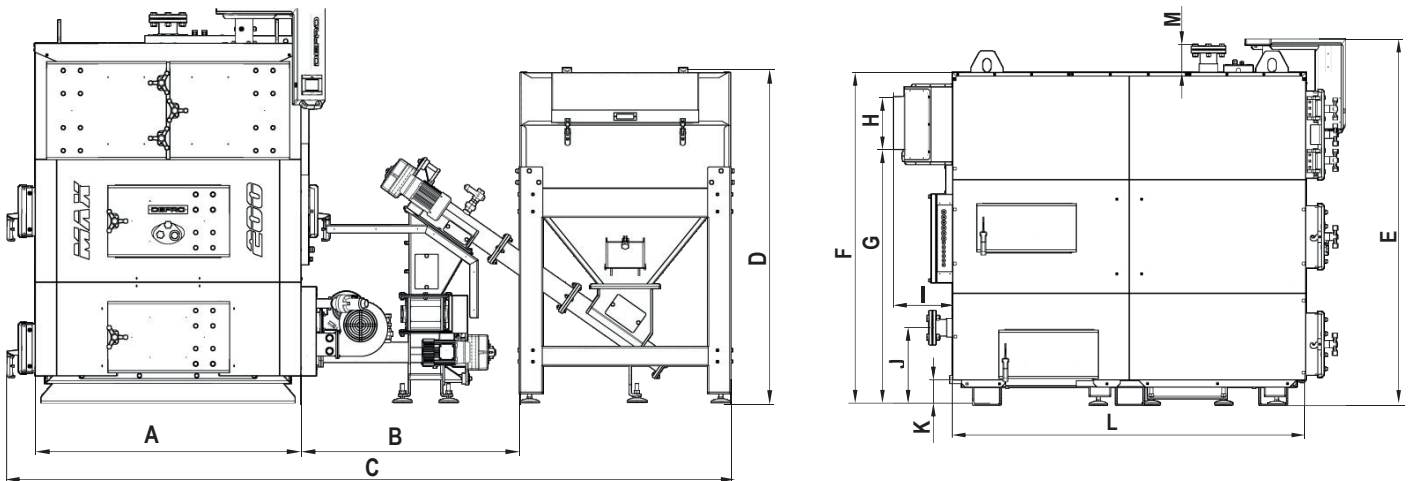
* The user's manual is an integral part of the product. You should read carefully guidelines and hints related to assembly and operation. The boiler should be assembled by qualified personnel acc. to the recommendations in line with the Polish Standard and guidelines of the manufacturer.



EKOPELL MAX 75 kW dimensions:



EKOPELL MAX 100 - 300 kW dimensions:



DIMENSIONS IN MM					
Dimension	75 kW	100 kW	150 kW	200 kW	300 kW
A	784	1194	1194	1394	1624
B	1645	1098	1098	1148	1264
C	1680	3648	3648	3794	4149
D	1817	1758	1758	1729	1753
E	1492	2078	2078	2078	2551
F	1296	1885	1885	1885	2358
G	246	1501	1051	1451	1925
H	376	246	246	296	296
I	140	336	336	336	386
J	1046	440	440	440	272
K	1440	146	146	146	146
L	1960	1801	2001	2001	2001
M	127	117	145	148	139
N	965	2317	2517	2517	2583
O	912	1586	1786	1786	733
P	806	1495	1492	1687	1935
R	-	599	599	699	814
S	-	1106	1106	1106	1106
T	-	1112	1112	1112	1112

EKOPELL MAX | 75-300 kW

TECHNICAL DATA / PRODUCT TYPE B						
Specification / boiler type	unit	75	100	150	200	300
5 class acc. to PN-EN 303:5-2012	-	✓	✓	✓	✓	✓
Ecodesign	-	✓	✓	✓	✓	✓
Heating area	m ²	5,9	12	14	23,5	29
Area of heated rooms ¹	m ²	to 750	to 1000	to 1500	to 2000	to 3000
Capacity of fuel container ²	kg	~250	~485	~485	~485	~485
Fuel consumption ³	kg/h	15,9	21,5	32,7	42,0	66,7
Burn time	h	~16	~23	~15	~12	~7
Efficiency for nominal power	%	91,2	91,5	90,6	90,3	90,0
Efficiency for minimum power	%	90,0	89,1	89,3	89,4	90,7
Max. permissible work pressure	bar	2,5	2,0			
Required flue gas draught	mbar	0,38	0,40	0,44	0,46	0,50
Max. water supply temperature	°C	65/80				
Min. return water temperature	°C	55				
Boiler weight	kg	1104	2651	2891	3306	4718
Container weight	kg	~139	~204	~204	~204	~204
Feeder weight	kg	~12	~195	~195	~210	~228
System weight (boiler, container, feeder)	kg	~1255	~3050	~3290	~3720	~5150
Boiler water tank capacity	l	355	790	890	1350	1600
Chimney section	cmxcm	25x25	27x27	32x32	37x37	45x45
Chimney section	Ø mm	280	305	365	415	505
Minimum chimney height	m	11	12,5	14	14,5	15,5
Diameter of supply and return	cal	3"				
Release socket diameter	cal	1"				
Flue size	mm	246	246	246	296	296
Power supply	V/Hz/A	~230/50/0,9		~400/50/0,9		
Power consumption	W	1200 / 820	2060 / 1600	2060 / 1600	2060 / 1600	2060 / 1600
Noise level	dB	<75				

¹ Maximum heated area has been calculated based on individual demand for heat $q=100 \text{ W/m}^2$.

² Charging density of pellet $0,6 \text{ kg/dm}^3$.

³ Fuel consumption for pellet with calorific value $17\ 000 \pm 300 \text{ kJ/kg}$.

ADDITIONAL EQUIPMENT / PRODUCT TYPE C	
Name	
K1PR MAX controller	additional equipment
PID function	standard equipment
Leveling legs	standard equipment
Primary air forced draught fan	standard equipment
Secondary air forced draught fan;	standard equipment
FIRE FIGHTER II fire suppression system (2 pcs)	standard equipment
Pneumatic cleaning system for the heat exchanger with ST-980 control	individual pricing ¹
Room controller SPK LUX	extra paid option
Room controller SPK LUX, wireless	extra paid option
ST-292 v3 room controller	extra paid option
ST-292 v2 room controller	extra paid option
I-1 module	extra paid option
I-1M module	extra paid option
Set for wireless communication RS	extra paid option
Modul internet	extra paid option
Automatic ash removal set	individual pricing
System for mechanical feeding the pellet from silo	individual pricing
System for the pneumatic feeding the pellet from silo	individual pricing

¹ The price depends on the power of the boiler and the number of pneumatic valves.

DEFRO

heating technology

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