

AUTOMATIC BOILERS BURNING BIOMASS VERNER GOLEM

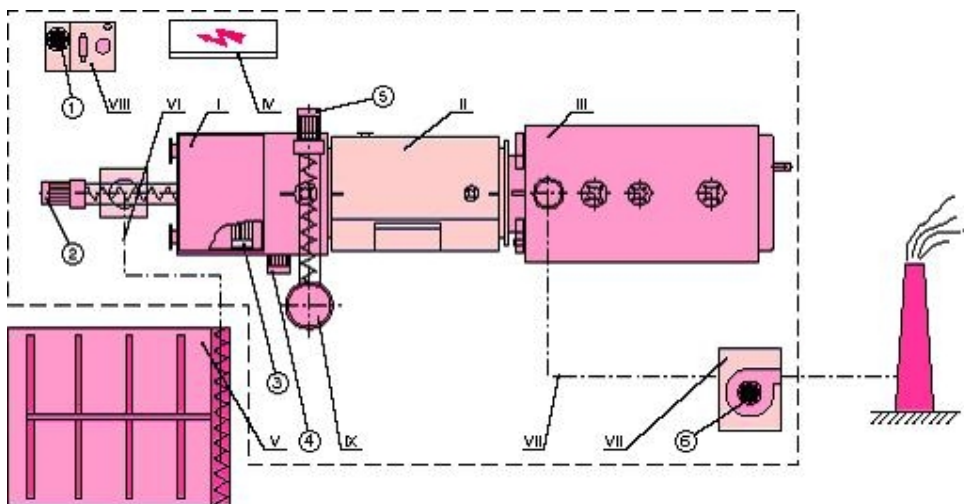
General description:

The VERNER GOLEM boilers of the rated capacity from 90 kW to 2 500 kW (in cascade up to 10 000 kW) are designed for water heating and service water heating or for steam production. They are intended for wood material combustion (chips and sawdust of the max. moisture of 35%, wood chips or green wood chips of the max. moisture of 50% sized up to 30 x 30 x 60 mm). At usage of stabilizing fuel (pellet) the maximum values of the moisture are increased by 10%. The combustion of other sorts of biomass, such as hay and straw must be consulted with the manufacturer, however maximum moisture may not exceed 20%. The construction of the boilers supports smooth combustion even of the clinkering materials such as bark, crust and some kinds of the straw, i.e. fuels that make clinker.

The boilers are equipped with an automatic fuel feeder out of a bin whose size depends on working and building conditions and it can be designed for a one-day up to a few-month stock of the fuel.

The boilers are constructed as a pre-combustion chamber with an exchanger which enables to locate this chamber in front of the original boiler /made by VSB, CKD, Slatina, etc./ and thus to save investment expenses for reconstruction of the original boiler room. The boilers are equipped with an automatic output and the complete combustion process control. Furthermore, the boilers are provided with automatic firing and automatic deashing so that the minimum operator attendance is demanded. Only occasional control is required. The operation and failure reports are announced to the boiler operators through the mobile phone.

The boilers are delivered as a complete set including mechanical parts of the bin, an ash conveyer and a combustion gas cleaning equipment, a primary (boiler) water circuit on the water side managing minimum reverse water temperature. This circuit is terminated by a hydraulic switch that balances hydraulic disproportions between the water circuit of the source and the heating system to which the boiler is connected. The company VERNER delivers complete boiler rooms. At the same time the company is ready and able to arrange any cooperation with the customer and their participation in works.



Explanation of the picture:

I = burner, II = after- combustion chamber
III = exchanger, IV = control unit
V = fuel chamber / storage bin
VI = supply (transportation) ways
VII = smoke flues and a filtration
VIII = hydraulic unit, IX = ashbin

1=hydroelectric generator drive
2=fuel feed worm drive
3=combustion air ventilator drive
4=ash crusher drive
5=ash conveyor drive
6=combustion gas conveyor drive

Boiler:

The boiler is composed of a fuel feed worm, a burner, an after-combustion chamber, an exchanger, an exhaust fan, a separator with a filter and a deashing device. An electric switchboard and a hydraulic unit for the grate drive in the fuel stock are the part of the accessories. The whole combustion process is controlled and it can adapt its comfort according to the customer's wish. Fuel is supplied into the burner by a feed worm which has fire protection and prevents fire from getting into the bin. Inside of the burner the fuel is moved by the feeder and that is why even bark can be easily burnt, or waste heavily polluted with dust and ground that is clinkered, can be also combusted easily. The deashing into the prepared and attached container is an automatic process.

Fuel chamber – storage bin:

The bins are equipped with a moving bottom which prevents the fuel from arching and guarantees its balanced fuel delivery. The bin can be situated on the existing floor, set down under the ground or it can have a shape of an overhead tower.

Usage:

The boilers can be constructed into the cascades of the total output up to 10 000 kW or they can be used for the output support of the gas-fired boiler or furnace oil one. The boilers are sufficient for complete central heating of the villages, towns and city suburbs. Distribution frames to separate houses can be made of pre-insulated piping which is laid very easily and can be distributed into a few kilometre distance. The greatest advantage of those boilers is their cheap and domestic fuel.

Other usage: heating of housing estates, schools, city halls, hospitals, production plants, workshops, joinery shops,...

Technical data (possibility of modification according to customer wish):

Boiler	Total rated capacity	Total dimensions in mm (length x width x height)	Total operation weight in kg (incl. contents of water)
GOLEM 90 (compact)	90 kW	1670 x 1430 x 1000	1 600
GOLEM 225 (compact)	225 kW	2250 x 1380 x 1870	4 000
GOLEM 350 (burner + after-combustion chamber + exchanger)	350 kW	5580 x 1230 x 2100	4 800
GOLEM 600 (burner + exchanger)	600 kW	5590 x 1980 x 2150	7 000
GOLEM 900 (burner + exchanger)	900 kW	5990 x 2210 x 2330	12 400
GOLEM 1800 (burner + exchanger)	1 800 kW	7980 x 2550 x 2910	32 800
GOLEM 2500 (burner + exchanger)	2 500 kW	9925 x 2800 x 3325	40 900
The boilers GOLEM 90 and 225- a burner, an after-combustion chamber and an exchanger composes one non-dismountable complex, usage only as a warm-water model			
The boiler GOLEM 350- a burner, an after-combustion chamber and an exchanger are separate units connected by the flanges, according to the type of the used exchanger there exist the following models- warm- water, hot-water or steam model			
The boilers GOLEM 600 to 2500 – a burner and exchanger are independent set, a part of the exchanger is an after-combustion chamber, according to the type of the used exchanger there exist the following models: warm-water, hot-water or steam model, it is possible to burn even straw at those outputs			

Benefits for environment:

Compared to the traditional heating devices any constant light ash and sulfur dioxide, known as a destructor of forests and mucous membranes of our respiratory systems, are not contained in the combustion gas. Leakage carbon dioxide, well-known as „ a greenhouse gas“, has so-called zero balance in a case of biomass combustion. That means that the next year biomass will consume to its growth the same quantity of the mentioned gas as it escaped through the chimney during its combustion. The other big advantage for the environment is a possibility of the elimination of the waste occurrence from the combustion process. Based on the ash analyses focusing on the investigation of the mineral substance content and of heavy metal presence the ash is carried back onto the field where it used as a auxiliary part of the fertilization.



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