



STAFOR ION BOILER

NEW GENERATION HEATING SYSTEMS

High Efficient European Technology



upto
70%
Cost
Saving



Terms & Conditions are Applicable



STAFOR Limited

Company is situated at LATVIA in the Europe. They are the world leaders in manufacturing of ION BOILERS & THERMODYNAMIC PANELS (COMBI) the latest power saving technology all over the world (Around 60% and above). Company's STAFOR primary directions of work is:

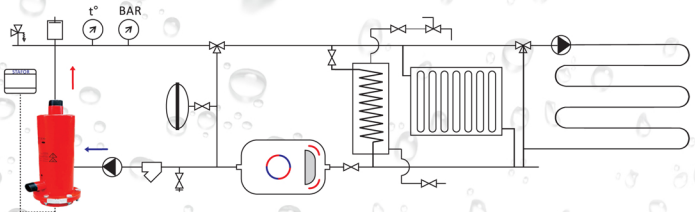
- Chemistry and building products manufacturing;
- Heating boilers (ion boilers) Heating carrier & cleaning agent climate control automatic manufacturing;
- Thermodynamic systems development.

Company develops and produces totally new, for the market products. For that high-qualified external experts and company personnel is realizing big research program. In this research program, company pays attention to building technology and materials.

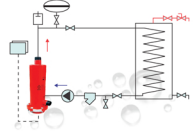
All company's variety of goods are carrying the "STAFOR" trademark, which is a registered trademark, the usage rights and ownership of which are protected by The Republic of Latvia, and international legal and legislative acts. Usage of trademark is allowed only with STAFOR permission.

Experts permanently check all products for quality issues and take care of safety in accordance with regulation of European Parliament and Council (EK) Nr. 1907/2006 (REACH). The greatest part of products, that are selling, are certified, int. al. products that in stringent regulations don't need to do it.

In worry of ecology the company is cooperating with The Ministry of Environment of the Republic of Latvia to utilize and regenerate throughout.



About Ion Boilers



Changes in energy prices, the emergence of new heating technologies, increased attention to the environmental housing is pushing people to seek alternative or complementary options for heating.

The technology of Ion Boiler is not a new one. It is a technology on which the working of sub-marines (*Pandubbi*) base. These have been used since decades and are still being used on large-scale by many countries of Europe, USA & South Africa. This technology is based on the fact of getting maximum heating by giving minimum input and was exposed to public around 12 years ago.

There is a stereotype that heating using electric energy - is "too expensive". To some extent this is acceptable, but with compulsory reservation: this view is true only for TEN boilers, which were used in the systems filled with ordinary water. Very quickly the surface of TEN (tubular heating element), absorbed heat-insulating crust of salt and efficiency of the boiler falls to 70% and below. That is, the energy spent inefficiently. In time TEN while overheated and quickly went out of order.

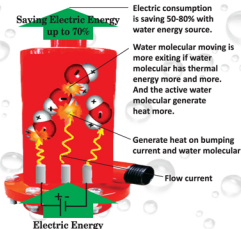
Such deficiencies have no heating systems with ion (electrode) boilers. Here there is no transmission link - TEN, system heating comes directly from the electrical characteristics of a special heat carrier, filled into the system. This heat carrier does not raid the salt, heat transfer surfaces are clean and the entire heating system is working well, so - and economically.

12 year old practice of operation of heating systems with ion boilers STAFOR in Latvia shows that the heated thus cheaper than oil-fired boilers or liquefied gas. Cheaper natural gas only from the "pipe" and a solid fuel (firewood, charcoal, etc.).

Working principle of Stafor Ion Boilers:

The process of heating the heat carrier in the ion boiler occurs at the expense of ion conduction. Positive and negative ions of heat carrier move to the respective electrodes, while providing thermal energy.

The electric ion boiler works as a flow-type electrode water heater and heating process is realized by ionization. As the electric current flows, the generation of negatively and positively charged particles from neutral atoms takes place. Heat energy is produced by these particles due to negative and positive polarities caused by alternate current when moving towards electrodes per phase. There is no electrolysis because of the presence of alternating current & no separate heating element or heater lining is required as water itself acts as a heating element.


















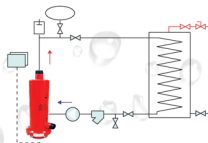


How ION boilers (heaters) STAFOR can reach COP 204%?

In solid conductors, only half (statistically) of the free electrons react to the applied voltage. In liquid conductors, if using special construction ionization chamber, it is possible to achieve that almost all of the free electrons will react to the applied voltage. This means that - theoretically it is possible to achieve COP 2. At the moment, company STAFOR EKO, Ltd. (www.stafor.lv) managed to achieve COP 2.04. It is confirmed by certification of European Union approved Center of Metrology, protocol № 016TP11.

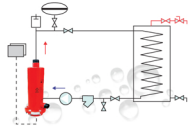
ADVANTAGES OF STAFOR ION BOILER:

-  Compact & small size
-  Silent operation
- The possibility of programming modes of operation at different times of day, which reduces costs for heating,
-  Environmental merit
-  Quick and easy installation
-  No fire and explosion hazard
-  Lack of demand for fuel
-  The possibility of installing a new heating system at a pre-existing - It can simultaneously be installed with other type (gas or multi solid fuel fired) boilers!
-  Protection from freezing the system (ion boilers heat carrier are not frozen to -40°C)
-  Energy-saving automation of new generation
-  Class-I electrical safety (certificate Nr. T25D07, T37D08) in accordance with European Union standards
-  High COP (coefficient of performance) from 1.57 till 2.04, that means efficiency of STAFOR Ion Boilers is from 157% till 204%!
-  With automatic control panel
-  Independent heating possibility, but it can be used for heating water indirectly!
-  Full consumption can be produced by combining with a current producing system (e.g. solar cell or wind turbine)
-  It does not overload the network due to gradual current consumption in the heating cycle.



1. Ion boiler
2. Spheric Valve
3. Circulation pump
4. Mechanical filter
5. Convertible valve
6. Extension container
7. Automatic "bleeder"
8. Electronic automatics
9. Plate type heat exchanger

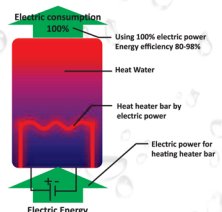
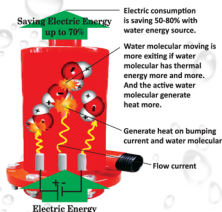
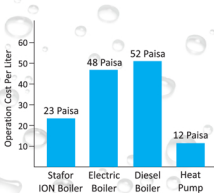
Comparison with other Systems



STAFOR do not have direct analogues in the market. The design of the boiler used a patented solution to fulfill all the requirements of European directives on low voltage Nr. EN 60335-1. Our boilers have class I electrical safety, as evidenced by a record of testing Nr. T25D07, T37D08 and may, without limitation installed in the EU.

S. No.	PARAMETERS	STAFOR ION BOILER	DIESEL FIRED GENERATOR	ELECTRIC BOILER	HEAT PUMP
1	Operating Cost at 50°C Per Ltr.	23 Paise	52 Paise	48 Paise	12 paise
2	Average COP	157% - 204% (on any temp.)	90%	80% - 99%	400% (Ambient Temp upto 10°C)
3	Heat Carrier (Media)	Stater EKO (Special Heat Carrier)	Soft Water	No media	Refrigerant
4	Place of Installation	Any Place	Any Place	In Inbuilt of Tank	Mostly in covered area
5	Source of Energy	Electricity	Diesel & Electricity	Electricity	Electricity
6	Temperature of Hot Water	up to 90°C (setting)	up to 90°C (setting)	Depends on Thermostat	up to 60°C
7	Control Panel	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual
8	Climatic Constrains	No	Yes	No	Yes
9	Automatic Safety Control	Yes	No	No	Yes
10	Pollution (Air / Voice)	No	Yes	No	No
11	Sound	No	Yes	No	Yes
12	Chimney Required	No	Yes	No	No
13	Space Required	Less Space	Big Space	Big Space	Big Space
14	Maintenance	No	Yes	Yes	Yes
15	Make up Tank	No	Yes	No	No
16	Fuel Tank Space	No	Yes	No	No
17	Guarantee	2 Year (For Electrodes)	No	No	No
18	Warranty	2 Years	1 Year	No	1 Year

***Estimated cost for electricity = Rs 8.00 rupees per unit and for Diesel = Rs. 70. rupees per liter inclusive all Expenses**





Key features of Stafor Ion Boiler



EFFICIENCY

There is increased rate of energy conversion from electrical to thermal with COP from 1 (100%) to 1.57-2.04 (157% -204%), depending on the model of boiler and operation mode. From other manufacturers, this parameter is less than 1. This means that if you use the boiler STAFOR, the electric current makes a greater job and, respectively, heating costs are reduced.

Do not overpay for heating! Use high-efficiency boilers STAFOR!!



ELECTRICAL SAFETY

The original, patented design of the boiler is fundamentally. It enables to use a principle of the separation of working and protective field ("Faraday cell").

To date, it is the only ion (electrode) boiler of a flow type that is entirely consistent with the requirements of the European Community Low Voltage Directive № 73/23/EEC on electrical safety and authorized for sale and use in the EU member states.

Do not expose your life, and lives of other people to danger. Use electrical safety ion boilers STAFOR!



QUALITY AND RELIABILITY

A large margin of safety for materials is incorporated into the ion boiler STAFOR during its design. The use of high-tech alloys and plastics (with heat resistance up to 700 ° C, with enhanced dielectric properties) provides high quality and reliability of the boiler STAFOR, making it preferable in comparison with other manufacturer's products.

All materials used in the manufacture of the boiler have European quality certificates. Experience in the



use of ionic boilers STAFOR indicates that the equipment, used more than 12 years, shows no signs of erosion of electrodes and other elements of the boiler's construction, the boiler operating parameters are stable.

The service life of the ion boiler STAFOR subject to the rules of installation and operation is at least 15 years. Effective and reliable automation of ion boilers STAFOR.

Heat carrier STATERM EKO E40 used for the ion boiler STAFOR provides a stable ionic composition, stability of electrical parameters of the boiler and high COP. Do not skimp on quality, use reliable boilers STAFOR!

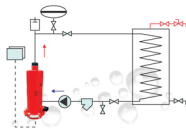


STAFOR CONTROL PANEL

- Electronic ON & OFF of the ion boiler. Control circuit is operated by one or more powerful triacs
- Improved reliability of the boiler control unit 10 or more times
- Increase in equipment lifetime
- Automatic shutdown of the boiler at a "loss" of any incoming electrical phases. Fully automated switch ON of system when power is restored. This keeps the boiler in economy mode.
- Completely silent operation.



Technical Specifications



S. No.	PARAMETER	Unit	3-5 set	5-10 set	10-20 set	21-30 set
1	Rated Voltage Single-phase AC in	V	230 ± 10%	230 ± 10%	400 ± 10%	400 ± 10%
2	The Minimum frequency of the AC	Hz	50	50	50	50
3	Work Current on One Phase @ COP 157 % to 204%	A	15 - 25	25 - 50	17 - 34	35-50
4	Operating Current, not more than	A	25	50	34	50
5	Nominal Power	kW	5	10	20	30
6	Applied operating power, at a temperature of + 15 °C	kW	3-5	5-10	10-20	20-30
7	Heating carrier STATERM EKO E40 with conductivity not more than	μS	205	230	330	450
8	The Maximum temperature at the outlet of the ion boiler	°C	90	90	90	90
9	The work temperature at the outlet of the ion boiler	°C	70	70	70	70
10	The size, length/height/diameter	mm	260/95/40	115/405/62	340/160/125	420/160/125
11	Weight, not more than	kg	2,00	5,00	6,00	10,00
12	Class of protection against electric shock	-	1st	1st	1st	1st
13	The degree of protection from moisture	-	IP44	IP44	IP44	IP44
14	Central Heating Area (Height upto 3M)	m ²	37.5 - 62.5	62.5-125.0	125.0-250.0	262.5-375.0
15	Hot water output (only hot water) LPH at ΔT 40 °C	Ltr.	64 - 107	107 - 215	215-430	450-860
16	Maximum Heat carrier volume in system	kW	3-5	5-10	10-20	21-30



PRODUCT GUARANTEE

We ensure 2 years Guarantee of Ion Boiler Electrode.



PRODUCT WARRANTY

We ensure 2 years warranty on complete system.

Certifications

- C E Approved (EN603351, EN60335-2-35)
- NMC T25D07 Riga, Latvia (EUROPE)
- Regulations of European Parliament & Council (EK) NR.1907/2006 (REACH)
- European Union approved center of Metrology, Protocol 016TP11.
- Class 1 electrical safety (certificate nr. T25d07, T37d08) in accordance with European union standards.



Council of the European Union



CUSTOMER SEGMENT

• Collective residential	• Swimming Pool
• Hospitality	• Prisons
• Hospitals	• Pilgrimage (Community accommodations)
• Hostels (Educational / NGO)	• Sports & Wellness Centers
• Industrial (Process / Dairy / Car Service)	• Space heating
• Army Barricks	• Central Heating i.e. so that radiator, radiant.



Marketed by :

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