

Fresh Water System

System Overview:

Our fresh water station and stratified zone accumulator team is the perfect solution for all areas. The fresh water station takes only the energy needed for heating fresh water from the buffer. The stratified accumulator ensures minimum energy loss and optimum use of the energy/heat stored. Last but not least, no usage water tanks are required. This leads to perfect cost effectiveness.



Fresh Water Station Technical Data:	Fw 30	Fw 40
Nominal tapping volume (10 °C > 45 °C)*:	30 l/min	40 l/min
Nominal power:	62 kW	82 kW
Hot water temperature:	adjustable**	adjustable**
Temperature max.:	90 °C	90 °C
Connection (hot / cold water):	3/4" IG	3/4" IG
Connection (supply / return):	1" IG	1" IG

*for heating flow temperatures of 60°C; **only with speed control

Technical Data Zone Stratified Accumulator:	Type 800	Type 1000	Type 1500	Type 2000
Content:	800	1000	1500	2000
Diameter without insulation:	790 mm	790 mm	1000 mm	1100 mm
Diameter with insulation:	990 mm	990 mm	1200 mm	1300 mm
Height:	1690 mm	2040 mm	2150 mm	2380 mm
Tip dimension:	1740 mm	2150 mm	2220 mm	2610 mm
Heat Exchanger:	1"	1"	1"	1"
Heat Exchanger (bottom):	2,40 m ²	3,00 m ²	3,60 m ²	4,20 m ²
Heat Exchanger:	1"	1"	1"	1"
Heat Exchanger (top):	1,80 m ²	2,40 m ²	2,40 m ²	2,80 m ²
Heating Connection:	1 1/2"	1 1/2"	1 1/2"	1 1/2"
Operating Pressure (heating water):	3 bar	3 bar	3 bar	3 bar
Operating Pressure (heat exchanger):	8 bar	8 bar	8 bar	8 bar

Heat generator and heat consumer with a power of up to approx. 30 kW, solar plants with a collector area of up to approx. 26m²

Subject to technical changes and errors.



True drinking water with the BioEnergieTeam fresh water system



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For your local **BET partner**
 refer to:
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- Fresh water technology
- Biomass heating systems
- Heat pumps
- Solar Energy

Fresh Water System

State of the art domestic water management with fresh water station and stratified zone accumulator.



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Energy efficiency & Hygiene

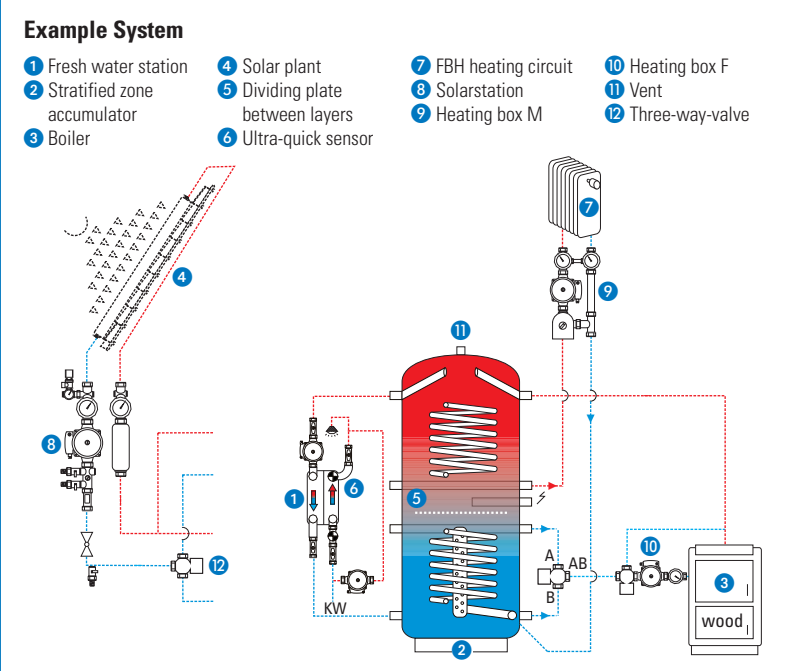
BET-fresh water system - how to protect your family's health and reduce operating costs with a fresh water station and a stratified zone accumulator.



► The system consists of a so-called fresh water station and a stratified zone accumulator. The stratified zone accumulator "manages" the energy reserves perfectly, while the fresh water station heats domestic water as required. Domestic hot water is thus only produced where it is needed, instead of being stored with high energy expenses. The (fresh) water that is taken from the line also has no contact to the heating medium, and thus is as hygienically safe as water from the waterworks.

1. Fresh Water Station

Drinking water is heated immediately to the pre-selected temperature when flowing through the stainless steel heat exchanger, the so-called fresh water station 1. For this, only the energy required for the fresh water is used (e.g. for taking a shower). This saves money. In usual boilers (large volume, small volumes taken from the tap, quickly dropping temperature), where will be suspended solids that facilitate the growth of legionella, which cause legionnaire's disease and/or Pontiac fever. Eight- to ten thousand people contract these diseases each year, and up to 1500 die of them. There are also 1.6 millions of cases of the less dangerous Pontiac fever per year. According to the standard, boilers that include more than 400 litres must be heated to more than 70°C once per day. This requires a lot of energy. Our fresh water system with less than 3 litres



does not require this because the lower amount of heat can be quickly exchanged and replaced completely

✓ Efficient

Only the amount of energy required from time to time is taken from the buffer.

✓ Fresh Drinking Water at all Times

Water is freshly heated when it is needed.

✓ Resistant

The plate heat exchanger in the BET station is made of stainless steel and thus is resistant to corrosion.

2. Stratified Zone Accumulator

The BET Team of Stratified Zone Accumulator and Fresh Water Station is more efficient than anything else!

The BET stratified zone accumulator is based on two simple laws of nature. Water is a bad heat conductor, and the weight of water depends on its temperature (hot water rises to the bottom).

A stratified accumulator will store water according to different temperature zones. Unused energy will be used smartly, and hot water is taken from the temperature zone required at any given time. This saves energy, also because the system is controlled without any electronic controls but based on the physical features of water.

A riser in the lower accumulator chamber is used to pre-classify water according to the weight principle. Then it is introduced into the respective temperature zone.

The sharp division of the temperature zones is supported by special division plates in the upper accumulator. This unique storage system has the advantage that even lukewarm water as delivered by the solar plant on a rainy day will be used to heat the lower and colder zones. The hot water in the upper area is not affected.

This means that the solar plant can be used to a higher capacity than with traditional systems. Preserving the high temperatures in the upper part of the accumulator increases the boiler's switching difference. Fewer

starts will cause lower emissions of pollutants and decrease costs.

The BET fresh water system not only saves space that would otherwise be required for the boiler. The newly developed plating also makes it look better. The controls are simple and structured and the system requires less effort in respect of planning and installation and offers an extraordinary price-performance-ratio.

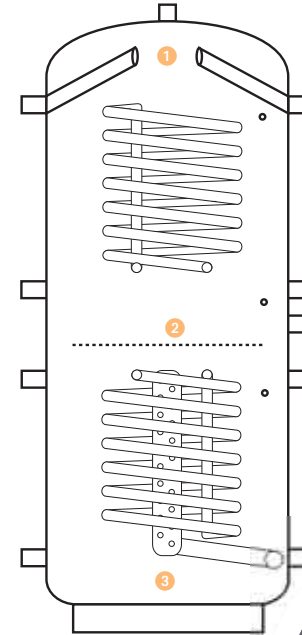
✓ Best heat efficiency

✓ Stable layers

✓ Saves Space

Stratified zone accumulator: Special Features

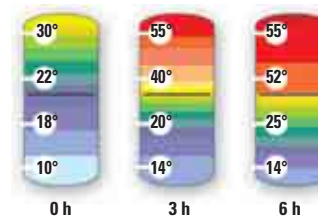
- 1 Suction pipe takes water from the hottest area.
- 2 Division plate decreases thermo-dynamic mixture with the lower "return area" as far as possible.
- 3 The heating return water flows into a riser with holes and is distributed perfectly in the respective "heat layer" in the lower part of the accumulator. By keeping it away from the water already included in the tank at first, the heating return water pumped into the tank is also calmed. Thus, it will only minimally affect the heat layers.



Energy Distribution – A Comparison

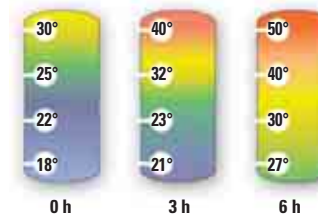
Example Solar Heating:

Temperature layers in the stratified accumulator ...



By the TOP load (storage in the uppermost area), only the upper area of the accumulator is heated at first. The solar pump speed further heats the collector area to ensure optimum storage in the upper area. The temperature at the upper sensor rises very quickly. There will soon be a temperature suitable for use as domestic water. If the solar energy available does not suffice, energy will not be lost but be stored in a lower area. **This means that the solar system will be used sooner and longer, and unnecessary burner usage will be avoided.**

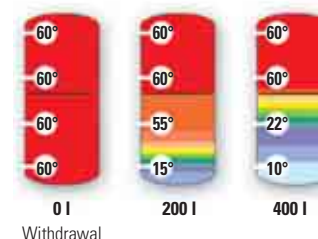
... and in a traditional combi accumulator:



All of the water in the tank is heated and mixed. This causes the temperature at the upper sensor to rise very slowly. It takes a very long time before the temperature in the tank has reached a useful level. The water heated by the solar plant must also be very hot (approx. 90°C) to be able to convey heat at all in a tank that has nearly the same temperature from top to bottom. **The solar plant is used less efficiently and the burner will start more often.**

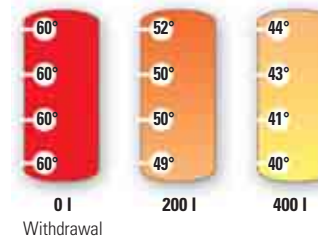
Example Hot Water Withdrawal:

Temperature levels in stratified accumulators when water is withdrawn ...



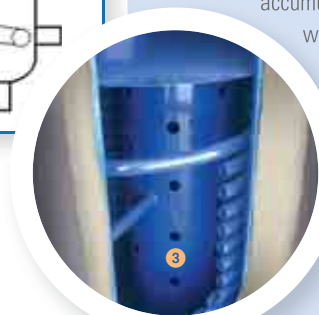
Due to the speed control, the plate heat exchanger uses the energy stored in the water so well that the return flow temperature will be below 25°C. This cold water is introduced in the lower part of the stratified accumulator almost without any disturbance. Due to this, only the accumulator bottom is cooled, instead of the whole water content, as is the case in a combi accumulator. Due to the sharp division and the additional zone division plate, the temperature in the upper part of the accumulator is not affected. **Thus, approx. 875 l of hot water can be withdrawn from a 1000 l stratified zone accumulator filled with water at 60°C.**

... and in a traditional combi accumulator:



When water is withdrawn, cold water flows through the corrugated pipe. Thus, the whole accumulator content is cooled off. If the temperature at the upper sensor is not high enough for heating fresh water (50°C), the water at the lower sensor will still be at 48°C and cannot be cooled off any further. The heat content is not used properly anymore. **Because of this, much less water can be withdrawn.**

The riser in the lower area of the stratified zone accumulator introduces calmed stored water into the respective heat zones.

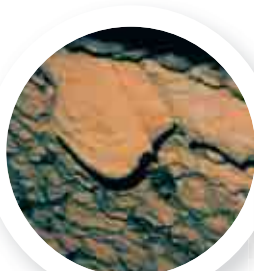
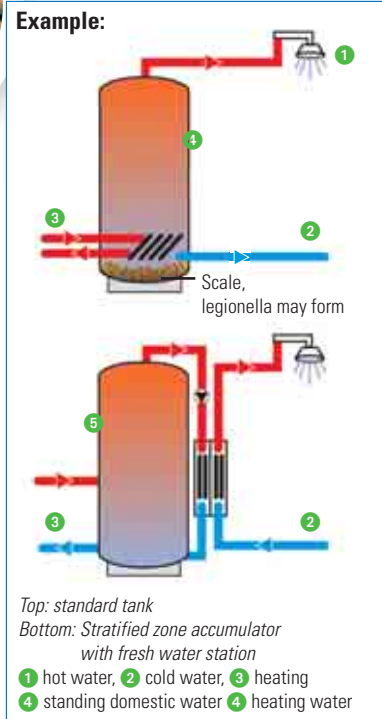


Clear Water:

Enjoy the refreshing feeling



- Fresh water technology
- Biomass heating systems
- Heat pumps
- Solar Energy



Calcium scale

After many years of use, some standard tanks will look like this!

