

LAYERED TANK  
SOLAR LAYERED TANK  
HYGIENIC LAYERED TANK  
MODULAR LAYERED TANK  
HOT WATER TANK



**NEW!**

NEOPOR AND FLEECE  
INSULATION SENSOR  
TERMINAL STRIP  
ADJUSTABLE FEET

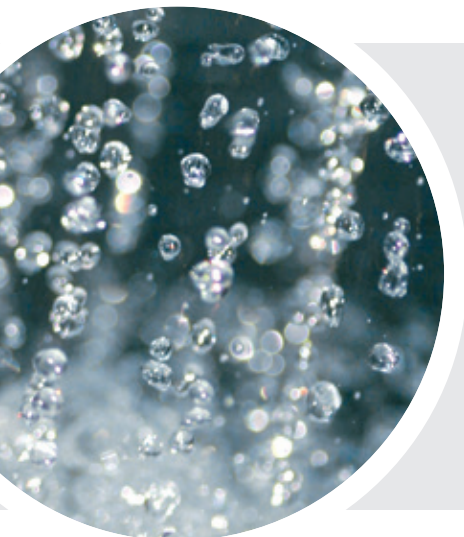
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## GUARANTEED QUALITY AND RELIABILITY FROM AUSTRIA

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For almost sixty years Froling has specialised in the efficient use of wood as a source of energy. Today the name Froling stands for modern biomass heating technology. Our firewood, wood chip and pellet boilers are successfully in operation all over Europe. All of our products are manufactured in our factories in Austria and Germany. Froling's extensive service network ensures that we can handle all enquiries quickly.

- Excellent environmental compatibility
- Environmentally responsible energy efficiency
- Ideal for all types of house
- More convenience for you
- Sophisticated fully automatic operation
- International pioneer in technology and design.



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## FLEXIBLE APPLICATIONS

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Froling tank systems are best used in combination with a pellet or wood chip boiler, but they can also be used with other heat sources such as an oil or gas boiler. An efficient solar panel system can also be integrated into solar layered tanks, the H3 hygienic solar layered tank and the FW modular solar layered tank. The solar power always takes priority thanks to the Froling Lambdatronic intelligent boiler controller management.

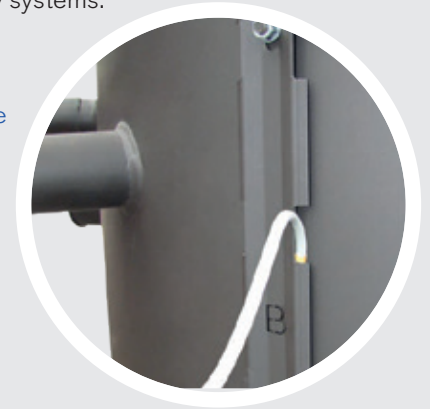
# NEW TANK SYSTEMS



## Froling tank systems with sensor strip

Froling layered tanks have a terminal strip for optimal positioning of the sensors. This allows multiple sensors to be positioned at any height and moved without having to empty the tank. The labelling of the sensor strip and corresponding Froling connection diagrams makes the sensors extremely easy to position and offer lots of different options. The tank systems are also ideal for combining with other energy systems.

Correct positioning of the sensors on the terminal strip is crucial for optimal operation of the system!



## Adjustable feet



## Layer separating module

The layer separating module (optionally with electronic controller) can help you achieve maximum efficiency with your solar panel system. Depending on the solar water temperature, the module automatically switches between the top and bottom half of the storage tank. At a high temperature layering takes place in the top half of the storage tank, and at a low temperature layering takes place in the bottom.

The fitting assembly consists of two high efficiency pumps, one heat exchanger and one three-way switch valve. The solar panel circuit is protected against overpressure by an integrated safety group. The fittings of the heat exchanger system are fully assembled on a base plate and tested for leak-tightness. The assembly is fully insulated.

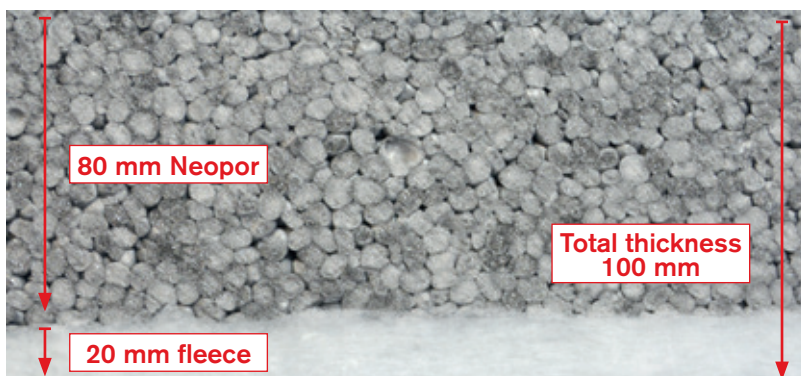


## Solar station

The ideal addition to Froling tank systems with solar integration for optimal use of solar energy. The high efficiency pump comes together with bleeder and safety group as a complete, preassembled unit for the solar panel circuit.

## SIZE AND FUNCTION

The use of a storage tank, particularly in combination with a firewood boiler, is advantageous as it results in longer refilling intervals, a longer life, reduced fuel consumption and lower emissions. The required size of the storage tank depends on many factors, so we recommend that an expert carry out the calculations for you.

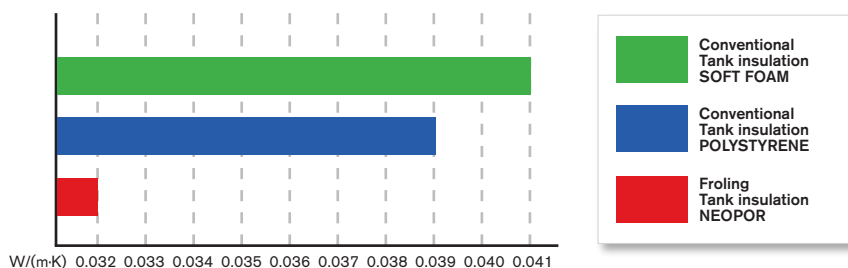


The use of a storage tank in combination with a pellet or wood chip system is not essential, but it is recommended as it also offers many advantages such as a reduction in burner starts, longer system life and lower emissions.

### NEW: Neopor and fleece insulation

The new Froling tank insulation consists of 80 mm Neopor and 20 mm fleece, resulting in a layer of 100 mm.

### Overview of insulation thermoconductivities [W/(m·K)]



Neopor® is the latest version of the insulating material Styropor®. The foam polystyrene contains graphite particles which reduce the thermal radiation and therefore heat loss.

Its thermoconductivity of approx. 0.032 W/(m·K) performs up to 20 percent more effectively than conventional insulation, resulting in around 20% less heat loss (improved energy yield W/(m·K) 0.032 0.033 0.034 0.035 0.036 0.037 0.038).

The following rule of thumb can be used to make a rough estimate of the storage tank volume:

#### Firewood boiler

Recommended storage tank capacity: approx. 55 - 100 l / kW\*

#### Pellet / wood chip systems

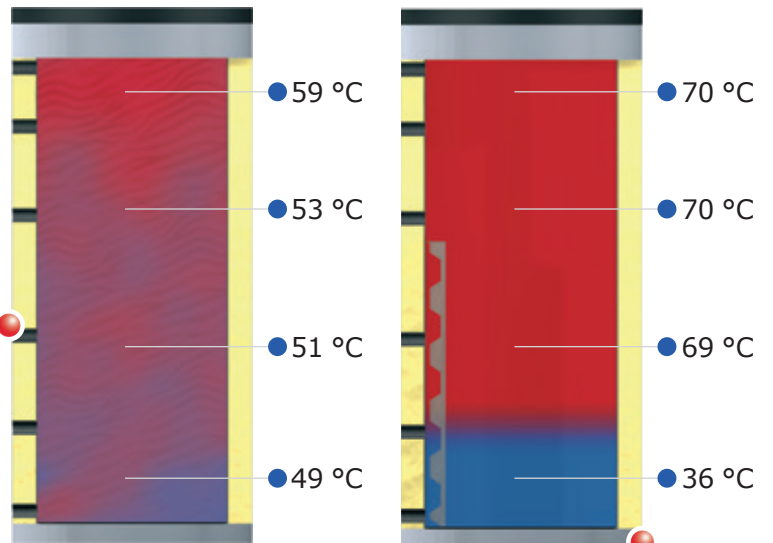
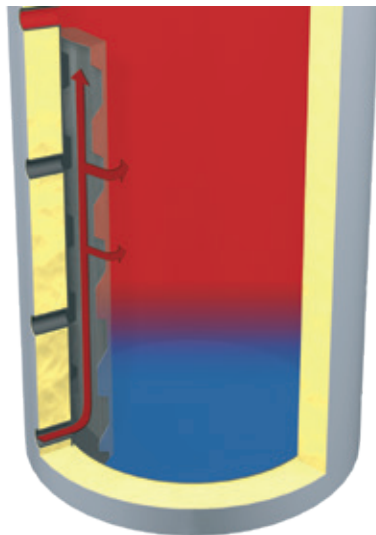
Recommended storage tank capacity: approx. 25 - 35 l / kW\*

\* Local laws, standards and regulations must also be taken into account when calculating storage tank capacities. Find out more about current legislation in your region at [www.froeling.com](http://www.froeling.com).

# EXACT TEMPERATURE LAYERING IN THE TANK

Precise temperature layering in the tank is crucial for optimal functioning, as it ensures that as much energy as possible can be reused. All Froeling layered tanks feature a special layer separator developed for this purpose.

Mixing/poor energy yield

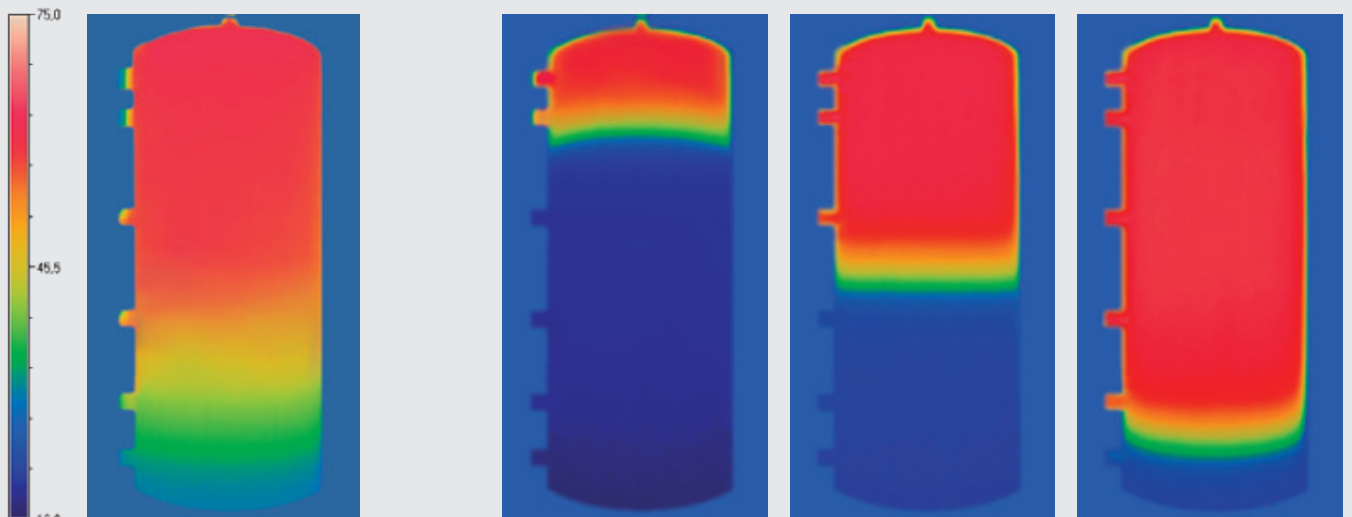


Temperature layering using layer separator

Incoming water (e.g. return) moves up through the layer separator and is then stored in the area where the water has a similar temperature. This ensures that there is an area with constant hot water.

Furthermore, the specially developed layer separator allows exact temperature layering and guarantees maximum energy yield and low running costs.

## Comparison of hot water storage systems



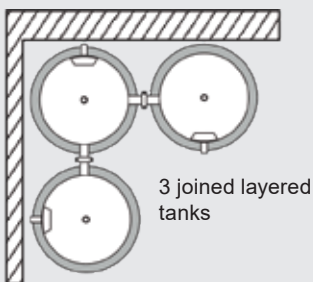
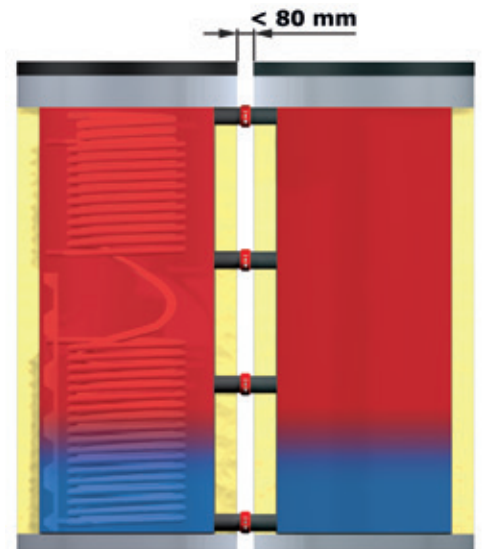
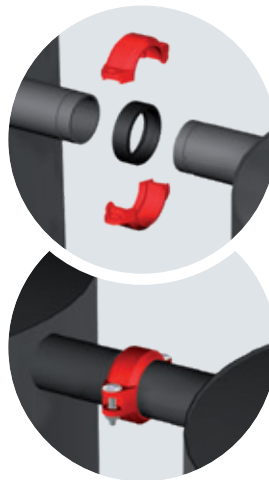
Storage tank without layer separator

Froeling layered tank with layer separator

# COMMUNICATING LAYERED TANKS

Thanks to their intelligent measurements, Froling layered tanks can be easily installed in the boiler room. And in rooms with low ceilings, Froling offers even more.

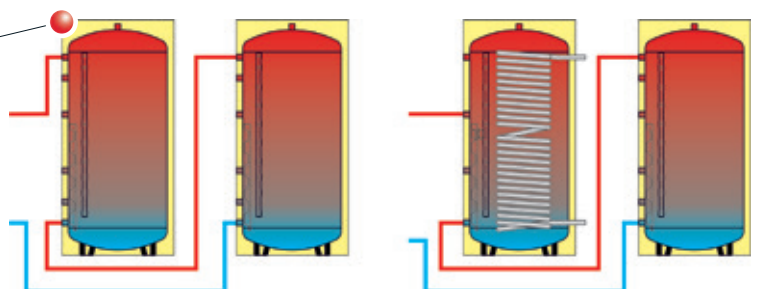
Up to four short slim tanks can be joined together with exact temperature layering in all tanks. Another advantage is the fast and easy assembly with the tanks just 80 mm apart.



The layered tanks can either be set up in a row or at an angle: In this case the connection couplings are fitted to the layered tank in the middle at an angle of 90°.

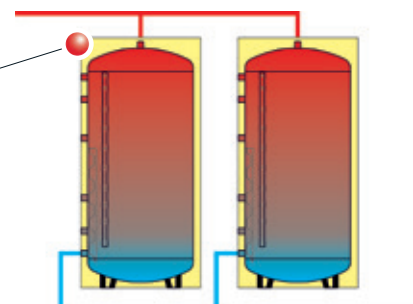
## Serial linking

Layered tanks are expanded by connecting layered tanks in series, partly because it is possible to connect layered tanks of different sizes and partly because large distances or obstacles can be overcome. It is also possible to connect a solar system at any time with this option.



## Tichelmann connection

Several layered tanks can also be linked according to the Tichelmann principle. With this type of connection, an optimally regulated system is required to guarantee uniform loading and emptying of all layered tanks.



# EFFICIENT SYSTEMS FOR ALL REQUIREMENTS

With its range of storage tank systems, Froeling offers the ideal solution for almost any situation. Froeling layered tanks make intelligent heating management and optimum heating support possible. If a solar system is to be built in, the Froeling solar layered tank, H3 hygienic solar layered tank and FW modular solar layered tank are ideal.

The Unicell NT-S ensures efficient domestic hot water heating, using solar energy if desired. Furthermore, Froeling offers compact comprehensive solutions for the boiler room thanks to its hygienic layered tank with integrated domestic hot water element and modular layered tank with fresh water module.

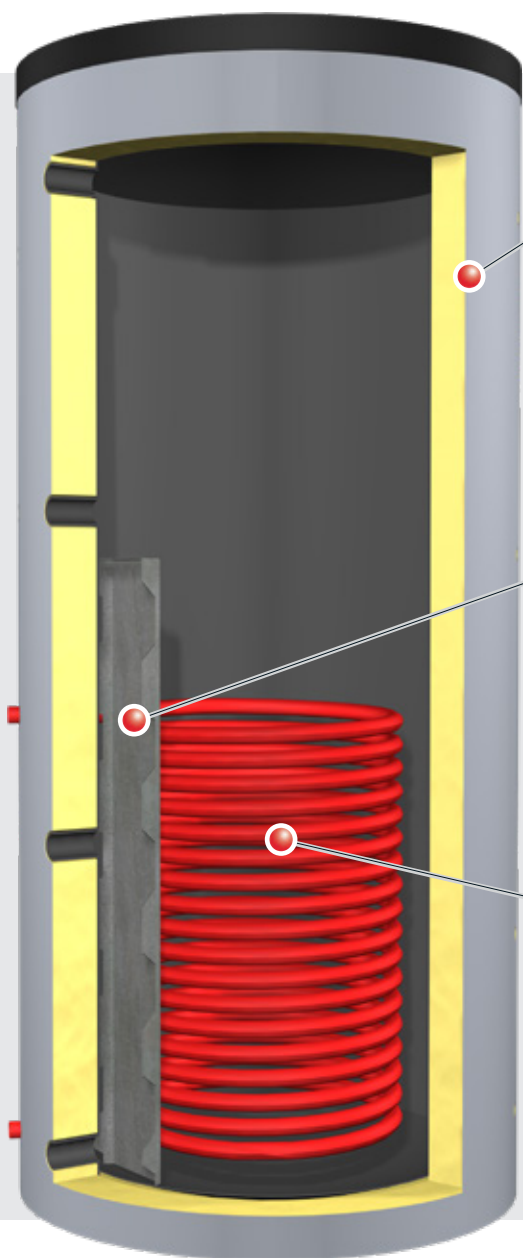
	Layered tank	Solar layered tank	H2 hygienic layered tank	H3 hygienic solar layered tank	FW modular layered tank	FW modular solar layered tank	Unicell NT-S water heater
Storage of surplus heat	✓	✓	✓	✓	✓	✓	
Precise temperature layering for high energy yield and affordable operating costs	✓	✓	✓	✓	✓	✓	
Optimal thermal insulation due to all-round CFC-free insulation	✓	✓	✓	✓	✓	✓	
Joined tank expansion in confined spaces	✓	✓	✓	✓	✓	✓	
Combination with other heat generators	✓	✓	✓	✓	✓	✓	✓
Integrated solar power		✓		✓		✓	✓
Domestic water heating			✓	✓	✓	✓	✓
Hot water tank and layered tank in one			✓	✓	✓	✓	
Hot water tank, layered tank and solar tank in one				✓		✓	
More information can be found on page ...	8		12		17		22



# LAYERED TANKS / SOLAR LAYERED TANKS

The ingenuity is in the detail! Froling's layered tanks and solar layered tanks feature an impressive heat management concept, with optimal energy intake and withdrawal.

Froling's solar layered tank also makes it easy to integrate solar power. The tried and tested layer separator system ensures optimum use of solar energy and heating support.



## High-quality insulation (100 mm) Neopor and fleece

The high-performance insulation with an outer jacket ensures optimum thermal insulation and low radiant heat loss, resulting in maximum efficiency.

- Advantages:
- Best thermal insulation
  - Low radiant heat losses
  - Compliant with fire protection class B2

## Tried and tested layer separator system

The tried and tested layer separator system ensures exact temperature layering in the tank, guaranteeing you an ideal energy yield and increased flow rate.

- Advantages:
- Maximum energy yield
  - High flow rate

## High-performance solar element (only solar layered tanks)

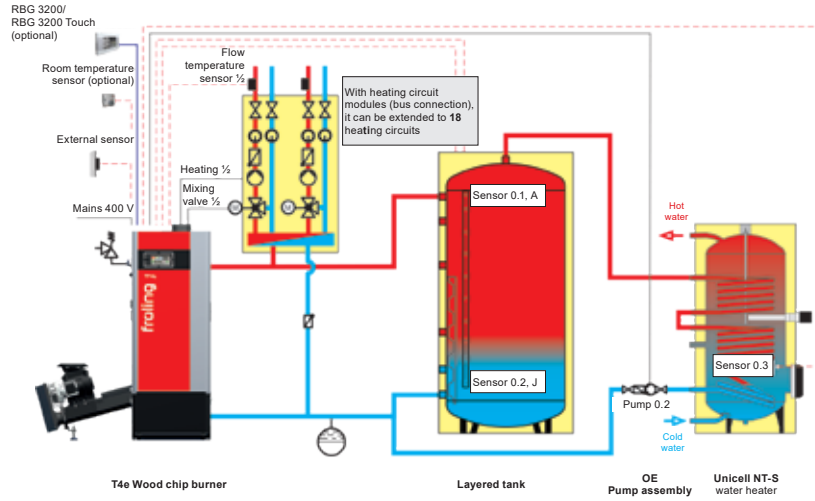
The high-performance solar element ensures that the tank is loaded to full capacity when energy is available from the solar panel system. In case of lack of sun and low temperatures in the solar panel system, these low temperatures are layered at the bottom of the tank resulting in pre-heating of the cold area.

- Advantages:
- Perfect integration of solar energy

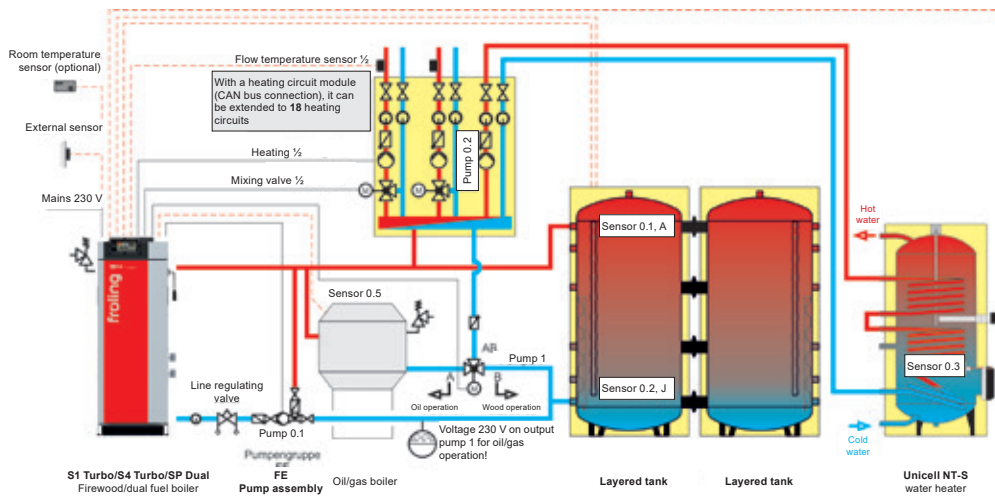


# CONNECTION EXAMPLES

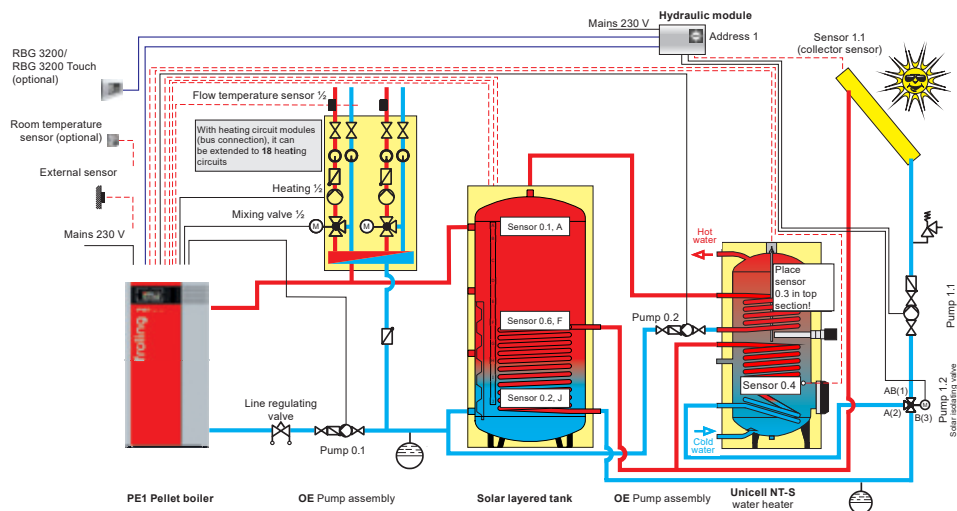
## T4e with layered tank and Unicell water heater



## S4 Turbo with oil/gas boiler, 2 layered tanks (joined) and water heater

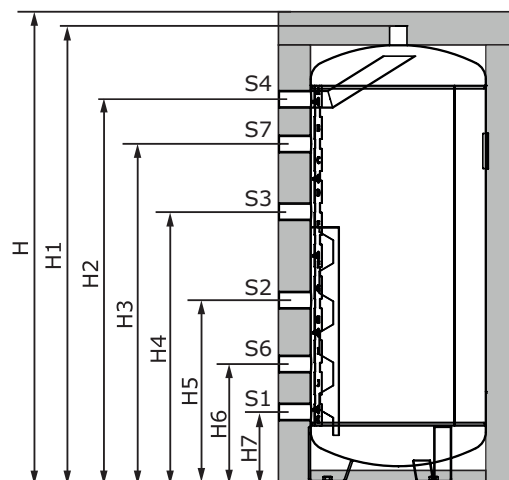
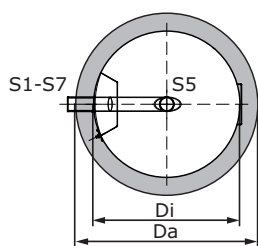


## PE1 Pellet with solar layered tank and water heater



# TECHNICAL SPECIFICATIONS

## LAYERED TANKS



S1 - S7: Heating connections	1 1/2" IT
F: Sensor terminal strip items A - K	
SV: Connections: combination tanks (only for combination tanks) Ø 76.1 mm 3 x SV with combination tanks 700, 850 4 x SV with combination tanks 1000 - 2000	
K: 2x flexible connection couplings Victaulic (only included with combination tank)	Type 75

Dimensions [mm]	300 <sup>3</sup>	500 <sup>3</sup>	700	850	1000	1250	1500	1700	2000 <sup>3</sup>	2200
Do Tank ø including insulation	750	850	990	990	990	1150	1150	1300	1300	1300
Di Tank ø excluding insulation	550	650	790	790	790	950	950	1100	1100	1100
H Height incl. insulation <sup>1</sup>	1470	1690	1640	1950	2163	2000	2257	2120	2435	2609
H1 Height excl. insulation <sup>1</sup>	1430	1650	1600	1910	2123	1960	2217	2080	2400	2569
H2 Height, flow connection <sup>1</sup>	1200	1398	1336	1648	1862	1639	1897	1743	2059	2228
H3 Height, flow connection <sup>1</sup>	1060	1248	1186	1398	1612	1439	1697	1543	1813	1978
H4 Height, flow connection <sup>1</sup>	848	1000	929	1122	1332	1142	1347	1293	1513	1596
H5 Height, return connection <sup>1</sup>	571	643	611	712	801	767	810	834	934	934
H6 Height, return connection <sup>1</sup>	371	393	405	452	452	510	510	534	584	534
H7 Height, return connection <sup>1</sup>	221	243	255	252	252	310	310	334	339	334
Minimum width required	560	660	800	800	800	960	960	1110	1110	1110
Tilting height	1450	1670	1620	1930	2140	2014	2265	2130	2440	2620
Minimum store height	1590	1810	1760	2070	2280	2120	2370	2240	2555	2730

Technical specifications		300 <sup>3</sup>	500 <sup>3</sup>	700	850	1000	1250	1500	1700	2000 <sup>3</sup>	2200
Permitted operating pressure	bar	3									
Permitted operating temperature	°C	95									
Weight (empty)	kg	50	73	87	99	109	158	178	217	243	258
Energy efficiency class <sup>2</sup>		B	B	-	-	-	-	-	-	-	-
Standing loss S <sup>2</sup>	W	66.3	68.3	79.6	109.2	132.5	137.9	154.6	176.3	178.3	-
Standing loss Q <sub>st</sub> as per EN 12897 <sup>2</sup>	kWh/24h	1.59	1.64	1.91	2.62	3.18	3.31	3.71	4.23	4.23	-
Storage volume <sup>2</sup>	litres	295.8	473.8	674.8	825.8	930.8	1240.8	1402.8	1696.8	1993	2167.8

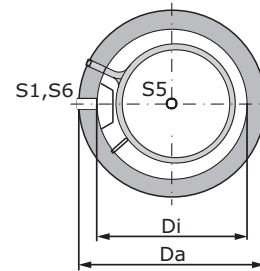
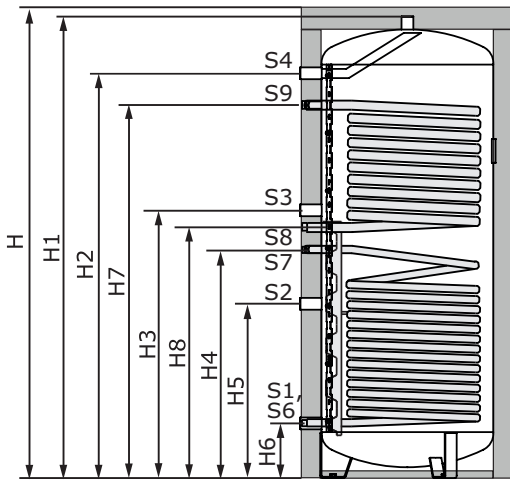
<sup>1</sup> If adjustable feet are fitted add 10 – 30 mm to the heights stated below depending on the setting

<sup>2</sup> As per Commission Delegated Regulation (EU) 814/2013 applies to tanks with Froling tank insulation

<sup>3</sup> Layered tanks 300, 500 and 2000 not available as combination tanks

# TECHNICAL SPECIFICATIONS

## SOLAR LAYERED TANK



S1 - S5:	Heating connections	1 1/2" IT
S6 - S7:	Solar panel system connections	1" ET
S8 - S9:	Connections: solar panel system, 2nd element (alternatively with tanks 1000, 1250, 1500)	

Dimensions [mm]	700	850	1000	1250	1500	1700	2200
Do Tank ø including insulation	990	990	990	1150	1150	1300	1300
Di Tank ø excluding insulation	790	790	790	950	950	1100	1100
H Height incl. insulation <sup>1</sup>	1640	1950	2163	2000	2257	2120	2609
H1 Height excl. insulation <sup>1</sup>	1600	1910	2123	1960	2217	2080	2569
H2 Height, flow connection <sup>1</sup>	1336	1648	1862	1639	1897	1743	2228
H3 Height, flow connection <sup>1</sup>	930	1122	1332	1142	1347	1293	1586
H4 Height, solar flow connection <sup>1</sup>	795	940	940	998	1228	1252	1252
H5 Height, return connection <sup>1</sup>	612	712	802	767	810	884	934
H6 Height, return/solar return connection <sup>1</sup>	255	252	252	310	310	334	334
H7 Height, solar flow connection 2nd Element <sup>1</sup>	-	-	1232	1104	1357	-	-
H8 Height, solar return connection 2nd Element <sup>1</sup>	-	-	1727	1639	1897	-	-
Minimum width required	800	800	800	960	960	1110	1110
Tilting height	1620	1930	2140	2014	2265	2130	2620
Minimum store height	1760	2070	2280	2120	2370	2240	2730

Technical specifications	700	850	1000	1250	1500	1700	2200
Permitted operating pressure on hot water side	bar			3			
Permitted operating pressure solar element	bar			16			
Permitted operating temperature on hot water side	°C			95			
Permitted operating temperature Solar element	°C			110			
Lower solar element heating surface	m <sup>2</sup>	2.0	2.5	2.5	3	4	4
Upper solar element heating surface	m <sup>2</sup>			1.8	2.4	2.4	
Optimal/maximal solar collector area	m <sup>2</sup>	6 / 8	8 / 12	8 / 12	8 / 12	12 / 16	12 / 16
Weight (empty) with 1 solar element	kg	114	138	148	205	240	278
Weight (empty) with 2 solar elements	kg	-	-	177	242	283	-
Water capacity lower solar element	litres	13	16	16	18	24	24
Water capacity upper solar element	litres	-	-	12	16	16	-
Standing loss S <sup>2</sup>	W	83.8	113.3	136.7	142.1	158.8	178.3
Standing loss Qst as per EN 12897 <sup>2</sup>	Wh/24h	2.01	2.72	3.28	3.41	3.81	4.28
Storage volume <sup>2</sup>	litres	675	826	931	1241	1403	2168

<sup>1</sup> If adjustable feet are fitted add 10 – 30 mm to the heights stated below depending on the setting  
<sup>2</sup> As per Commission Delegated Regulation (EU) 814/2013 applies to tanks with Froling tank insulation



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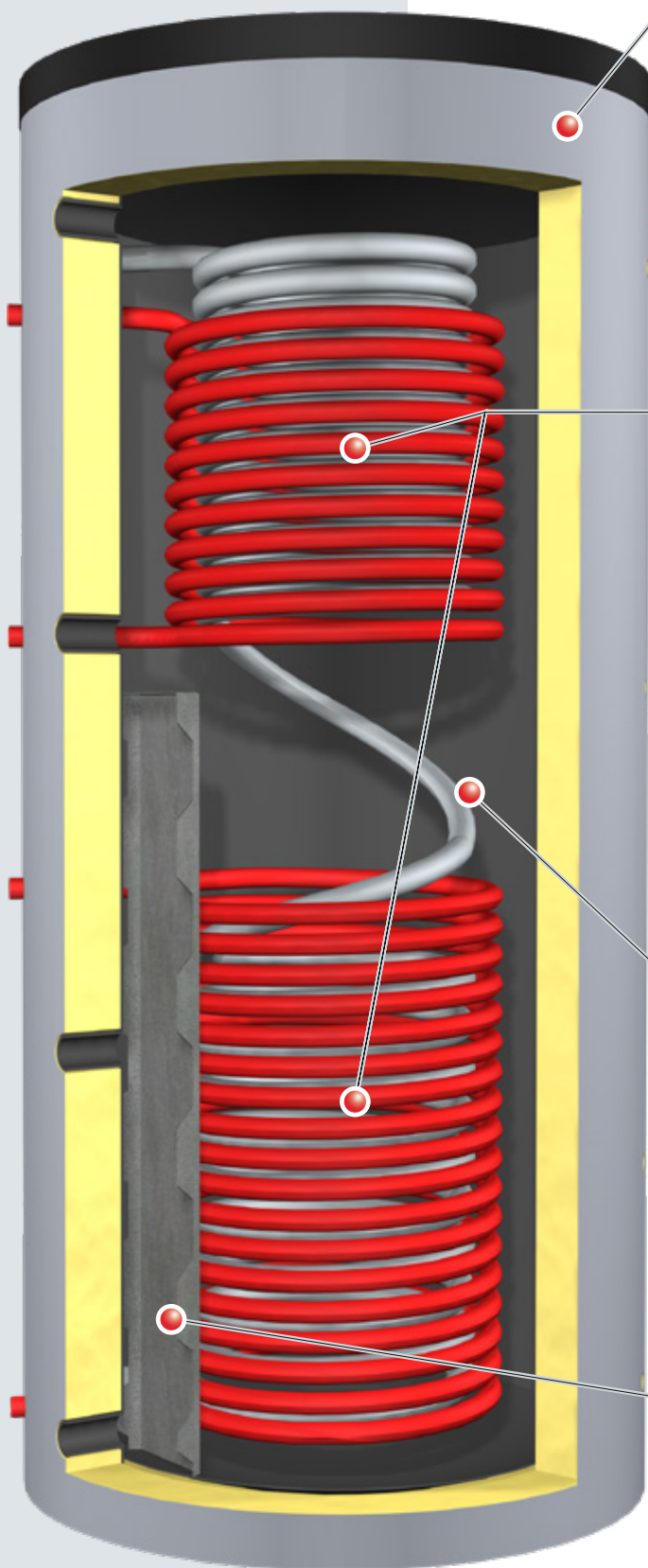
## H2 HYGIENIC LAYERED TANK / H3 HYGIENIC SOLAR LAYERED TANK

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Froling's hygienic tanks combine a layered tank and hot water tank all in one. The volume of the storage tank is large, yet the capacity of the high-performance stainless steel corrugated pipe element is relatively low. Thanks to the highly efficient heat exchanger surface area, the tank provides consistently sufficient fresh hot water of exceptional quality using the flow principle. Guaranteed to be free from legionella bacteria.

Two additional high-performance solar elements permit efficient integration of solar energy in combination with the H3 hygienic solar layered tank. The corrugated stainless steel hot water pipe element which runs through the tank optimally cools the bottom part of the tank by preheating the domestic hot water. The low temperatures at the bottom of the tank enable a low return feed temperature to the collector and thus extremely efficient utilisation of the solar energy irradiation (up to 70% more energy yield depending on the collector type).





### High-quality insulation (100 mm)

The high-performance insulation with an outer jacket ensures optimum thermal insulation and low radiant heat loss, resulting in maximum efficiency.

- Advantages:
- Best thermal insulation
  - Low radiant heat losses
  - Compliant with fire protection class B2

### Two high-performance solar elements (only H3 hygienic solar layered tank)

The upper solar element ensures rapid heating of the tank in the hot water area and provides solar energy for heating the domestic hot water. The lower element ensures that the tank is loaded to full capacity when energy is available from the solar panel system. In case of lack of sun and low temperatures in the solar panel system, these low temperatures are layered at the bottom of the tank resulting in pre-heating of the cold area.

- Advantages:
- Perfect integration of solar energy
  - Optimal energy yield

### Stainless steel corrugated pipe element

The stainless steel corrugated pipe element provides fresh hot water free from legionella using the flow principle. The internal movement means that there is hardly any depositing, even in very hard water areas.

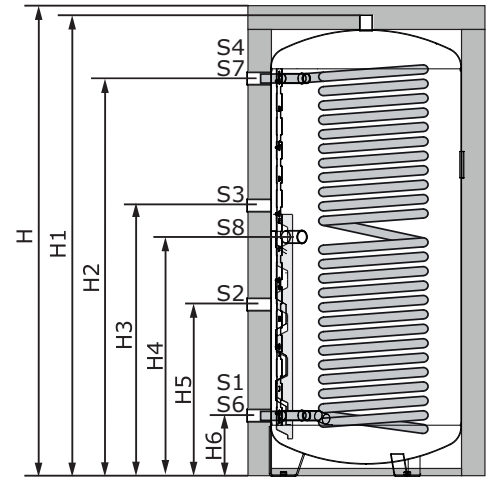
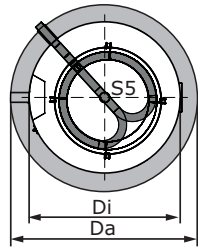
- Advantages:
- Fresh water guaranteed free from legionella

### Tried and tested temperature control system

The tried and tested temperature control system ensures exact temperature layering in the tank, guaranteeing you an ideal energy yield and increased flow rate.

- Advantages:
- Maximum energy yield
  - High flow rate

# TECHNICAL SPECIFICATIONS H2

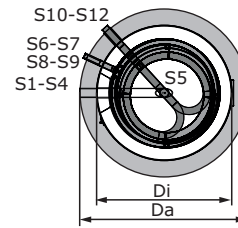
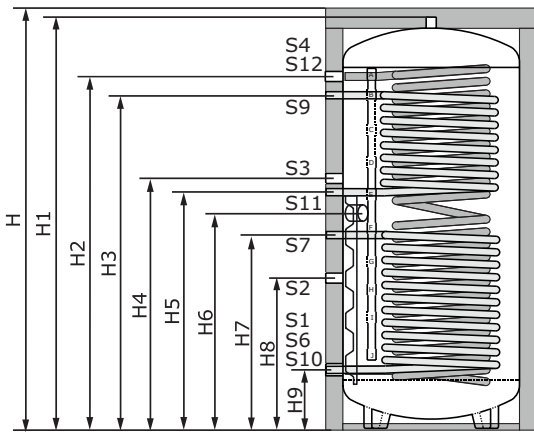


S1 - S5:	Heating connections	1 1/2" IT
S6:	Cold drinking water connection	1 1/4" ET
S7:	Warm drinking water connection	1 1/4" ET
S8:	Electric heating element connection	1 1/2" ET

Dimensions [mm]	500	700	850	1000	1250	1500	1700	2000 <sup>3</sup>
Do Tank ø including insulation	850	990	990	990	1150	1150	1300	1300
Di Tank ø excluding insulation	650	790	790	790	950	950	1100	1100
H Height incl. insulation <sup>1</sup>	1690	1640	1950	2163	2000	2257	2120	2435
H1 Height excl. insulation <sup>1</sup>	1650	1600	1910	2123	1960	2217	2080	2400
H2 Height, flow / warm drinking water connection <sup>1</sup>	1398	1336	1648	1862	1639	1897	1743	2059/2063
H3 Height, flow connection <sup>1</sup>	1000	862	1122	1332	1142	1347	1293	1513
H4 Height, electric heating element connection <sup>1</sup>	921	847	902	1164	1067	1311	1156	1405
H5 Height, return connection <sup>1</sup>	643	611	712	802	767	810	834	934
H6 Height, cold drinking water return connection <sup>1</sup>	243	255	252	252	310	310	334	339
Minimum width required	660	800	800	800	960	960	1110	1110
Tilting height	1670	1620	1930	2140	2014	2265	2130	2440
Minimum store height	1810	1760	2070	2280	2120	2370	2240	2555

Technical specifications	500	700	850	1000	1250	1500	1700	2000 <sup>3</sup>
Permitted operating pressure on hot water side	bar		3					
Permitted operating pressure on drinking water side	bar		6					
Permitted operating temperature on hot water side	°C		95					
Permitted operating temperature on drinking water side	°C		95					
Heating surface drinking water element	m <sup>2</sup>	5.6	5.6	6.0	6.6	6.6	6.6	6.6
Performance indicator drinking water element	NL	1.2	1.4	1.9	2.5	3.0	3.8	3.8
Element output drinking water element	kW	55	55	60	75	75	75	75
Heating water flow drinking water element dT = 20 K	m <sup>3</sup> /h	3.5	3.5	4.0	5.95	5.95	6.64	6.85
Flow output drinking water element	l/h	850	1180	1290	1520	1520	1615	1615
Weight (empty)	kg	109	118	138	157	201	224	292
Water capacity drinking water side	litres	35	35	40	43	43	43	43
Energy efficiency class		B	-	-	-	-	-	-
Standing loss S <sup>2</sup>	W	70.4	83.8	112.9	136.7	142.1	158.8	178.3
Standing loss Qst as per EN 12897 <sup>2</sup>	kWh/24h	1.69	2.01	2.71	3.28	3.41	3.81	4.28
Storage volume <sup>2</sup>	litres	474	675	826	931	1241	1403	1993

# TECHNICAL SPECIFICATIONS H3



S1 - S5:	Heating connections	1 1/2" IT
S6, S7:	Lower solar element connection	1" ET
S8, S9:	Upper solar element connection	1" ET
S10:	Cold drinking water connection	1 1/4" ET
S12:	Warm drinking water connection	1 1/4" ET
S11:	Electric heating element connection	1 1/2" ET

Dimensions [mm]	700	850	1000	1250	1500	2000 <sup>3</sup>
Do Tank ø including insulation	990	990	990	1150	1150	1300
Di Tank ø excluding insulation	790	790	790	950	950	1100
H Height incl. insulation <sup>1</sup>	1640	1950	2163	2000	2257	2435
H1 Height excl. insulation <sup>1</sup>	1600	1910	2123	1960	2217	2400
H2 Height, flow / warm drinking water connection <sup>1</sup>	1336	1648	1862	1639	1897	2059/2063
H3 Height, solar flow connection, upper element <sup>1</sup>	1291	1616	1727	1639	1897	2063
H4 Height, flow connection <sup>1</sup>	930	1122	1332	1142	1357	1513
H5 Height, solar return connection, upper element <sup>1</sup>	930	1122	1232	1104	1347	1523
H6 Height, electric heating element connection <sup>1</sup>	862	1002	1164	1067	1311	1405
H7 Height, solar flow connection, lower element <sup>1</sup>	795	940	940	998	1228	1252
H8 Height, return connection <sup>1</sup>	612	712	802	767	810	934
H9 Height, return / solar return connection, lower element / cold drinking water <sup>1</sup>	255	252	252	310	310	339
Minimum width required	800	800	800	960	960	1110
Tilting height	1620	1930	2140	2014	2265	2440
Minimum store height	1760	2070	2280	2120	2370	2555

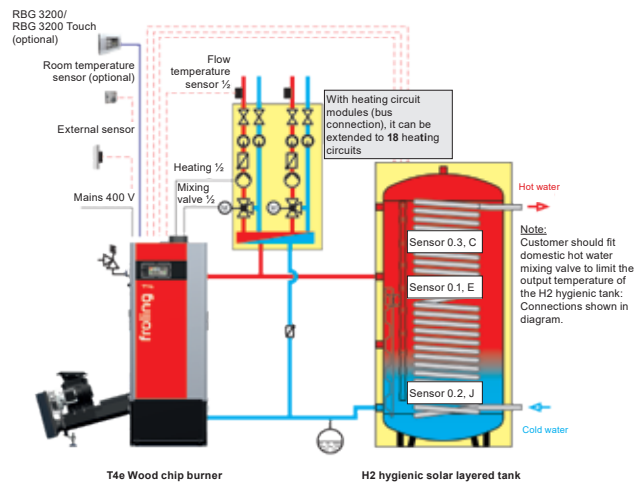
Technical specifications	700	850	1000	1250	1500	2000 <sup>3</sup>
Permitted operating pressure on hot water side / drinking water side	bar	3/6				
Solar element	bar	16				
Permitted operating temperature on hot water side / drinking water side	°C	95/95				
Solar element	°C	110				
Heating surface drinking water element	m <sup>2</sup>	5.6	6.0	6.6	6.6	6.6
Upper/lower solar element	m <sup>2</sup>	1,6/2,4	2,2/3,0	2,2/3,0	2,4/3,0	2,4/4,0
Performance indicator drinking water element	NL	1.4	1.9	2.5	3.1	3.9
Element output drinking water element	kW	55	60	75	75	75
Heating water flow drinking water element dT = 20K	m <sup>3</sup> /h	3.5	4.0	5.95	6.35	6.64
Flow output drinking water element	l/h	1180	1290	1520	1615	1615
Solar collector area	m <sup>2</sup>	6 / 8	8 / 12	8 / 12	8 / 12	12 / 16
Weight (empty)	kg	178	223	238	278	325
Water capacity drinking water side	litres	35	40	43	43	43
Upper/lower solar element	litres	11/16	15/18	15/18	16/18	16/24
Standing loss S <sup>2</sup>	W	90	119.6	142.9	148.3	178.3
Standing loss Qst as per EN 12897 <sup>2</sup>	kWh/24h	2.16	2.87	3.43	3.56	4.28
Storage volume <sup>2</sup>	litres	674.7	825.7	930.7	1240.7	1402.7

<sup>1</sup> If adjustable feet are fitted add 10 – 30 mm to the heights stated below depending on the setting  
<sup>2</sup> As per Commission Delegated Regulation (EU) 814/2013 applies to tanks with Froeling tank insulation  
<sup>3</sup> layered tanks, 2000 not available as combination tank

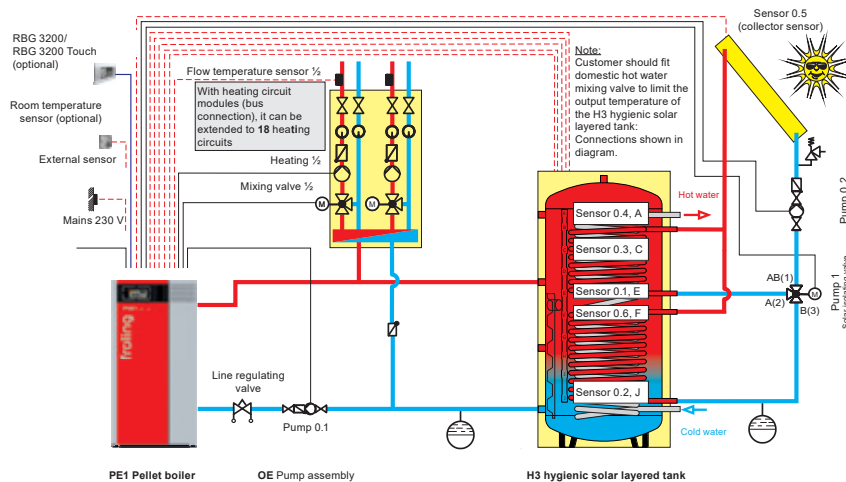
# CONNECTION EXAMPLES

## H2 & H3

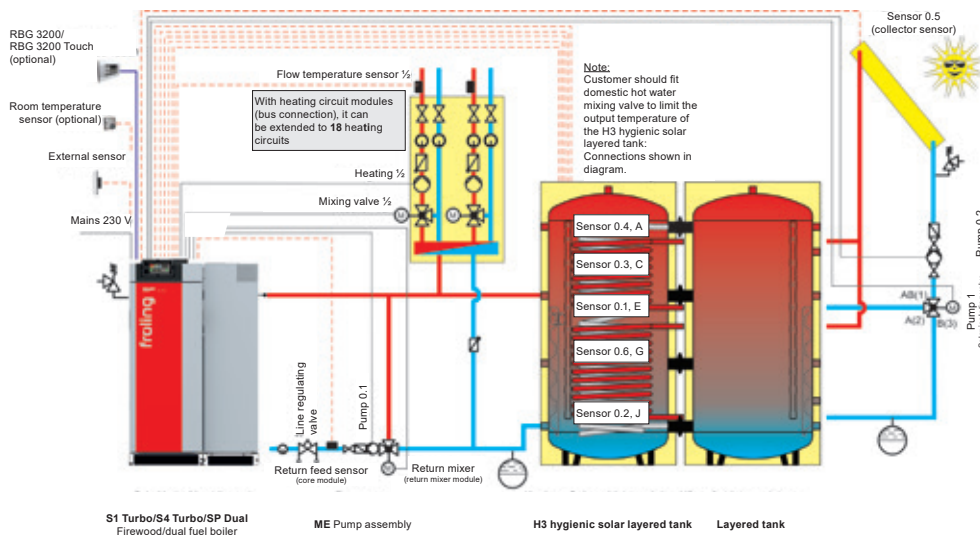
### T4e with H2 hygienic layered tank



### PE1 Pellet with H3 hygienic solar layered tank



### SP Dual with H3 hygienic solar layered tank (joined)







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## FROLING MODULAR LAYERED TANK / FW MODULAR SOLAR LAYERED TANK

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Froeling's FW layered tank and new FWM fresh water module are a complete compact solution for the boiler room. The layered tank is available with or without a solar element. They can be used in combination with the full range of Froeling tanks to offer optimal solutions for almost any area of use.

The high-performance solar element ensures that the tank is loaded to full capacity when energy is available from the solar panel system. Thanks to the specially-developed temperature control system TCS, the tank enjoys optimum layering thereby resulting in increased flow rate as a result of the constant hot water areas.



### High-quality insulation (100 mm)

The high-performance insulation with an outer jacket ensures optimum thermal insulation and low radiant heat loss, resulting in maximum efficiency.

- Advantages:
- Best thermal insulation
  - Low radiant heat losses
  - Compliant with fire protection class B2

### Temperature control system TCS

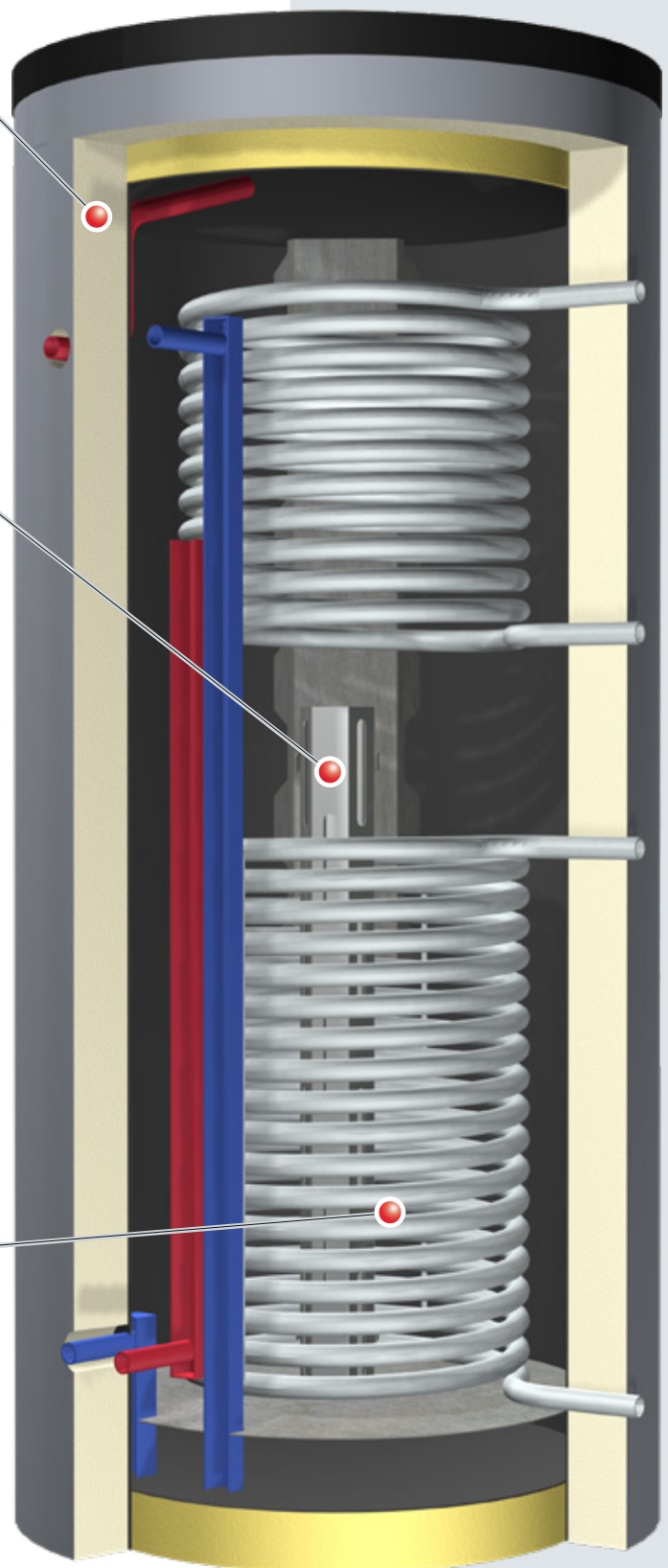
The specially-developed temperature control system TCS ensures optimal temperature layering in the tank. The layered hot water areas ensure high flow rates. The incoming flow of water is decelerated by the temperature control system TCS which results in exact layering. This then leads to constant layering in the hot water areas, resulting in less (primary) energy being used to warm the tank. It also means that lower storage volumes and fewer solar collector areas (in the case of the modular solar layered tank) are required for the hot water supply. The temperature control system TCS ensures optimum energy yield.

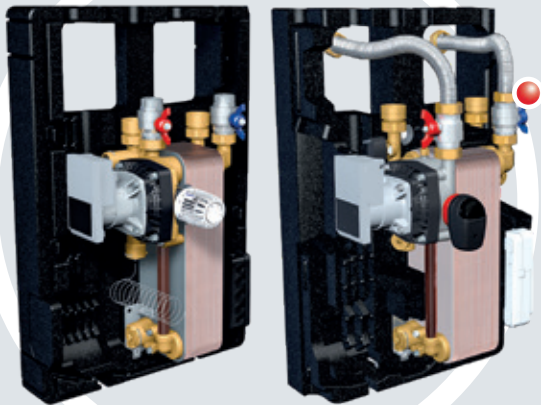
- Advantages:
- Maximum energy yield
  - High flow rate

### High-performance solar element (only modular solar layered tanks)

The solar element ensures rapid heating of the tank in the hot water area and provides solar energy for heating the domestic hot water. The solar element ensures that the tank is loaded to full capacity or for pre-heating the cold area when energy is available from the solar panel system.

- Advantages:
- Perfect integration of solar energy
  - Optimal energy yield





### Fresh water module FWM (30 - 40 litres) for direct installation on tank

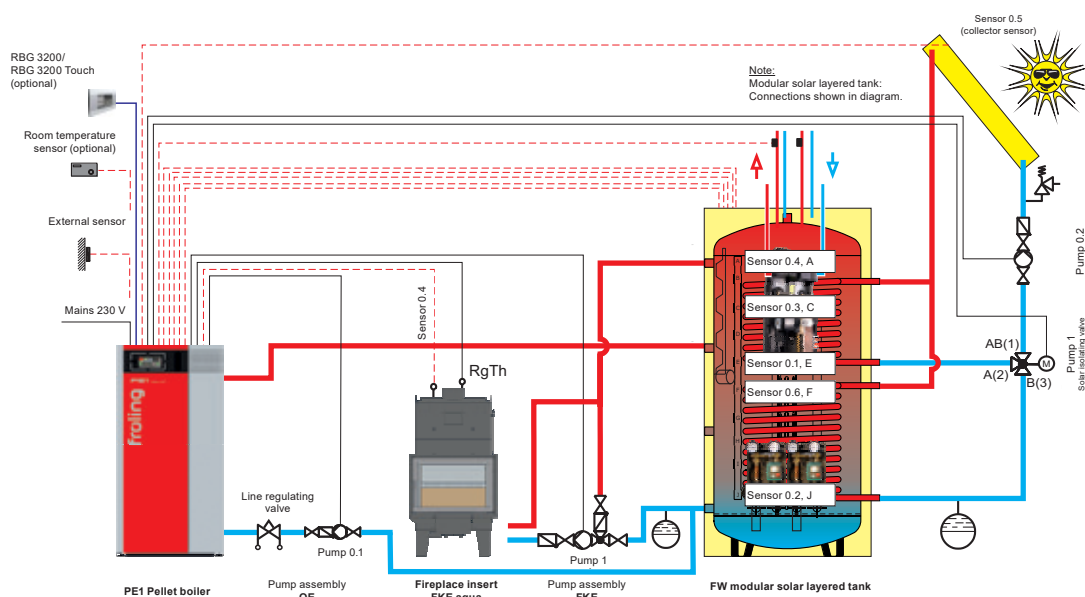
The Froling fresh water module FWM provides constant fresh, hygienic hot water and shows very little loss. According to the flow principle, water coming out of the layered tank is passed through the plate heat exchanger (soldered using copper and stainless steel) and heated until it reaches the predefined hot water temperature. The thermostat ensures the flow temperature in the heat exchanger is set which results in reduced levels of scale formation caused by heat.

### Fresh water station FWS (40 - 100 litres) for wall mounting

The fresh water station FWS with integrated electronic controller delivers DHW heating according to the instantaneous water heater principle (DVGW, worksheet W551) by means of a plate heat exchanger made of high-quality stainless steel, and therefore offers a hygienic and convenient solution for the supply of domestic hot water. The continuous flow principle also prevents the risk of legionella build-up.

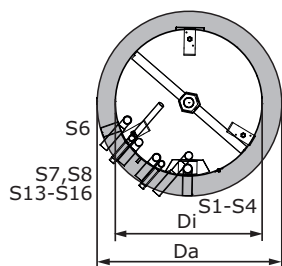


### PE1 Pellet with additional boiler and FW modular solar layered tank

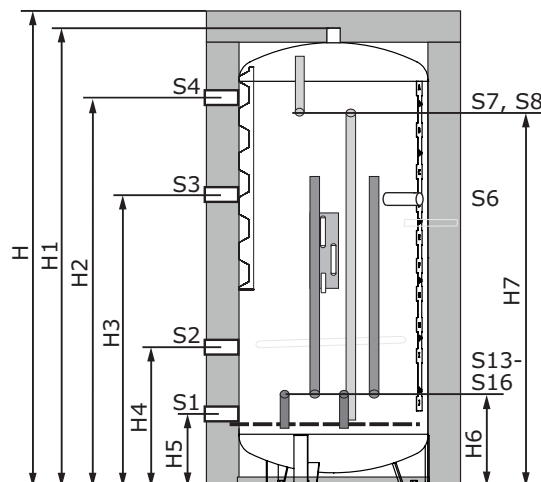


# TECHNICAL SPECIFICATIONS

## FW MODULAR LAYERED TANK



S1 - S5:	Heating connections	1 1/2" IT
S6:	Electric heating element connection	1 1/2" ET
S7, S8:	Connections: fresh water module	1" ET
S13, S14:	Connections: heating circuit pump assembly 1	1 1/4" IT
S15, S16:	Connections: heating circuit pump assembly 2	1 1/4" IT



Dimensions [mm]	850	1000	1250	1500
Do Tank ø including insulation	990	990	1150	1150
Di Tank ø excluding insulation	790	790	950	950
H Height incl. insulation <sup>1</sup>	1950	2163	2000	2257
H1 Height excl. insulation <sup>1</sup>	1910	2123	1960	2217
H2 Height, flow connection <sup>1</sup>	1648	1862	1639	1897
H3 Height, flow connection <sup>1</sup>	1122	1332	1142	1347
H4 Height, return connection <sup>1</sup>	712	802	767	810
H5 Height, return connection <sup>1</sup>	252	252	310	310
H6 Height, heating circuit pump assembly flow and return connections <sup>1</sup>	312	312	367	367
H7 Height, fresh water module connection <sup>1</sup>	1462	1562	1540	1540
Minimum width required	800	800	960	960
Tilting height	1930	2140	2014	2265
Minimum store height	2070	2280	2120	2370

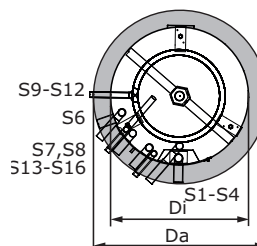
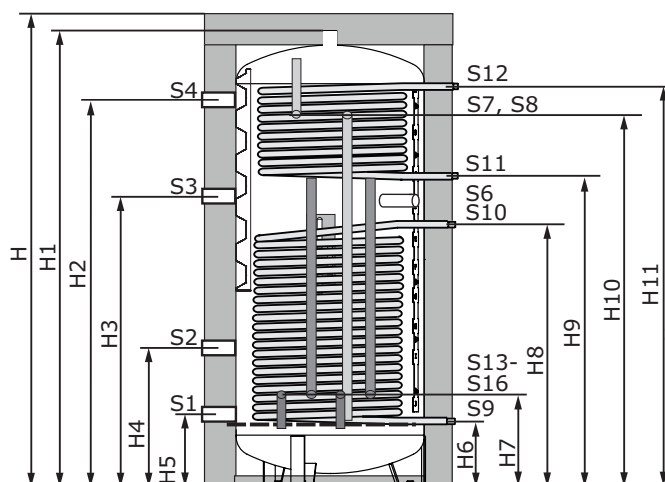
Technical specifications		850	1000	1250	1500
Permitted operating pressure on hot water side	bar	3			
Permitted operating temperature on hot water side	°C	95			
Weight (empty)	kg	122	132	184	206
Standing loss S <sup>2</sup>	W	113.3	136.7	142.1	158.8
Standing loss Q <sub>st</sub> as per EN 12897 <sup>2</sup>	kWh/24h	2.72	3.28	3.41	3.81
Storage volume <sup>2</sup>	litres	826	931	1241	1403

<sup>1</sup> If adjustable feet are fitted add 10 – 30 mm to the heights stated below depending on the setting

<sup>2</sup> As per Commission Delegated Regulation (EU) 814/2013 applies to tanks with Froling tank insulation

# TECHNICAL SPECIFICATIONS

## FW MODULAR SOLAR TANK



S1 - S5:	Heating connections	1 1/2" IT
S6:	Electric heating element connection	1 1/2" ET
S7, S8:	Connections: fresh water module	1" ET
S9, S10	Lower solar element connection	1" ET
S11, S12	Connections: upper solar element	1" ET
S13, S14:	Connections: heating circuit pump assembly 1	1 1/4" IT
S15, S16:	Connections: heating circuit pump assembly 2	1 1/4" IT

Dimensions [mm]	850	1000	1250	1500
Do Tank ø including insulation	990	990	1150	1150
Di Tank ø excluding insulation	790	790	950	950
H Height incl. insulation <sup>1</sup>	1950	2163	2000	2257
H1 Height excl. insulation <sup>1</sup>	1910	2123	1960	2217
H2 Height, flow connection <sup>1</sup>	1648	1862	1639	1897
H3 Height, flow connection <sup>1</sup>	1122	1332	1142	1347
H4 Height, return connection <sup>1</sup>	712	802	767	810
H5 Height, return connection <sup>1</sup>	252	252	310	310
H6 Height, solar return connection, lower element <sup>1</sup>	252	251	310	310
H7 Height, flow and return connections <sup>1</sup>	312	312	367	367
H8 Height, solar flow connection, lower element <sup>1</sup>	940	940	998	1228
H9 Height, solar return connection, upper element <sup>1</sup>	1122	1232	1104	1357
H10 Height, fresh water module connection <sup>1</sup>	1462	1562	1540	1540
H11 Height, solar flow connection, upper element <sup>1</sup>	1617	1726	1639	1897
Minimum width required	800	800	960	960
Tilting height	1930	2140	2014	2265
Minimum store height	2070	2280	2120	2370

Technical specifications		850	1000	1250	1500
Permitted operating pressure on hot water side	bar			3	
	Solar element			16	
Permitted operating temperature on hot water side	°C			95	
	Solar element			110	
Heating surface upper/lower solar element	m <sup>2</sup>	1,8/2,5	2,2/2,5	2,4/3,0	2,4/4,0
Solar collector area	m <sup>2</sup>	8 / 12	8 / 12	8 / 12	12 / 16
Weight (empty)	kg	166	200	266	303
Water capacity upper/lower solar element	litres	12/16	15/16	16/18	16/24
Standing loss S <sup>2</sup>	W	119.6	142.9	148.3	165.0
Standing loss Q <sub>st</sub> as per EN 12897 <sup>2</sup>	kWh/24h	2.87	3.43	3.56	3.96
Storage volume <sup>2</sup>	litres	826	931	1241	1403

<sup>1</sup> If adjustable feet are fitted add 10 – 30 mm to the heights stated below depending on the setting

<sup>2</sup> As per Commission Delegated Regulation (EU) 814/2013 applies to tanks with Froeling tank insulation



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## UNICELL NT-S HOT WATER TANK

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Much energy can be saved not only during heating but also during hot water preparation. In this respect Froling and the Unicell are forging new paths. The vacuum enamelling and magnesium protection anode protect against corrosion and ensure resistance to high temperatures and a long life cycle. Whether it's an optimal hot water preparation system for every heat boiler or an efficient solar tank, the Froling Unicell is fully versatile and guarantees efficient, hygienic hot water preparation.

The Froling Unicell NT-S permits efficient use of solar energy to heat domestic water. The lower element is connected directly to the solar panel system. The upper heating surface provides extra heat, meaning that the solar energy can be used all year round. It is also possible to provide extra heating using an electric heating cartridge, available separately.



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### High-quality insulation (50 mm)

The high-performance insulation with an outer jacket ensures optimum thermal insulation and low radiant heat loss, resulting in maximum efficiency.

- Advantages:
- Best thermal insulation
  - Low radiant heat losses

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### Large heat exchanger surface areas

When in use as a solar tank, the large lower heating surface is connected to the solar panel system. The upper heating surface provides extra heat, meaning that the solar energy can be used optimally all year round.

When using with a boiler alone, both coils are connected directly to the boiler. The resulting heat exchanger surface area ensures a short loading time and high operating comfort.

- Advantages:
- Maximum energy yield
  - Optimum use of solar energy

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### Connection for electric heating cartridge

When being used as a solar tank, you can provide additional heating with an electric heating cartridge, available separately.

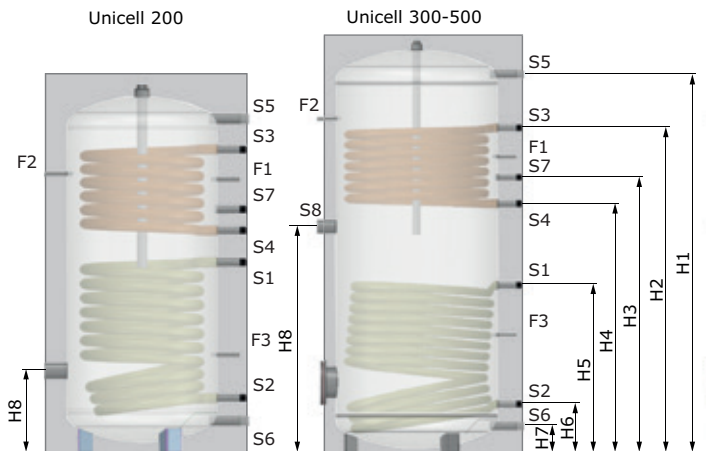
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### Large cleaning flange

- Advantages:
- Complete water drainage
  - Easy cleaning

# TECHNICAL SPECIFICATIONS

## UNICELL NT-S



- S1, S2: Lower element (heating / solar) 1" IT
- S3, S4: Upper element (heating) 1" IT
- S5: Warm drinking water 1" IT
- S6: Cold drinking water 1" IT
- S7: Circulation 3/4" IT
- S8: Electric heating element 1 1/2" ET
- R: Cleaning flange 180 mm (only with Unicell 300, 500)
- MA: Magnesium protective anode 1 1/4"
- F1, F3: Sensor bushing 9 mm
- F2: Thermometer bushing 9 mm

Dimensions [mm]	200	300	500
Do Tank ø including insulation	610	610	760
Insulation thickness	50	50	50
H Height of tank including insulation	1227	1703	1675
H1 Height, warm drinking water connection	1107	1586	1529
H2 Height, flow connection, upper element	1005	1351	1325
H3 Height, circulation connection	805	1051	1127
H4 Height, return connection, upper element	735	951	1022
H5 Height, flow connection, lower element	630	646	685
H6 Height, return connection, lower element	180	196	205
H7 Height, cold drinking water connection	105	110	110
H8 Height, electronic heating cartridge connection / max. installation depth	267 / 420	785 / 512	920 / 663
Minimum store height (=tilting height)	1370	1800	1835

Technical specifications		200	300	500
Permitted operating pressure on hot water side / drinking water side	bar	16 / 10	16 / 10	16 / 10
Permitted operating temperature on hot water side / drinking water side	°C	130 / 95	130 / 95	130 / 95
Heating surface upper / lower element	m <sup>2</sup>	0.8 / 1.2	1.1 / 1.8	1.3 / 1.9
Magnesium protective anode	mm	1 1/4"	1 1/4"	1 1/4"
Flow output (tap temperature 45 °C) upper / lower element	l/h	580 / 710	605 / 970	830 / 1400
Performance indicator NL as per DIN 4708	NL	1.4 / 1.9	1.9 / 8.4	2.5 / 18.9
Water capacity upper / lower element	litres	4.38 / 6.02	6.02 / 8.21	7.11 / 10.4
Energy efficiency class <sup>1</sup>		B	C	C
Standing loss S	W	58	76	92
Standing loss QST as per EN 12897	kWh/24h	1.39	1.82	2.20
Storage volume	litres	199	291	493

<sup>1</sup> As per Commission Delegated Regulation (EU) 814/2013 applies to tanks with Froling tank insulation



### Pellet boiler

PE1 Pellet	7 - 35 kW
PE1c Pellet	16 - 22 kW
P4 Pellet	48 - 105 kW



### Firewood boiler

S1 Turbo	15 - 20 kW
S3 Turbo	20 - 45 kW
S4 Turbo	22 - 60 kW

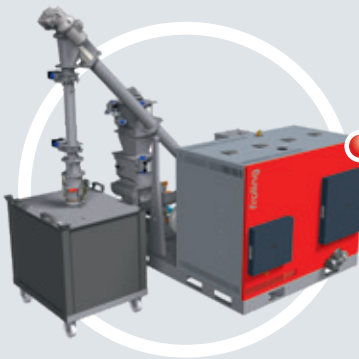
### Dual fuel boiler

SP Dual compact	15 - 20 kW
SP Dual	22 - 40 kW



### Wood chip / Large boilers

T4e	20 - 350 kW	TI	350 kW
Turbomat	150 - 550 kW	Lambdamat	750 - 1500 kW



### Wood combined heat and power

Fixed-bed gasifier CHP	45 - 500 kWel
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