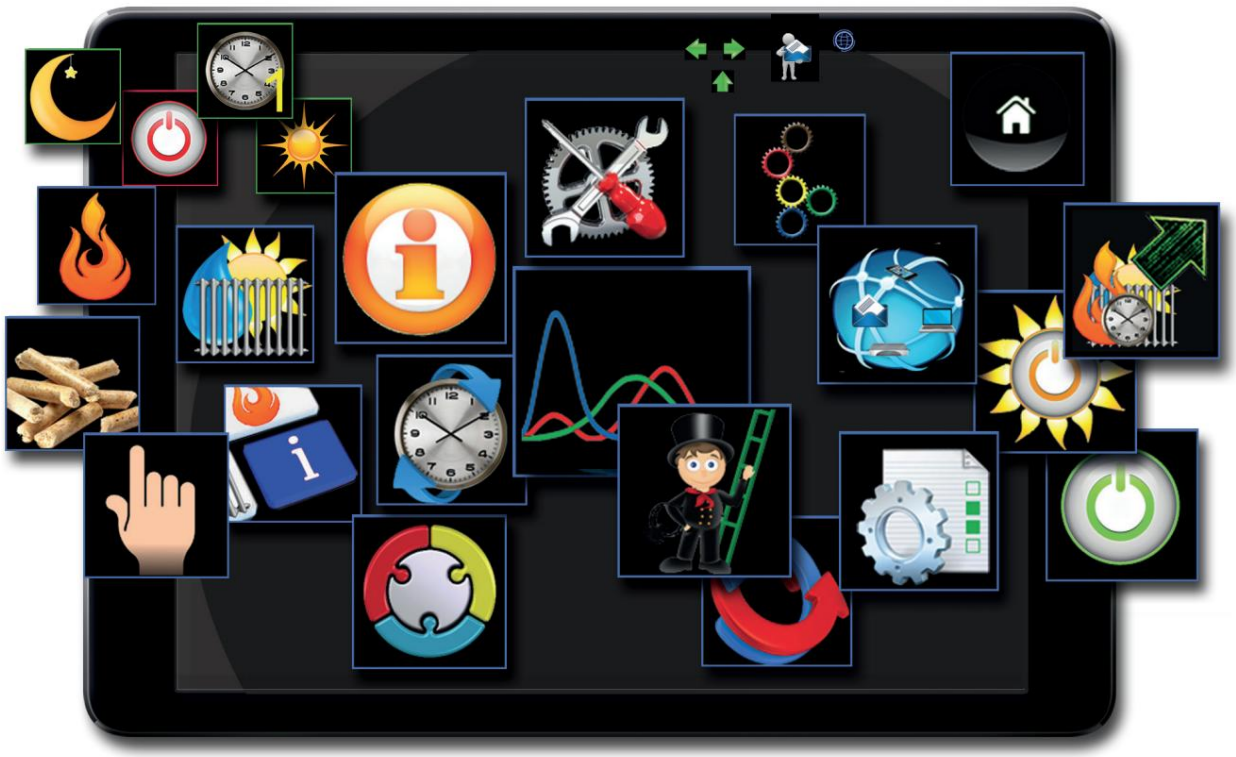
ENERGIESPARFIBEL



Re2 GmbH

hotline

How to save a lot of pellets with the same heat!

The rising energy prices are also leaving their mark on the pellets market.

It is therefore more important than ever to check your pellet heating system, make any necessary adjustments and, above all, set your pellet heating system to be energy-efficient.
In this primer, I will show you lots of tips and tricks on how to keep your house warm while still reducing pellet consumption.

I, Robert Winkler, have been dealing with the topic of heating with pellets for many years. Your heating control was developed and continuously improved by me.

Burning pellets is not comparable to oil or gas heating and often requires advanced expertise and specific adjustments.

As I found out again and again, these specific adjustments were often not complied with. Under the motto "The main thing is warm", no attention was paid to consumption.

In the primer I will first deal with classic energy destroyers and explain to you what effects each degree has more or less.

In the second part I go into the setting options and the resulting effects.

In the third part, I will inform you about the options for switching to modern heating control.

I wish you a lot of fun and great potential for savings with your pellet heating system.
Yours, Robert Winkler

You are welcome to donate a small portion of your savings to me.

content overview

Where is energy destroyed without you benefiting from it

- boiler
- heating line
- buffer
- water heater
- circulation line
- room temperature
  - Setback times
  - Heating times

How can I optimize?

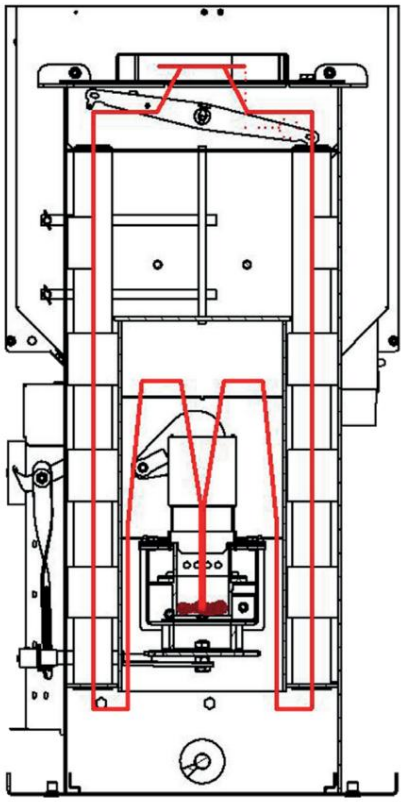
- boiler maintenance
- Temperature of the heating line
- Minimize buffer temperatures
- Adjust domestic water boiler correctly
- Optimize circulation line
- Adjust room temperatures optimally.

Which control variants are there and which one suits me best?

Boiler Maintenance:

In order to bring the heat, i.e. the energy in the pellets, into your living room, a number of transformations take place.
A well-maintained pellet boiler has an efficiency of around 94%.
This means that the higher the degree of pollution in the boiler, the lower the efficiency. Don't worry, our pellet boilers are highly efficient boilers.
A poorly maintained boiler is often better than a competitor's.

Your chimney sweep can certainly tell you the efficiency after the measurement.



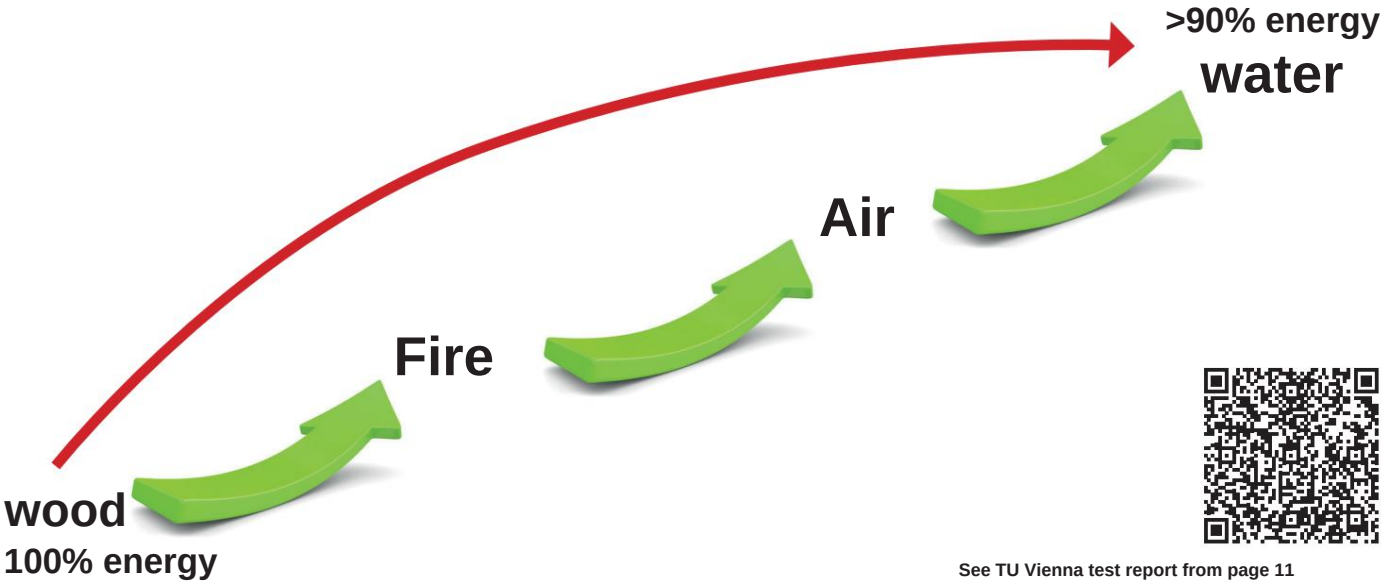
Nevertheless, it is important to always have your boiler serviced.

What actually happens in your pellet boiler?

When the pellets boiler enters the control phase after the start-up process, an aggressive, optimized pellets flame burns in your boiler.

This flame heats the combustion air to almost 2000°C. The task now is to cool this heated air down to less than 100°C as far as the boiler outlet (chimney connection).

This happens first in the combustion chamber and then in the heat exchanger. The energy contained in the almost 2000°C is thus transformed into the water jacket of the pellets boiler and is now available as warm water, i.e. as an energy source.



See TU Vienna test report from page 11

Where is the energy going?

Heating line (transport losses):

The warm water can have a temperature of 55°C - 85°C.

Now I have to briefly explain something about transport losses: Just as the hot air in the boiler was transformed into water via the heat exchanger, the hot water can be released back into the environment via the heating pipe. These losses can be up to 10%.

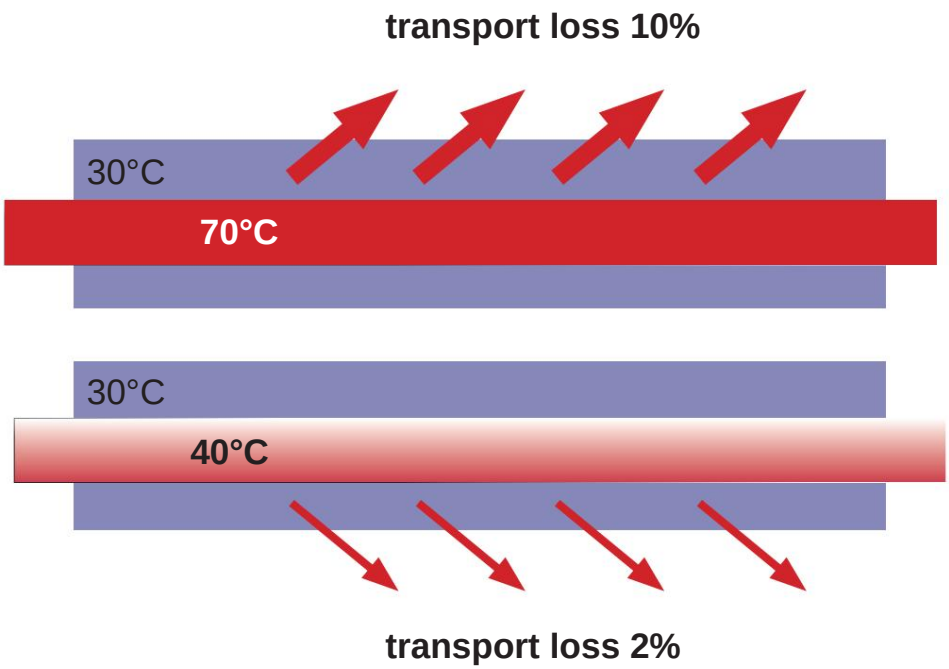
As you can see, there is an enormous need for action.

But how did these losses come about?

The hot water flowing from the boiler to the radiator heats the heating pipe.
This in turn releases the energy to the environment.
The energy output (loss) depends on the ambient temperature. If the heating line is well insulated, little energy will be lost. However, if this is not insulated, as is usually the case, and the pipe runs through the outer walls to the radiator, the heated area around the pipe cools down faster and has to be heated up again in the form of energy. Since this energy usually does not reach the living room, one speaks of transport losses.

By the way - the loss depends on the difference between the environment (brickwork around the pipe) and the temperature of the pipe.

A pipe with a temperature of 70°C loses considerably more energy than a pipe with a temperature of 40°C.



Buffers and Losses:

If the buffer is really hot, it will also be nice and warm in your house.
Yes, that's definitely true. I could also write...
If the buffer is really hot, the boiler room is nice and warm and the losses are very high.

If the buffer is in the living room, everything is fine. No, it's in your basement? Then you burn a lot of pellets for nothing.

A buffer is a water container with a rather low level of insulation (8 - 10 cm).

The buffer is often heated to 70°C to 80°C, and accordingly it loses energy.
This is where the greatest optimization approach is to be sought and found.

Try it yourself: Heat a pot of water to 100°C (boiling) and time it, if the temperature has dropped 10°C each time, write down the time.

You can finish the whole thing at 30°C. Now you will find that the hotter the water, the faster it cools down.

We have already learned that the loss depends on the difference between the surface and the environment. This means that the buffer should be kept as "cool" as possible! How to do this with the right control settings comes in the next part.

Now many will object, why do I have this buffer? The buffer volume is then insufficient, etc.

You have e.g. B. an 800 liter buffer.
These 800 liters should be available to you as energy storage.
How is that done?
There are two temperature sensors in the buffer:

Sensor ABOVE = the switch-on sensor
Sensor DOWN = the switch-off sensor

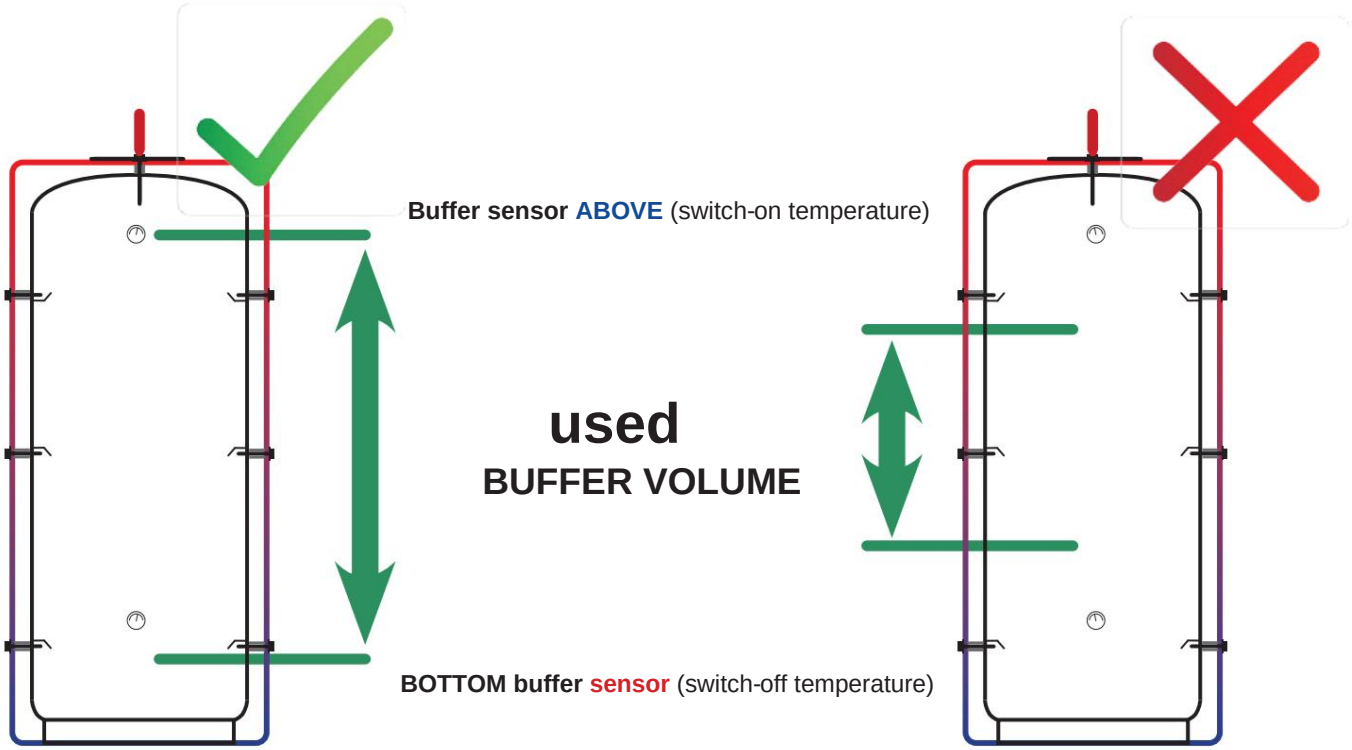
If the temperature above is too cold, the charging process starts until the switch -off sensor comes above a determined temperature.

Where is the energy going?

If the setting is correct, you have the entire buffer volume between the sensors at the top and feelers available **below . If the sensors are positioned incorrectly, an 800 liter buffer can become a 200 liter or smaller buffer.**

If the buffer has less buffer volume, the temperature must be set higher to get more energy into the buffer. However, higher temperatures mean higher losses.

It is therefore important to position the sensors precisely! You should use the following example to check the sensors.



Only the area between the sensors is used.

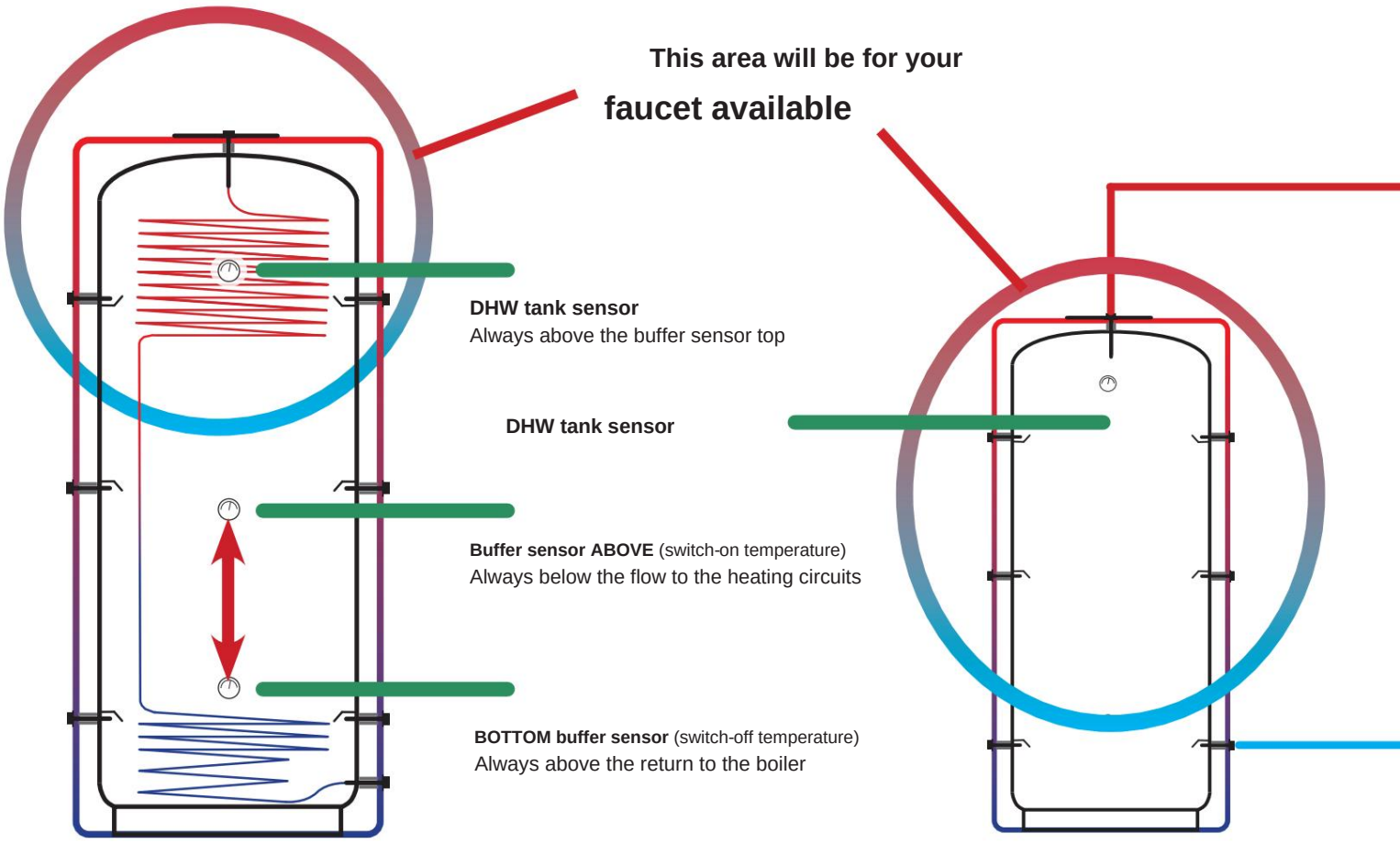
However, the buffer is hot over the entire range and accordingly has a lot loss of energy!

Service water storage tank (boiler):

The hot water for the tap or shower is prepared in the service water storage tank. This service water storage tank can stand as a separate tank in the boiler room or be integrated as an insert in your buffer. This buffer can contain the service water area either as a bladder, as a corrugated pipe or as a fresh water station.

Often, for reasons of convenience, this service water range is not specified in the control or the sensors are positioned incorrectly. If there is no sensor, the buffer would have to be kept at a temperature of 60°C 365 days a year. This increases the pellet consumption enormously and the water in the tap is not warmer as a result!

On the basis of the following pictures you can see how the sensor positions are best set.



combi buffer with service water area

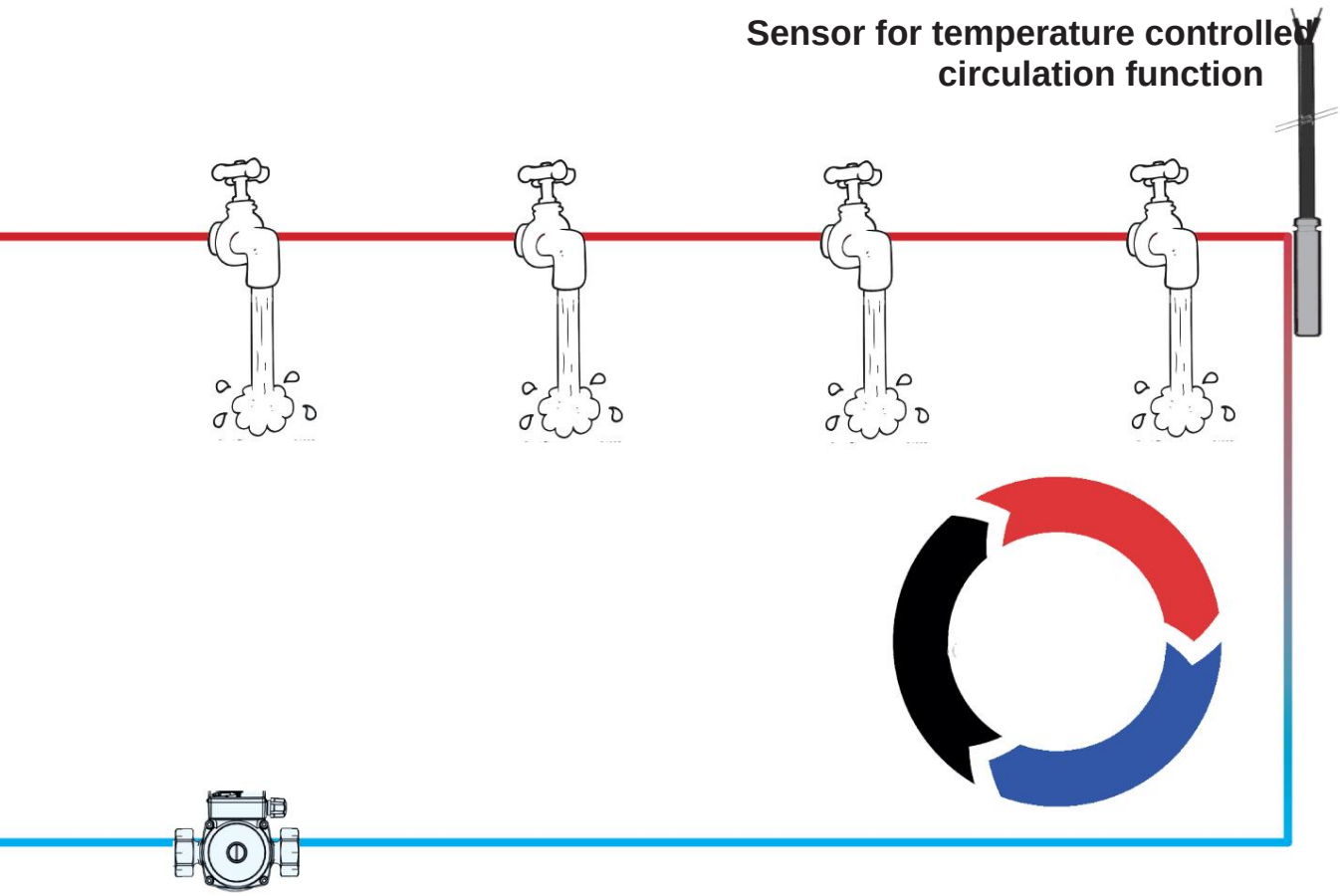
standalone water heater

Where is the energy going?

Circulation line:

Here we have a classic energy destroyer.
The water is fed back from the last tap back to the hot water storage tank. We know that hot water (eg 60°C) in a poorly insulated pipe requires a lot of energy. Aside from local regulations for circulation lines in "public" buildings, here's a perfect way to save money.

Consider whether you really need hot water permanently and at any time. Most of the time you know exactly when you need hot water in the morning and in the evening.
I think it can be maybe 15 minutes in the morning and about an hour in the evening when the circulation is active. This function can be saved for the rest of the day. You not only save pellets, but also electricity for the pump!



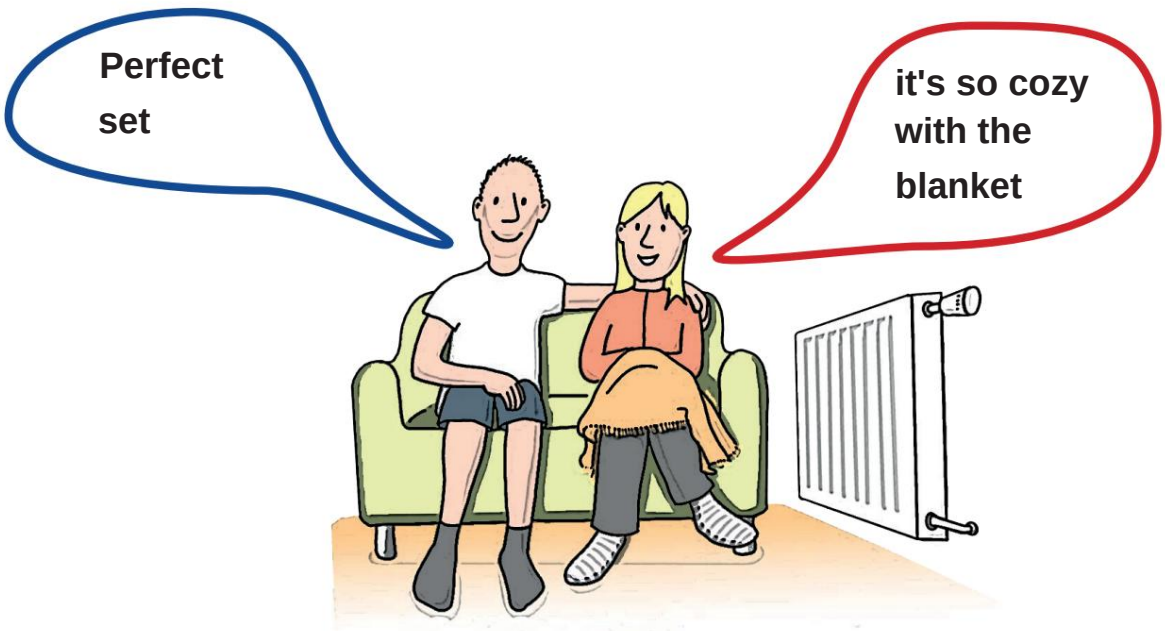
The room temperature:

What is comfort temperature?

Imagine coming home from sport - 22°C can be really warm. You start to cook yourself a delicious dinner, 22°C is getting warmer and warmer. Then take a bottle of wine and sit comfortably on the couch to enjoy the evening, 22°C is rather too cold. So set 23°C as the room temperature. But you also have this during the day, then you are too warm after training and when cooking, but you can open the window for that. Does that sound familiar to you?

Therefore, create time-dependent temperature zones in the house and snuggle up comfortably in a blanket.

Remember, you need about 7% more energy for one room degree of greater living comfort. So with 4 tons of pellets a year, that's almost 300 kg of pellets! Regular air exchange is indispensable, especially in the living room. Too cold, too humid, too warm, too dry or too much CO2 - a poor indoor climate causes discomfort, tiredness and reduced concentration.

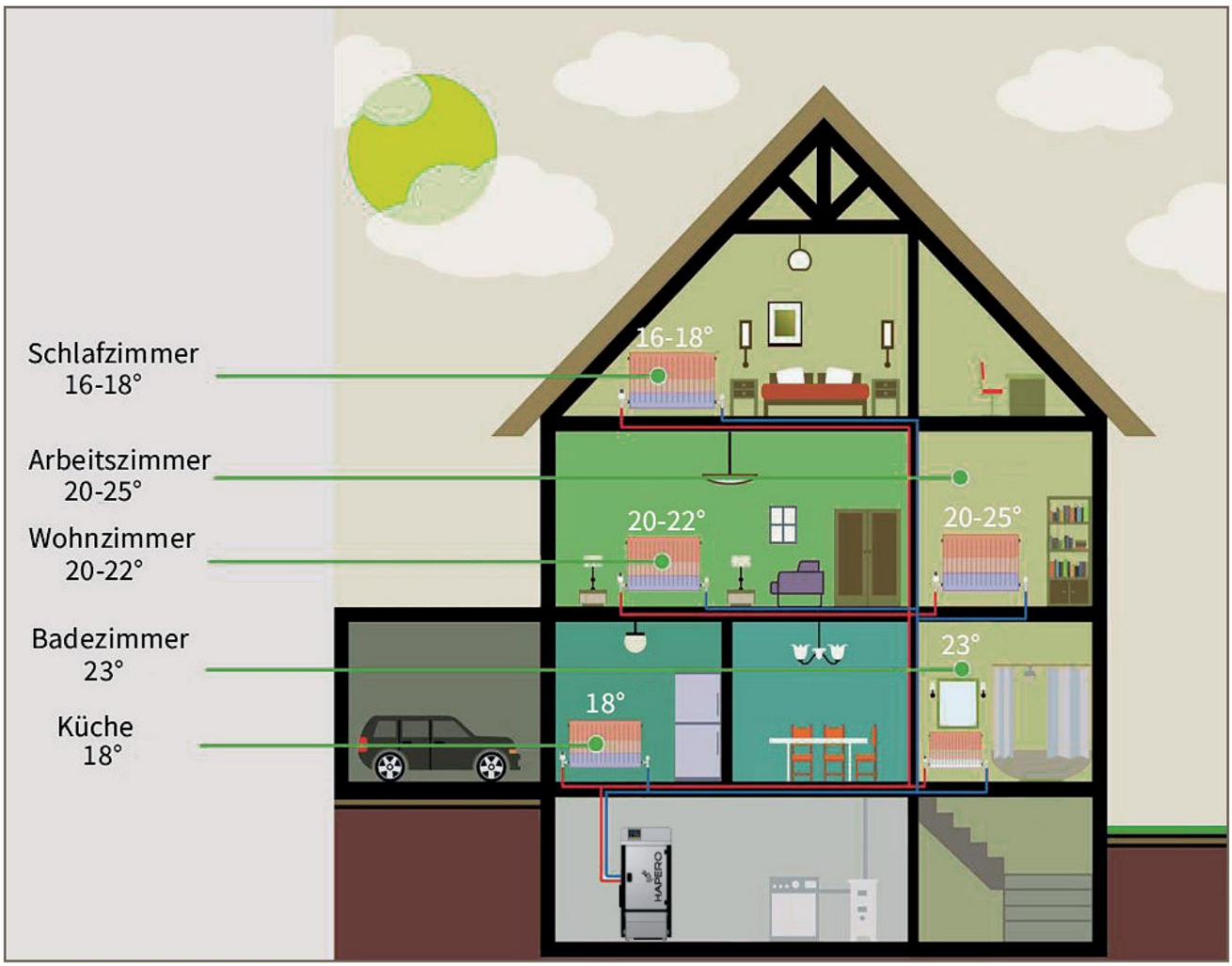


The right room temperature:

The right room temperature should now be discussed with your partner. Not all rooms in the house need to be heated. Of course, the flower pot should not become an ice flower.

Perhaps one should generally avoid poorly insulated rooms in winter.
Simply by optimizing the room temperatures, you can then be really comfortable in the living room and still save on pellets.

Remember, there are countries where there is only one heated room.



Boiler maintenance:

If there is no service partner in your area who carries out annual boiler maintenance, you can and should do this yourself.
There are corresponding documents and documentation for this.
Furthermore, we are happy to comment on pictures and give you tips on the hotline.
To get the best possible support, install Plug & Easy on your PC

You can find this at www.myTouch.at/software/

Plug & Easy is of course free of charge and a must-have for Spanner Re² and HAPERO pellet boiler owners.

As a rule of thumb for the maintenance intervals, multiply the boiler output by 300 kg of pellets. That means a 15kW boiler should be serviced every 4500kg of pellets burned. 25kW = 7.5t and 35kW = 10.5t.

This is how you maintain the performance, efficiency and value of your pellets boiler.

https://www.edv-systemtechnik.at/software/

Control variants:

A: The pellet boilers of the series up to and including 2013 have a 4-key display. Therefore, I refer to this as controller A in the following

B: All boilers built after 2014 were equipped with a touch display. I will refer to these as controller B below

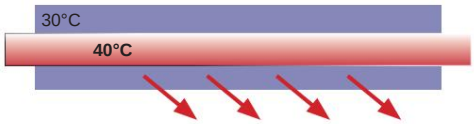
The regulations are fundamentally divided into internet-enabled (7" display) and NON-internet-enabled (3.5" display) regulations. The non-internet-capable displays include those with the original HAPERO Touch 1.0 software (the return arrow is green) and those from the myTouch series (the return arrow is blue). If you still have an old version, it can be exchanged for a display of the myTouch series for a small exchange price.
Both software versions, Internet-capable and non-Internet-capable myTouch, control the same functions and behave in the same way.

Important: every boiler of the 2013 series, i.e. controller A, can be converted into a controller B at low cost.
You can find out at the end of the primer which control variant suits you best!

How to get to the respective parameters, which are described below, can be found in the instructions. You can find this in the document folder in the PC software Plug & Easy.

heating line:

As a primary goal, we have to adjust the temperatures in the heating line / heating pipes so that you have the lowest losses. More on this under room temperature door.



Buffer:

The controller automatically sets the buffer correctly. However, make sure that this function is also active! Before you start, you must ensure that the domestic water sensor is present and connected to the hardware. Also check the sensor positions, as these are very important for saving pellets.

Controller A: In the PP menu on line 59 you will find three numbers. If you read an 8 or 9 here, the buffer will not adjust itself automatically and will therefore remain too hot for 365 days. Replace the 8 or 9 with a 7. 7 stands for energy saving buffer.

Controller B: In the buffer parameters under General you will find the parameter "Load without request" - this must NOT be active.
Among the temperatures, you should check the following parameters:

Switch-on temperature = 25.0°C
Switch-off temperature = 50.0°C
Superelevation = 3.0°C
Hysteresis = 7.0°C

The buffer now receives its actual switch-on and switch-off temperature from the connected loads. So if the domestic hot water area is too cold, the switch-on temperature would be 60°C. After full loading, only the heating circuit flow temperature would be entered as the new switch-on temperature. With underfloor heating maybe only 30°C. This means that the buffer can cool down to 30°C (cold buffer little energy loss!) and is only recharged when the temperature drops below this point. If it gets colder outside, the flow temperature of your heating circuit rises automatically and thus also the buffer switch-on temperature.

However, if the heating circuit is switched off in summer, the buffer is no longer charged. You always see a perfectly adjusted buffer.

Boiler:

If the sensors are set correctly, you must check the following settings:

Controller A: Check under IP menu line 35 whether a boiler temperature is displayed. Nothing else is necessary.

Controller B: Please check in the service water parameters under temperatures

Base temperature <= 35.0°C
Switch-on temperature =
45.0°C Switch- off temperature = 60°C
Superelevation = 1.0°C

The switch-off temperature should not be selected higher than 60°C for stand-alone boilers, otherwise calcification will occur. That means the lime sticks better. However, the switch-off temperature should not be selected lower either, otherwise you would lose energy volume in the service water storage tank and this would lead to frequent boiler starts.

Circulation pump:

You now know what times of the day you need hot water from the tap.
If you have an external timer, set the tabs correctly.

Controller A: Set the times (E.=09) for the circulation pump correctly, provided this is active as relay 8 function (10).

Controller B: Here you can select different variants (continuous operation, clocking and approaching a temperature). This means that if a temperature sensor is installed at the last tap or before the hot water tank, the pump will only pump until a certain temperature is reached. All in one time window, of course. So you have the comfort of the circulation line with the shortest pump running time.

The room temperature:

You have thought about what temperatures you want in the living room and in the other rooms.

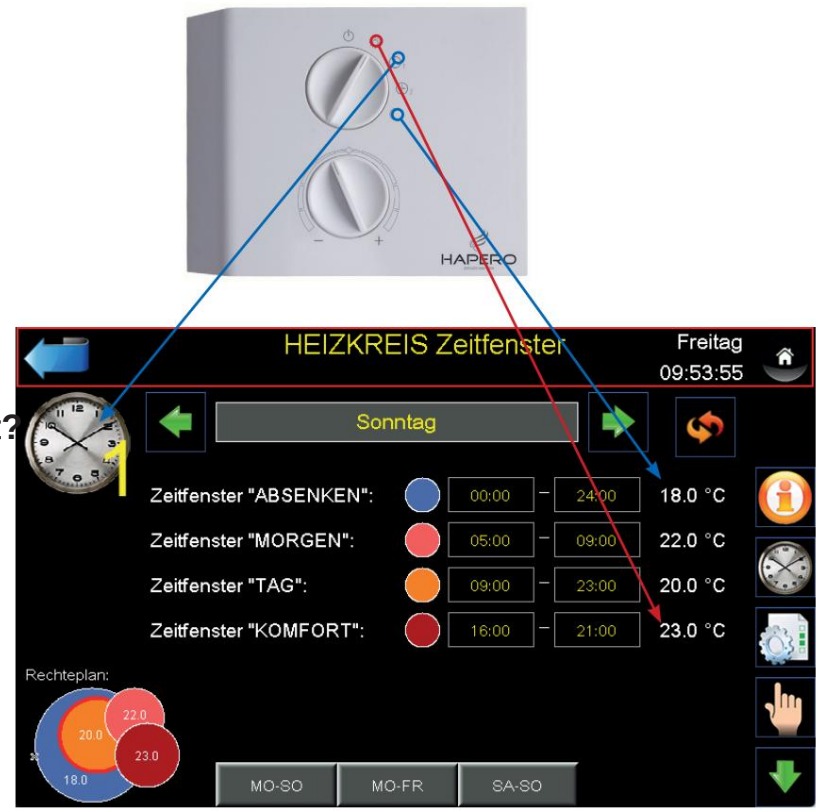
Almost 99% of all heating customers have thermostats on the radiator. This is good in principle, but also a hindrance in terms of savings.

Imagine the following: In order to achieve the desired room temperature, you need a temperature of 40°C on the radiator. Your heating engineer has set the control so that at least 60°C is reached. The thermostat closes and only lets through 40°C. Great, one might think, but that's not the case, because a line that is 20°C too hot increases the transport loss. If there is a drop of 4°C during the night, the flow is lowered by 16°C and the temperature at the radiator is no longer 60°C, but only 44°C. So still enough for your 22°C - even at night. So no reduction, no energy saving - ergo your money.

If the flow is now set in the control so that only 44° would arrive, then you can easily increase the room temperature to 23°C and if there is a drop, then a flow temperature of 28°C will arrive at the radiator. The room temperature is therefore reduced by 3°C. Here alone you have high savings potential:

1. fewer losses in the line and 2. the lowering takes effect.

The best thing about this saving is that it is still just as warm in the living room.



What if you could set zones now?

Have you ever thought about when the lowering time should start? Is it necessary to heat to a comfortable temperature from 4pm to 11pm, especially if you go to bed at 10pm? In fact, you could lower it at 9:30 p.m. and you wouldn't feel it at all!

Controller A: In the controller you have 2 time windowsper day * 7 days. You can define the time in the morning and in the evening as "time with the comfort temperature". Outside of this time, the economy temperature begins. Think about the schedule and enter it.

Of course, it is desirable to experiment. My tip: enter 8:30 p.m. as the end time and feel for yourself when it starts to get too cold for you. You already know the new time for the end of the comfort temperature. You can now use two weekly programs via the room controller. Set the second weekly program so that you can use it in the transitional period.

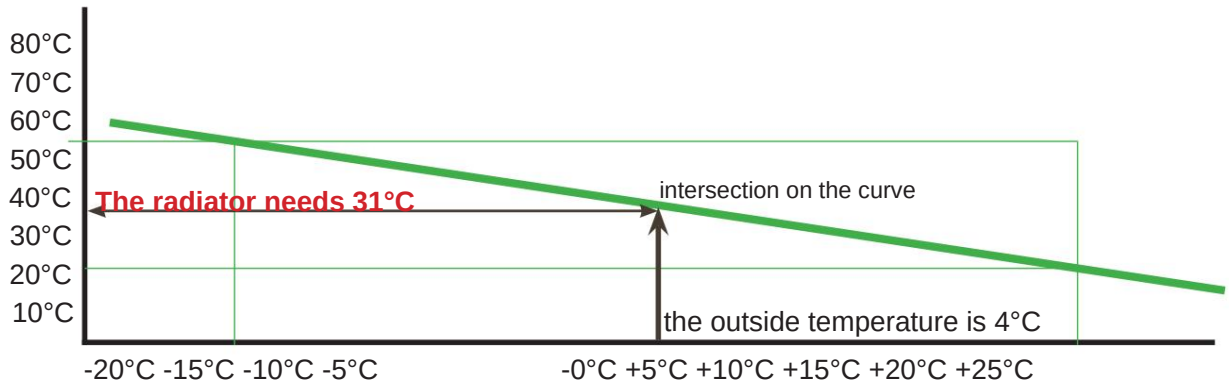
Controller B: In this controller you have 4 time windows per day * 7. Now you can create real temperature zones. In the morning it should be warm first, after that the temperature can be lowered, but not as much as at night. In the evening you want it to be as comfortable as in the morning and then it's back down in stages. A complete time-controlled switch-off of the heating circuit is also possible. With both control variants, you can use a room controller to switch off the heating circuit automatically if the room temperature is too high. This function is a pellet saving tip, especially when the temperature is reduced.

But now we should find out the right flow temperature, because if the temperature drops, your radiator should react despite the thermostat. The flow temperature is calculated using an outdoor cure.

There are three relevant values in this curve:

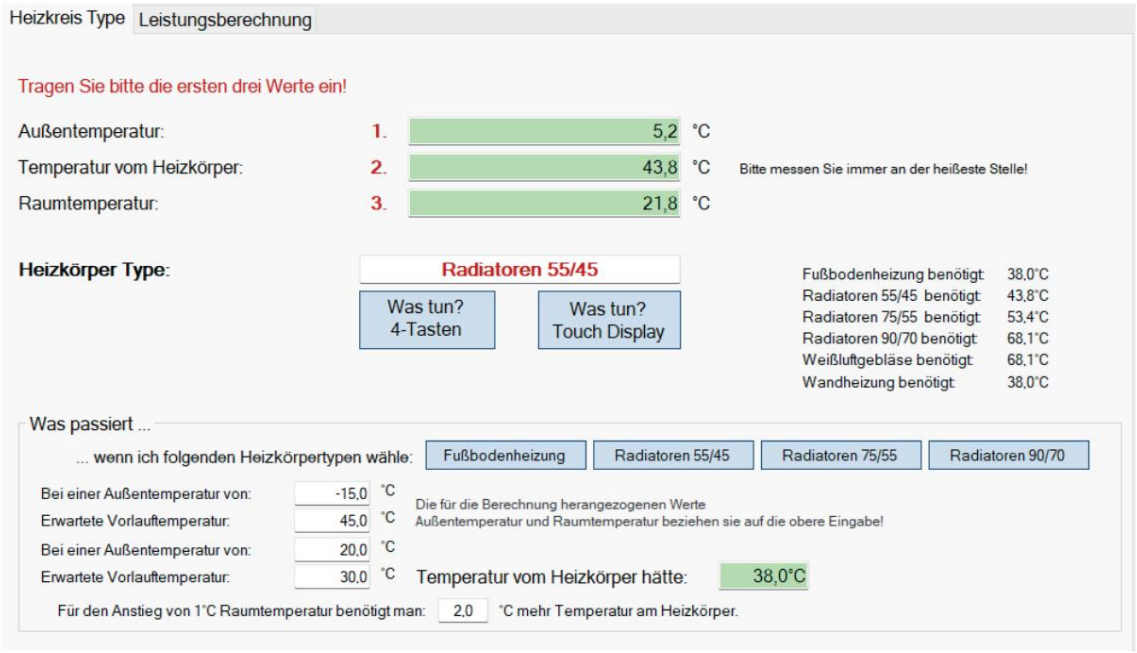
The flow temperature at -15°C and the flow temperature at 20°C. Now you need the outside temperature and you can calculate the correct flow temperature.

But how do you get the perfect result now? Not so easy, but you will find useful help in the PC software Plug & Easy.



Determine the correct heating circuit type:

Open the PC Softwarer Plug & Easy. Click on the "Help" button and select the program part Helpful.



When the temperature in your living room is comfortable, use a measuring device to measure the hottest spot on the radiator. Write this and the room temperature down. Now write down the outside temperature recorded by the control.

These three values

- **Outside temperature**
- **Temperature from the radiator**
- **Room temperature**

enter in the software. Now read off the suggested radiator types.

Via the button [What to do? 4 - buttons] or [What to do? Touch Display] you can find out what to do with the determined radiator type.

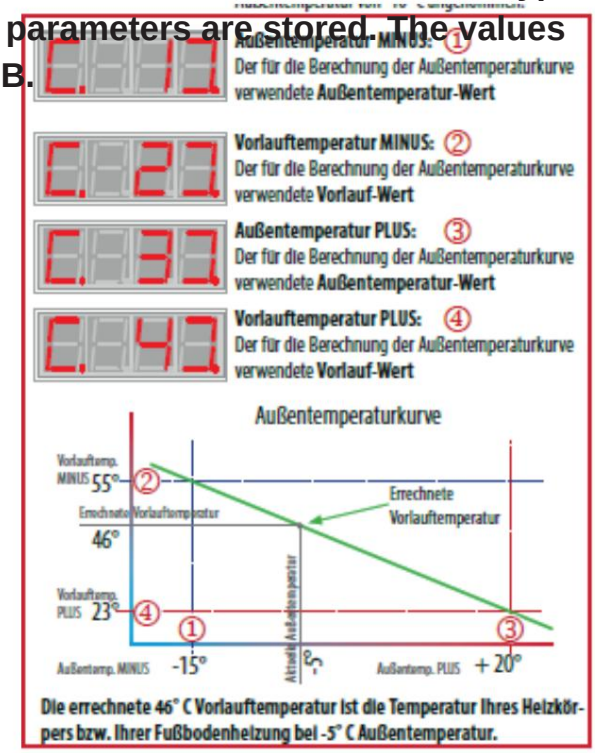
radiator types

As already described, the correct flow temperature (radiator temperature) is calculated based on the outside temperature. The colder the outside temperature, the higher the flow temperature.

In order to be able to calculate the values correctly, you need an outside curve. This curve consists of four values, which are used for the calculation. Each radiator type has its own curve. After selecting this curve, the parameters are stored. The values of the curve are identical for series A and series B.

underfloor heating	**type no. 1**
Radiators 55	**Type No. 2**
Radiators 75	**Type No. 3**
Radiators 90	**Type No. 4**
heat gun	**Type No. 5**
wall heating	**Type No. 6**

The values in the curve shown are intended for fine tuning.



Instructions Series A (page 21)

Setting the heating circuit types can be found on page 45.

When experimenting with temperatures, keep in mind that it may take many hours before you can evaluate the changes.
Delays may occur depending on the insulation and wall construction of the house. The walls must also be able to adapt to the new temperature.

room controller

In the past, room controllers were often installed, but nowadays people like to save on that. However, the room controller also has some savings potential.

Our room controllers have 5 status modes

• OUT

• SUN (comfort temperature)

• Time program 1 (2 / 4 times per day x 7) • Time program 2 (2 / 4 times per day x 7) • MOON (economy temperature)

• Correction of room temperature (-4°C to +4°C)

As you can see, you can change the heating circuit properly and very easily.

You have these functions with a physical room controller (wireless or cable) and the room controller on the touch display (ALL touch displays).

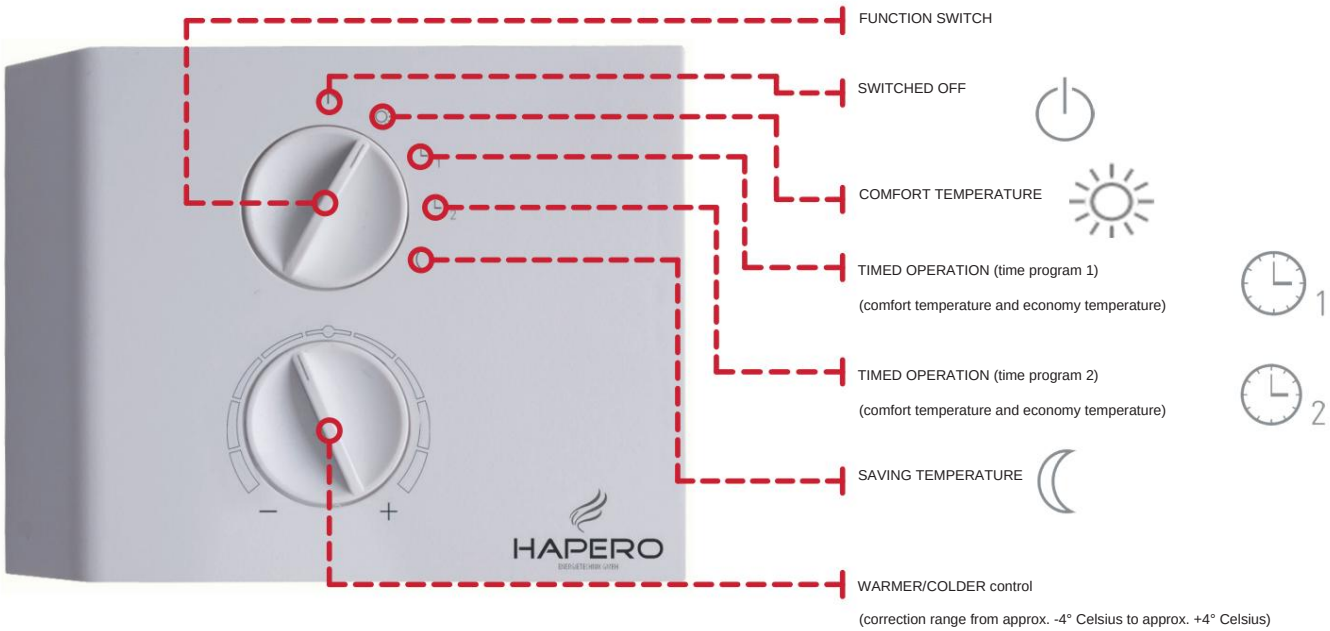
However, the physical room controllers can also measure the temperature.
With this measurement, i.e. the TARGET - ACTUAL comparison, the heating circuit can also be switched off and save money.
This works in such a way that the heating circuit is switched off during buffer operation and the room temperature is too high (the sun is shining in or the tiled stove has been heated up).
If you don't have a buffer, I recommend selecting the setting so that the heating circuit is only switched off if the room temperature is too high during night setback.

Remember that reducing the room temperature by 1°C can result in a saving of up to 7%.

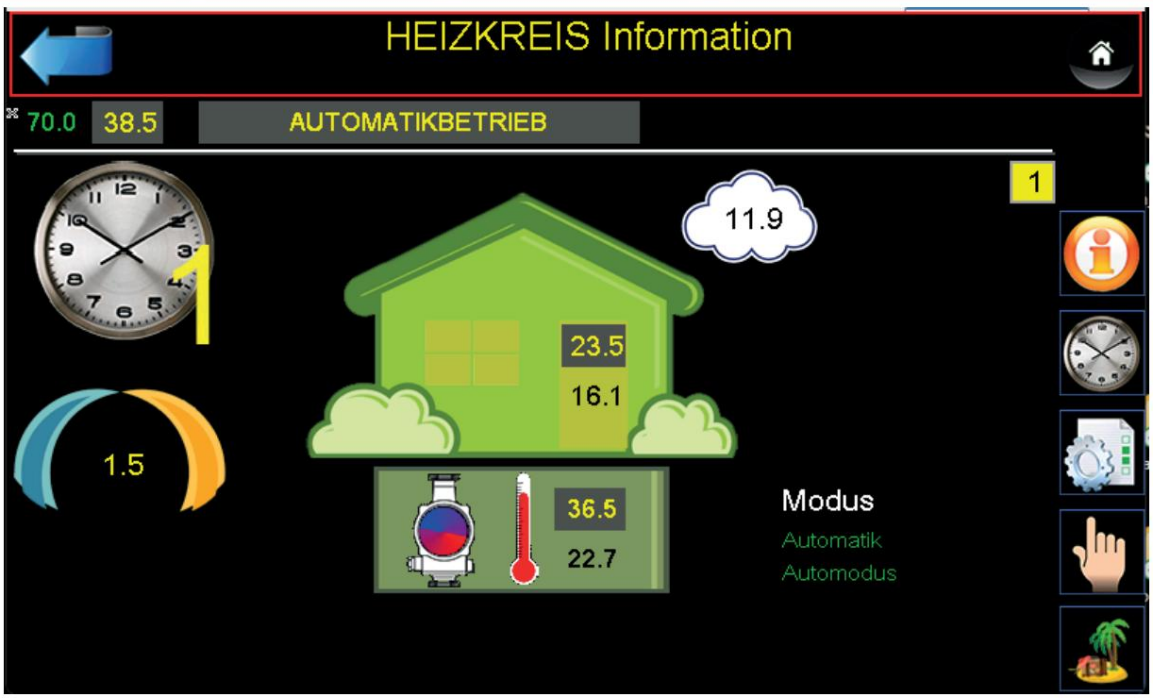
If it is an internet version, controller B can be accessed worldwide possible.

What I can do!

Regulator A:



Controller B: The physical room controller can also be used.



Deliveries of pellet boilers with a 4-button display:

The good news is, your 4 button display can do everything, the better news - ALL control variants fit perfectly on your pellet boiler.

This means your pellets boiler can be updated and any "newer" version can be selected. So there is no restriction on your wish.

There are basically three new control versions that could fit.

Internet access. All the functions described so far under controller B are possible and much, much more. It is very inexpensive and almost all customers can do

If you are not sure or want an offer, just write to me: office@myTouch.at.

myTouch 3.5"

The myTouch is a 3.5" touch display, which allows all settings, but it has no Internet access. All functions described so far under controller B are possible and much, much more. It is very inexpensive and almost all customers can install this themselves.

more on this...

https://www.edv-systemtechnik.at/das-rechte-touch-display/

myTouch Display Internet

The myTouch Display Internet is a 7" touch display that enables all settings and is Internet-enabled. The big advantage, you have the opportunity access the screen via VNC and everything you see there is what you would see if you were standing in front of the boiler. Of course, the touch display also sends you e-mails, these messages can be configured and assigned to different e-mail addresses.

myTouch Internet

The myTouch Internet WITHOUT a display is the combination of a full range of functions, i.e. also Internet, but WITHOUT a display. If you have a smartphone, you can access and operate the display directly from your smartphone / PC etc. The "emergency operation" continues via the 4-button display (ON/OFF, chimney sweep, ash pan, etc.). Access is direct in the same network (i.e. at home), access from the road via a repeater.

more on this...

https://www.edv-systemtechnik.at/mytouch-internet/

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