

LG Therma V: Weather Compensation setup (AI)

Author: Ian Skeet, 5th edition, Edited: 1 October 2024.



I am a home HP enthusiast, I will happily accept all added advice to help myself and other consumers who are trying to learn how to run a Heat Pump efficiently. This document has been created from research and many useful tips gained from FB groups.

A Big Thank you to those who have 'donated' pictures, info and good finds!

What is weather compensation (WC) and why do I want to set it up?

It's a better way to run your HP, it's more efficient and can save roughly 20% on your running costs. This is only used for heating, it is not used for DHW (hot water in your cylinder).

It essentially checks the outside temperatures and then heats up the water efficiently for your heating circuit so that your home stays the temperature you want. WC is called AI in LG land. The WC curve essentially works as your thermostat, it will pump in cooler or hotter water based on the curve. You set this curve so that your home matches heat loss as the outdoors gets colder or warmer, this maintains your home at a stable temperature. If you still have a 3rd party thermostat it should be set a few degree higher than what you need the curve to deliver (it really becomes a dumb thermostat now). Your 3rd party thermostat can still be used as a limiter (eg a setback overnight) as this will signal the HP to stop delivering heated flow.

Step 1

The following settings in the tables need to be adjusted, please do read the advice column for each one.

[Note this was originally done on my LG controller with version 3.0.5.5a software. Newer firmware is now available. I have added an extra step for newer version (e.g. 3.0.6.4a) but please start at step 1 and when you can't do something in step 1 or 2 it's likely in step 3 for your software version. My understanding is it is not possible to upgrade software versions as they are tied to the actual controller/generation of LG ASHP you have.]

To access settings: You will need the code which is the version of your controller, this can be viewed in bottom right corner of the controller when on the settings icon. (e.g. 3055 or 3064 etc). Move to settings option on the LG controller by clicking OK on the MENU icon on the screen, navigate to the settings icon, press the up arrow button for 5 secs, enter the code and you will then be able to access these settings (and more) below. You can do all of this regardless if the HP is running or not.

Settings	Reasonable settings	Advice
Select Temp Sensor	Water	Only use Air & water if the LG controller manages both. If you use a 3 rd party controller like Tado/Hive as your thermostat only set to water. Do not use Air if the controller has been installed in a warm bathroom or cupboard etc, ideally it should be in a "normal" living room. To remove thermostats speak to your installer.
Air Heating Temp	16/25	Only works if using LG controller as your thermostat and AIR & Water set above. Home shouldn't go below 16 or above 25c.
Water Heating set temp	20/55	Water heating will run between 20c and 55c when it needs to resolve it's curve/heat (e.g. the heat you want). This is used for heating your rads/ufh.
DHW set temp	40/55	The heat range you expect your cylinder to be at. Here I set it to be always working between 40 & 55. The temp you set it on the LG controller is the temp it will aim for.
Outdoor Temp for auto mode	3/15 (higher heat loss home) -2/15 (lower heat loss home)	HP auto mode will work between these parameters. When it hits 15c outside I expect the HP is not needed. If it's hits 3 or lower it will use water heating up to the max you set for 'water Heating set temp'. You need to set the lower temp as low as you can perhaps -2 or -3 but this needs to be done based on your home being warm enough using the LWT setting. I moved mine from -5 to +3 as I needed higher water temps than my LWT curve when it got sub 3c.
Indoor air temp for auto mode	16/23	Is only useful for those using the LG controller as their home thermostat. Auto mode (AI) will work between these parameters. If you don't want the house too drop as low as 16c, raise min temp. If you don't need the home to hit 23c drop max.
LWT for Auto Mode	30/50 [This is very dependent on your home and where you need to 'play'] See curve graph further down in the document.	Leaving water target. Raise/lower by 5c each time until the home is the warmth you want. This improves the curve. This is the setting you have to adjust to get the curve working properly. Best done in winter! The aim of course is to get your home to the right temp when it's the 'average' coldest outside. Wait 24 hours between each test temp to see if it works or needs a new curve. Do not do this when it's sub-zero outside as that is generally not 'average' cold.

Tank Disinfection setting 1	Use Fri 1	Cylinder runs disinfection cycle once a week on a Friday at 1am. [Most HP systems will control the immersion heater in the cylinder to do this]
Tank Disinfection setting 2	62 / 10 / 1	Follows above, set to heat to 62c (some say it should be 65c). Runs for 10 minutes
Tank setting 1	5 / 55	LG default setting
Tank setting 2	3 / DHW	LG default setting
Heater Priority	Mains + Boost ON	Boost Heater Only ON - means immersion heater is turned on for DHW, not the ASHP. Main + Boost heater On means both immersion heating and DHW heater are on/off using settings. HP runs first then immersion if it needs help to reach temp.
DHW time setting	30 / 30 / 30 Other examples 60/0/30 75/0/10	LG default setting First 30 = heat the DHW for 30 minutes. Second 30 = if the heating circuit is calling for heat halt the DHW and prioritise heating. Third 30 = if DHW is still not reaching temp after this 30 mins then run secondary heating (usually this will be the immersion heater in the cylinder or if hybrid then the gas/oil boiler). This setting depends a little on heat loss in your home, priority for you for DHW, the size of cylinder, if you use a timer perhaps due to using cheap off-peak tariffs or have a buffer etc. In my home if I let the DHW be prioritised for 75mins I will notice a drop off in heat in mid winter (I do not use a schedule).
Use Heating tank heater	Use cycle 30	LG default setting
Pump setting in heating	Operation continue / 2 / 1	This helps the HP determine if heating water temp has dropped and 'automates' the optimum running for heat.
Pump Capacity	100%	LG default setting If for some reason your HP is quite oversized for your property (heatloss calculation errors/rogue trader) you can drop this down to say 80% for some efficiencies but LG's do modulate down on power usage so only do this if you believe this is a major issue.
Anti-freezing temp	-10	LG default setting

Once above is set, exit settings.

Step 2

If your heating is running you will likely see the 'HEAT' icon is lit up on the controller if not set your thermostat higher so it calls the HP for heat, then you should see the HEAT icon lit up. If you are just using the LG controller as your thermostat and it's not currently in a heat cycle press the power button on the controller which should bring up the screen to change the below.

Set Heat to Auto: navigate to the HEAT icon and use the up/down arrow to change to AUTO. You will see AI appear on the controller.

Set the shower symbol (DHW) to probably what you already have it at [usually 45 to 50, depending on how you like your showers, hot or scalding].

Note the LWT is changing the heat of the water flowing around your heating system. Your thermostat (be it LG or third party like a Tado) is just trying to reach your desired temp. If the heated water running around your UFH/Rads is not reaching desired temp, as per you reading your thermostat, you likely need to change the LWT to get hotter water running around, so up the degrees on the LWT.

Flow rate – The flow gauge on your system will have been set by your installer, usually based on your heat survey calculation. For example how much flow does the house need at 50c to produce 21c in the home when it's -2 outside? There is a balance between flow, LWT and the pumps. As a Dyer I suggest only heating engineers get involved on the flow setup. If you don't have enough flow or the HP is too small for your property you will suffer from not reaching temp/high bills.

Step 3 – Newer software version

The newer software has changed some of the weather comp screens and how you adjust them, it's a little friendlier. LWT is replaced with Seasonal Auto Temp (under the Auto Mode menu). I picked these screenshots and commentary off other posts.



Some standard WC settings proposed as a starting point

If all UFH, as a starting point set to the following: Outdoor Temp +5 / 19, Target Temp 43 / 33

If all Rads, as a starting point set to the following: Outdoor Temp +5 / 19, Target temp 50 / 33

If a mix choose one of the above then tweak to perfection.

Step 4 – tweaking

If you aren't getting the warmth you need these are the setting you need to adjust. Every home's heat loss is different, so run it for a while, like 24hrs, then adjust if needed.

Outdoor Temp for auto mode
Indoor air temp for auto mode
LWT for Auto Mode/Seasonal Auto Temp

A commissioning document - It's possible to generate your own commissioning document. This is useful to keep a list of settings before changing them. Download a blank form e.g. a LG Therma V R32 Monobloc S Range Commissioning Sheet from Robus Energy

<https://www.robuseenergy.co.uk/manufacturers/lg>

I used these three videos to get a better understanding

Why weather compensation? <https://www.youtube.com/watch?v=SfgTOcclbCY>

An experienced LG heating engineer's advice <https://www.youtube.com/watch?v=LfiOWHBXWPg>

More from LG <https://www.youtube.com/watch?v=-OXFy2a14FE>

Additional Understanding & Settings

AI Control

On the AI button on the controller you can set the curve to -1/2/... or +1/2/.... The AI works by using outdoor temp heat curve. The +1 +2 or -1 -2 will bend or pivot the curve by that number of degrees Celsius so it will provide hotter or cooler water to the system. Go + for hotter, - for cooler. When you do this it sticks until you reset it to 0 again. Often done in very cold days when you need a bit more heat. Treat this a little like a thermostat but if you need to do this often rather try set your WC a bit better.

Solar Thermal

I do not use solar thermal so no advice on those settings.

Thermostats

If you use the LG controller for both air & water and have set all settings above then the controller uses both the AIR and WATER temps to optimise the way the HP runs.

Many installs will have kept a 3rd party controller for indoors (tado/hive etc). This is wired up and overrides the LG controller for AIR. By using WATER only for WC this 3rd party thermostat essentially becomes useful as a limiter of temp. If you set the WC 'higher' and the thermostat lower you may have more cycling as the thermostat tells the HP to stop while the WC keeps telling the HP to start. This is why the thermostat needs to actually be set around 2c higher than the actual temp you want in your home. Stop using this thermostat to 'set temp', rather use the AI+ and AI- on the LG controller to boost/limit temp at very cold/warm times

Don't get excited with Homely thermostat/setup if you use GEN 1 LG's (v3.0.5.x), it won't work.

If you are using a fixed heat, not AI, then a 3rd party thermostat runs as usual.

Hot water (DHW)

Hot water is run separately from heating. Heating will stop when DHW needs to heat the cylinder. HW inlet/outlet temp will run up to 65c when it is trying to bring the DHW cylinder up to the temp you have set on the controller. WC is not used for DHW, it's just for heating. The DHW allows a 5c drop off (known as hysteresis) before it'll kick off a reheat again [if set to 47 it will drop down to 42 before running again. Of course if you are using the hot water it will drop lower than 42c and then also kick off a DHW cycle if you have not set any schedule].

I see some people will schedule one DHW cycle to 55c at an off-peak tariff time and this will fulfil their needs 24/7. This is often a lifestyle/comfort/cost decision. Running to a higher temp does make the HP run harder and may require the immersion to kick in more often but that's offset by the cheap tariff.

Quick, I need some DHW: On the LG controller hold the back button (the curly one not the arrow) when you're on the hot water icon. A little lightning bolt will appear after a few seconds on the hot water icon. That's the immersion kicking in to give you a boost. It will turn off when back to temp.

Setting Hot Water Schedules.

Note that setting a schedule may affect how your heating works. Most HP's are set to stop heating while they run a DHW cycle. Many people though will use a DHW schedule to utilise a cheaper off peak tariff rate and set at a time to not interfere with a high heat load requirement (eg in winter set DHW schedule to run 1 hour before you start needing to heat the home) .

Select Menu, Press ok, Scroll to Schedule & press ok

Select Schedules & Edit, Select DHW

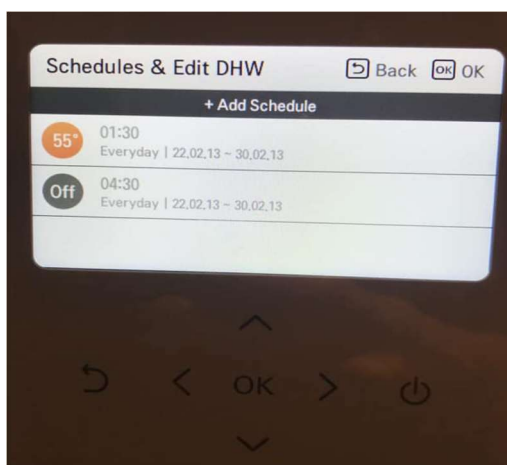
Set the date for every day,

Set required start time & temperature

Set period to many years in the future & then save.

Then set an off time as above.

Don't set DHW Heater – this uses your immersion and is far more expensive than scheduling the DHW which uses the HP (your immersion will come on automatically if the HP is not getting your cylinder to temp by using DHW time setting as above)

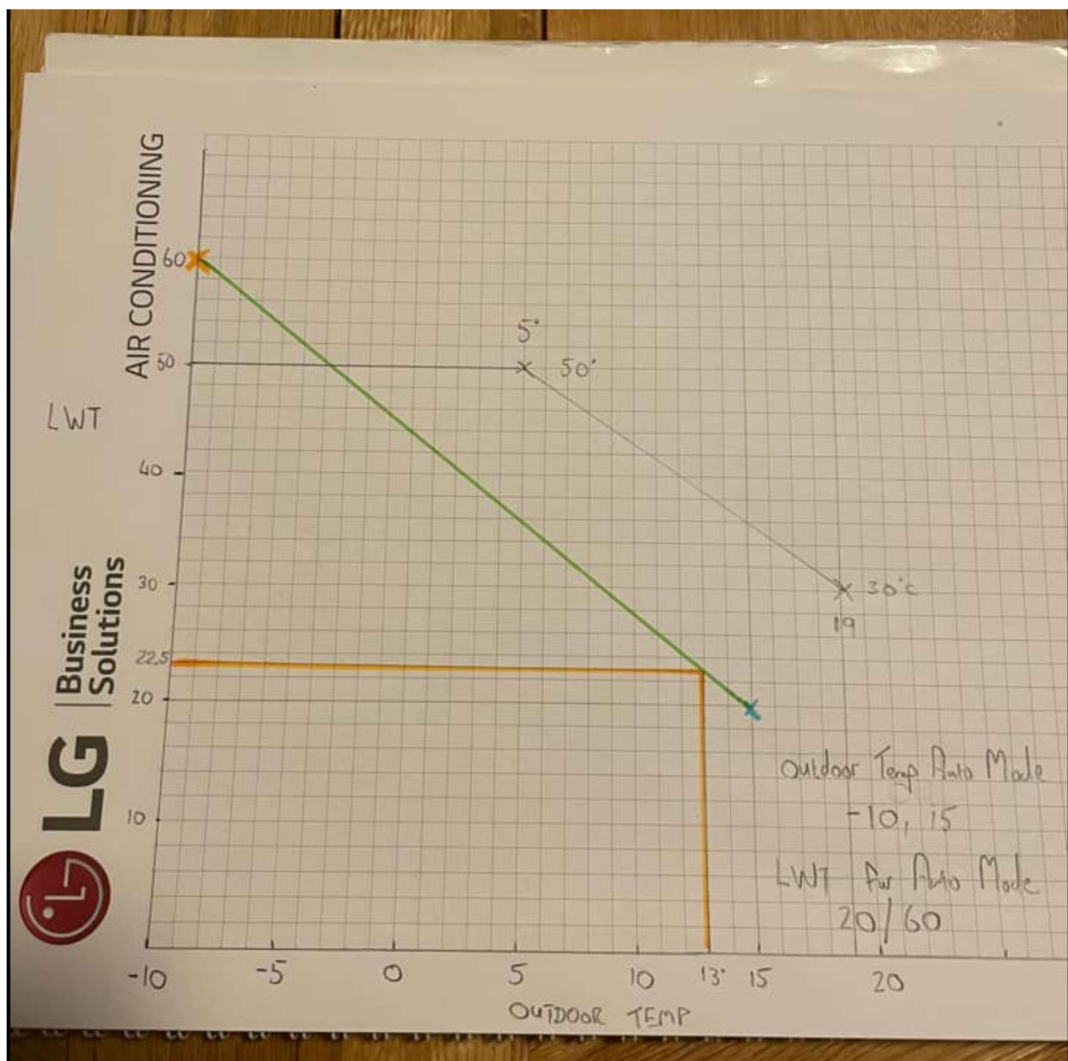


Curve graph image:

I had originally set my LWT to 20/60, what I could see when the temp outside was 13c (googled) my HP was registering outlet temp at 22.5c but my home was only reaching about 19c (Tado thermostat was calling for 20.5c) What I wanted was 20c for my day time temp. Essentially the water wasn't at a high enough temperature as it ran through my rads to reach 20c on the tado thermostat. I was advised to change my LWT to 30/50, essentially boosting the water to a higher temp, 40c, when it's 13c outside (follow the orange line up at 13c to the new LWT on the 30/50c line).

Advice is to move the bottom and top ends of the curve by 5c in tandem. What you can see here is my system will need to be doing 50c when it's 5c or less outside. This seems to work well for my home. My installation was set at 50c for -2c if I leave it on fixed heating mode. Now using weather compensation my home won't be running up to the 50c all the time in shoulder seasons, it'll use the curve at the lower LWT (e.g. 30c LWT when 19c outside or 40c when it's 13c outside) which should save considerable kWh's/£'s. In reality I'll never need heating to run when 19c outside as my home is generally a lot warmer due to solar gain from April through October.

I set this curve in early April, it's probable I will need to adjust this coming winter for a final setting. No flow rates have been adjusted – that needs an installers help.



COP

Older LG's aren't great at giving up data (the new ones are much better) but COP should be somewhere around these figures dependent on your settings. The warmer the outside air the better cop, the lower the water is heating at the better the cop. I have the 16kw model so I should be expecting at 2c with 48 flow rate with LWT 45c a 3.71 cop, at -2 = 3.38 cop, at 7c = 4.13 cop.

What is COP (coefficient of performance)? If my cop is 4.13 that means I am producing 4.13 units of heat for every 1 kW input so 413% efficient.

Operation & Performance

Capacity Tables: Monobloc S

◆ ZHBW126A1 [HM121MR U34] / ZHBW128A1 [HM123MR U34]

Outdoor Temperature [°C (DB)]	Water flow rate 24.5 LPM				Water flow rate 21.5 LPM				Water flow rate 17.3 LPM			
	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C
-25	9.50	2.13	9.50	1.97	9.50	1.81	9.50	1.56	10.21	1.87	11.50	2.00
-20	10.75	2.68	10.75	2.47	10.75	2.27	10.75	2.07	11.50	2.24	11.50	2.00
-15	12.00	2.90	12.00	2.55	12.00	2.52	12.00	2.49	12.00	2.74	12.00	2.46
-10	12.00	3.59	12.00	3.40	12.00	3.28	12.00	3.16	12.00	3.25	12.00	2.94
-5	12.00	4.18	12.00	3.78	12.00	3.68	12.00	3.58	12.00	3.52	12.00	3.29
0	12.00	4.52	12.00	4.19	12.00	4.05	12.00	3.91	12.00	3.96	12.00	3.69
5	12.00	5.34	12.00	4.90	12.00	4.63	12.00	4.33	12.00	4.32	12.00	3.74
10	12.00	5.95	12.00	5.50	12.00	5.04	12.00	4.58	12.00	4.60	12.00	3.90
15	12.00	6.50	12.00	6.00	12.00	5.50	12.00	5.00	12.00	4.98	12.00	3.90
20	12.00	6.93	12.00	6.30	12.00	5.76	12.00	5.25	12.00	4.73	12.00	3.90
25	12.00	7.04	12.00	6.50	12.00	5.96	12.00	5.44	12.00	4.88	12.00	3.90
35	12.00	6.68	12.00	6.01	12.00	5.34	12.00	4.82	12.00	4.34	12.00	3.80

12kw- @ 35°C LWT
100% down to -15°C
COP = 4.90

◆ ZHBW146A1 [HM141MR U34] / ZHBW148A1 [HM143MR U34]

Outdoor Temperature [°C (DB)]	Water flow rate 40.25 LPM				Water flow rate 35.2 LPM				Water flow rate 26.1 LPM			
	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C
-25	10.00	2.09	10.00	1.93	10.00	1.78	10.00	1.62	11.40	2.03	13.30	1.95
-20	12.00	2.50	12.00	2.42	12.00	2.29	12.00	2.13	11.40	2.28	11.50	2.00
-15	14.00	2.84	14.00	2.70	14.00	2.47	14.00	2.30	14.00	2.76	14.00	2.47
-10	14.00	3.51	14.00	3.34	14.00	3.21	14.00	3.09	14.00	3.00	14.00	2.87
-5	14.00	3.90	14.00	3.65	14.00	3.49	14.00	3.35	14.00	3.26	14.00	3.06
0	14.00	4.09	14.00	3.86	14.00	3.68	14.00	3.50	14.00	3.35	14.00	3.00
5	14.00	4.73	14.00	4.29	14.00	4.05	14.00	3.83	14.00	3.65	14.00	3.00
10	14.00	5.24	14.00	4.80	14.00	4.52	14.00	4.24	14.00	3.82	14.00	3.00
15	14.00	5.83	14.00	5.39	14.00	4.94	14.00	4.49	14.00	4.00	14.00	3.00
20	14.00	6.37	14.00	5.88	14.00	5.39	14.00	4.90	14.00	4.04	14.00	3.00
25	14.00	6.59	14.00	6.18	14.00	5.67	14.00	5.15	14.00	4.64	14.00	3.00
35	14.00	6.91	14.00	6.38	14.00	5.86	14.00	5.32	14.00	4.79	14.00	3.00

14kw- @ 35°C LWT
100% down to -15°C
COP = 4.80

◆ ZHBW166A1 [HM161MR U34] / ZHBW168A1 [HM163MR U34]

Outdoor Temperature [°C (DB)]	Water flow rate 45.0 LPM				Water flow rate 38.8 LPM				Water flow rate 23.0 LPM			
	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C	LWT 38°C	LWT 35°C	LWT 40°C	LWT 45°C
-25	10.50	1.96	10.50	1.84	10.50	1.72	10.50	1.60	11.58	1.82	13.68	1.94
-20	12.50	2.40	12.50	2.32	12.50	2.15	12.50	1.98	12.58	2.16	13.68	1.94
-15	16.00	2.71	16.00	2.52	16.00	2.41	16.00	2.27	16.00	2.58	16.00	2.27
-10	16.00	3.46	16.00	3.27	16.00	3.13	16.00	2.98	16.00	2.70	16.00	2.41
-5	16.00	3.75	16.00	3.58	16.00	3.40	16.00	3.22	16.00	2.90	16.00	2.58
0	16.00	4.16	16.00	3.78	16.00	3.58	16.00	3.38	16.00	3.05	16.00	2.72
5	16.00	4.57	16.00	4.19	16.00	3.95	16.00	3.71	16.00	3.35	16.00	2.98
10	16.00	5.00	16.00	4.70	16.00	4.41	16.00	4.13	16.00	3.72	16.00	3.00
15	16.00	5.67	16.00	5.24	16.00	4.80	16.00	4.37	16.00	3.94	16.00	3.00
20	16.00	6.20	16.00	5.71	16.00	5.26	16.00	4.79	16.00	4.32	16.00	3.00
25	16.00	6.74	16.00	6.23	16.00	5.71	16.00	5.20	16.00	4.69	16.00	3.00
35	16.00	6.96	16.00	6.41	16.00	5.80	16.00	5.20	16.00	4.69	16.00	3.00

16kw- @ 35°C LWT
90% down to -15°C
COP = 4.70

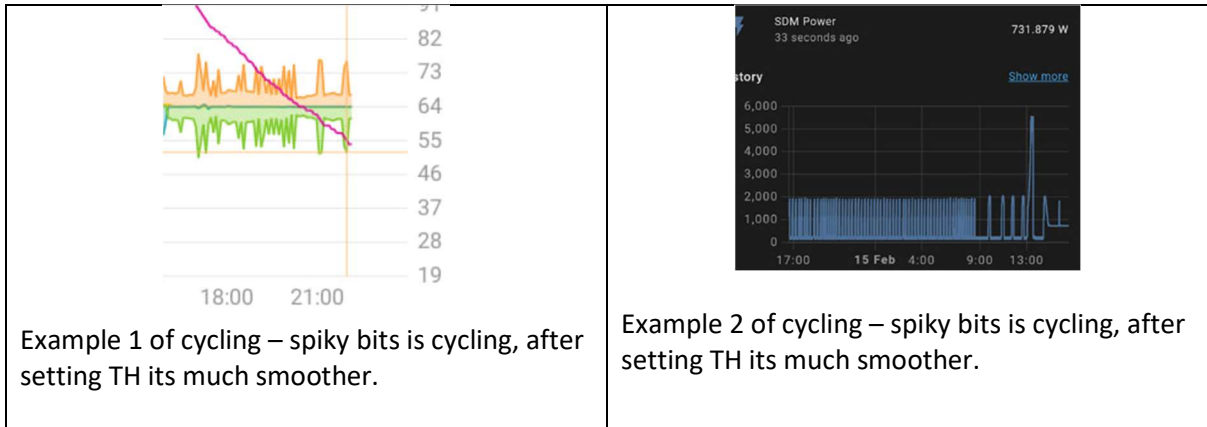
COPs based on A7W35

Cycling (advanced setting change)

Cycling is when your HP starts and stops many times an hour. It usually does this if the home is maintaining heat well but the WC is trying to pump in more heat because of low outdoor temps. In my opinion if you have more than 4 spikes an hour you may be suffering from cycling. Most people who notice this have better stats/apps and various battery/electricity monitoring apps. Cycling uses more electricity as the HP stop/starts consume more kWh's. The aim is to try have the HP modulate so it's more of a long & low wave of electric usage rather than spiky off/on's. More on this conversation in the LG Therma V FB group:

<https://www.facebook.com/groups/716683532924964/search/?q=th>

TH on/off Variable, heating water in software version 3.0.5.6 or prior	Type 2 (allows +4/-4c operating range)	If you find you are having a lots of cycling this can be helpful. It helps the HP overshoot the flow temp allowing it to modulate power usage lower.
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In newer software go here: menu → setting → room heating → hysteresis heating water → -4/4

Other Useful Info

Low noise mode – the whisper lips icon on the LG controller

This is not meant to be used permanently, it should be used to reduce noise at scheduled times, if noise affects you. This is just the noise of the outdoor HP unit, it does not help with any other plumbing/pump noises. Why not permanently...it disadvantages normal compressor effectiveness and mechanical running, it may impact longevity of the HP (anecdotal).

It works by reducing the speed of the inverter so it is quieter (the compressor runs at a lower output/frequency) but this also means less heat output. It may result, usually in very cold days, in your DHW not reaching your optimum temperature. Advice here is to schedule your DHW not to run over the same time as your low noise schedule. For heating it can take longer for your home to recover to required temperature, this is more noticeable in deep winter days.

Maintenance

Always clean the strainer inside the Heat Pump annually! This can restrict flow if gunged up and will reduce performance. Do it before winter. Also check the magnetic filter usually close to the cylinder.

Basic Error correction

- **CH14 error**
 - You have low flow. Usually because filters have gunged up or air in the system. Simple fix to try (after you check the filter) is simply to turn the HP on/off (either the big red switch next to the HP or use your electric board), turn off, wait a few minutes and turn back on.
- **DHW not working**
 - Check that you haven't accidentally turned the DHW off. On the controller move to the shower symbol and make sure the controller ON button is lit (bottom right of the controller), if not turn it on.
- **Others issues**
 - When in doubt turn the HP off/on – this does help reset things, then call an engineer if it's not resolved.

Best way to run your HP (cost + efficiency + comfort)

- 1st way – one temp 24/7 on WC, no zoning, all TRV's open
- 2nd way – an offset temp so say 20c day 18c night, no zoning, TRV's open or slightly closed if you need it cooler in some rooms.
- 3rd way – fixed temp (no WC), no zoning, all TRV's open
- 4th way – as per 1-3 but schedule the HP to run warmer during cheap tariff periods and a little cooler during peak tariff periods. This is mainly a £ saver although some find that using the 1-3rd way actually provided better comfort for very little cost overhead.
- 5th way – like you ran gas/oil, if this works for you. All expertise will point to this being very expensive and likely uncomfortable. If you try run some rooms cold by turning TRV's down or using smart TRV's these can play havoc with water flow/air flow and temperature stability in your home when running an ASHP.

Lowering Running costs

The start of the season the HP will run harder as it heats the fabric of the house up, usually you will see this if you turn it on later in the cold season or from a colder internal temperature (for example taking it from 16c to 20c). Once it's settled in and you are just keeping temp with maybe a 2c setback it won't be as shocking.

Use annual costs, if you just check winter bills it'll be off-putting. For many who move from gas we never checked our daily usage as we simply paid the bill on a monthly basis averaged over the year, now we can easily see our daily electric usage it can be a shock on very cold days.

If you are using an HP as it is setup to be used, i.e. 24/7 at one temperature or with a setback for overnight time you should see bills equal or less than gas. If you are over a comparable gas cost you need some more tweaking or an expert to come review. Usually an HP always beats OIL/LPG. Your electric tariff is key, also adapt small changes to lifestyle for bigger rewards on cost. Lowering your temp by 1c is often an easy adaption once you are use to a constant running temp. Feel free to use this if you swap to Octopus Energy, you'll buy me a few coffees!

<https://share.octopus.energy/green-burn-92>

LG Help

Mostly it's best to work through an LG HP engineer who should have contact with LG through their tech team. If you are using an engineer who needs help/warranty type help then also try via LG main vendors who are very helpful – Unitherm, BublShop, Robus Energy.

At present consumer support does not seem to be a direct LG priority. You can try this but you may get bounced back to your own HP engineer- 0844 847 1402 (premium).Some have had success using this <https://www.lg.com/uk/support/warranty-information/>

Wise words from LG

How to operate your heat pump during the winter months to ensure you have the perfect indoor comfort:

Heat pumps operate best when in “continuous operation” mode. Meaning your heat pump should always be on over winter. Your heat pump would have been selected based on its output to meet with the heat demand in your property. If your heat pump is turned off, the amount of energy

required to bring the temperature of your property from a cold state up to its desired level will be more than that calculated when sizing the heat pump.

Think of boiling a kettle from cold water - this will take longer to bring up to temperature than a kettle that has just been boiled and then reboiled.

Therefore, switching off your heat pump will put more demand on the system and you could experience delays to your heating and hot water requests and comfort levels within your home could be affected.

Installer Help

Many HP engineers/installers get a bit of flak from not setting everything up perfectly first time. This is a bit of a controversial topic. It can take the right time of the year and a number of goes to get the WC right and is based on clear conversations how the owner lives their lives/change their lives. I am not sure this is 'affordable' on both sides due to repeat visits while the installer is in high demand for actual installs?

My view is a good handover is needed but also some self learning by the customer. I didn't get the first bit but happy to provide the second bit here.

Installers are free to use this doc /pass to customers as they wish.

Finally - My Results

My tweaking, using weather compensation, has seen me drop from 9000kWh to 7000kWh, almost all saving made in the shoulder and summer months as I need to hit around 45-50c in mid-winter so weather comp doesn't work as well then. I have now also settled into a rhythm for settings that seem optimal for me. I have a UFH system that requires 45c flow temp to keep it's rooms up to temp (installed when I had a gas boiler), I cannot run WC fully over winter as occasionally it won't heat to 45c if its warmer outside, so I now use WC except in Dec/Jan/Feb when I use a fixed 45c. I am still using 7000kWh which further seems to show that WC is great for savings in shoulder months but for my property in winter a fixed temp works fine. All homes are different, modern homes probably best to run WC all year round!

A journey I found interesting in the Therma V facebook group, get your nerd on.

<https://www.facebook.com/groups/716683532924964/permalink/948583656401616>

Good luck, stay warm!