



# CLADE

LEADING THE TRANSFORMATION IN  
GREEN HEATING AND COOLING

Aftercare Service Package  
& Optimisation Services

May 22



## HEAT PUMPS ARE DIFFERENT //

The world is changing, in the past an oversized gas boiler was fitted and with gas at very low prices little attention was paid to efficiency. They are reliable because they have few moving parts and the high temperatures of combustion overcome deficiencies elsewhere in the system.

Energy prices are rising and the volatility of price is also increasing over all timescales from 30 mins to seasonal. This means efficiency and good control are much more important.

Heat pumps are sized more appropriately to the system and generate only the temperature required. So, the whole system has to work together in harmony which takes a co-ordinated approach to control.

They have more moving parts and the evaporators of ASHPs are exposed to the environment. Therefore need more attention to keep everything working smoothly

You have invested a significant amount in the design, supply and installation of your heat pump. In order to generate the most benefit from this investment you must ensure the 15 or more years of service are optimised.

At Clade we seek to help our customers continuously improve their heat pump and heating system operation. To do this we offer two services under our Aftercare brand

- Aftercare Service – the mechanical, electrical and refrigeration services to keep your heat pump up and running.
- Aftercare Optimisation – the data and digital services plus on site support to adjust the operation of the heat pump and system in order to achieve the optimal performance.





# WE LEAD, WE DON'T FOLLOW

At Clade we lead, we don't follow. We proactively find ways to innovate in the heating and cooling.

This includes the service and maintenance of heat pumps. We aim to provide a flexible, value for money service that achieves your aims, be that cost reduction or decarbonization.

We're pleased to present this proposal for maintenance of your heat pumps.



## AFTERCARE SERVICE COVER LEVELS

We can offer three levels of aftercare maintenance levels for you to choose from.

- Gold is a fully comprehensive service including parts and labour for any repairs
- Silver has all the basic services but any call outs are payable (except parts in warranty)
- Bronze is the absolute minimum, for those applications not so sensitive to loss of service

### Gold

#### Fully Comprehensive Service\*

- Major PPM
- Minor PPM
- Bi-Monthly evaporator clean
- Remote fault monitoring
- Seasonal adjustments as required
- All labour & Materials inclusive \* (outside warranty spares)

### Silver

- Major PPM
- Minor PPM
- Remote Fault Monitoring
- Seasonal adjustments as required

### Bronze

- Major PPM
- Remote Fault Monitoring

\* Exclusions: Misuse & Abuse, Power / Supply Issues, Additional condenser cleaning (service level dependant), Damage to plant caused by hard water



## ROUTINE SERVICES //

These services are necessary to keep the heat pump reliable but also within the statutory compliance requirements.

### PPM Schedule - Major, Autumn & Minor Spring

- A major PPM will be conducted between September and October. A minor PPM will be conducted in April to May (subject to contract level)

### Bi-Monthly evaporator cleanliness

- It is recommended that a minimum of six visits are made annually to check the condition of the evaporator, over and above the major and minor PPM. The efficiency of the system can become compromised in the event of the evaporator becoming blocked particularly at time of high pollen count or in autumn due to leave and dust. (included with gold standard service)

### Statutory requirement

- PRV's will need to be checked and replaced under the PSSR regulations every five years.

### Remote Monitoring

- Our remote desk engineering team will monitor the heat pumps for alarms and faults which will be passed on to the service team for rectification.

### Seasonal Recommission

- This will ensure the plant is operating at it's optimal position, using the least energy possible whilst providing the heating required to ensure comfort heating is maintained. We will send our Engineering team to site and analyze the data available to make changes to the control strategy, physical arrangements and the wider system with your prior agreement.





## REACTIVE SERVICES //

- Your call will be registered on to our system and one of our staff will personally take care of your case.
- We will assess the data from your heat pumps and will call you to discuss this if necessary
- If there is an immediate need to attend site we will dispatch a technician within our standard service levels which are:
  - Monday to Friday ex. Bank holidays
  - 0800 to 1800 hours
- We hold stock of parts on our vans and in our Technology Centre in Leeds ready for immediate use. We can also provide you with spares to hold on site to improve the time-to-fix.
- We will call you to let you know what's happening, when everything is up and running again we will follow this up with a report.
- For Gold service this is all inclusive.
- For Silver & Bronze service we will provide an estimate of cost to repair before conducting any work





## EVAPORATOR CLEANLINESS //

The evaporator is a vital part of the heat pump it is a heat exchanger that takes the heat energy in the air in to the refrigerant.

Depending on the location the air can contain contaminants such as:

- Pollen
- Sea salt
- Car and combustion particulates
- Dust
- Leaves and grass cuttings
- Acidic rain

Over time these build up on the surfaces which reduces the ability to absorb heat and increases the energy the fans need to draw air through them. This all reduces the efficiency of the heat pump.

Keeping them clean is a fairly straight forward job which needs to be done regularly. The frequency depends on the location, we recommend starting with bi-monthly for the first year and adjust from there.





## MAJOR AND MINOR SERVICE WORK ITEMS //

	Task	Frequency
Pre PPM Works	Sign in and make site aware of presence	All site attendances where applicable
	Remove Evaporator Cowling	
	Ensure ASHP is in operation	
	Check Localised water feed operational (for Jetwashing)	
	Ladders and Tools out and ready	
	OFN bottle with gauge to test HP Block	
	Ensure correct PPE is worn at all times	

	Task	2m	6m	12m
HEAT PUMP	Check HP running pressure - note			
	Check HT suction pressure - note			
	Check all compressors are operational			
	Report any noisy compressors			
	Check compressor overloads are rated above FLA			
	Clamp compressor overloads/contactors - note amps			
	Check compressor oil levels			
	Check any crankcase heaters are operational			
	Visual Check PRV note rating			
	Check refrigerant charge - specify level and type			
	Check panel/housing cooling fans are operational & guarded			
	Check any LP safety switches are set above zero			
	Check HP safety cut out - note			
	Replace suction line drier			
	Check oil pressure where applicable			
	Change oil filters			
	Check all pack ball valve caps are tight			
	Check all probes are secure - if fitted			
Leak test all ASHP including, Liquid Receiver, Drier Assembly, Evaporator & Pipework				





## MAJOR AND MINOR SERVICE WORK ITEMS CONTINUED //

		Frequency		
Task		2m	6m	12m
EVAPORATORS	Check all fans operate			
	Check rotation of all fans			
	Check all fans, blades & guards secure			
	Check Evaporator fan overloads are rated above FLA			
	Clamp evaporator fan overload/contactor - note amps			
	Brush down and chemically clean all coils			
Task		2m	6m	12m
ELECTRICAL	Visible inspection of all electrical connections in panel and check for signs of deterioration			
	Check the panel isolators operate correctly			
	Check panel indication lamps for operation			
	Ensure all contactors and electrical connections are sound			
	Check power cables for signs of overheating			
	Ensure all equipment is switched on			
Task		2m	6m	12m
COMPLETION	Clean ASHP - Compressor rack, and external panels			
	Check temperature alarms have cleared prior to leaving			
	Inspect controls (system) for correct operation			
	Replace Cowling & lock doors			
	Tidy away ensuring site is clear of rubbish			
	Complete Contractor Sign In/Sign Out process and hand in keys/passes			
Task		2m	6m	12m
REMOTE MONITORING EQUIPMENT	Annual PPM visit on Remote Monitoring Equipment			



## AFTERCARE PROPOSAL

### Clade quote to cover the following items of equipment for service is:

The first years aftercare at silver level and optimisation is included in the contract price given above. The below price can be used for subsequent years when optimisation has been completed.

Annual Aftercare contract price for XXX KW total installed capacity

Gold	£XXXX
Silver	£XXXX
Bronze	£XXXX

Multiple year contracts are available on request.

Parts only warranty extensions to cover the second and third year are available for 3 and 5% of plant value.

Ex. VAT

Annual or quarterly billing in advance.



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# WE LEAD, WE DON'T FOLLOW

Clade's Aftercare Optimisation service is much more than a maintenance contract. We work with our customers and their newly commissioned heat pump to optimize performance over the full year and beyond.

We are determined that every Clade heat pump performs to its best, for our customers and the planet.

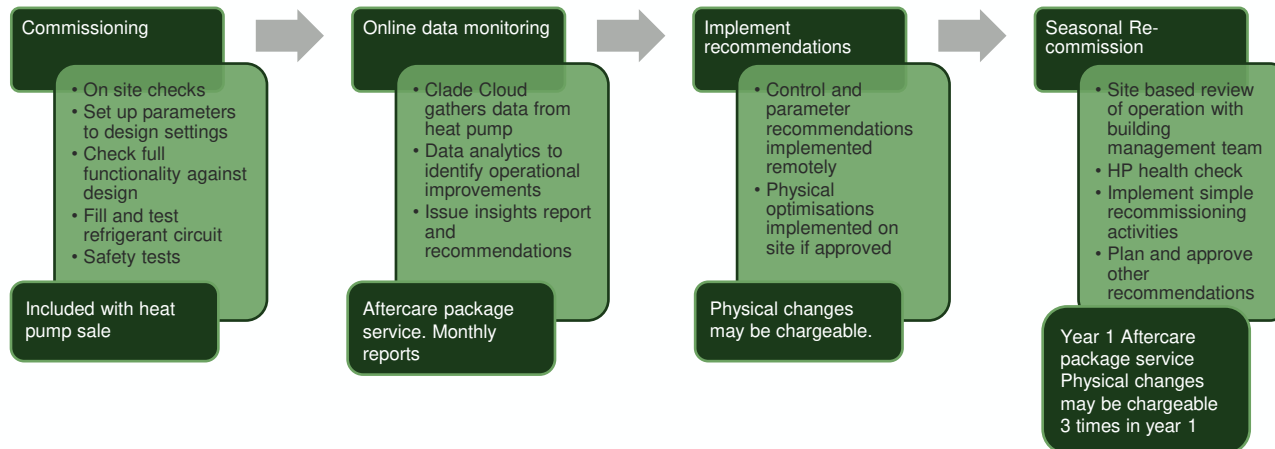


## THE OPTIMISATION JOURNEY //

Heat pump performance is dependent on four major sets of variables; the ambient conditions, the demand conditions, the physical health of the heat pump and the controls.

The ambient and demand conditions are variable across the day, week, season and year. This means that optimal year round performance is only achieved over a period of time.

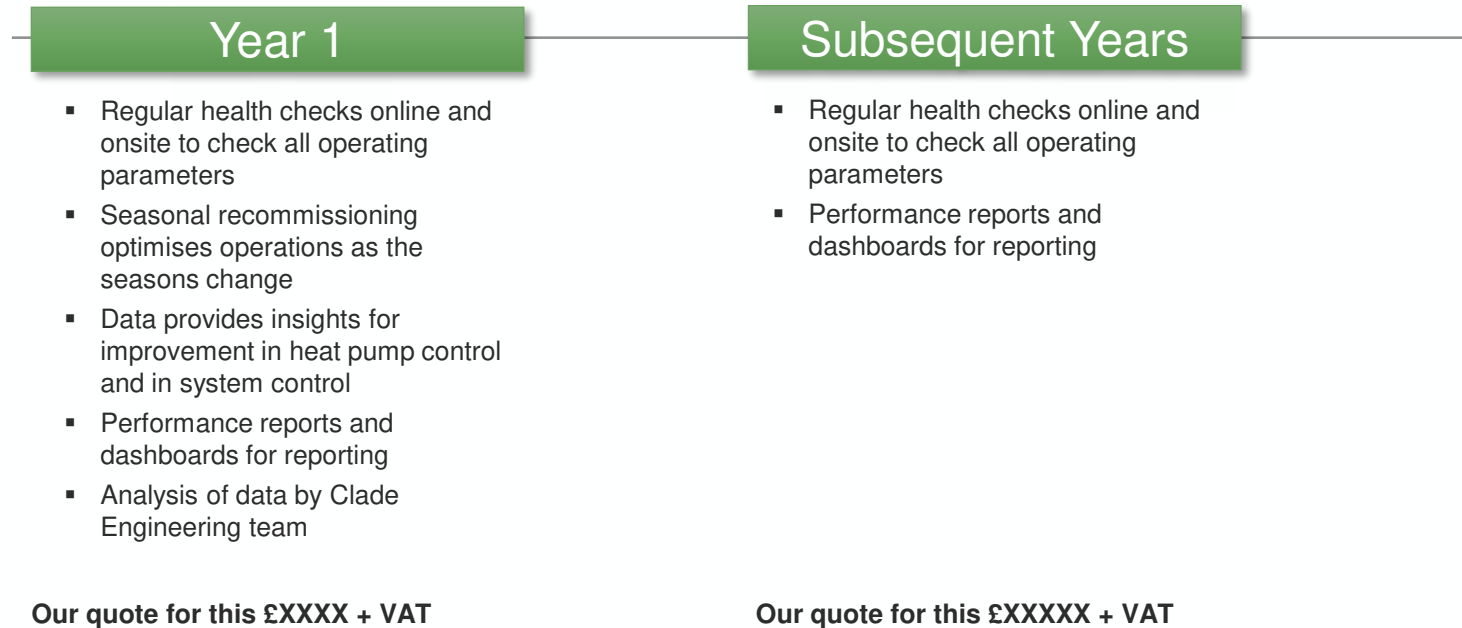
Clade Aftercare package provides the basic maintenance services which maintain the physical health of the heat pump and a series of services that optimise heat pump operation over time. These optimisation services are provided by Clades expert Engineers who are on hand to analyse and assist improvements throughout the contract.





## AFTERCARE PRICE REDUCES OVER TIME //

After the first year your heat pump will be largely optimised and so we aim to reduce the cost of optimisation over time. Only in the case of significant system changes will extensive optimisation be required provided that the heat pump is kept in good order and not operated outside of its or the system parameters.



**Our quote for this £XXXX + VAT**

**Our quote for this £XXXXX + VAT**



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## LEVEL 2 SERVICES

These services are provided to enable status updates, remote diagnostics and peak operational efficiency.

### Clade Cloud Data Monitoring

- Our remote desk engineering team will access the sites heat pump through a remote connection device and review all settings and parameters to ensure the system is running at it's optimum performance. A report will be issued to the user on a monthly basis, advising of any changes to system operation, along with any changes to parameters that vary from the initial commissioning of the system.

### Seasonal Recommissioning in year 1

- This will ensure the plant is in its optimal operating condition, using the least energy possible whilst providing the heating required to ensure comfort heating is maintained. We will send our Engineering team to site and analyse the data available to make changes to the control strategy, physical arrangements and the wider system with your prior agreement.





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**Jennifer Barnfather**

Aftercare Manager

T: 07719 524174

E: [jennifer.barnfather@clade-es.com](mailto:jennifer.barnfather@clade-es.com)

[www.clade-es.com](http://www.clade-es.com)

Head Office & Registered Office //  
Bristol & Bath Science Park,  
Dirac Crescent, Emersons Green,  
BRISTOL BS16 7FR

The Technology Centre //  
Unit R3 Gildersome Spur Industrial Estate,  
Stone Pits Lane, Morley,  
LEEDS LS27 7JZ