New Heat Solutions

GEOTHERMAL HEATING SPECIALISTS

Gortnahoe,
Thurles,
Co. Tipperary.
Phone: 086 2265465
Fax: 0568834801
Email: info@nhs.ie

www.nhs.ie

04/12/16

Ken McCullagh.
Clonlea Lodge,
Ballinteer,
Dublin 16.

Quotation for underfloor heating - Supply and installation Ground Floor + First Floor.

Heat sources:
Air Source Heat Pump

Quantity	Details	
985m	17mm POEC Double Oxygen Barrier Piping	
2	Underfloor Manifolds	
11	Ports	
145m	Underfloor quick Track & Pipe Staples	
2	High Head Circulating Pumps	
3	Motorised valves	
1	2 Zone Zoescientific + Hot Water controller with remote access	
	Flow and Return pipework - from heat pump to underfloor manifolds only	
	Filling point & Expansion Tank	
	Fixtures and fittings	
	All Materials and Labour	5,328.38
	Plus Vat @ % 13.5	719.33
	Total €	6,047.71

- Quote is valid for 90 Days.
- The room stats are optional but not essential. The master controller would be controlling the complete house; this is normal and also the most efficient system.

Please note:

1. The Piping above is 17mm diameter double oxygen barrier piping.
2. The amount of piping required is based on 6" & 4" spacing.
3. Quote is based on drawings provided at the time of the quotation.
4. Quote does not include Insulation or the placing of insulation.

5. Recommended would be two layers totalling 150mm of minimum high-density insulation on base, Use Xtratherm or Kingspan, with 25mm edge/ perimeter insulation for the underfloor slab.
6. 50mm insulation is sufficient on the first floor slab.
7. On all floors the edge insulation is also required (25mm will suffice).
8. Total area to be clear of all materials prior to our arrival for the installation.
9. We recommend between 75 to 125mm of concrete screed to be used. Whatever depth you go for, it is vitally important that the depth remains constant across the complete floor area.
10. A number 10 aggregate is a superior final cement pour rather than standard readymix. It bonds around the pipe better and has better thermal characteristics.
11. All room stats (where supplied) will be digital.
12. See information on heating controls at www.zoescientific.com.
13. Locate the Datatherm controller as agreed at first fixing, we need to liase with the electrician at this time (this will be installed by your electrician for RECI purposes)
14. Controls include all time clocks etc for the underfloor **and** the hot water cylinder.
15. We would recommend at least a 300 litre hot water cylinder. Rapid recovery is preferable.(Not Included).We can supply if required.
16. Where stud work is to be nailed to the floor, we need to avoid these studs with the piping, to this effect, all walls to be marked out clearly in advance
17. All sewers, services and wastes to be fitted prior to insulation installation.

IMPORTANT

The above includes all of the controls, motorised valves and pumps, which will be required for the set up of the hot water & under floor circuits.

THIS should be borne in mind if comparing pricing. Give me a call to explain further. By pricing in this fashion we can take control of the "Primary heating circuit". This will ensure efficient operation of the heat pump, more importantly all controls are integrated and less confusion all around.

Terms of payment:

1. 75 % Payment on installation of underfloor piping, or appropriate zone / area.
2. 25% on completion of commissioning.

Any queries or clarification that you may need please contact us at 0862265465.

Regards,

_____

Eric Norton

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04-12-16

Ken McCullagh.
Clonlea Lodge,
Ballinteer,
Dublin 16.

Quotation for a Panasonic Air/Water heatpump installation

Air Source

Heat Source:

Panasonic Aquarea 5kw air to water Heat Pump

Model:

Air to Water heat pump.230v 50 Hz Single phase variable compressor.

Performance:

5kw at cop of 3.75 @ 2°C source air
5kw at cop of 5.08 @ 7°C source air

COP is based on EN-14511 which determines heat pump performance at 2°C source air and producing 35°C water on the load side.

Manufacturer:

Panasonic UK
Berkshire, England.
www.panasonic.co.uk

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Panasonic heat pumps are fully CE certified as required by EN-14511.

All units are capable of delivering up to 60° Celcius, however we normally limit this to 50° C to ensure increased lifetime of compressor, but as ever the heat pump's efficiency is best at lower temperatures.

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This quotation covers the complete installation of the heat pumps and mechanical components
The heat pump will be tested on commissioning and output readings taken for to complete the guarantee as per "Panasonic" requirements.

Quotation

Aquarea MDC05F…….5Kw Total

	Unit Price	Quantity	
Aquarea MDC05F	4,405.29	1	4,405.29
		Sub total	4,405.29
Kilowatt rating is based on En 14511 ratings	Plus Vat @	13.5	594.71
as Per CE certification		Total	**5,000.00**

- This quotation is valid for 90 days
- This quotation is dependant on a site survey prior to work commencing or else re-assurances from client on the ground conditions
- Deposit is non-refundable.
- Panasonic reserves the right to change prices. This is beyond our control. Any changes will be notified in advance and in writing.
- Any work not completed within 12 months of the date of this quotation, will be subject to a price review
- Allow 3-6 weeks for delivery from Sweden after order has been received.

Please note:

2. The location of Heat pumps and associated services will be as agreed
3. Client to supply power to the unit or to junction box within 1 m of location.
4. A qualified RECI Electrician must be present during commissioning.
5. No responsibility will be undertaken for damage to underground services.
6. Below running costs are based on ESB rates using a day/night rate meter and on technical data supplied by Panasonic

****

For your information:

Based on an outside air temperature of 2 degrees C, and an output temperature of 35degrees C.

Average running costs per hour for an Aquarea MDC05F

Delivering 35 degrees C (High underfloor Temp. or low temperature radiators)

Day Rate	1.3 Kwh	@	18.61 Cent / hr	24	Cents
Night Rate	1.3 Kwh	@	9.22 Cent / hr	12	Cents

****

Terms of payment:

1. 10 % deposit of heat pump within 90 days of quotation date.
2. 50% of unit(s) at time of ordering, and 50% (less deposit) on delivery in Ireland
3. Commissioning: payment on completion of project, heat pump installed and running.

If you need any clarification or have any queries, please contact us at 086 2265465.

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With regard to the quotation's for under floor and heat pump installation.

1. The system installed will be the primary source of space heating in the dwelling concerned with no need for additional backup of any kind.
2. The Kw output of the heat pump is based on the Insulation and air tightness levels being equal to the current building regulations.
3. In relation to hot water, our heat pump will heat the tank to 50 degrees Celsius. To comply with building regulation an immersion element will need to be fitted and timed to switch in for a short time (1/2-hour approx.) every day to bring the tank temperature to 65 degrees.
4. Included in the quote is a Datatherm system, which allows for greater control over your heating. Radiant floor heating can be very difficult to regulate with the standard room temperature thermostat. This is because of the large heat storage capacity that exists within the floor. Datatherm control systems were designed specifically with this in mind and allow the user very precise control of any under floor application.
5. Two layers totalling 125mm **minimum** high-density (Xtratherm or Kingspan) floor insulation is recommended and must cover the entire floor space with a 25mm edging to finished floor height on all room perimeters including internal walls.
6. It is important that sub floor levels do not vary more than 15mm across the whole floor space.
7. A base is required with a condensate soak away for the heat pump.
8. Conservatories by their nature are difficult to heat and control due to large amounts of glass ,large amounts of external wall area and often vaulted ceilings.We allocate a higher density of underfloor pipe work in these areas but special consideration must be taken regarding heat loss in these areas.
9. Electrical cable (6square min) with isolation switch plus a mains water supply will be required within one meter of pump location also Datatherm control cable should be installed at first fix stage which will be predetermined.
10. For remotely installed heat pumps we would require district flow and return piping to be installed between the building and the heat pump this prevents unwanted heat loss to the ground.(Not included in quotation please specify if remote location required)
11. On the day of final commissioning a certified electrician must be present.
12. An outlet is required for the heat pump supply and return pipes 4 inches in diameter each is adequate.
13. The location of the heat pump and its accessories will be pre determined and agreed upon with the customer.
14. If there are any queries please contact us at 0862265465.

Regards,

_____

E. Norton.

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18/12/16

Ken McCullagh.
Clonlea Lodge,
Ballinteer,
Dublin 16.

Quotation for 500 litre Hot water cylinder.

Heat sources:
Air Source Heat Pump.

Quantity	Details	
1	Joule Cyclone twin coil 500l hot water cylinder Diameter 660mm	
	For mains water supply (Please specify if private well is the source)	
	Supply and connection to heating circuit.	
	Subtotal	1,150.00
	Plus Vat @ % 13.5	155.25
	Total €	1,305.25

- Quote is valid for 90 Days.

IMPORTANT

Terms of payment:

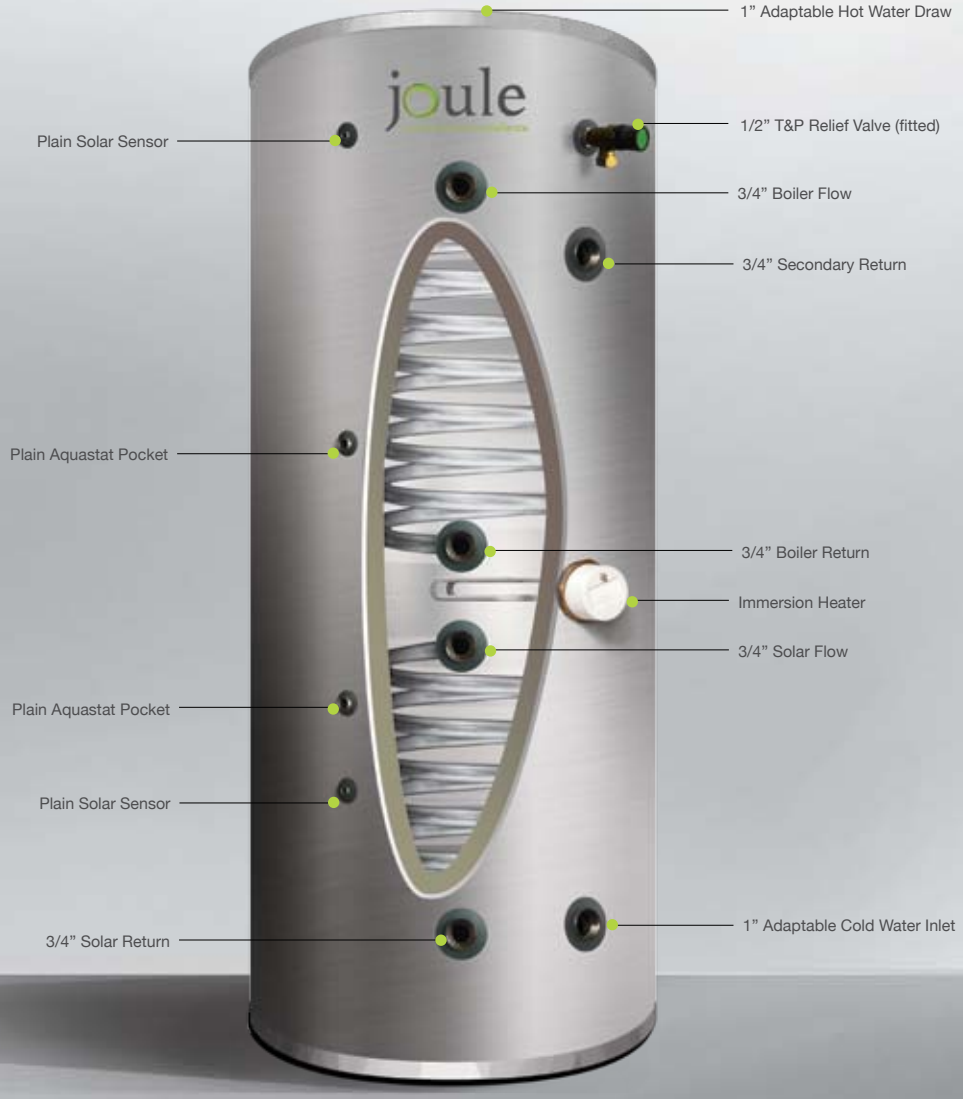
1. Payment on installation and testing of cylinder..

Any queries or clarification that you may need please contact us at 0862265465.

Regards,
Eric Norton

Cyclone Twin Coil

efficient solar supported indirectly heated hot water



Twin Coil

These cylinders are designed to be heated indirectly using of an oil or gas boiler. They come complete with one electric Element to intermittently support the water heating system.

Immersion Heater options

Incoloy immersions come as standard in all Joule Cyclone Cylinders unless otherwise stated. Incoloy immersions are designed for low to medium use in a domestic application. If the water been stored is hard or the usage is high, Joule recommend Titanum Immersions.

Eco80

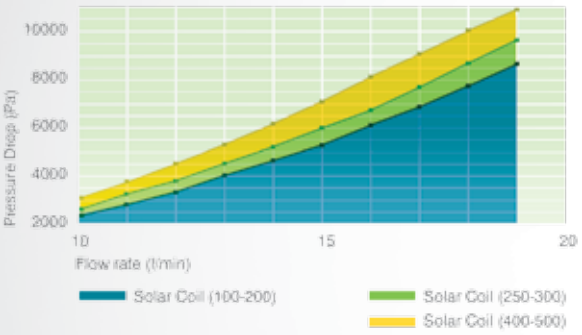
With the requirement for more energy efficient solutions, Joule offer the full Cyclone range with Eco80 specification. The eco 80 range increasea insulation thickness to 80mm nominal.

Technical Information

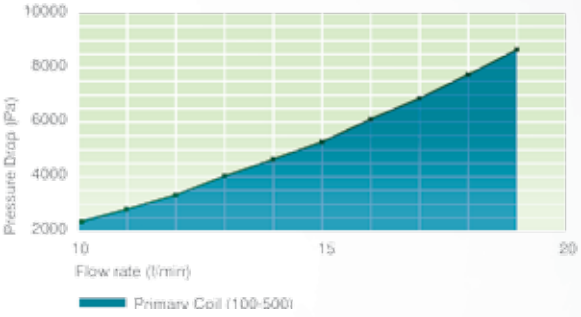
	STANDARD						SLIM LINE			SPECIAL								
Volume (l)	170	200	250	300	400	500	175	205	230	193	222	225	270	280	300	305	342	360
Height (mm)	1205	1085	1335	1535	1535	1880	1535	1880	2000	1335	1535	1205	1085	1880	2000	1205	1335	1880
Diameter (mm)	500	560	560	560	660	660	440	440	440	500	500	560	660	500	500	660	660	560
Weight Empty (kg)	32	34	43	47	62	75	34	36	40	34	38	40	45	46	47	48	55	58
Weight Full (kg)	202	234	293	347	462	575	209	241	270	227	260	265	315	326	347	353	397	418
Reheat Indirect Total Minutes	24	26	26	32	35	35	27	28	32	26	30	31	30	31	34	34	30	32
Reheat 3 kW Immersion Total Min.	75	91	118	141	175	222	76	93	112	87	101	110	135	138	141	144	152	165
EN12897 Prim. Heat Exchng (kW)	16	18	22	22	28	35	16	18	18	18	18	18	22	22	22	22	28	28
EN12897 Solar Heat Exchng (kW)	16	16	18	18	22	22	16	16	18	16	18	18	18	18	18	18	22	22
Dedicated Solar Volume	95	110	135	160	210	260	98	113	125	107	121	123	145	150	160	163	181	190
Standard Standing Loss kWh/Day	1.53	1.8	2.15	2.28	2.41	2.54	1.55	1.82	1.92	1.75	1.86	1.9	2.2	2.24	2.28	2.3	2.35	2.38
Eco80 Standing Loss kWh/Day	1.45	1.59	1.69	1.91	2.15	2.25	1.46	1.61	1.64	1.56	1.62	1.66	1.71	1.72	1.91	1.92	2.10	2.12

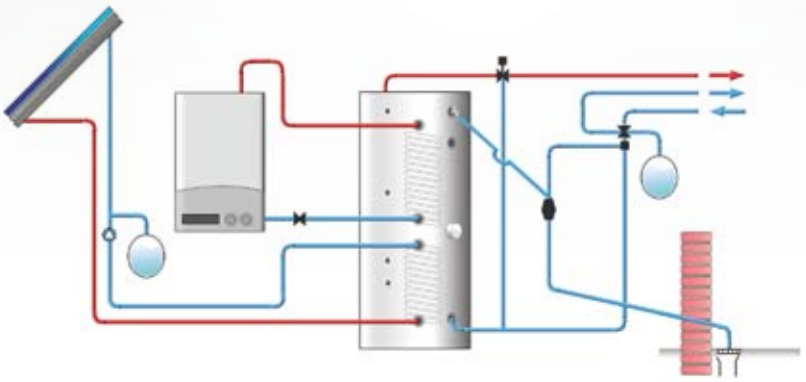
When using Eco80, dimensions will change to allow for extra insulation.

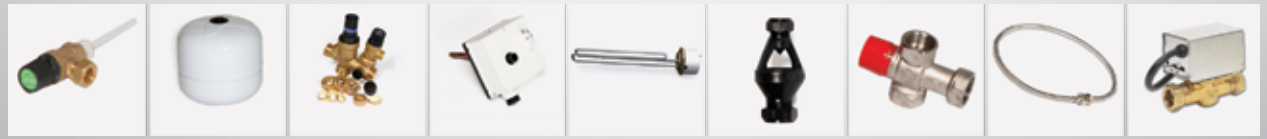
Solar Coil - Pressure Drop Graph



Primary Coil - Pressure Drop Graph







1	1	1	1	1	1	0	1	1
Temperature and Pressure Relief Valve	Expansion Vessel	High Flow Rate Inlet Control Set	Dual Thermostat	Incoloy Long 240V 3kW Immersion Heater	15/22 Tundish	22mm Thermostatic Mixing Valve	Expansion Vessel Hose	22 mm 2 Port Motorzed Diverting Valve

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18/12/16

Ken McCullagh.
Clonlea Lodge,
Ballinteer,
Dublin 16.

Quotation for underfloor heating - Supply and installation Kitchen/Living & Utility Next Door.

Heat sources:
Air Source Oil Boiler

Quantity	Details	
230m	17mm POEC Double Oxygen Barrier Piping	
1	Underfloor Manifold	
3	Ports	
28m	Underfloor quick Track & Pipe Staples	
1	High Head Circulating Pump	
1	Motorised valve	
1	Room thermostat and integrate to existing oil & radiator system	
1	Under floor temperature mix valve	
	Flow and Return pipework - from oil boiler to underfloor manifold	
	Fixtures and fittings	
	All Materials and Labour	1,251.79
	Plus Vat @ % 13.5	168.99
	Total €	1,420.78

- Quote is valid for 90 Days.
- The room stats are optional but not essential. The master controller would be controlling the complete house; this is normal and also the most efficient system.

Please note:

1. The Piping above is 17mm diameter double oxygen barrier piping.
2. The amount of piping required is based on 6" & 4" spacing.
3. Quote is based on drawings provided at the time of the quotation.
4. Quote does not include Insulation or the placing of insulation.

5. Recommended would be two layers totalling 150mm of minimum high-density insulation on base, Use Xtratherm or Kingspan, with 25mm edge/ perimeter insulation for the underfloor slab.
6. 50mm insulation is sufficient on the first floor slab.
7. On all floors the edge insulation is also required (25mm will suffice).
8. Total area to be clear of all materials prior to our arrival for the installation.
9. We recommend between 75 to 125mm of concrete screed to be used. Whatever depth you go for, it is vitally important that the depth remains constant across the complete floor area.
10. A number 10 aggregate is a superior final cement pour rather than standard readymix. It bonds around the pipe better and has better thermal characteristics.
11. All room stats (where supplied) will be digital.
12. The temperature control will be integrated to the heating schedule of the existing system while maintaining a base temperature in the event that the radiator system is not used.
13. Locate the controller as agreed at first fixing, we need to liase with the electrician at this time (this will be installed by your electrician for RECI purposes)
14. Controls include all time clocks etc for the underfloor **and** the hot water cylinder.
15. Where stud work is to be nailed to the floor, we need to avoid these studs with the piping, to this effect, all walls to be marked out clearly in advance
16. All sewers, services and wastes to be fitted prior to insulation installation.

IMPORTANT

The above includes all of the controls, motorised valves and pumps, which will be required for the set up of the hot water & under floor circuits.

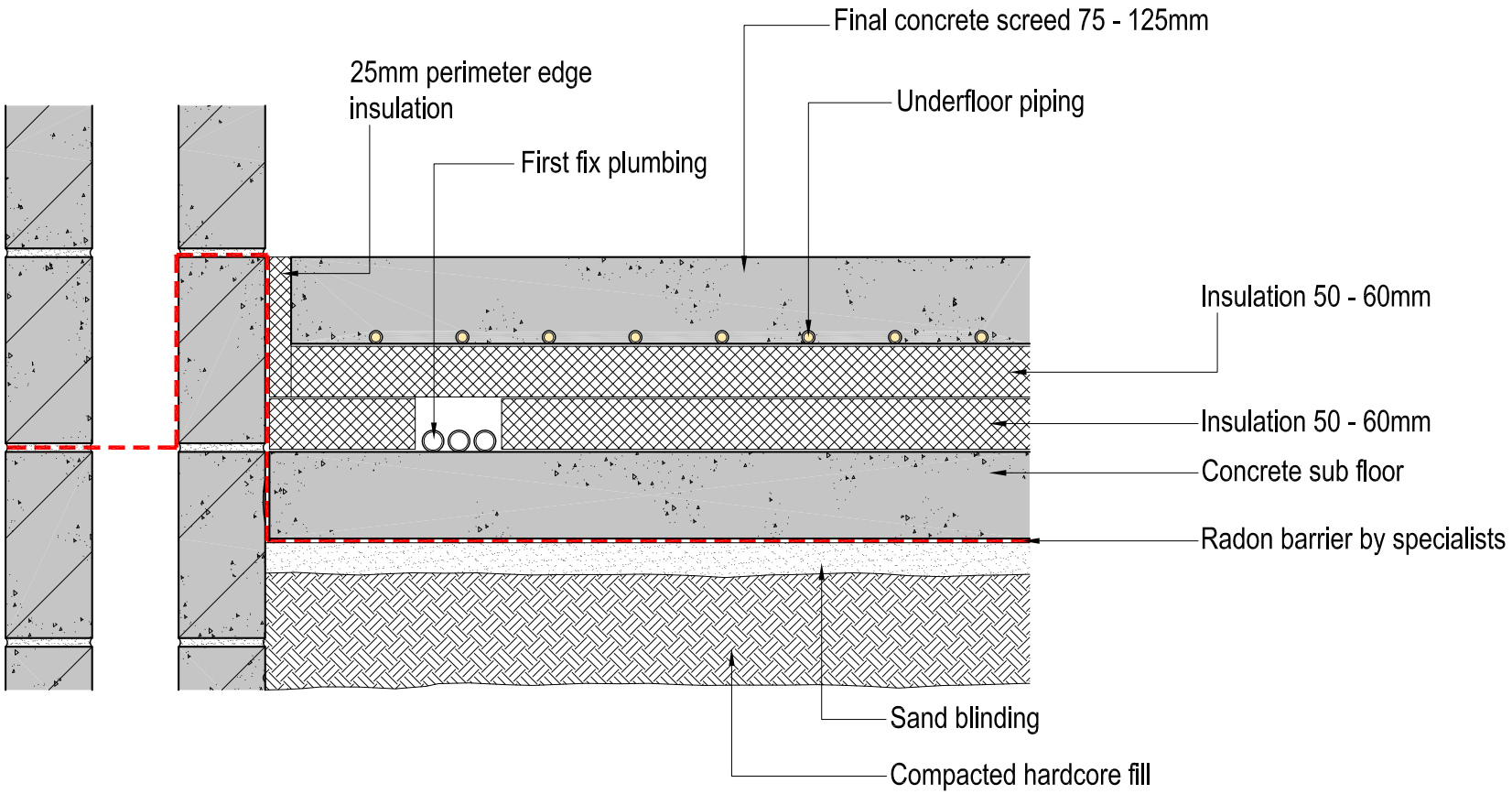
Terms of payment:

1. 75 % Payment on installation of underfloor piping, or appropriate zone / area.
2. 25% on completion of commissioning.

Any queries or clarification that you may need please contact us at 0862265465.

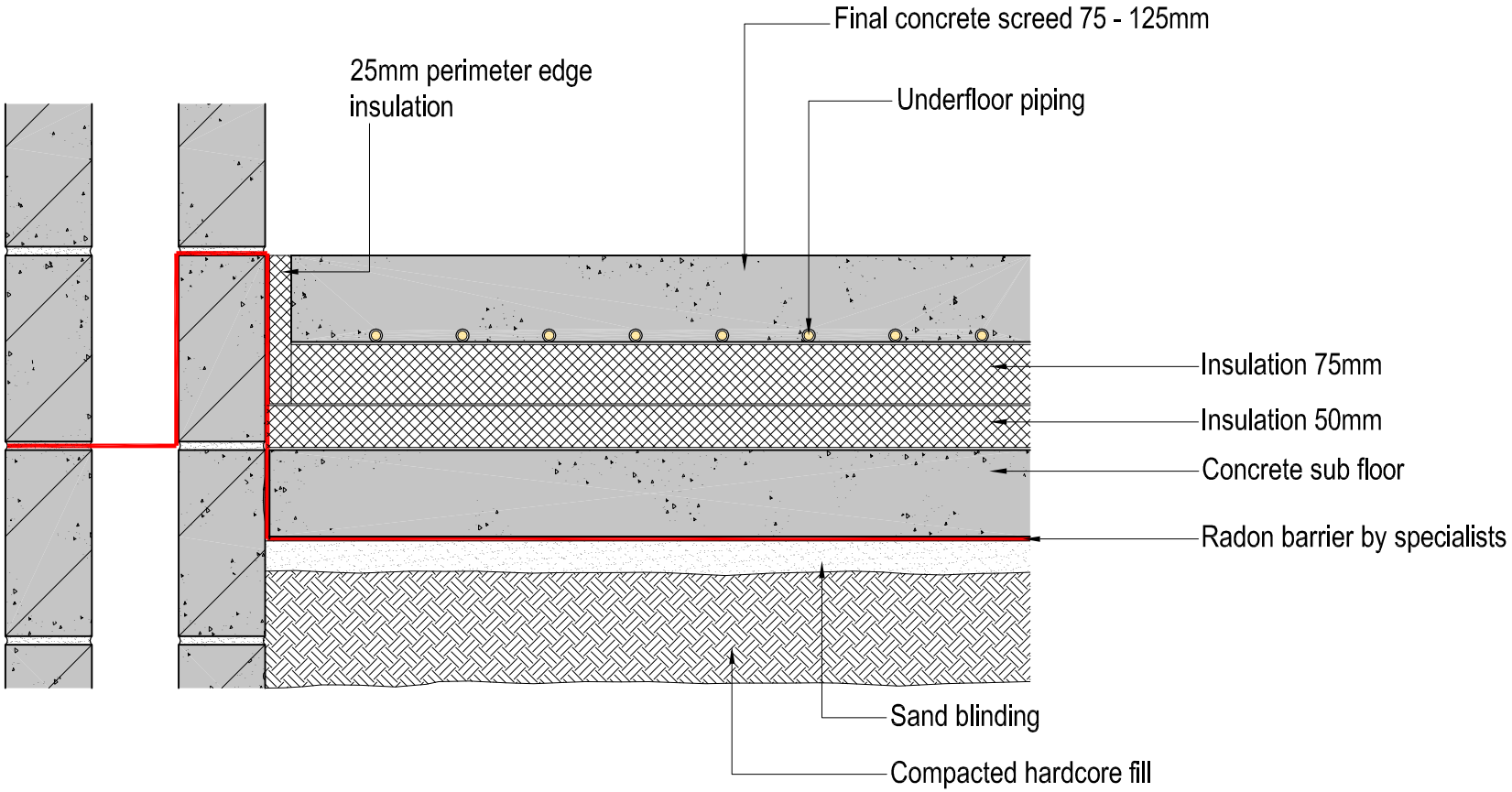
Regards,

_____
Eric Norton



Ground floor detail - *Underfloor heating*

For demonstration purposes only



Ground floor detail - *Underfloor heating*

For demonstration purposes only

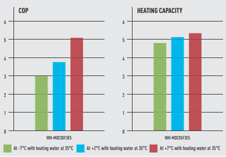
NEW AQUAREA 5KW MONO-BLOC

Maximum savings, Maximum efficiency, Minimum CO_2 emissions, Minimum of space
Panasonic has designed the new 5kW Aquarea Mono-Bloc heat pump for small homes which have high performance requirements.
Whatever the weather, the 5kW heat pump will always give you maximum efficiency, even at -20°C! The New Aquarea heat pump is easy to install on new or existing installations, in all types of properties.

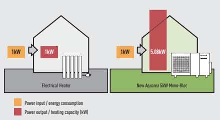
How do you get heating and hot water from air?
An Aquarea Air Source Heat Pump captures fresh air and passes it over refrigerant-filled coils (think fridge!). The captured heat is automatically transferred to water, which is then ready for use in your heating system and for supplying all of your domestic hot water needs. Panasonic's latest technology offers you a sustainable alternative to oil, LPG and electric heating systems.

Aquarea High Performance for low consumption houses. From 3 to 16kW
For a house with low temperature radiators or under-floor heating, our high performance Aquarea HP is a good solution. This solution can work as a stand-alone unit or can be combined with an existing gas- or oil-fired heating system depending on requirements. This new solution is ideal for low consumption homes.

High Performance have extremely high efficiency even at -15°C



COP comparison
Electrical heater with new Aquarea 5kW Mono-Bloc.



* The comparison is made on nominal manufacturer values based on the following conditions. Rating conditions: Heating: Inside air temperature: 20°C Dry Bulb / Outside air temperature: 7°C Dry Bulb / 6°C Wet Bulb. Conditions : Water input temperature: 30°C. Water output temperature: 35°C

Due to the ongoing innovation of our products, the specifications of this catalogue are valid barring typographic errors, and may be subject to minor modifications by the manufacturer without prior warning in order to improve the product. The total or partial reproduction of this catalogue is prohibited without the express authorisation of Panasonic UK Ltd.

ACCESSORIES

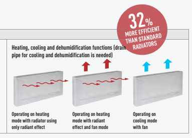
Radiators

Panasonic have developed a new radiator line up working with water at 35°C in order to:
- Make the installation easier, without 2 zones kits and additional pumps,
- Increase the efficiency by 32% over standard radiators working at 45°C.
- Makes cooling operation possible to increase comfort

A selection tool is available on www.panasonicproclub.com

AQUAREA AIR RADIATORS. PAW-AAIR-900 / PAW-AAIR-700 / PAW-AAIR-200

Heating, cooling and dehumidification functions (drain pipe for cooling and dehumidification is needed)



Tanks

Panasonic have a large line up of tanks with high efficiency and high insulation allowing in certain cases for the tank to be installed in a non heated part of the house (such as garage, cellar, etc...) without affecting the efficiency of the house.

		STANDARD SANITARY		HIGH EFFICIENCY		SUPER HIGH EFFICIENCY		
		WH-TD20E3E5	WH-TD30E3E5-1	HR 200	HR 300	HRS 200	HRS 300	HRS 500
Heat up time	Valuation	★★☆☆	★★☆☆	★★★☆	★★★☆	★★★★	★★★★	★★★☆
Energy losses	Valuation	★★★☆	★★★☆	★★★☆	★★★☆	★★★★	★★★☆	★★★☆
Efficiency of the tank	Valuation	★★☆☆	★★☆☆	★★☆☆	★★☆☆	★★★★	★★★☆	★★★☆
Warranty		10 years	10 years	7 years	7 years	7 years	7 years	7 years

Control & connectivity

Aquarea Manager
Ready Steady Go. Easy Installation & Easy Configuration.
Ready: Pre-programmed with up to 600 applications/ system diagrams. Steady: At start up - state the number of application/system diagram. Go: The controller starts working according to selected diagram
PAW-HPM1: for 2 zones cascade and bivalent applications.
For more information: www.panasonicproclub.com

Room Thermostats
PAW-A2W-RTWIRED: Wired LCD room thermostat with weekly timer.
PAW-A2W-RTWIRELESS: Wireless LCD room thermostat with weekly timer.

Internet control
Internet Control is a next generation system providing user-friendly remote control of heat pump units from anywhere, using a simple Android or iOS smartphone, tablet or PC via internet.
A simple Installation: Just connect the Internet Control device to the heat pump with the supplied wire and then link it to your WIFI Access point.

Connectivity to Modbus / KNX / EnOcean
Panasonic allows for optimum integration with BMS systems. Panasonic have designed a range of interfaces for Panasonic specifically to provide complete monitoring, control and full functionality of the entire Aquarea line-up from KNX, EnOcean and Modbus installations.

Photovoltaic Solar panels

Heat Pump + HIT Photovoltaic solar panel from Panasonic
Photovoltaic solar panels: the best solution for big savings.
Combining photovoltaic solar panels with your heat pump can help to further reduce your electrical consumption and CO_2 emissions. Additionally, with the unique HIT photovoltaic solar panel technology from Panasonic, you can produce more electricity per square metre, helping you to increase your energy savings still further.

Panasonic®

To find out how Panasonic cares for you, log on to: www.aircon.panasonic.eu

Contact Details:
Telephone: 01344 853182
www.panasonic.co.uk/aircon

Address: Panasonic Air Conditioning
Panasonic House
Willoughby Road
Bracknell
Berkshire
RG12 8FP

Panasonic

NEW 5kW MONO-BLOC SINGLE PHASE

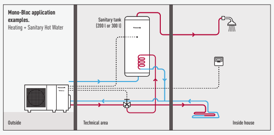
heatingandcoolingsystems

AQUAREA

APPLICATION EXAMPLES

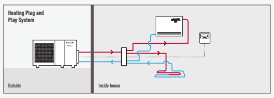
Application A:
· Ground floor and · 1st floor: floor heating. · Sanitary hot water for 4 persons

Panasonic Solution:
· Mono-Bloc heat pump of 5kW. · Efficient HRS 200 tank with high exchange surface, high insulation allowing a installation in a not heated part of the house, high durability.



Application B:
· Ground floor and 1st floor: Radiators

Panasonic Solution:
· Mono-Bloc heat pump of 6kW. · Aquarea Air radiators working with water at 35°C, allowing 32% more efficiency on the heating system as standard low temperature radiators.



HIGH CAPACITY COMPRESSOR

High temperature heating source unit
· R410A refrigerant
· High capacity compressor (42-65cc)
Models: 5JD420X and 5JD550X

HOW PANASONIC HELPS YOU

How Panasonic heat pumps can help you to save money
· Large line up of solutions which can be integrated in your projects
· Mono-Bloc line up for easy installation, no refrigerant installation and small foot print
· Large installer and service team available on www.panasonicproclub.com for efficient follow-up and support for your project
· Helps you to reduce the cost of your construction and increase reliability
· Panasonic has expanded our distribution network, providing delivery when you need it
· Panasonic offers a strong service network for startups and commissioning

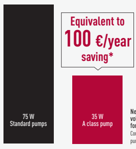
How Panasonic helps you to specify the correct heating system
· Panasonic can help you adhere to strict building regulations
· Design software, specs and noise calculator available on www.panasonicproclub.com

How to install easily the Panasonic Heat Pump
· If Mono-Bloc required, there is no need for a certified gas installer
· Easy setup with a very easy to handle remote control
· Reliable
· Safety valve and expansion vessel included
· Concrete Dry mode[1]
· Lock cooling mode[1]
· Pump speed control level 1-7

KEY POINTS OF THE LINE-UP

· 6l EXPANSION VESSEL
· A CLASS PUMP

· A-Class pump significantly reduces the consumption

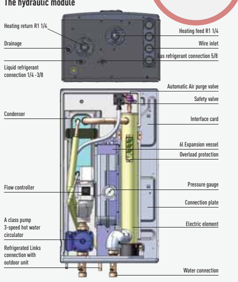


New A class pump with variable volume-flow (Dynamic Pump Control) for 5kW Mono-Bloc
Comparison of energy consumption - Standard pumps vs A class pump

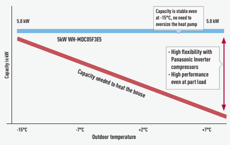
* Assuming a yearly cost of 180 € for a standard pump may vary depending on consumption and energy cost.

· A Class pump adapts the water pressure according to the demand, reducing energy consumption, noise on the valves, and makes the installation easy without buffer tanks or manifold.
· No Backup heater needed to maintain the capacity at -7°C, High efficiency guaranteed even at -7°C
· Many new functions added:
Auto mode, holiday mode[1], show power consumption, new device control

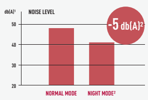
The hydraulic module



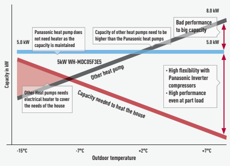
With a Panasonic heat pump, there is no need to over size the heat pump to reach the required capacity at low temperatures.
· Dedicated software for low consumption houses which allow the heat pump to produce hot water at 20°C. This is needed during the seasons, when a little heating is required
· No need of additional expansion vessel, as the unit already has a 6l expansion vessel
· No buffer tank required as the Panasonic heat pump has an inverter compressor which can regulate the capacity. (Please check on the service manual the minimum volume of water needed on the circuit)
· 3kW electrical heater is included on the heat pump
· Panasonic heat pumps can work up to -20°C and guarantee the capacity without backup heater up to -15°C (Check capacity tables)
· Panasonic heat pumps are very silent and have a night mode program for even lower noise. See noise calculator on www.panasonicproclub.com



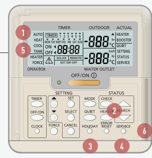
Special attention has been given to noise levels - Panasonic created a night mode to reduce the noise when it's needed.



1. Sound pressure measured at 1 m from the outdoor unit and at 1.5 m height.
2. At standard condition working at heating capacity at +7°C with heating water at 35°C for two fans outdoor units. For one fan outdoor units, night mode reduction is 3dB(A).

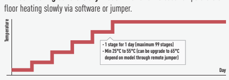


NEW FEATURES



For installer

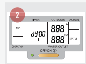
4. Floor heating concrete dry mode: Allows to increase temperature of floor heating slowly via software or jumper.

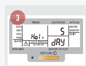


5. Heating and Cooling Mode
Installer can disable the cooling mode through a special operation via the remote controller on site.

6. Pump with 7 speeds
Pump speed can be selected on the remote control.

7. New de-ice control
Panasonic has developed a new de-icing control system which dramatically reduces the requirement for a back-up heater, increasing the efficiency of the heat pump.





For customer

1. Auto Mode: Automatically changes from heating to cooling depending on outdoor temperature.

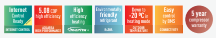
2. Energy Consumption: Displays the heat pump's energy consumption, split by heating, cooling and domestic hot water, and shows total consumption figure.

3. Holiday Mode: Helps you to reduce heating temperature during holidays.

NEW 5KW HIGH PERFORMANCE. TECHNICAL DATA

Panasonic has designed the new 5kW Aquarea Mono-Bloc heat pump for low consumption homes which have high performance requirements but limited space to install the outdoor unit.
Whatever the weather, Aquarea will always give you maximum efficiency, even at -20°C. The Mono-Bloc is easy to install in new and existing residential properties.

Technical focus
· Efficient control of room temperature based on the outdoor temperature, indoor temperature using the Aquarea Manager.
· Optional Smartphone control
· Maximum hydraulic module output temperature: 55°C
· Works down to -20°C
· Plug and play system



INTERNET CONTROL READY: Optional.

5kW High Performance			Single Phase
Model			WH-MDC05F3E5
Heating Capacity at +7°C with heating water at 35°C		kW	5.00
COP at +7°C with heating water at 35°C			5.08
Heating Capacity at +7°C with heating water at 45°C		kW	5.00
COP at +7°C with heating water at 45°C			4.00
Heating Capacity at +2°C with heating water at 35°C		kW	4.80
COP at +2°C with heating water at 35°C			3.75
Heating Capacity at +2°C with heating water at 45°C		kW	4.50
COP at +2°C with heating water at 35°C			2.96
Heating Capacity at -7°C with heating water at 35°C		kW	4.50
COP at -7°C with heating water at 35°C			2.98
Heating Capacity at -7°C with heating water at 45°C		kW	4.50
COP at -7°C with heating water at 45°C			2.53
Heating Capacity at -15°C with heating water at 35°C		kW	5.00
COP at -15°C with heating water at 35°C			2.56
Heating Capacity at -15°C with heating water at 45°C		kW	5.00
COP at -15°C with heating water at 45°C			2.04
Cooling capacity at 35°C with cooling water at 7°C		kW	4.50
EER at 35°C with cooling water at 7°C[1]			3.00
Power			230V / 50Hz
Dimensions	H x W x D	mm	865 x 1283 x 320
Weight		kg	112
Pump			A class
Heating water flow (ΔT=5 K. 35°C)		l/min	45.9
Capacity of integrated electric heater		kW	3
Sound pressure level		dB(A)	47
Sound power level		dB	65
Dimensions / Weight	H x W x D	mm / kg	1340 x 900 x 320 / 127
Operation range	Outdoor ambient	°C	-20 to 35
Water outlet	Heating	°C	25 – 55
	Cooling		5 – 20
Base pan heater			Option

COP classification is at 230 V only in accordance with EU directive 2003/32/EC. Sound pressure measured at 1 m from the outdoor unit and at 1.5 m height. Performance in agreement with EN14511.