



B0949 Hampton by Hilton Bath Road Heathrow **Planning Response Condition 24 (Energy)**

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Version	Date	Reason for issue	Prepared By	Checked By
1.0	April 2020	Planning condition discharge	AG	AG

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1 Response

This document addresses planning condition 24:

Prior to the commencement of development full details of the carbon reduction measures that conform to the energy strategy (Energy Assessment Rev.P1-J1054-ER-001, prepared by Kinetic Engineers Ltd, dated August 2018) shall be submitted and approved in writing by the Local Planning Authority. These shall include:

1 - Full details of the baseline energy (kWhr) and carbon performance (KgCO₂) of the development

2 - Full details and specifications of the passive energy savings measures (Be Lean- London Plan) and how they relate to the baseline emissions

3 - Full details and specifications, including relevant plans and elevations of any low or zero carbon technology to be utilised in the site.

The development must proceed in accordance with the approved details unless otherwise agreed in writing with the Local Planning Authority.

REASON: To ensure the development contributes a CO₂ reduction in accordance with the London Plan Policy 5.22223¹

Regarding this condition the approach to the strategy remains as indicated in the Energy strategy details as follows:

1.1 Baseline Energy and Carbon performance

The baseline energy is based on a thermal envelope having the following properties.

Table 1 – Baseline and Proposed Settings

Item	Unit	Baseline	Proposed
Average wall U Value	W/mK	0.26	0.20
Average Ground Floor U Value	W/mK	0.22	0.20
Average Exposed Floor U Value	W/mK	0.22	0.20
Average Window U Value	W/mK	1.6	1.4
Average Roof U Value	W/mK	0.18	0.18
Air Permeability	m ³ /hr/m ² @ 50Pa	3	3

¹ Extract from Grant of planning permission 43794/APP/2018/2779: 3rd April 2019



Item	Unit	Baseline	Proposed
Heating	Gas boiler Efficiency	0.91	--
Heating	Air Source Heat Pump	--	5.5
DHW	Gas boiler Efficiency	0.91	0.98
DHW	CHP Efficiency	--	50% Thermal/30% power
Cooling	Average SEER	2.7	5.0
Lighting	Average Lumen/Circuit Watt	60	85
Carbon (regulated)	kgCO2/m2 annum	47.41	38.2
Energy (regulated)	kWh/m2	260.12	205.39

In the table above the proposed fabric and air permeability values are also the Be Lean values.

The following appendices illustrate the current proposed plant and arrangements for the scheme.



2 Appendix A – CHP Data

At this stage of design development the proposed CHP is based on the XRGi 2. The final installation may differ with any change having with similar performance.

TECHNICAL DATA FOR THE XRGi® 20

Product data sheet in accordance with Regulation (EU) No. 811/2013; 813/2013, Dated 26.09.2018



The XRGi® is a combined heat and power plant (CHP) that works on the principle of cogeneration.

An XRGi® system consists of three main components – the Power Unit, Q-Heat Distributor and the iQ-Control Panel. In a package with a Flow Master (temperature control, class II = 2 %) the XRGi® is rated as seasonal space heating energy efficiency class A++.

In addition, you can also extend your XRGi® system with a storage tank with a capacity of 500, 800 or 1,000 litres for optimum operation.

ORDERING DATA

Supplier's name or trademark	EC POWER	
Supplier's model identifier		
Article number		
Modules		
	XRGi® 20 without condensing technology ¹	XRGi® 20 with condensing technology ¹
	X200001	X200001+01KIT2616
	Power Unit, iQ20-Control Panel, Q80-Heat Distributor	Power Unit, iQ20-Control Panel, Q80-Heat Distributor + Condensing and exhaust gas heat exchanger kit

ErP-LABEL DATA²

Seasonal space heating energy efficiency class	A++	A++
Rated heat output P_{rated}	39 kW	42 kW
Seasonal space heating energy efficiency; HCV ³	213 %	238 %
Sound power level, indoors L_{WA}	63 dB	63 dB
Electrical efficiency; in accordance with heating value LCV ³ $\eta_{el} \text{ CHP100+SUP 0}$	33 %	33 %
All special precautions to be taken during assembly, installation or service	Refer to Commissioning and Service Manual	Refer to Commissioning and Service Manual

¹ Return temperatures as per EN 50465 2015 7.6.1: Without condensing technology 47 °C, with condensing technology 30 °C.

² The values were rounded in accordance with the requirements governing product data sheets by Regulation (EU) No. 811/2013; 813/2013.

³ HCV = higher calorific value, LCV = lower calorific value

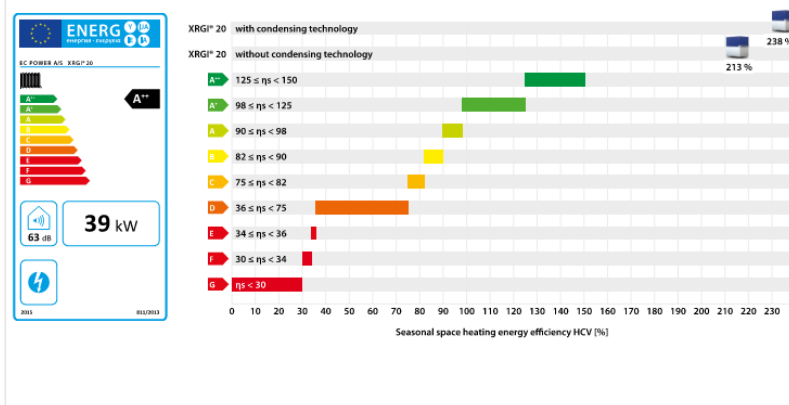


Figure 1 - CHP Data Sheet 1



OUTPUT

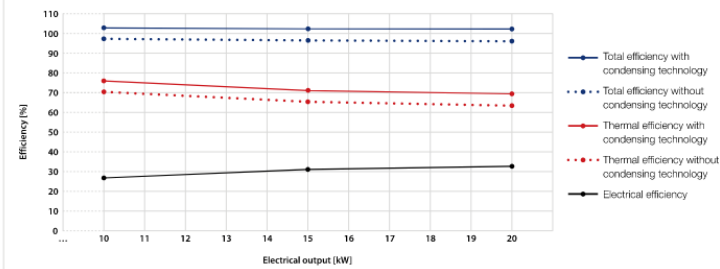
XRGi® system		XRGi® 20 without condensing technology ¹			XRGi® 20 with condensing technology ¹		
Power modulation*		50 %	75 %	100 %	50 %	75 %	100 %
Electrical output, modulating*	kW	10.0	15.0	20.0	10.0	15.0	20.0
Thermal output, modulating*	kW	26.1	31.4	38.7	28.1	34.2	42.2
Power consumption, gas in accordance with LCV ²	kW	37.1	48.1	61.1	37.0	48.0	60.8
Electrical own demand, production	kW	0.078	0.078	0.078	0.083	0.082	0.081
Electrical own demand, stand-by	kW	0.025			0.025		

EFFICIENCIES
& OPERATING
PARAMETERS

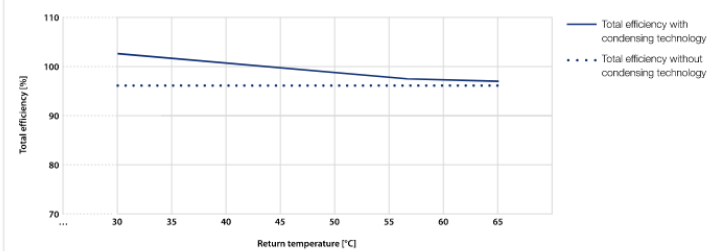
Power modulation*		50 %	75 %	100 %	50 %	75 %	100 %
Electrical efficiency in accordance with LCV ²	%	26.9	31.1	32.7	26.9	31.2	32.9
Thermal efficiency in accordance with LCV ²	%	70.4	65.4	63.4	76.0	71.2	69.4
Total efficiency in accordance with LCV ²	%	97.3	96.5	96.1	102.9	102.4	102.3
Seasonal space heating energy efficiency in operating mode ^{3,4}	$\eta_{\text{se}} \%$	217			242		

POWER
MODULATION

Continuous modulation of 10 – 20 kW in power-controlled mode

TOTAL
EFFICIENCY AT
FULL LOAD

XRGi® 20 total efficiency / return temperature



* Continuous modulation in power-controlled mode

¹ Return temperatures as per EN 50465 2015 7.6.1: Without condensing technology 47 °C, with condensing technology 30 °C.² LCV = lower calorific value³ This values are based on independent, certified and authorised inspection bodies. Test reports are available upon request.⁴ Efficiency at rated heat output as per the delegated Commission Regulation (EU) No. 811/2013; 813/2013

Figure 2 - CHP Data Sheet 2



3 Appendix B – Gas Fired Water Heater

At this stage of design development the proposed GFHW is based on the Andrews SUPAflo EVO condensing Water Heater. The final installation may differ with any change having with similar performance

Six reasons it has to be Andrews

- ✓ Britain's No.1
- ✓ Market leading expertise
- ✓ Reliability you can trust
- ✓ Unrivalled design support
- ✓ Expert technical advice
- ✓ Exceptional after sales service

You can also find all the technical information that you need at: andrewswaterheaters.co.uk

- BIM files
- CAD files
- Brochures
- Technical specification sheets
- Case studies
- Installation manuals
- User guides
- Size-it tool

The original sizing tool, built with you in mind

Size-it is quick, easy and available online on any device. Use it to create a detailed specification for your project, which can be downloaded as a PDF or printed directly.

SUPAflo EVO Condensing Water Heater

SUPAflo EVO produces a continuous supply of hot water at a recovery rate of up to 9,250 litres an hour. Digital controls are built-in as standard for easy installation, diagnostics and maintenance. SUPAflo EVO is supplied with a high grade stainless steel heat exchanger and bronze primary pump, delivering optimum efficiencies.

Designed to have a small footprint and fit through standard doorways, SUPAflo EVO is ideal for compact boiler rooms and has built-in wheels for effortless manoeuvrability. It's designed for high demand environments that need high volumes of instant hot water, such as health clubs, commercial laundrettes and manufacturing plants.

Technical Specification

- 142-538kW
- 98%
- 5.230 l/h
- 35mp/kWh

Features

- 98% gross efficiency
- Hot water recovery of up to 9,250 litres per hour at 50°C
- Seven models, 142kW to 538kW
- High quality stainless steel heat exchanger
- Compact, lightweight design with small footprint
- Natural Gas or LPG

Benefits

- Energy efficient, cost effective operation
- Suitable for most demanding applications
- Suitable for large commercial and industrial applications that require large quantities of hot water
- Very efficient and low maintenance
- Low space requirement for installation
- Can be installed in all rooms gas mains

Andrews. Built to perform.

Andrews. Built to perform.

Andrews. Built to perform.

Figure 3 - Gas Fired Water Heater Data



4 Appendix C - DHW General Arrangement

At this stage of design development the proposed DHW arrangement is indicated below, this may differ from the final arrangement with the concept similar.

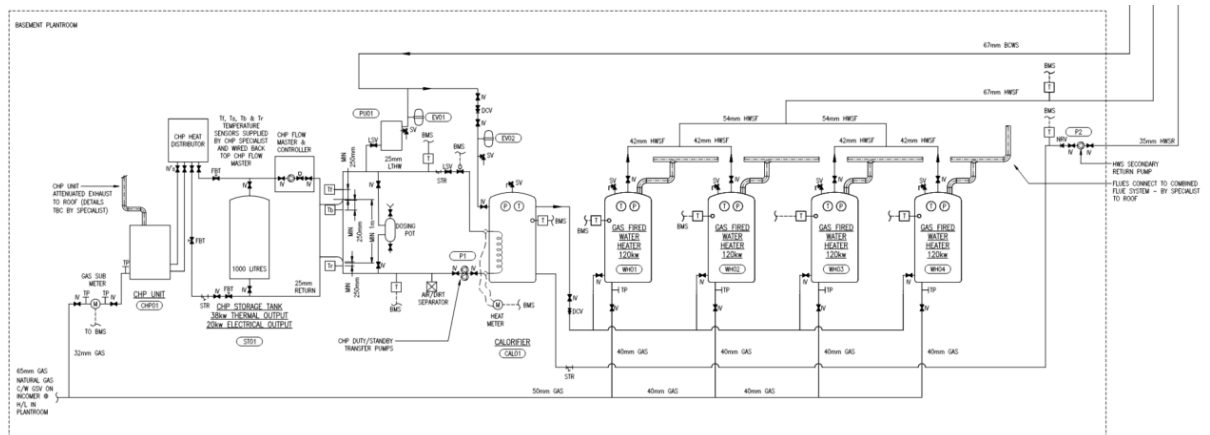


Figure 4 - DHW Arrangement Schematic

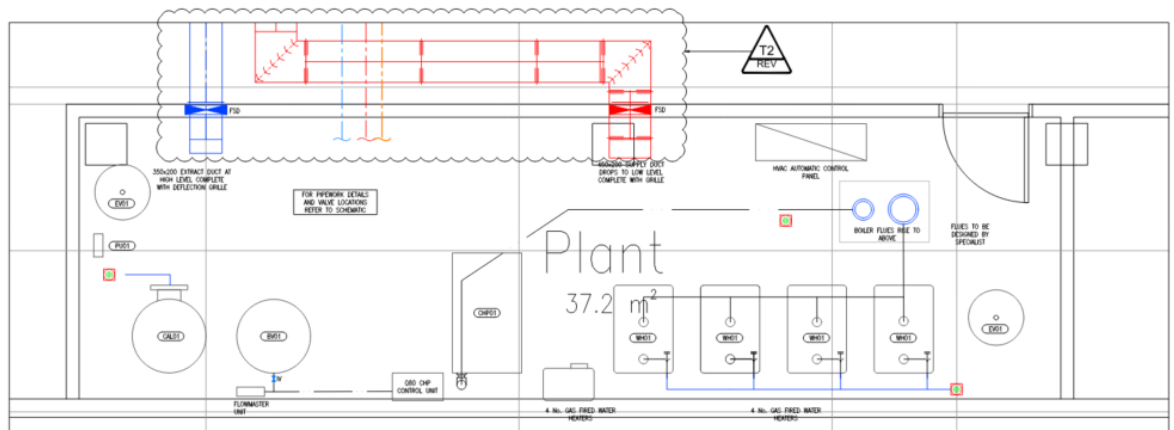


Figure 5 - Plant Room Layout



5 Appendix D - Roof Plant Arrangement

At this stage of design development the proposed plant arrangement, items highlighted in green represent the air source heat pump outdoor units, this may differ from the final arrangement with the concept similar.

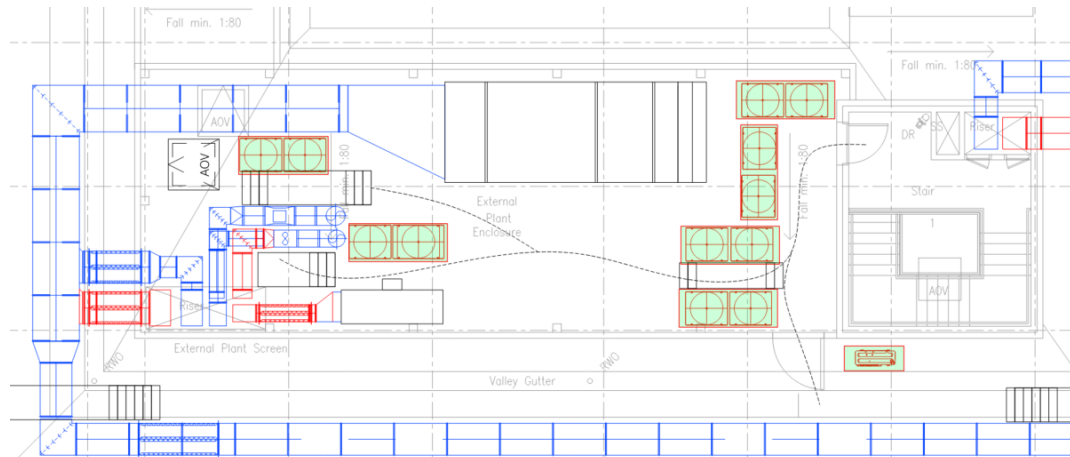


Figure 6 - Roof Plant Arrangement