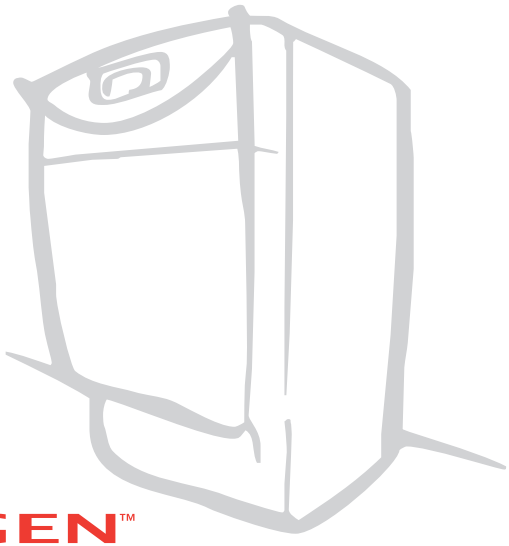
User manual

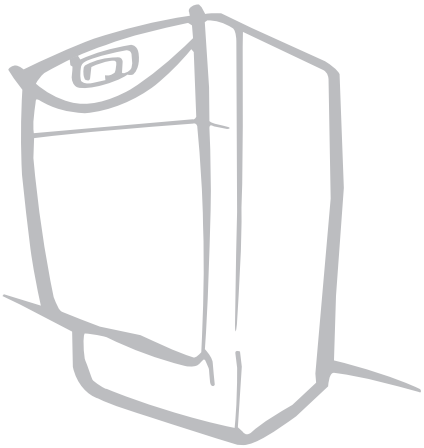


WHISPERGEN™

Personal Power Station
Model PPS24-ACLG-5

WhisperGen™ User Manual

(for UK)



The WhisperGen™ microCHP system is designed and manufactured by:

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Part No. WP-5037-030-00 UK

Applies to WhisperGen™ microCHP system Model PPS24-ACLG-5

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References to third party products in this manual do not necessarily represent an endorsement or a recommendation that the product is suitable for use within a WhisperGen™ microCHP system. Always refer to the manufacturer of the product to confirm its suitability.

Table of Contents

Welcome

The **WhisperGen™** microCHP Unit is a Personal Power Station - a completely new kind of home appliance, designed to save you money and protect the environment at the same time.

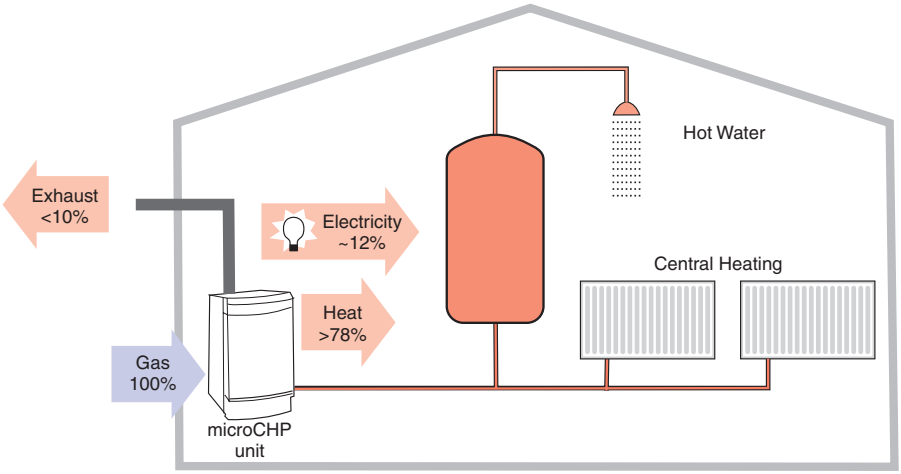
This booklet explains how to make best use of your unit, how to take care of it and what to do if you experience any problems.

We recommend that you read this booklet carefully and then keep it close to your **WhisperGen™** microCHP Unit for future reference.

What is a Personal Power Station?

The **WhisperGen™** Personal Power Station is an example of what is known as a *microCHP* unit.This is a name in two parts. *CHP* stands for *Combined Heat and Power.* It means that the unit will produce hot water and electricity at the same time.

CHP systems can be very large and the first part of the name, *micro* simply means that the system has been scaled down so that it can be used in a domestic environment.



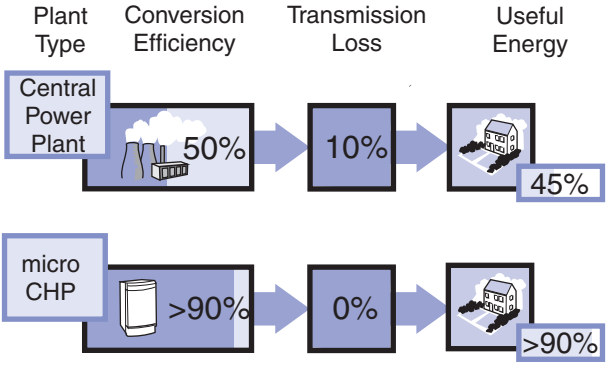
A microCHP unit performs the same function in your home as a gas central heating boiler by providing hot water and central heating.

Whenever it operates it also generates electricity that can either be used in your home or exported to the electrical distribution network. It is, in effect, a miniature power station for your personal use.

What are the Benefits?

There are two main benefits of operating a **WhisperGen™** microCHP Unit - environmental and economic.

Using the electricity generated when the unit is running reduces the amount of electricity that a house must draw from the local distribution network. Any excess electricity generated can usually be exported for a credit. This should result in a noticeable reduction in your electricity bills.



All figures are approximate and used to show the relative overall efficiencies of the different technologies. Source: EA Technology Ltd 2001

Using a microCHP system to produce electricity and heat close to where they are to be used, results in much more efficient use of fuel. Consequently less carbon dioxide gas is emitted into the atmosphere. It is this carbon dioxide that is thought to be the major cause of climate change.

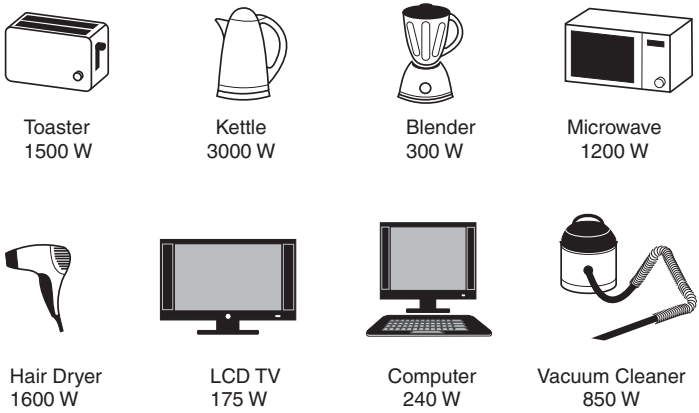
It has been estimated that a typical household using a **WhisperGen™** microCHP Unit could reduce their carbon dioxide emissions by 1.5 tonnes per year and reduce their electricity bills by around 25 to 35% per year.

How Much Electricity Can You Expect to Generate?

In normal operation the **WhisperGen™** microCHP Unit will provide around 1000 watts of electrical power.

This is enough electricity to run some lights and appliances, but not enough for short term, heavy loads such as electric kettles.

When these are in use, additional electricity is drawn from the local distribution network. Conversely, if you generate more electricity than you use, the surplus will be exported to the network.



Typical Power Consumption of Common Household Appliances

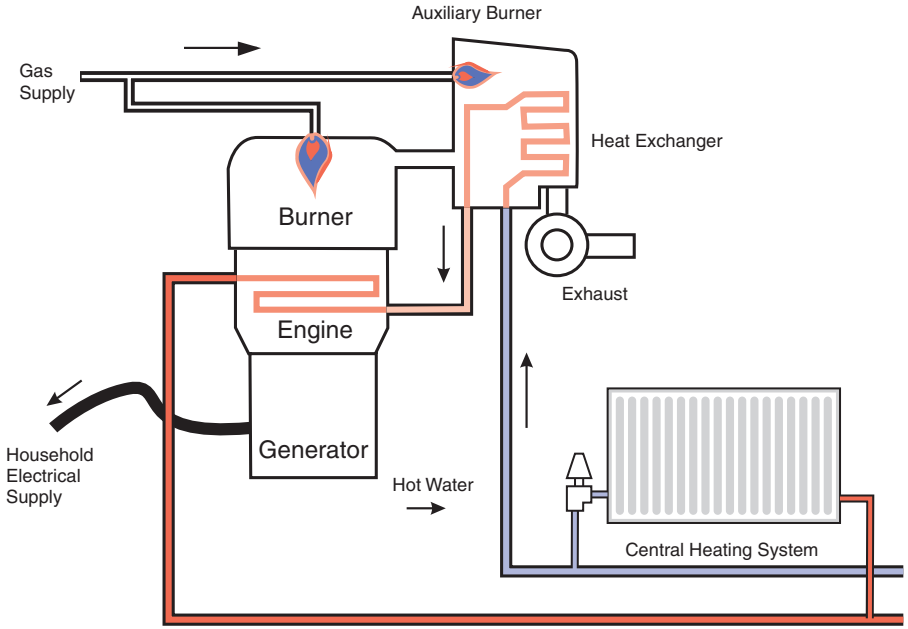
The exact quantity of electricity generated and the economic benefits depend on a number of factors. These include the energy efficiency of the building, the appliances that you use, and your occupancy patterns.

Later, we will give you some tips on how to set things up so that you maximise your benefits.

How does the unit work?

Your **WhisperGen™** microCHP Unit is the result of more than fifteen years of research and development. The specific details of its operation are very complex, but the basic principles are very simple:

- The unit contains a gas powered engine called a Stirling engine.
- This is connected to an electrical generator that produces electricity whenever the engine runs.
- The water that is used to cool the engine heats up during that process.
- This hot water is circulated within the central heating system.



Operating Your WhisperGen™ microCHP Unit

For the most part the Unit operates completely automatically and, apart from perhaps adjusting the room thermostat, there is no need for you to intervene.

However, it is important that you are aware of what to do if you experience any problems, and also you may want to customise the unit's operation to better suit your needs.

Safety Controls

Your **WhisperGen™** system includes electrical isolating switches and gas shutoff valves that can be used to shut the unit down in an emergency.

These should be clearly marked. It is important for you to locate them and ensure that you know how to operate them in an emergency. If you cannot find them or you are unsure how to operate them ask your installing company for advice.

See "*What to do in an Emergency*" on page 10 for more information on how to use the safety controls.

To Start the Unit

1. Ensure that all isolating switches and gas valves are in the "on" position.

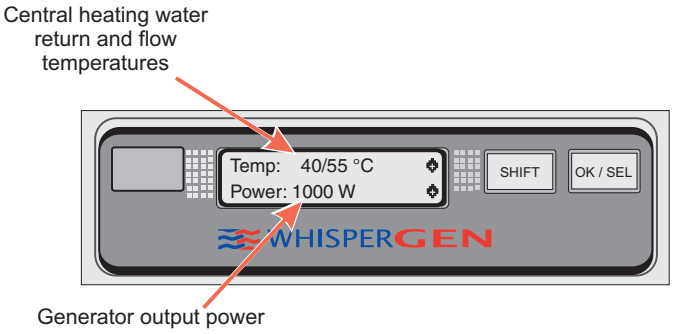
2. Set the heating controls and room thermostat to the "on" position.

3. The burner will begin to operate immediately, and the engine will begin to run after a few minutes.

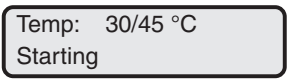
The Control Panel

The **WhisperGen™** microCHP Unit has a small LCD display and control panel mounted on it.

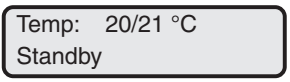
This provides important status information that will help you to confirm that the system is operating correctly.



Typical LCD display output during normal operation



During starting ...



and during standby.

The panel can also be used to reset the unit if a fault should occur – see "*Troubleshooting*" on page 12 for details of how to do this.

Adjusting the Heating System Controls

Your heating system controls (room thermostat, central heating programmer, etc.) operate the WhisperGen™ microCHP Unit to ensure you get your heating and hot water when you schedule them.

If you need to make a change to how the system runs, then you should make an adjustment to the heating controls. Because of the wide variation between different heating and control systems we are not able to provide specific instructions on how to adjust them. You should refer to the documentation provided with the controls for this.

General Principles

Some of the changes that you make can have an effect on how the unit operates. Here are some general principles that will help you maximise the levels of comfort and the financial benefits of operating a WhisperGen™ microCHP Unit.

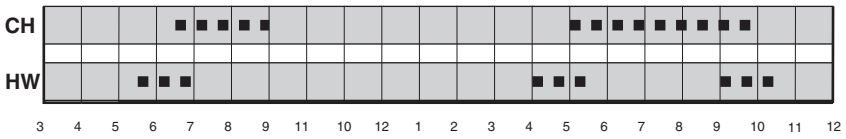
Principle 1 – The control of the system should be heat driven. Only run the system when you want to heat your home or need hot water – never run it simply to generate electricity.

Principle 2 – WhisperGen™ microCHP Units operate most effectively when they are able to operate in continuous periods of half an hour or more. Try to avoid settings that cause the unit to cycle on and off rapidly.

Principle 3 – The electricity the WhisperGen™ microCHP Unit generates is of most benefit to you if it is used within your home. Try to make most use of your major household appliances when the unit is operating.

Standard Controller Timer Settings

In a typical household following these principles will probably result in a central heating timer programme that looks like the diagram here.



Typical Controller Program Settings

As you would expect, the central heating times have been set to occur when the home is occupied, but there are other points to note.

The first is that the hot water and central heating demand times overlap. This has the effect of both maximising running times, and ensuring that the unit operates during times when the building is occupied.

The second point is that a short water heating period has been included at the end of the day. This is intended to ensure that the hot water gets up to temperature as quickly as possible the following day.

Programmable Thermostats

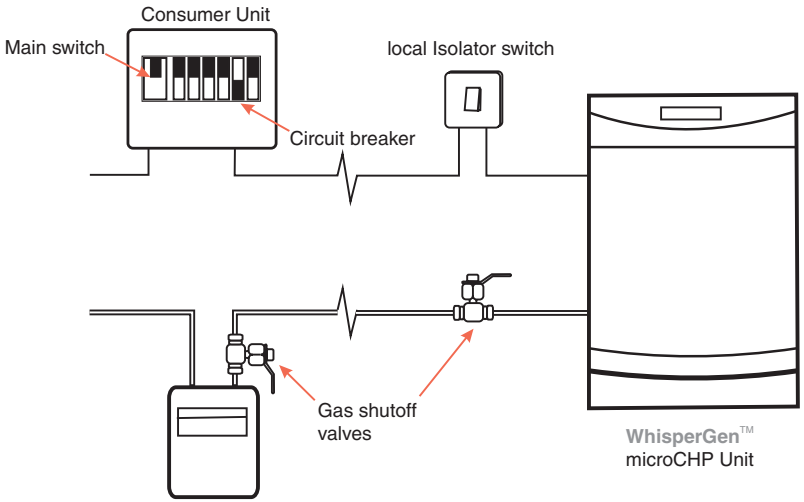
The principles for setting standard controllers apply equally to a programmable thermostat control system. Avoid short on/off periods to minimise cycling and set the hot water on times so they overlap with your occupancy times.

What to do in an Emergency

In an emergency the WhisperGen™ microCHP Unit can be shut down by either:

1. Shutting of the gas supply by using the shutoff valve or the gas meter isolating valve. This will result in a controlled shutdown of the unit, but will cause a fault lockout which will need to be reset at the control panel (see later).

2. Turning off the electricity supply using the isolating switch, consumer unit circuit breaker or main switch.



Important Note

Don't use the local electrical isolating switch as a control switch. The purpose of this switch is to provide an emergency cut-off and make the unit safe for maintenance work to be carried out. Using it to switch the unit on and off will prevent the unit from operating efficiently and could shorten its service life.

Maintenance

The WhisperGen™ microCHP Unit requires a routine service every year. This involves checks and adjustments to ensure that the unit is running properly and a safety check.

Our recommendation is that you enter into a maintenance contract to ensure that this is carried out and to give you emergency cover in the event of a breakdown. Your installation company will be able to provide more information about this.

Important

The WhisperGen™ microCHP Unit contains no user serviceable parts. Improper maintenance can be very dangerous, and it is an offence for anybody without the appropriate training or qualifications to carry out maintenance work on the unit.

Service, maintenance and repairs must always be carried out by an approved and certified WhisperGen™ service agent.

Troubleshooting

If a fault occurs, the unit will shut down and then attempt to clear the fault and restart. If it is unsuccessful after a number of attempts it will shut down and display a message indicating the nature of the fault.

Some faults may be due to a temporary condition and it may be possible to restart the unit after a short period.

To clear the fault and restart:

1. Make a note of the fault code and message displayed on the LCD panel.

2. Press the OK/SEL key and hold it for 5 seconds.

3. The Unit will attempt to restart.

If it is unable to start or you experience repeated shutdowns contact your WhisperGen™ service agent and request a service visit.

Technical Specification

General Details	**Engine –** 4 cylinder double-acting Stirling cycle **Main Burner –** Single nozzle swirl stabilised recuperating **Auxiliary Burner –** Cylindrical premix surface burner **Generator –** 4 pole single phase induction motor **Duty Cycle –** 1 - 24 hour cycle **Installation Type –** C12 or C32 **Electrical Supply –** 230 Vac 50 Hz (Nominal Grid Voltage)
Electrical Output	**Nominal Mode –** up to 1000 W
Thermal Output	**Minimum –** 5.5 kW **Nominal Mode –** up to 7.0 kW **Maximum –** up to 12.0 kW
Power Consumption (net)	**Standby –** 9 W **Generating –** 100 W
Fuel	**Type –** 2H-2nd family natural gas **Supply Pressure –** 17...25 mbar (20 mbar nominal) **Supply Conditions –** I_{2H}-G20-20 mbar
Fuel Consumption	**Maximum Burner Firing Rate –** 1.55 m^3/ hour
Central Heating System	**Flow rate (nominal) –** 8.5 to 15 l/min. **Type –** Open vented or sealed pressurised **Max system pressure –** PMS = Class 2; 3.0 bar maximum **Thermal Store System Flow Temperature –** maximum 85°C

Contact Numbers

Installer

Service Callout

Unit Serial Number

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