

Statement of Compliance with PfE Policies

New Jerusalem Church, Stand Lane, Radcliffe, Manchester, M26 1JQ

Policy JP-S2: Carbon and Energy

In compliance with Policy JP-S2 of the Places for Everyone (PfE) plan, our development prioritises the minimisation of energy demand and maximisation of energy efficiency through the following measures:

No operational development is required to facilitate the proposals. The development involves utilising the existing Church space and using it as offices.

High Insulation Standards:

An assessment of Insulation will be undertaken as part of an EPC assessment, any potential increase in loft insulation highlighted will be undertaken.

Double glazing is installed throughout the property to further improve insulation and reduce energy consumption.

The applicant's business is to sell and install **Hotspot Vortex Deaerator**

Its principal objective is to increase the efficiency of boilers and reduce carbon emissions. This system is to be installed at the development

Explanation of How the Hotspot Vortex Deaerator Works

The vortex deaerator in response two functions by using a high-velocity swirling motion to separate dissolved and entrained gases from the water in a wet heating system. Here's a step-by-step breakdown of how it operates:

1. Inlet Flow & Pressure Drop

- Water enters the deaerator at 98285.26 Pa (0.9828 bar).
- It flows into a tapered conical chamber where it is forced into a vortex motion.
- This rapid swirling motion creates a low-pressure core in the center of the chamber.

2. Air Separation

- Due to the centrifugal force, denser water is pushed outward, while lighter air and gas bubbles migrate toward the center of the vortex.
- The vortex intensifies bubble coalescence and surface area exposure, allowing trapped gases to escape.

3. Air Removal at the Outlet

- The deaerator has a strategically placed air release valve that allows separated gas to be vented from the system.
 - The outlet pressure is -3211.86 Pa (-0.0321 bar), meaning there is a significant pressure drop, enhancing gas liberation.
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Pressure Drop Calculation in the System

Given Parameters

- System Temperature: 60°C
- Operating Pressure: 1.25 bar
- Flow Rate: 10 L/min (0.167 L/s)
- Deaerator Inlet Pressure: 98285.26 Pa (0.9828 bar)
- Deaerator Outlet Pressure: -3211.86 Pa (-0.0321 bar)

Thus, the pressure drop across the deaerator is approximately 1.015 bar.

Key Effects of the Pressure Drop

- Enhanced Gas Liberation: The rapid drop in pressure causes dissolved gases to reach their saturation point and separate more effectively.
 - Efficient Bubble Removal: The centrifugal force and low-pressure region facilitate gas extraction, reducing microbubble insulation effects in the heating system.
 - Minimal Flow Disruption: The design ensures that even with a 1.015 bar pressure drop, flow remains consistent without significant turbulence in the downstream piping.
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Conclusion

This **vortex deaerator efficiently removes dissolved air**, significantly improving **heat transfer efficiency** in a wet heating system. It produces an expected pressure drop of **1.015 bar**, which is well within operational limits while ensuring optimal air removal.

The property undergoes regular maintenance, with bi-annual reviews to ensure all energy-saving measures are functioning optimally and to identify opportunities for further improvements.

These measures align with the 2022 Part L Building Regulations and underscore our dedication to creating a sustainable and energy-efficient development. Policy JP-C2:

Digital Connectivity

In compliance with Policy JP-C2 of the PfE plan, our development support high-quality digital infrastructure through the following measures:

Full Fibre Superfast Internet

The property has not got Fibre optic cables and superfast Broadband is not available in the area making it unviable and not feasible.

However, internet is provided via 5g wireless technology supplied by 3 Business and gives 1 gigabit capable network connections.