**1. Heat Pump Specifications, Efficiency & Performance**

| **Item** | **Sustain** | | | **Smart Heating** |
| --- | --- | --- | --- | --- |
| **Model** | Vaillant aroTHERM Plus 3.5kW | | | Vaillant aroTHERM Plus **5kW** |
| **SCOP at 45°C** | 3.65 (365% efficiency) | | | **3.9 (390% efficiency)** |
| **Capacity vs. Heat Loss** | Matched (3.5kW vs. 3.27kW heat loss) | | | Oversized (5kW vs. 3.27kW heat loss) |
| **Warranty** | 5 years (heat pump) | | | **7 years (heat pump)** |
| **Running Costs** | | | -£30 to £301/year savings | **£200/year savings** (£17/month) | |

Key Takeaways

* **Smart Heating’s higher SCOP could yield better savings \*if accurate\*, but oversizing may negate gains during milder weather?**
* **Smart Heating’s longer warranty**

**2. Radiator Design**

| **Item** | **Sustain** | **Smart Heating** |
| --- | --- | --- |
| **New Radiators** | 4 replaced, 2 retained | **5 new radiators** |
| **Heat Demand Coverage** | Explicit % coverage per room (e.g., Kitchen: 123%) | Outputs listed (e.g., Kitchen: 2,060W@dT50) |
| **Transparency** | Room-by-room heat loss % met | No explicit % coverage; relies on wattage |

Key Takeaways

* **Sustain’s radiator plan is more transparent and detailed**, with clear % heat demand met at 45°C flow temp.
* **Smart Heating’s 5 new radiators may oversupply heat** (e.g., Kitchen’s 2,060W vs. 811W loss), but actual output will depend on adjusted delta T at 45°C?
* Overall, the two designs are **difficult to compare** as they used different design temp.

**3. System Components**

| **Aspect** | **Sustain** | **Smart Heating** |
| --- | --- | --- |
| **Volumiser** | Included | Included |
| **Cylinder** | 150L Unistor (25-year warranty) | 150L Vaillant uniSTOR (25-year warranty) |
| **Decommissioning** | Full removal of old system | Full removal of old system |
| **Solar PV Integration** | Requires iBoost controller | Solar PV-ready (no controller cost) |

**Key Takeaways**

* No major relevant difference here

**5. Installation & Compliance**

| **Aspect** | **Sustain** | **Smart Heating** |
| --- | --- | --- |
| **Certifications** | MCS, B-Corp, CIBSE-affiliated design | Heat Geek trained, MCS certified |
| **Sound Compliance** | 42 dB | **40.2 dB** (quieter) |
| **Documentation** | Detailed heat loss report | Less transparent radiator metrics |

**Key Takeaways**

* Both meet regulatory standards, but **Sustain’s documentation is more rigorous**.
* **Smart Heating’s quieter operation** is a minor advantage.

**Quality Assessment conclusion**

1. **Sustain**
   * **Strengths:** Appropriately sized heat pump, transparent radiator coverage.
   * **Weaknesses:** Lower SCOP (3.65), shorter heat pump warranty.
2. **Smart Heating**
   * **Strengths:** Higher SCOP (3.9), quieter operation, longer heat pump warranty.
   * **Weaknesses:** Oversized heat pump, less radiator transparency.

**Final decision quandary:**

* **All things considered the upgraded Smart Heating quote (5 new rads instead of 3) edges ahead on efficiency (assuming what indicated will be true and no oversizing).**
* **I could not fully compare radiators design (heat loss and performance).**
* **If quality was equal, Sustain’s lower cost (£5,139 vs. £8,327) and tailored design made it the better choice.**
* **The final choice will have to be made on the assumption that Smart Heating design will achieve 3.9. Considering the customer service promised by Heat Geek I am inclined to believe they would improve the system without further expenses on my part**