ZYPHO® Shower Heat Recovery

SAP, SAP10 and Part L

What is SAP?

The Standard Assessment Procedure (SAP) is the methodology used by the government to assess and compare the energy and environmental performance of dwellings.

Developed by the Building Research Establishment in 1992, its purpose is to provide accurate and reliable dwelling energy performance assessments.

Part L of the building regulations uses SAP (since 1994) to assess a building's energy performance.

Reduced data SAP (rdSAP) was introduced in 2005 as a less costly method to assess the performance of existing dwellings.

How SAP Works

SAP assesses how much energy a dwelling will use while delivering a defined level of comfort and service provision. The assessment is based on standardised assumptions for occupancy and behaviour enabling a like-for-like comparison of dwelling performance.

Factors such as fuel costs and emissions of carbon dioxide (CO_2) are determined from the assessment.

SAP quantifies a dwelling's performance in terms of:

1. Energy use per unit of floor area,
2. A fuel-cost-based energy efficiency rating (the SAP Rating),
3. The emissions of CO_2 (the Environmental Impact Rating).

WWHRS and SAP

Waste Water Heat Recovery for Showers (WWHRS) is a listed technology on the Products Characteristics Database (PCDB). This database holds product information for a range of technologies used within different National Calculation Methodologies (NCMs) of which SAP and rdSAP are two.

WWHRS specifically targets energy use in the home associated with hot water—and showering uses the largest proportion of that energy. Because of the amount of energy required to heat water, using WWHRS has one of the highest cost versus SAP impact ratios within the software.

Savings are applied through the SAP modelling software to rooms with showers that have WWHRS connected to them. The level of SAP impact is then determined by a few key factors:

1. The number of occupants SAP has calculated for the dwelling
2. The total number of rooms for showering/bathing
3. The number of rooms with WWHRS attached
4. If the room has only a shower or a bath and shower
5. The system (A/B/C) installation method used

What is SAP10?

Coinciding with the new *Approved Document Part L 2021*, SAP10 is the new version of SAP. In SAP10, the methodology has been updated to more accurately reflect the energy consumption of buildings.

One of the major changes to the calculations is the introduction of a new hot water model, which is more accurate than the previous versions of SAP.

In turn, this means that WWHR has a much larger impact (two to three times more effective) on the energy performance of a dwelling, making it even more cost effective than before.

Building Regulation Part L and Part L1A

Building Regulations Part L deals with the conservation of fuel and power which was established in 2006. Part LIA applies to new dwellings and one of its objectives is to ensure that new buildings increase their energy efficiency to meet targets set by the government.

Building regulations are mandatory and in order to meet them, builders need to gain a ‘pass’ on their SAP calculations. Without it, building control will not sign off the development and the property cannot be let or marketed for sale.

The current version of Part L—the 2016 edition—is about to be updated by the 2021 edition, which will see a 30% reduction in CO_2 emissions from the current level (more on this below). The government plans to achieve the remaining 70% through the Future Homes Standard towards Net Zero Carbon homes in 2025.

Building Regulation Part L 2012 Edition

Effective from 15 June 2022, the 2021 edition of Building Regulation Part L will see the minimum requirement for a new dwellings energy performance increase significantly. In order for a dwelling to pass Part L, it will have to reduce its carbon emissions by approximately 30% compared to the previous standard.

The government has provided a 'notional dwelling' as an example of how to achieve this reduction and meet the new requirements. For a typical three-bedroom semi-detached house, it is done by including 1.5 kW of Solar PV and a WWHR system. Each of these measures reduce CO_2 emissions by approximately 15%.

What is interesting is how much more cost effective the WWHR is. With Building Regulations requirements changing and the SAP10 model giving more credit to WWHR, it is likely that WWHR will become a common technology in new-build homes.

Future Homes Standard

To be introduced in 2025, Future Homes Standard will require that all new homes be Net Zero Carbon constructions. This will reduce carbon emissions by a further 70%. It is anticipated that it will largely be met by utilising electricity generated from renewable sources as the primary heating source via heat pumps.

SAP Score Comparison

Installing Zypho® WWHRS products is one of the most cost-effective ways to increase a building's SAP score. The table shows the different products that can be applied to an SAP calculation, the typical SAP increase they provide and their cost. You can see just how cost-effective Zypho® is against other technologies:

ZYPHO® VS OTHER TECHNOLOGIES						
Product	Estimated SAP10 Increase	Product Cost	Installation Cost	Maintenance Necessary	User Interaction	Cost per SAP 1%
Zypho®	15%	£ 500	£ 50	N	N	£ 33
Solar PV (1.5kW)	15%	£ 4,000	£ 500	N	N	£ 300
Insulation (increase by 50 mm to 150 mm)	2%	£ 500	£ 0	N	N	£ 250
Air Source Heat Pump	70%	£ 5,000	£ 1,500	Y	Y	£ 93
Biomass Boiler	65%	£ 10,000	£ 2,000	Y	Y	£ 184
Solar Thermal	15%	£ 3,500	£ 500	Y	N	£ 266
MVHR	3%	£ 1,000	£ 500	Y	N	£ 500