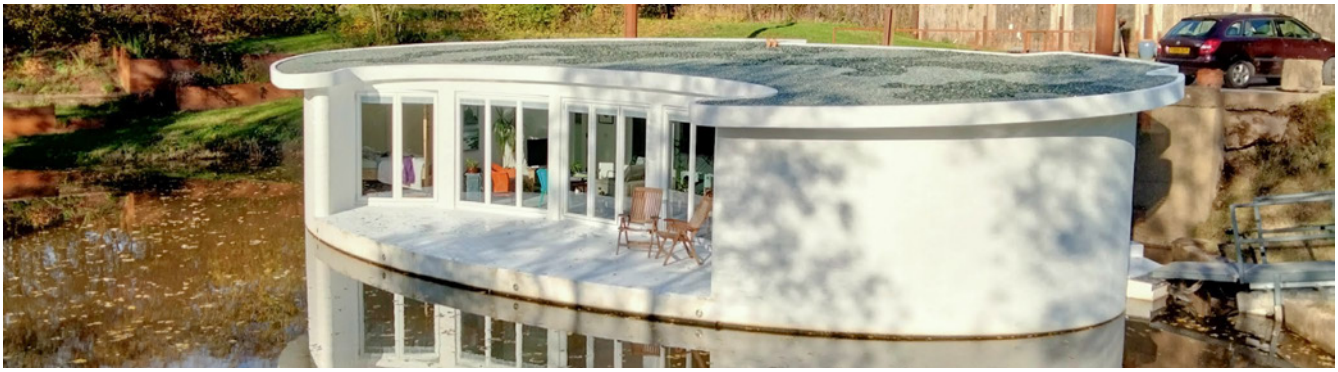
Saniflo SFA GROUP

CASE STUDY

Floating House, Worcestershire



Unusual floating house uses Saniflo to pump waste

From a disused former marina and storage yard to a stunning beauty spot, an unloved inlet along the River Severn in Worcester was bought and transformed by locals Sue Braithwaite and Oliver Carpenter during the covid lockdowns. With no planning permission, no electric, water or drainage, the couple set about planning a unique floating property that would transform the aesthetics of the riverside, whilst embracing innovative technology.

Working with the local planners at Worcester City Council, who were keen to oversee the transformation of the area, the couple submitted plans for a single-storey, three-bedroom eco-structure that would sit on the shallow river bed and rise and fall with the water. With no solid foundations on the ground the property was designed to attach to piles in the bank; floating up and down as the river rises and falls.

Planning permission granted, the project was designed as a futuristic looking property using Computer Aided Design. A steel structure was erected and polystyrene, a light and thermal material for building projects, was cut to size on site and used to create the shell of the building. Specialist concretes were used to render the building exterior, whilst an innovative roof surface made from recycled glass was chosen to reflect the sun and the water.

When it came to planning the discharge of waste from the property, a system of pumps was recommended to discharge waste water from the bathrooms through a series of flexible pipes in the floor void to a Sanifos 110 lifting station attached to the back of the property. The Sanifos activates automatically when full to pump the waste water up vertically 7.5 m to a main drain when the house is at its lowest point on the water. It also has to be sufficiently versatile to pump at varying heights as the floating house moves up and down with river level.

With the property ready for occupancy the couple moved in. Unfortunately, the pumps in the bathrooms were not working as they should; pumping and not pumping at the right times, water gurgling and the alarms sounding. The only pump that was working correctly was the Sanifos. Receiving waste water from the bathroom pumps and gravity fed kitchen water, the unit, which has 110 litres capacity, quietly and efficiently moved the waste on demand.

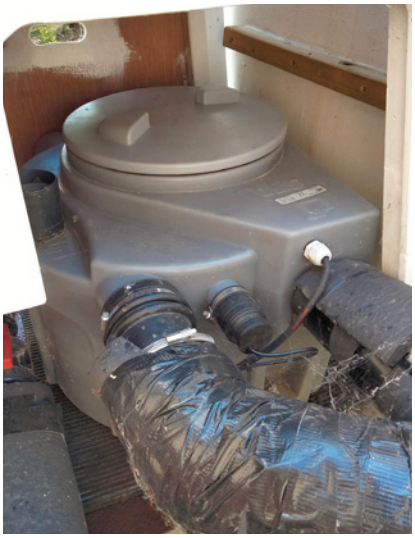
After pursuing a number of avenues to try and fix the issue, Oliver reached out to the technical team at Saniflo, who teamed up with Saniflo distributor and commercial plumbing company, PumpMaster. A site visit and a thorough analysis later, the problem was identified and a short term fix was made on the day with a return visit booked in for further small adjustments. The solution was a tremendous relief to the couple who had braced themselves for major works and expense;

> **As the Saniflo was the only pump that appeared to be working correctly we sent an email to see if they could come and help us sort out the whole system. The response was swift and efficient with a site visit quickly organised. The guys from Saniflo and PumpMaster were exceptionally knowledgeable and jointly worked through every possible scenario from the major to the minor until a practical resolution was found. Ultimately, it was a simple and cost-effective solution. The pump installations were all correct, but were lacking the correct venting. A temporary solution was made on the day and the fitting of new vents a few days later. We were clearly delighted at the outcome. This is such a lovely and individual house and working bathrooms are pretty fundamental.**

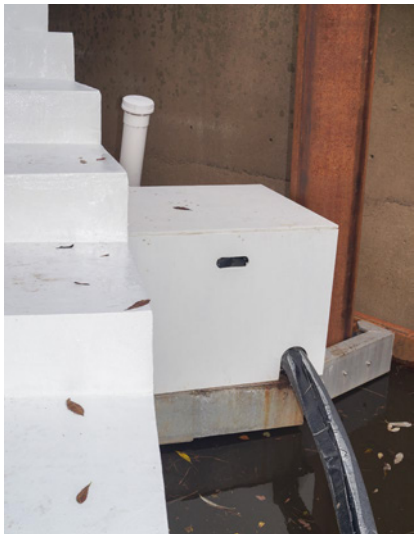
All pumps were ultimately correctly specified but a couple of minor installation errors proved to be the cause of the problems. The original plumber had placed air admittance valves on the vents in the internal pumps creating vacuums in the system. This prevented waste from entering the units properly as the displaced air had nowhere to go. As the vents were hidden the problem wasn't obvious, but after testing many hypotheses the duo from Saniflo and PumpMaster were able to identify the problem and the air admittance valves were removed and replaced.

On the Sanifos the vent port had also been blanked off completely. As vents are essential for the correct operation of a pump - displaced air needs to be pushed out when the pump is filling with water - the lack of vent was forcing air back in via the inlet pipe. Inversely, when the pump activates and the water level falls, it needs to draw air so as not to generate a vacuum. The vent port in the tank was opened to fix the immediate issue and an installer from PumpMaster returned later to install a vent pipe and cage. According to Oliver;

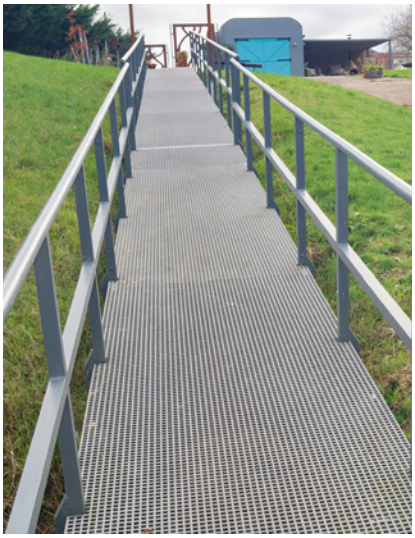
> **This is an unusual house which needs innovative ideas and thoughts to resolve its specific design requirements. Saniflo and PumpMaster stepped up to help us when we asked them, even though the problems weren't with their equipment and the solution has transformed the system and eliminated the issues.**



The Sanifos 110 takes the waste from the internal pumps and discharges it through small bore pipework up the hill to the mains drains.



The Sanifos 110 is installed in a box adjacent to the house and floats up and down with the house as the tide moves.



The mains drains are located at the top of the walkway; an incline of 7.5 m. The walkway also moves up and down with the rise and fall of the water.