SHOWER
POWER
BOOSTER
INLINE MICRO PUMP

FLOWFLEX

WRAS
APPROVED PRODUCT

Energy & Water Saving In Homes

www.showerpowerbooster.co.uk

Trustpilot

THE WRIGHT CHOICE

CONTENTS

FOREWORD

FOREWORD

This manual provides practical guidance and technical insight into innovative water and energy-saving systems to support decarbonisation. It is intended for homeowners, developers, energy assessors, and local authorities seeking validated, high-impact solutions for reducing carbon emissions and utility costs. Each system described here has been tested or validated by academic or field partners, and is designed to be scalable, cost-effective, and retrofittable.

ShowerPowerBooster Ltd has patented a technology [GB2623198] to use existing hot water systems for thermal energy storage with minimal modification. This allows replacement of 100% of the heat load from gas with 100% renewable energy. This can be applied in individual homes, hotels, public buildings, and factories, with a particular focus on replacing gas boilers or improving the efficiency of Heat Pumps (HP). The principal advantages of this technology is the rapid and low-cost upgrade of any existing heating system, without needing to replace the hot water system. ShowerPowerBooster Ltd is currently selling a commercialised product which benefits from independent validation of the technology. This allowed us to optimise the design and operation parameters.

Computational fluid dynamics (CFD) simulations of the device, in opera-tion in a domestic setting, have demonstrated that x4 more energy can be stored in a simple tank than previously predicted. When compared with complex tanks which claim to be market leaders, it stores twice the energy (x2), at half the cost. These simulations prove an almost perfect thermal stratification (thermocline) can be maintained in the hot water cylinder while also acting as a heat store and is a "game changer".

FOREWORD

Market Application:
This technology addresses the pressing need for residential heat storage solutions that work across the full spectrum of UK households. It is equally effective for properties with combi boilers (80% of the market) and those with conventional heating systems, offering a clear path to mass-market deployment. The system enables complete flexibility in heating load management, supporting the transition to a renewable-powered grid while reducing energy costs for consumers.

Benefits To Customers:
Storage of low-cost off-peak energy or surplus renewable energy at the flick of a switch. Replacing up to 100% of gas use in a home without replacing the water tank. Shift reliance on fossil fuels to surplus renewable electricity at a lower cost compared to heat pumps.

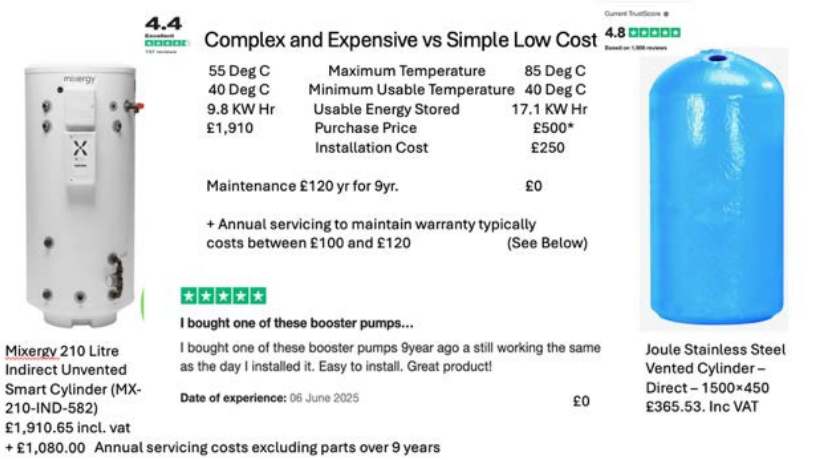
Benefits To The UK Government:
Achieving grid balance without building more gas power stations or major upgrades to the UK National Grid but simply repurposing existing water tanks.

Enabling Mass-Market Thermal Storage for Grid Flexibility:
This is a fundamental advance in thermal storage efficiency that addresses a critical challenge in grid decarbonisation. By enabling practical, cost-effective residential heat storage at scale, this technology opens new possibilities for grid balancing and renewable energy integration, creating a clear pathway to widespread adoption.

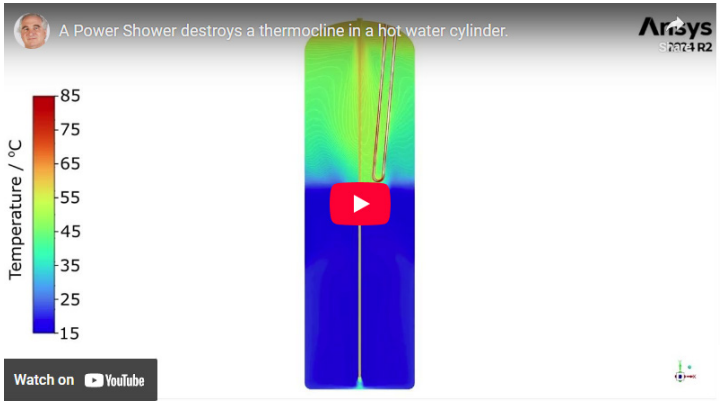
Technical Innovation:
At the core of this opportunity is a patented approach to thermal stratification control. The technology maintains separation between stored and incoming water in both space heating and hot water systems, significantly improving storage efficiency and enabling practical deployment at scale.

Gateway Technology:
At the heart of this technology is the ability to create perfect showers and water flows without complexity and cost leading to **Energy Saving, Water Saving, balancing Electricity and Water Networks** and **increasing Electricity and Water Supply** making this the only technology that can allow homes to be built in areas of scarce water and power.

UNAFFORDABLE HEAT STORE VALIDATION

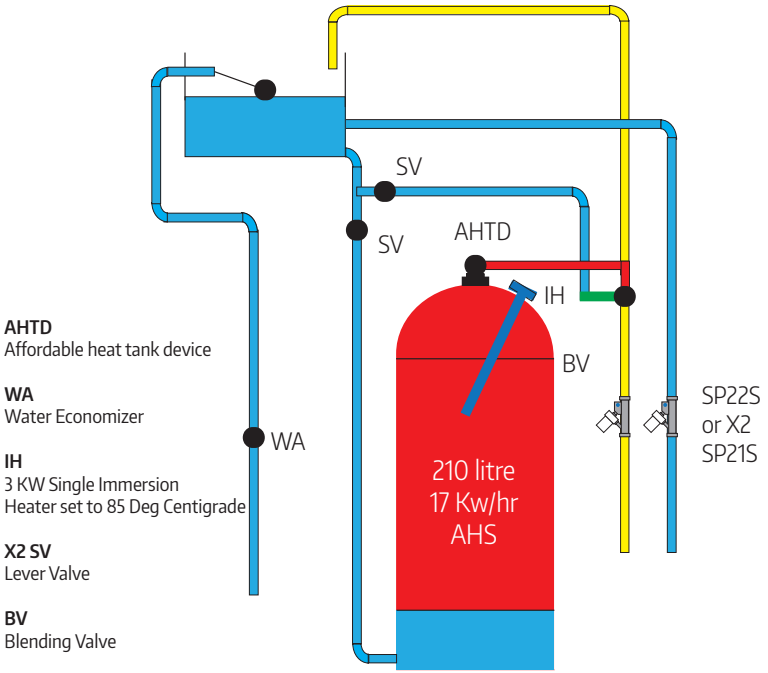


The affordable heat store technology allows a simple tank to store twice the energy of market leading heat stores. The cost of an affordable heat store cylinder is 25% that of the more complex tanks. There is no need for expensive ongoing servicing. The video below demonstrates that a simple tank without the new patented technology and without the complexity of an unaffordable heat store simply allows hot and cold water to mix and it cannot be used as a heat store.



Video Link

AFFORDABLE HEAT STORE VALIDATION



AHTD
Affordable heat tank device

WA
Water Economizer

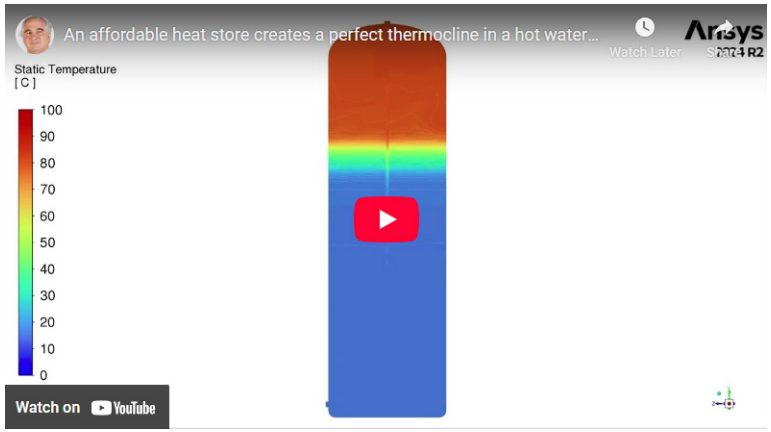
IH
3 KW Single Immersion
Heater set to 85 Deg Centigrade

X2 SV
Lever Valve

BV
Blending Valve

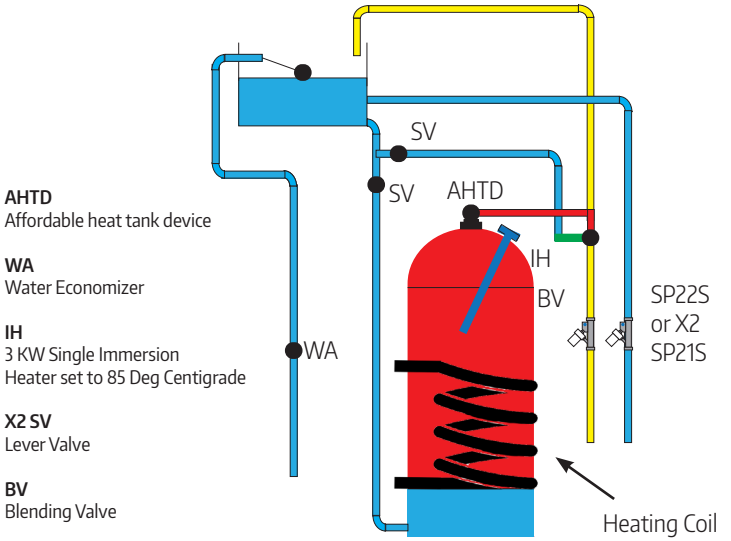
AFFORDABLE HEAT STORE

The affordable heat store can store 17 KW/hr of energy, enough for 14 perfect showers. This is discharged whilst maintaining a perfect thermocline as is seen in the following video supplied by the University of East Anglia. The energy stored can be stored for days and used when energy is scarce.



Video Link

AFFORDABLE HEAT STORE WITH SOLAR THERMAL



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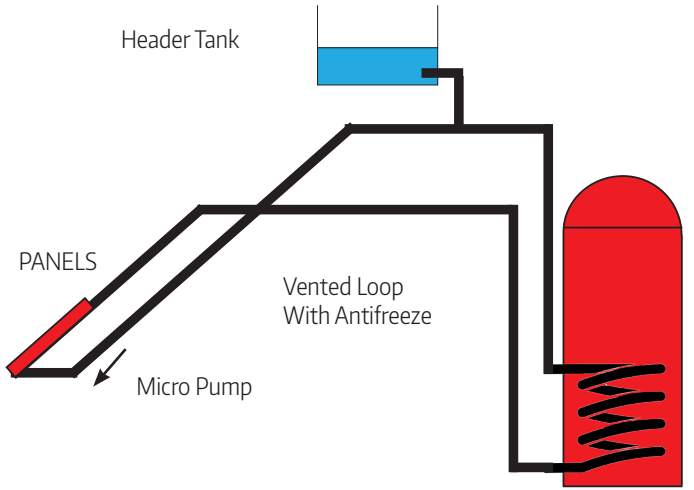
If you already have a suitable 210 litre hot water cylinder or you decide to install a new hot water cylinder with an internal heating coil, you can benefit from solar thermal heating to pre-heat the water. In the summer, 100% of your water can be solar heated – Free of Charge. The panels sit on top of a flat room or in your garden, the antifreeze allows it to operate in winter, and we sell top of the range 1.5M2 solar panels at £250 each.



The system we sell is simplicity itself and its driven by a SP1 ShowerPowerBooster, using 10mm pipe, linked to a simple vented header tank.

BALANCING THE ELECTRICITY GRID

To increase the use of renewables and decrease the use of fossil fuels we need energy storage.

An affordable heat store can store 17 KwHr of energy in 210 litres of water at a cost 25% that of the cheapest alternative water tank solution. Quiet and efficiently storing energy whenever there is a surplus, and delivering that energy with the minimum of fuss when there is an energy deficit. No expensive rare earth metals are needed, and it is under 10% of the cost of equivalent battery storage. A real game changer, cheap to install in any home, and needing minimal plumbing skills.

In the UK we pay constraint payments to wind farms so they do not to generate electricity. In 2025, constraint payments in the UK are projected to exceed £1.8 billion, a significant increase from £1.5 billion in 2024. These payments, which compensate electricity generators for reducing output due to grid limitations, are driven by the challenges in transporting renewable energy, particularly from wind farms in Scotland, and offshore North Sea wind farms.

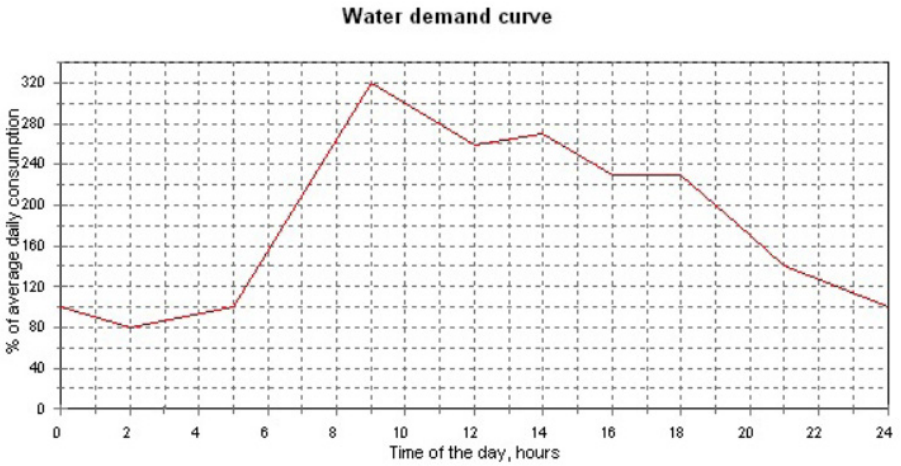
Gas power stations are held in reserve just to supply electricity on windless nights and it is this extreamly high cost of gas powered power stations that sets the price of electricity

BALANCING THE TREATED WATER NETWORK

The water network can supply plenty of treated water in the early hours of the morning when demand is low and little or no spare energy is available at peak demand when people rise in the morning and return home in the evening. An **affordable heat store** allows water storage in homes at minimal cost. I worked for Anglian Water and other Water Companies for over 30 years. I was the most senior design Engineer in Norfolk with specific responsibility for water network design and construction, so I know that when you add 24-48 hours of water storage in enough homes, the effect on the water network and water supply would be game-changing. The effects on regional water supply and distribution would be:

Reduced peak pressures in the networks gives fewer bursts and less leakage in general.
Reduced magnitude in cyclic variations in pressure leading to fewer bursts.
Less energy would be needed to pump water around the water network
Reduction in the unit price of water because supply sources can run at a more even output.
An overall increase in water output from individual source works.

Many source works have a minimum contact time for treatments and the maximum output based on those minimums. Without storage capacity, water is left idle in a process tank during parts of the day.



BALANCING THE RAW WATER NETWORK

There are three ways to reduce the strain on raw water resources.

Reduce Wasted Water (Instant Hot Water at Taps)
The **affordable heat store** is easily modified to give a customer **instant hot water** at taps. Imperial College recognised our micro pump's ability to provide instant hot water at taps without running water to waste as the best UK water innovation in 2014. A separate micro pump which drives hot water to a tap, when switched on, is deactivated when hot water reaches the tap, and deactivated when the tap is turned on. This is achieved without the traditional hot water return loop.
The same two ShowerPowerBoosters fitted to enable the affordable heat store to work, activate when a consumer turns on a tap or a shower. When they activate they automatically deactivates the heat loop pump.
For a shower 30 metres away the saving is 5 litres of water per shower

Reduced Water Used For Showers (Perfect Showers)
A **ShowerPowerBooster** creates the perfect shower. It provides enough pressure for a perfect spray pattern and enough water to effectively wash away suds.quickly and efficiently. The pumps give a perfect shower which is preferred by customers without the cost of a pressurised cylinder and with the added advantage of adding potable water storage.
For a 5 minute shower the saving is 30 litres of water per shower when compared to a power shower.

Rain Water Harvesting
A 245 litre coffin tank is an easy way to store rain water in the apex of any new or existing home. Linked with a SP22S, and our outside garden boosters, it allows rain water, collected in water butts, linked with a hidden hydro syphon, to supply all the toilets in a home. The system is fully automatic, giving priority to storage of rain water when it is available, and switching to mains water when needed. It is simple to install and maintain with a fit and forget design.
6 litres of water is saved per toilet flush

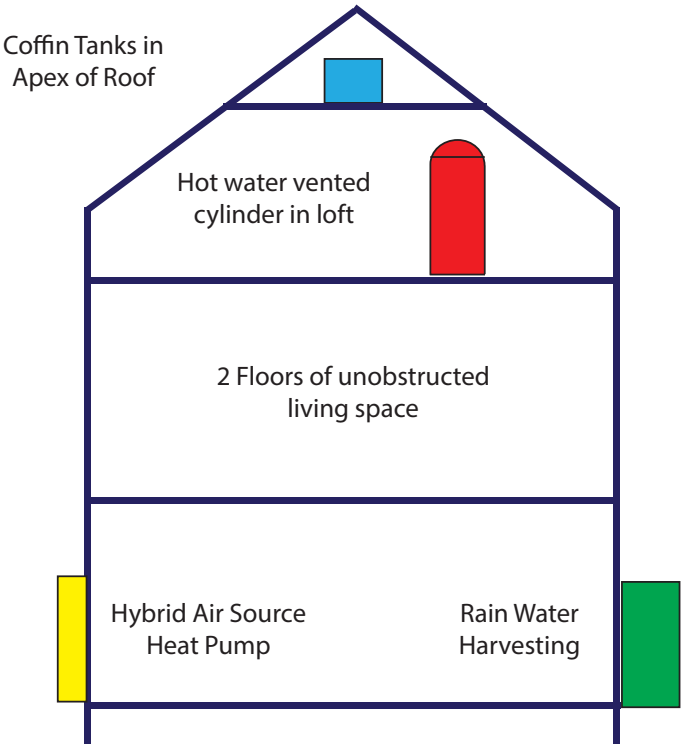
NEW BUILD - ENERGY AND WATER SAVING

New builds do not qualify for the boiler upgrade scheme so they are unencumbered by market price distortions.

There are several incentives that make our new technology not only the cheapest solution but in many cases the only solution when building new homes because you can:-

Build in some areas where there is no spare supply or network capacity (see pages listed below) -

Balance The Electrical Power Grid (Energy Supply) - page 8
Balance The Treated Water Network (Water Distribution) - page 9
Balance The Raw Water Network (Water Supply) - page 10

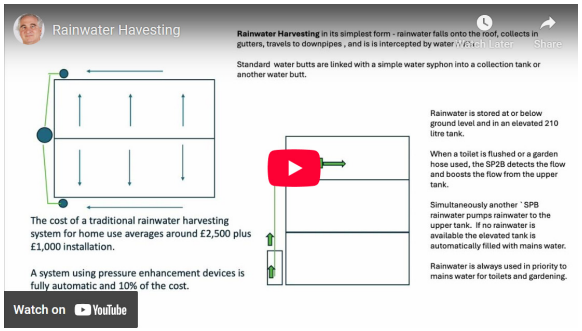


RAIN WATER HARVESTING

In 2017, I installed a completely automatic system for collection, storage, filtration, treatment, and usage of rain water. If there is no stored rainwater the entire system automatically switches to a mains supply. It collects 4.5 tonnes of water for every inch of rain which falls on my roofs. Multiple water butts can be linked with other tanks by buried garden hose which forms a syphon which allows enhanced water storage whilst the water butts retain any debris (works perfectly and has done so for 8 years). After many years of trials I conclude that the rainwater harvesting system in my own home in Norfolk, England, is robust and durable, I sell all of the pumps needed to run this system through my websites.

For just boosting water from a water butt or from an outside tap you can buy a WrightChoice Fully Automatic 12 volt Garden Booster from the WrightChoice/uk.com website.

For a fully automatic whole house solution using rainwater to flush toilets and a garden hose at mains pressure visit WrightChoice/uk.com



Video Link

Alan Wright
The inventor of the Shower Power Booster

Video Link

RAIN WATER HARVESTING

RAIN WATER HARVESTING

Summer Rainwater Harvesting

In my home, the garden and car washing takes so much water, so there was little left to supply the house. In the winter there is lots of water for toilets.

The system automatically switches from rainwater to mains water seamlessly

In summer, my rainwater just supplies the garden, and the pumps installed in my garage double boosts the water – it supplies water at hosepipe pressure to my garden, and for car washing.

You can deliver 'free' water by hosepipe to your garden, your car, and windows (distilled water) and intermittent storms fill my 4,500-litre storage

Winter Rainwater Harvesting

In the autumn and winter, my water is not needed in the garden so I simply open a valve to supply my home with filtered rainwater. It supplied our washing machine, our toilets, showers, baths, and we use it for hot hand washing.

For car washing, the pumps can supply double boosted unfiltered rainwater via a tap outside our garage.

Fully Automated System

The pumps in our garage deliver water to the garden simply by opening the garden tap. The booster pumps switch on and off automatically. Simply turn off the tap and the pumps stop until you need water again.

In the winter, the pumps in the garage are started by demand for water in my home. If, for example, a toilet is flushed, the refilling of the toilet will be sensed by a SP2B in my loft which starts the SP2B in the garage plus a slave pump. Pumps in the garage continue to pump until the water used in flushing the toilet is replaced.

Should I run out of rainwater the cold water is automatically switched to mains water.

Despite living in one of the driest parts of the UK with an average of 650mm of rain a year, I can collect 14m x 14m x 650mm of water = 127.4 tomes of water every year.

100 tonnes of water a year = £500 in water saved!

AIR SOURCE HEAT PUMPS

Affordable heat stores will work with any heat pump. When using a heat pump, our technology works independently of the heat pump, allowing your heat pump to work better.

In designing an air source heat pump system, all air source heat pump systems have a hot water cylinder for potable water. The standard hot water cylinder normally fitted with an air source heat pump holds 300 litres, has an internal coil, and costs £2,000. Mixergy has 250 litre tank, with an external plate mix exchanger, and costs £2,000.

Our cylinder is 210 litres, stores twice the energy, and costs £500. You will also have the advantage that it can be used as a smart and connected device which can store energy one week and use it the next, store low cost and free energy when it's available, and help balance the energy network. If you generate your own PV electricity then this can be diverted to storage whenever you want.

Air source heat pumps may need to increase the volume of water in the heating system by adding a buffer tank. Buffer tanks should hold approximately 15 litres of water for every kilowatt of heat pump capacity. For instance, a 10kW heat pump would ideally be paired with a 150-litre buffer tank.

Only an affordable heat store gives you a super-efficient heat store that adds energy storage to an air source heat pump system, as well as providing the potable water hot water cylinder essential for every home.

In order to qualify for the Boiler Upgrade Scheme "the new heating system will be capable of meeting the full space and water heating needs of the property, and it is designed to do so" also " all heat-generating components of the original heating system will be replaced (where applicable, you may retain circulation pumps, solar thermal collectors, wood-burning stoves, and supplementary electric heaters, including immersion heaters)"

Many air source heat pump systems that qualify for the grant include immersion heaters as a backup or supplementary heating source for domestic hot water. The immersion heater can be integrated to ensure a consistent hot water supply, especially during peak demand, or added if the heat pump is unable to reach the desired temperature.

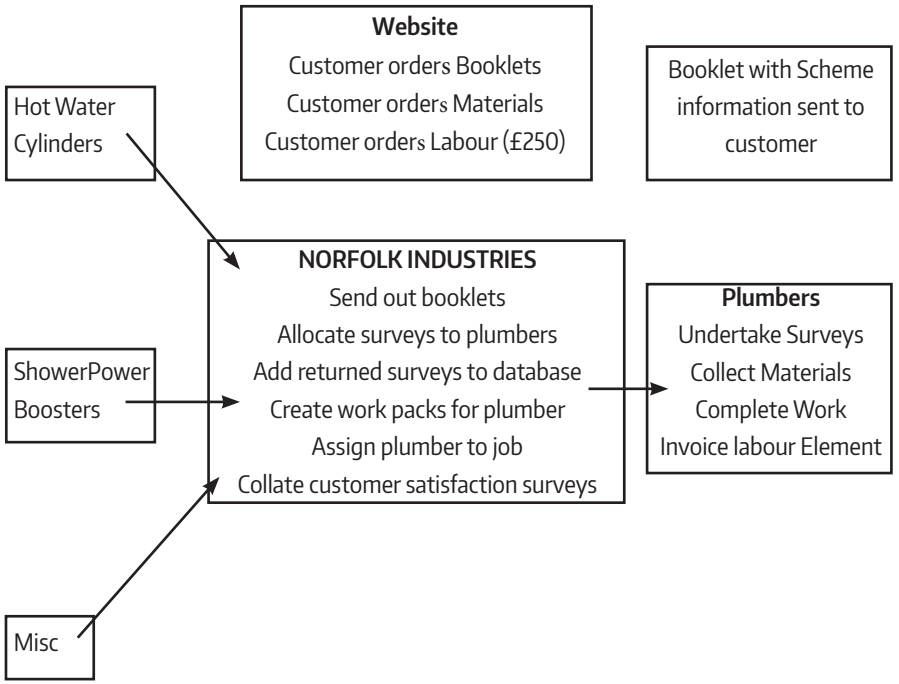
RETROFIT AND CONVERSION OF EXISTING BUILDINGS

Retrofit and conversion of existing buildings can reduce energy consumption, lower carbon emissions, and improve comfort and health. This is of particular value if you can also reduce reliance on gas Combi Boilers by 18% in advance of fitting an air source heat pump, or to stop using electric showers which take electricity when it is x3 times more expensive and when it is scarce. Gas boilers are expensive to service. Electric showers and Power Showers are designed to fail, and as 5 years approaches, the thought of replacement becomes an issue. The question arises of whether to replace or take the opportunity to improve.

Refurb or replace?
It seems strange but Councils and others, often specify ripping out existing plumbing systems rather than solving pressure problems with low cost retrofit solutions. Prescriptive solutions when dealing with Grants for Disabled Facilities for instance, gives certainty of cost because a new boiler, and a new electric shower, is a known price. Allowing a cheaper solution with the same performance is forbidden. ShowerPowerBoosters can give the equivalence of mains pressure hot and cold whatever the existing plumbing system is. The correct combination of SPB pumps can be calculated for any and all plumbing systems. For most ground floor showers with an efficient shower head and shower mixer, there is no need for additional water boosting. If there is subsequently decided there is need to boost pressure, then ShowerPower-Boosting pumps can always be added to give a perfect shower with a retrofit solution. There is no incentive for a plumber to refuse to fit a new boiler and electric shower, and no option to fit a retrofit ShowerPowerBooster. This must change in order to allow plumbers to deliver cheaper and better solutions.

Building Conversions
When converting warehouses into flats or homes into HMOs, our technology allows you to store water, this puts little or no additional demand on the water supply so you can have multiple flats enjoying perfect showers at the same time.

NORFOLK PILOT



SHOWER POWER BOOSTER
INLINE MICRO PUMP

THE WRIGHT CHOICE

SUMMARY

A 210 litre tank operating storing water at 85 degrees centigrade will store 17 KWhr of energy, which is enough water for 14 hot showers.

Switching from a Power Shower or an Electric shower to a ShowerPowerBooster will save £400 a year.

Amazing retrofit solutions using the UKs only 5 star rated booster pump.

Harvest Rain Water with a fully automatic system suitable for 90% of homes.

Build new homes in existing urban areas without increasing the water supply.

Install low cost solar thermal in your home.

Enjoy instant hot water at taps.

Take a first step towards an air source heat pump and 100% replacement of gas in your home

The UEA, Cranfield University, and Imperial College, have all validated my technologies which make pumping 20 times more efficient, and heat stores with 8 times more storage capacity. Albert Einstein famously quoted "Any intelligent fool can make things bigger, more complex, and more violent. It takes a touch of genius – and a lot of courage – to move in the opposite direction,"

For Homeowners:
- Lower energy and water bills
- 2-3 year repayment period (savings vs installation costs)

For Developers:
- Easy compliance with SAP/SBEM carbon targets
- Reduced infrastructure costs for hot water systems and water savings

For Local Authorities:
- Scalable retrofits to meet climate pledges
- Encourages sustainable housing initiatives

Central Government
- Balances grid demand, by utilizing off peak / surplus grid electricity