

Design Guide

V3.2 Nov 2009



ECOVERTA[®]

Simple, Sustainable, Unpowered Water Recovery Products



www.ecoverta.com.au





Design Guide

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Note:

- *When using PDF version soft copy with Adobe Acrobat, use thumbnails/pages tab at left to navigate document.*
- *Video Web links available only when viewing this document on a PC with internet access available*

1. Introduction:

This document provides detailed information and guidelines to assist in understanding the installation and system layout possibilities using *EcoVerta* water saving products.

From conception the fundamental design features of the *EcoVerta* range have been, and remain, that these products recover cooled water in the hot water circuit simply, require no power supply, no pump support, are easily installed, quiet in operation and offer a friendly, seamless interface with the user. *EcoVerta* is a fit and forget product.

First released in 2005, *EcoVerta* products have achieved their success and acceptance through simple, innovative design and many years of reliable in-service operation. Each unit functions automatically without the need for the user to do anything additional and are uniquely powered by the energy contained in flowing hot water. These products can be used in any country or region remaining independent from differing or intermittent power supplies, or the need for extra push buttons, remote controls or reliance on external battery powered components.

EcoVerta delivers state of the art patented technology combined with good old fashioned quality plumbing engineering and will provide reliable and real water recovery benefit for many years. The exact amount of water saved in any particular installation will depend on a number of inter related variable factors both design and environmental which are explained in the following pages.



How To Channel Article



Simulated Water Flow Animation



Garden Angels EcoVerta TSV installation

EcoVerta TSV and *EcoVerta Protecta* are intended to be mounted close to the points of hot water delivery. They can be fixed at any angle or orientation in wall, ceiling or under floor, are waterproof so can be mounted externally if required.

EcoVerta is a rugged, low maintenance product and the only circumstance where service may be required is if the water supply contains suspended solid material. The in line filter fitted in the *EcoVerta* supply port will protect the unit from blockage and in normal circumstances this will require only very occasional cleaning, Service access to the filter should however in all cases be provided. In situations where large amounts of water contaminants are expected, a pre filter arrangement should be considered.

2: General Principles

A hot water generator (HWG – water heater, gas, electric, oil, solar, combination hybrids, all known types) heats the water automatically when the cold-water recharge temperature is lower than the required hot water delivery temperature set point. With storage hot water systems this means that the heating is stopped when the reservoir has reached the chosen set delivery temperature. Continuous flow type heaters stop heating when water flow ceases.

In all cases however water in the pipes between the HWG and the final delivery outlet cools between uses. In many cases this pipe length is of a considerable distance representing a large volume and water lost to the drain as the user naturally waits for the outlet to run warm. Where there are very cold ambient temperatures, the pipes between the HWG and outlets cool more rapidly than in warmer conditions thus creating further loss. Whilst the ambient temperature is an important factor accounting for loss, so are the number of usage cycles therefore each situation and quantity of water recovered will be unique. See online water recovery [calculator](#)

In new constructions the fundamental design target is to locate the HWG close to the major hot water consumers. An assessment is then made of the required pipe length to each outlet, the type of tapware to be used, and the likely usage cycles per day. Our online [calculator](#) (appendix 2) can help with this assessment.

In the ideal hot water plumbing design there is no sensible job for *EcoVerta* to do however design constraints do not always allow the optimum conditions and in these cases, *EcoVerta* can be a valuable aid to recovering water and increasing the overall efficiency of water use.

In retrofit designs, *EcoVerta* can be of particular benefit. Allowance should be made for the quality and age of hot water pipe insulation (if any) and the possibility that the pipe work between the HWG and the delivery outlet meanders around the building. The best way to assess this is to actually measure the amount of water that has cooled and will be diverted in each location, assess the usage cycles for that outlet, and again use our [calculator](#) to see an overview of the potential savings.

EcoVerta considers water temperatures up to approximately 30°C to be “cold” (see Appendix 1) and this water is diverted for further re-use. Using this process you will obtain a sound view of where the best savings can be achieved. It is then a simple matter to decide which *EcoVerta* product matches your prioritised interests.

The features of the individual products in the *EcoVerta* range follow:

3. Product Features:



3.1

NEW October 09

EcoVerta TSV is an all new second generation product released in late 2009.

It was developed to reduce purchase cost, installation time and mounting footprint.

TSV offers unequalled installation versatility in new and retrofit situations. It supersedes previous *EcoVerta* models providing the same function with obvious space and installation advantages.

Suitable for use with any tapware including single tap, modern dual tap mixer sets and single lever flick mixer types in any combination of kitchen or bathroom sinks and showers.

EcoVerta TSV is installed "upstream" of the tapware and is under mains pressure all of the time awaiting the simple use of the hot tap to trigger the automatic water saving function. It can be installed under a kitchen or bathroom sink, or fitted on route to an entire wet area (bathroom) to service all of the outlets in that area.

The *EcoVerta TSV* is compatible with any hot water heater and is particularly suited to working with gas continuous flow types of heater where there can be an added delay, and waste of water during the start up process. It will also work seamlessly with most currently available water conserving add-on devices that may already be installed.

The *EcoVerta TSV* is very compact, lightweight and simple to install. All fittings are ½" inch BSP for local and international conformity. (see: Specifications Appendix 1)

3.2





EcoVerta Protecta has all the features of *Ecoverta TSV* plus flow and temperature control for scalding protection.

EcoVerta Protecta is an “upstream device”, like the *Ecoverta TSV*, and therefore is suitable for use in areas such as bathrooms supplying multiple outlets or multiple bathrooms in care facilities, hospitals or the like.

Apart from its water saving potential and temperature control, the *EcoVerta Protecta* has an intelligent flow control feature that ensures safe and comfortable delivery of hot water irrespective of the general pressure fluctuations that can occur and cause discomfort.

EcoVerta Protecta extends the *Ecoverta TSV* functions to allow you to draw water in your shower or other outlet at a constant temperature. When used with single lever flick mixer type taps – no further adjustments are needed. Never again experience being too hot or too cold, even if your plumbing is less than perfect. Most importantly no scalding!

3.3 Product Summary Table:

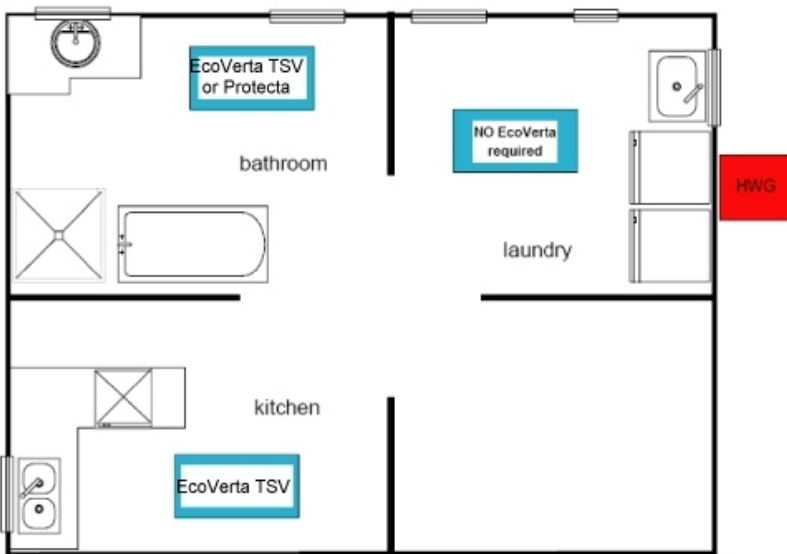
Product Comparison		
Water Saving	*	*
Dual Taps shower and sink	*	*
Mixer Taps shower and sink	*	*
Flow Control hot and cold		*
Scalding Prevention Max 42oC		*

4. Design Considerations:

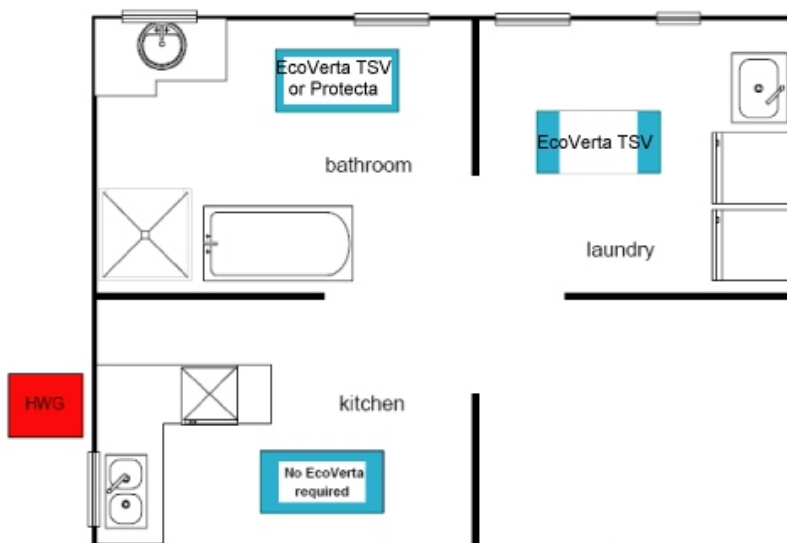
As discussed earlier, the value of an *EcoVerta* installation is closely linked to the positioning of the HWG, which in turn is determined by many considerations. e.g. statutory regulations, land topography, building layout etc. In retrofit situations the HWG position will be predetermined and the design must work around that fact.

In new designs there are opportunities to build additional “Eco Friendly” features that were not possible previously. Careful location of the new HWG will minimize cold hot water losses at all outlets. The considered integration of *EcoVerta* devices into the plumbing layout can further enhance both the water and energy saving features of the plumbing in that area.

In the following floor plan, note how the laundry is close to the HWG, and the bathroom and kitchen are much further away at the other end of the building. In this case there is little advantage from installing any *EcoVerta* product in the laundry. The long pipe runs to the bathroom/kitchen suggest value in an *EcoVerta* installation. The bathroom position suggests the use of an *EcoVerta Protecta* (if scald protection is not an issue) or an *EcoVerta TSV* to service all three delivery points. The kitchen position suggests the use of an *EcoVerta TSV* in this case where a single lever flick mixer and dishwasher are fitted.



Taking the same layout, but moving the HWG to outside the kitchen, results in the following recommendations.



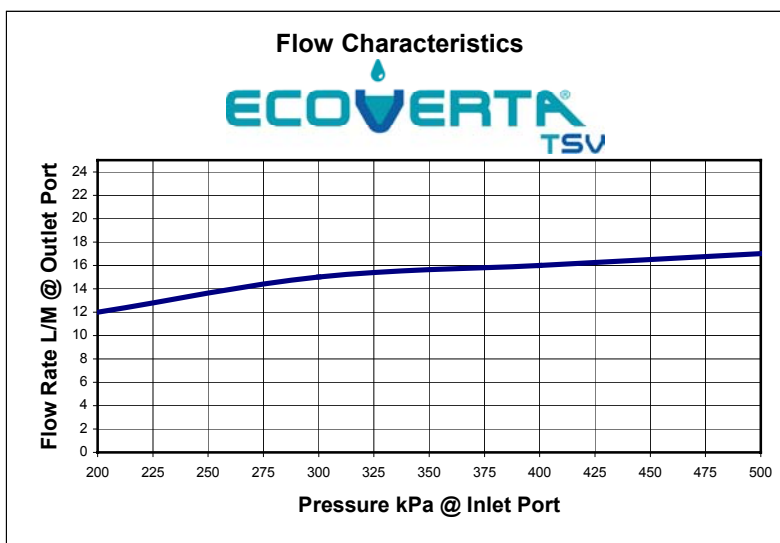
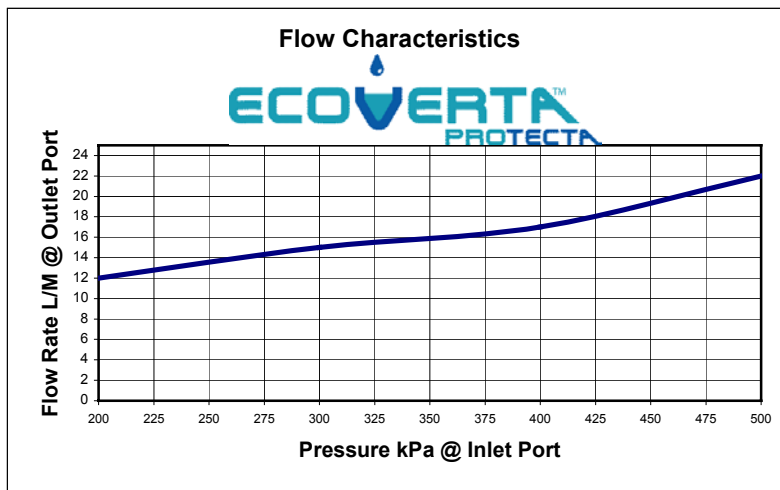
The positioning of the HWG in this situation suggests an *EcoVerta TSV* in the laundry. Either an *EcoVerta Protecta* or an *EcoVerta TSV* in the bathroom to service all three delivery points.

Appendix 1

EcoVerta Product Specifications

Specifications	EcoVerta TSV	EcoVerta Protecta
Dimensions mm	D 35 x L 140 x W 90	D 90 x L 250 x W 320
Weight Kg	0.6	13.1
Supply pressure kPa	200 - 600	200 - 1200
Minimum supply flow rate litres/min	10	10
Water heater output temperature °C	+40 - +60	+40 - +80
By-pass switching temperature °C	Lower 30 (± 3°C)	Lower 30 (± 3°C)
	Upper 36 (± 3°C)	Upper 36 (± 3°C)
Maximum by-pass switching time	25 sec	25 sec
Maximum leakage rate during by-pass cycle litres/min	0.25	0.25
Regulated outlet water temperature °C	N.A.	44 (± 2°C)
Suitable for external mounting*	Yes	Yes
Fittings hoses & pipe sizes required	½" BSP	½" BSP
Rural tank water pre-filter required	Yes	Yes
Town water supply pre-filter required	Optional ¹	Optional ¹

*Protection from freezing must be provided. ¹ Subject to acceptable known mains water quality.



Appendix 2

Interactive Online Water Calculator

click logo



Appendix 3

Frequently Asked Questions (FAQ's)

How much water will I save?

The potential water savings are a product of the formula of persons or usage cycles per day + weather conditions + distance from hot water supply + pipe work diameter + condition of pipe insulation material. All of these points are variable factors so it differs for each situation.

You can complete your own test by measuring the water that would normally be wasted whilst waiting for the hot to arrive using a jug or bucket, perform the test over several days at varying times and various locations throughout the dwelling.

Enter your daily data into our online calculator to give you an annual total.

Don't forget you will save more water in the winter than in the summer.

Will EcoVerta work with Dual Tap Mixer Sets?

Yes, in fact any dual tap mixer tapware you currently have as well as any you may install in the future.

Will EcoVerta work with a Single Lever Flick Mixer Tap?

Yes both *EcoVerta TSV* and *EcoVerta Protecta* are compatible with this type of tapware.

Will EcoVerta work with Instantaneous/Continuous Flow Water Heaters?

Yes all *EcoVerta* models are ideally suited for use with the more modern types.

I am renting and would like to install EcoVerta can I take it when I move?

Yes normally the pipe work can easily be put back to the original arrangement by a licensed plumber, as the install modifications are generally minor.

Can I install an EcoVerta model in a mobile home or boat?

Certainly, because there is no need for additional power supply and the products are not affected by motion or mounting orientation, *EcoVerta* products could also be installed on trains and ships.

How can it be that EcoVerta works without any additional power source?

The entire family of products are powered by the energy contained in the water flowing through the pipes. No mechanical pumping devices are involved. The advantage of this is that installation costs are reduced and there is no reliance on other energy supplies that can fail or be interrupted.

Provided a minimum and consistent hot water supply pressure is available, *EcoVerta* will function as reliably as a common water tap.

Do we have to divert the water to your suggestions only?

No. We have provided our suggestions as just that and you are free to do what you want. The great part is that by-pass water is delivered at mains pressure so it can be used in an almost limitless number of ways.

How about knowing that your fernery, flowerbed or lawn is going to get a sprinkle when you shower/bath or wash your hands!

I already have water saving devices fitted to my home. Can I use EcoVerta in conjunction with them?

Certainly. *EcoVerta TSV* or *EcoVerta Protecta* will not impact on these devices.

Why do you not return the water to the cold drinking water circuit, as some other systems do?

It is reported that health risks exist where hot and cold water lines are interconnected.

To do so, introduces more complex components into the plumbing, with the associated purchase, installation, energy and maintenance requirements.

What if I am diverting the water to my tank and want to use it for drinking?

Many authorities suggest that tank water should not be used for drinking.

If you are in a rural environment and have however, no other source of supply, you should consult the relevant local authority as to what treatment may be required before the tank content is considered potable water and what potential risks exist.

When I am having a shower and someone else in my house turns on a tap, will the water go very cold or hot?

If you install *EcoVerta Protecta*, fluctuations in flow are automatically accounted for, therefore producing a constant temperature supply even under these conditions.

So even if you have put up with miserable plumbing for years, *EcoVerta Protecta* can overcome this.

Minimize the incidence of being boiled or chilled while under the shower, no matter what else is happening in your water system!

If I want a hotter shower than the *EcoVerta Protecta* is set at, can I do this?

We have set the outlet temperature of *EcoVerta Protecta* at 44°C, which our research indicates to be the maximum comfortable temperature to shower and this cannot be raised. To do so would negate the built-in anti scalding capability of the product.

If I want a colder shower than the *EcoVerta Protecta* is set at, can I do this?

Absolutely. You can still use the shower in the same way as before; simply add cold water to lower the outlet temperature.

What happens if the hot water supply fails?

EcoVerta only controls how heated water in the circuit is delivered. If there is no hot water, you will have to determine the cause, Power failure? Gas bottle empty? Water heater capacity? etc.

How long does it take to install?

When retrofitting an *EcoVerta* product to an existing property/home an allowance of 1 1/2 to 2 hours to install is typical, depending however on the plumbing layout in the building. In new constructions, or major renovations, there should be minimal additional cost.

EcoVerta TSV will generally take less time than *EcoVerta Protecta*.

Who can I get to install it?

Installation of *EcoVerta TSV* and *EcoVerta Protecta* can installed by any plumber or arranged through our network of [Reseller-Installers](#).

Where can I buy one?

[Contact](#) Advanced Eco Technologies directly, or our network of [Resellers](#).

Appendix 4.

Installation and Operation Instructions

See following 4 pages:



Installation and Operation Instructions

V2.0

Save Water system overview:

EcoVerta TSV, when installed in a dwelling, will save the water that has cooled in the hot water lines which otherwise would flow out of the hot tap prior to the hot water arriving at the spout or shower.

The saved water can be piped to a rainwater tank for re-use or to external distribution points for direct further use such as Gardens, Greenhouses, Swimming Pools etc.

The *EcoVerta TSV* is compatible with mains pressure water heating systems including, solar, heat pump, gas and electric storage types. It is particularly suitable in modern systems where continuous flow water heaters are used and the start up delay causes significant water loss before hot water delivery.

All known tapware can be integrated as well as existing water storage tanks either at home level, below ground or raised. When the saved water is required to be connected to a rainwater tank it can be piped direct between cold-water outlet on *EcoVerta TSV* and tank or from cold-water outlet on *EcoVerta TSV* to tank via gutter and downpipe.

EcoVerta TSV can be installed under a sink or basin. One valve per wet area is all that is required. *EcoVerta TSV* can also be used in a hot line before a junction to two wet areas. All the cold water in the hot line between the heater unit and the *EcoVerta TSV* will be intercepted and saved for reuse.

See reverse for installation instructions.

Operating instructions:

The *EcoVerta TSV* has been designed to offer the simplest and most friendly human interface that currently exists whilst consuming no additional energy. Once installed, there is nothing for you to do, adjust or interact with apart from use your shower, taps or appliances in the normal way whilst saving water automatically.

The following will however assist you in being accustomed to the product and its operation: Immediately after install you will notice that when you turn on the hot tap there will only be a slight trickle of water and a delay before hot water runs at full flow. This time delay is when the *EcoVerta TSV* is doing its job, recovering water to another location for you automatically and at mains pressure.

The actual time of this delay will vary with different installations and the ambient air temperature at the time of use. You will notice extended wait times on colder days and the opposite being shorter wait times on hotter days. It is quite normal for the waiting times to be in the 30-60 second range and in some circumstances even longer.

Whilst the ambient temperature is a key factor, so is the distance between the hot water heater and the point of installation of the *EcoVerta TSV* combined with the quality and age of hot water pipe insulation. Together these points will define the specifics of your new installation, which will probably vary from one area to another.

Maintenance:

The *EcoVerta TSV* is protected by a screen filter washer located at the inlet port. Cleaning may be necessary if debris in the line reduces or stops water flow.



Troubleshooting:

Problem	Cause	Solution
Dribble or no hot water flow for short period when hot tap is turned on.	Normal Function.	Wait for hot to arrive.
Dribble or no hot water flow for long period when hot tap is turned on.	No hot water available	Check hot water supply.
	Debris in valve inlet strainer.	Remove inlet pipe and clean strainer.
	Valve thermal element faulty.	Service thermal valve, element is replaceable.

Note: Thermal element failure will result in only cold water being delivered by valve to hot tap. Service valve.

Installation.

Plumbing Professional

- 1: Identify the client's requirements & install *EcoVerta TSV* where water recovery will be best achieved.
- 2: Identify whether the addition of supply water pre-filter is required subject to known local water quality. In situations where supply is from rainwater collection tank, the addition of a suitable pre-filter is required to ensure reliable service of *EcoVerta TSV*.
- 3: Identify that flowing hot water temperature is 40°C or greater.
- 4: Identify that adequate hot water pressure is provided at point of connection of *EcoVerta TSV*. (see specifications).
- 5: Identify that adequate hot water flow is available at point of connection of *EcoVerta TSV*. (see specifications).
- 6: The *EcoVerta TSV* should be fitted as close as possible to the point of delivery, this would ideally be under sink area however, in the case of the *EcoVerta TSV* supplying more than one point of delivery it can be installed upstream of a wet area either in the ceiling, under floor and in wall cavity provided that adequate access is supplied for future service of *EcoVerta TSV*.
- 7: It is highly recommended that all connections to the *EcoVerta TSV* ports be made using suitable unions or compression couplings to the rigid pipe work as per compliance with Plumbing Code AS 3500.

⚠ Do not apply heat above the product specifications to the ports or product body. Under no circumstances should soldering or welding be attempted by gas heating or any other device. Use only threaded fittings.

8: The *EcoVerta TSV* requires full flow (cold water) by-pass pipe work to either a rainwater tank or direct external alternative use via a hose connection.

By-Pass pipe work for the *EcoVerta TSV* can be arranged in any suitable mains pressure-sustaining product of suitable diameter for the flow rate. There are no limits to the horizontal or vertical direction or length of the runs provided that the calculated in service dynamic head pressure will never exceed that of the supply pressure. Additionally end of supply restrictive devices such as sprinklers need also to be considered.

9: Testing

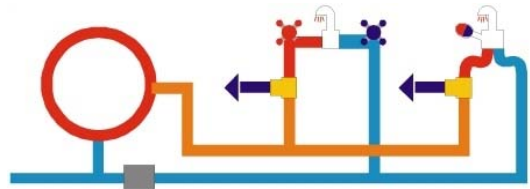
Turn on the hot tap downstream of *EcoVerta TSV*. There may be a slight dribble or no flow of water until hot water arrives. Only hot water will flow from the hot tap. If pipe work is already hot an alternative cold supply could be attached via a garden hose to inlet port for extended testing of by-pass flow, leaks etc.

Australian Standards:

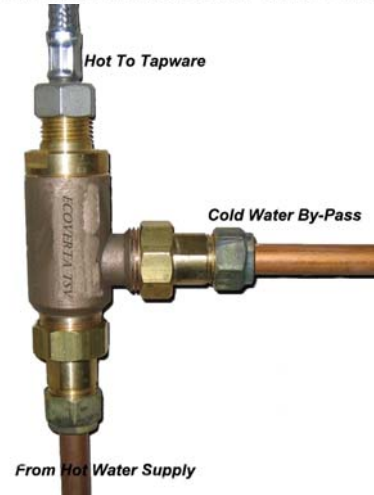
ATS 5200-475 Coldwater Recovery Device
ATS 5200-481 Thermal Switching Valve



Installation continued:



- EcoVerta TSV**
(for single lever mixer tap or inline)
Fit upstream of hot tap.
- Cold water line
- Hot water flowing to spout
- Hot water line containing either cooled or hot water
- Cooled water in the hot lines being intercepted and saved to storage
- Saved water piped to rain water tank storage



Specification:

Water supply pressure req	200 to 600 Kpa
Water supply flow rate req	10Lpm +
Cold water temperature	0° to 30°C
Hot water temperature	40° to 60°C
Valve opening temperature	35° to 40°C
Valve closing temperature	30°C -

Warranty:

The *EcoVerta TSV* as supplied by Advanced Eco Technologies is warranted for a period of twelve (12) months to be free from defects in material and/or workmanship. Defective items must be returned to the factory for inspection and replacement.

The *EcoVerta TSV* must be installed by a licensed plumber in accordance with Installation Instructions and Application Guidelines supplied with the product, and in accordance with the National Plumbing and Drainage Code current at the date of installation and all relevant statutory and local requirements in the State or Territory in which the product is installed (for Australia AS 3500).

Manufactured By:



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Installation and Operation Instructions

V4.0

Save Water & Temperature Control system overview:

EcoVerta Protecta, when installed in a dwelling, will save the water that has cooled in the hot water lines which otherwise would flow out of the hot tap prior to the hot water arriving at the spout or shower. The saved water can be piped to a rainwater tank for re-use or to external distribution points for direct further use such as Gardens, Greenhouses, Swimming Pools etc.

The *EcoVerta Protecta* is compatible with mains pressure water heating systems including, solar, heat pump, gas and electric storage types. It is particularly suitable in modern systems where continuous flow water heaters are used and the start up delay causes significant water loss before hot water delivery.

All known tapware can be integrated as well as existing water storage tanks either at home level, below ground or raised. When the saved water is required to be connected to a rainwater tank it can be piped direct between cold-water outlet on *EcoVerta Protecta* and tank or from cold-water outlet on *EcoVerta Protecta* to tank via gutter and downpipe.

EcoVerta Protecta is best installed where hot water outlet temperature of less than 44°C is required (anti scalding). One unit per wet area is all that is required.

EcoVerta Protecta can also be used in a hot line before a junction to two wet areas.

See reverse for installation instructions.

Operating instructions:

The *EcoVerta Protecta* has been designed to offer the simplest and most friendly human interface that currently exists whilst consuming no additional energy. Once installed, there is nothing for you to do, adjust or interact with apart from use your shower, taps or appliances in the normal way whilst saving water automatically.

The following will however assist you in being accustomed to the product and its operation: Immediately after install you will notice that when you turn on the hot tap there will only be a slight trickle of water and a delay before hot water runs at full flow. This time delay is when the *EcoVerta Protecta* is doing its job, recovering water to another location for you automatically and at mains pressure.

The actual time of this delay will vary with different installations and the ambient air temperature at the time of use. You will notice extended wait times on colder days and the opposite being shorter wait times on hotter days. It is quite normal for the waiting times to be in the 30-60 second range and in some circumstances even longer.

With the *EcoVerta Protecta* delivering the hot water at a maximum of 44°C (anti scald) you only need turn on the hot tap and find the water temperature to be comfortable. Should you require less temperature, just add cold water as normal, using cold-water tap.

Maintenance:

The *EcoVerta Protecta* is protected by two screen filter washers located at the Hot and Cold water inlet ports. Cleaning may be necessary if debris in the line reduces or stops water flow.



Troubleshooting:

Problem	Cause	Solution
Dribble or no hot water flow for short period when hot tap is turned on.	Normal Function.	Wait for hot to arrive.
Dribble or no hot water flow for long period when hot tap is turned on.	No hot water available Debris in unit inlet strainer.	Check hot water supply. Remove inlet pipe and clean strainer.

Installation.

Plumbing Professional

1: Identify the client's requirements & install *EcoVerta Protecta* where water recovery & temperature control will be required.

2: Identify whether the addition of supply water pre-filter is required subject to known local water quality. In situations where supply is from rainwater collection tank, the addition of a suitable pre-filter is required to ensure reliable service of *EcoVerta Protecta*.

3: Identify that flowing hot water temperature is 40°C or greater.

4: Identify that adequate hot & cold water pressure is provided at points of connection of *EcoVerta Protecta*.

(see specifications).

5: Identify that adequate hot & cold water flow is available at points of connection of *EcoVerta Protecta*.

(see specifications).

6: The *EcoVerta Protecta* should be fitted as close as possible to the point of delivery.

In the case of the *EcoVerta Protecta* supplying more than one point of delivery it can be installed upstream of a wet area either in the ceiling, under floor and in wall cavity provided that adequate access is supplied for future service of the *EcoVerta Protecta*.

7: It is highly recommended that all connections to the *EcoVerta Protecta* be made using quality braided flexible hoses between the fixed pipes and *EcoVerta Protecta* ports. **Limit any torque applied to the port fittings at installation or during service (unsupported torque not to exceed 20Nm).** ⚠️

Do not apply heat above the product specifications to the ports or product body. Under no circumstances should soldering or welding be attempted by gas heating or any other device. Use only threaded fittings.

8: The *EcoVerta Protecta* requires full flow by-pass pipe work to either a rainwater tank or external alternative use via a hose connection.

By-Pass pipe work for the *EcoVerta Protecta* can be arranged in any suitable mains pressure-sustaining product of suitable diameter for the flow rate. There are no limits to the horizontal or vertical direction or length of the runs, provided that the calculated in service dynamic head pressure will never exceed that of the supply pressure.

Additionally end of supply restrictive devices such as sprinklers need also to be considered.

A stop valve should be installed as part of the by-pass pipe work and positioned so as to accessible and easily operated by the end user (this is to stop unwanted by-pass water loss should the water heater be turned off or down during an extended absence from the property).

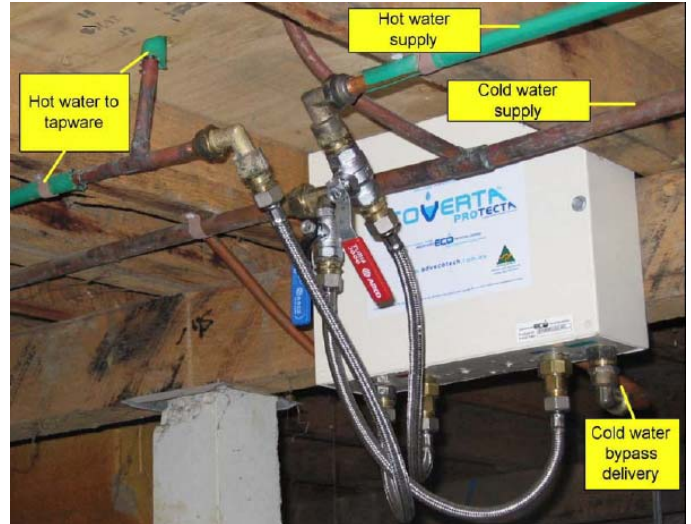
9: The *EcoVerta Protecta* can be mounted at any angle or orientation (we recommend inlet & outlet ports face down). **Use only the mounting holes pre-drilled in the product & screws provided.**

Do not allow the screw heads to embed in the product body under tension.

Installation continued:

10: Testing

Turn on the hot tap downstream of *EcoVerta Protecta* there may be a slight dribble or no flow of water until hot water arrives. Only hot water at a maximum of 44°C will flow from the hot tap. If the hot pipe work is already hot an alternative cold supply could be attached to the hot port via a garden hose for extended testing of by-pass flow, leaks etc.



Specification:

Water supply pressure req	200 to 1200 Kpa
Water supply flow rate req	10Lpm +
Cold water temperature	0° to 30°C
Hot water temperature	40° to 80°C
By-pass switching temp	Lower 30 (± 3°C) Upper 36 (± 3°C)
Regulated output water temp	44 (± 1°C)

Warranty:

The *EcoVerta Protecta* as supplied by Advanced Eco Technologies is warranted for a period of twenty four (24) months to be free from defects in material and/or workmanship. Defective items must be returned to the factory for inspection and replacement.

The *EcoVerta Protecta* must be installed by a licensed plumber in accordance with Installation Instructions and Application Guidelines supplied with the product, and in accordance with the National Plumbing and Drainage Code current at the date of installation and all relevant statutory and local requirements in the State or Territory in which the product is installed (for Australia AS 3500).

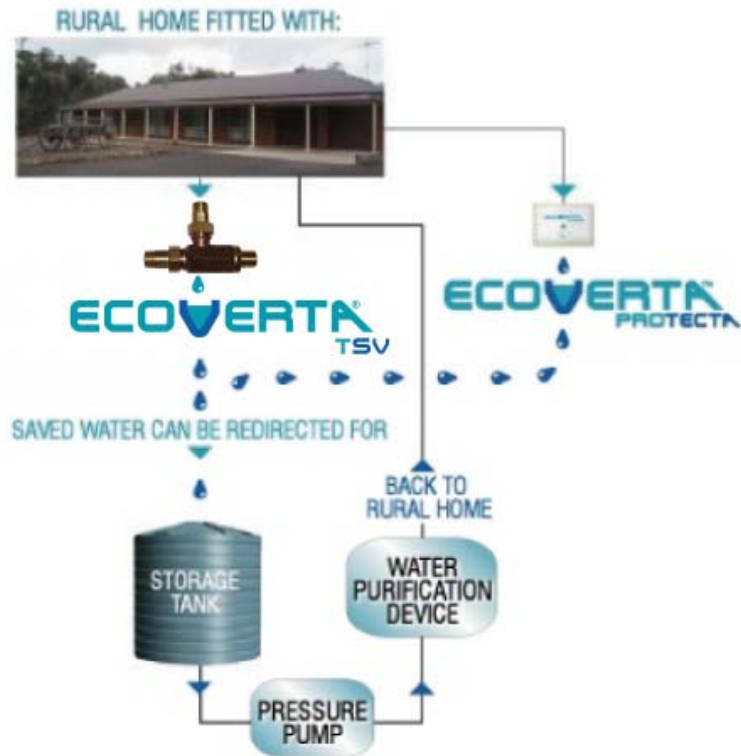
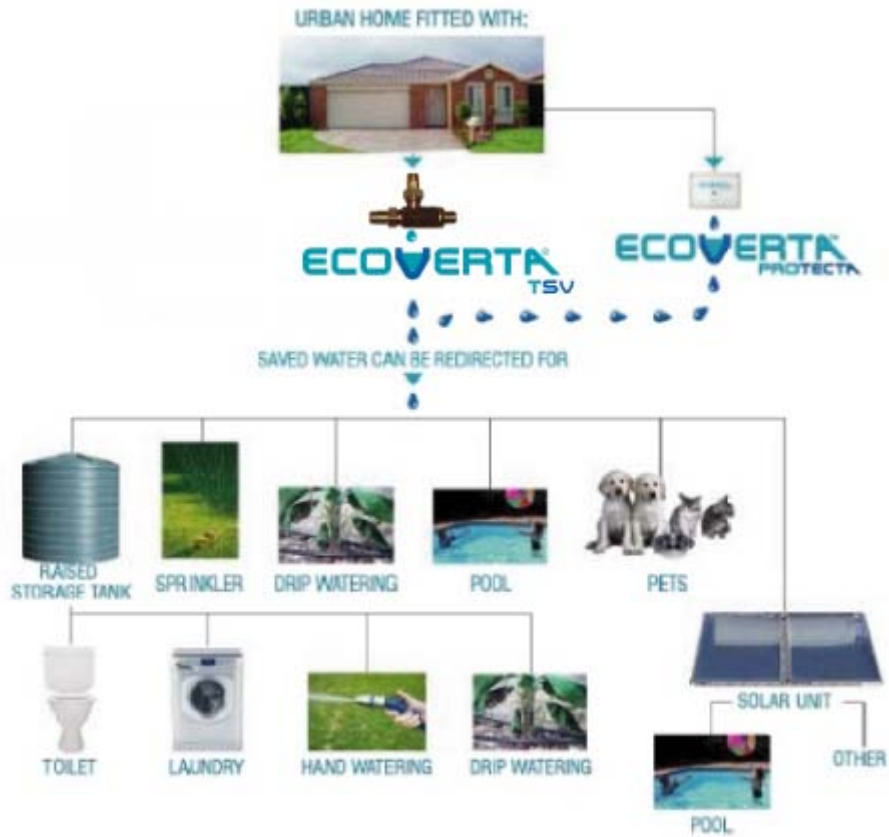
Manufactured By:



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Appendix 5 – Schematic Examples

The following two diagrams illustrate practical options for using diverted water in Urban and Rural homes. Delivery can be anywhere within the property that can be reached with the supply water pressure.

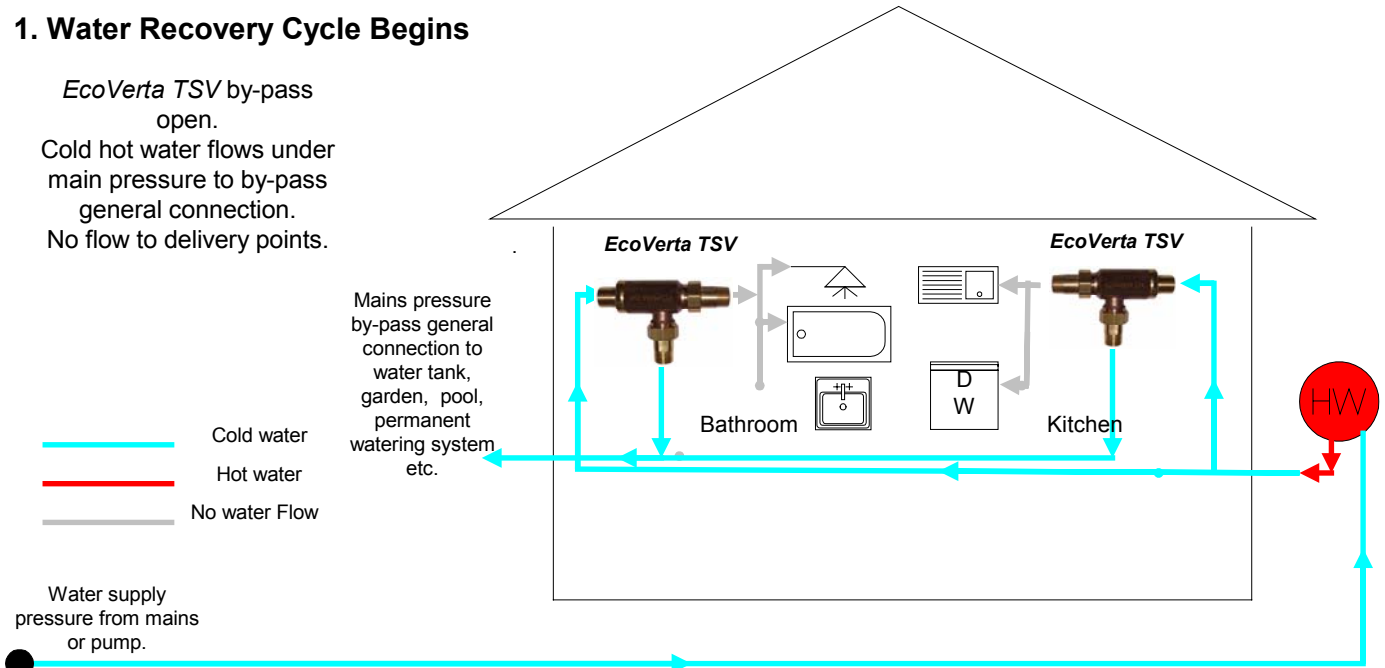


The following two diagrams illustrate the way in which an **Ecoverta TSV**, one each installed for the bathroom basin and the kitchen, switch the flow of water in the hot water supply system. For simplicity the illustrations show flows with both units in operation simultaneously, however the flows are relevant to either location if operated separately.

Autonomous water recovery arrangement for single and multi story applications.
EcoVerta TSV example with simple mains pressure by-pass outlet for general connection

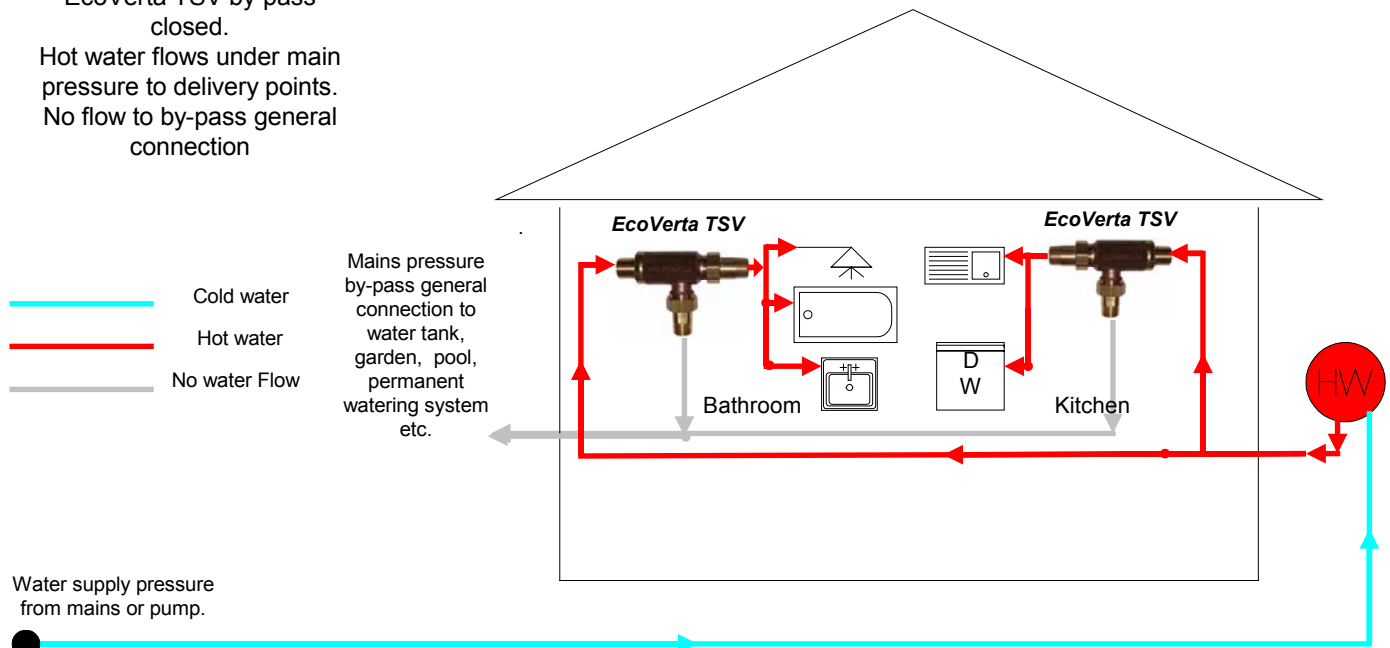
1. Water Recovery Cycle Begins

EcoVerta TSV by-pass open.
 Cold hot water flows under main pressure to by-pass general connection.
 No flow to delivery points.



2. Water Recovery Cycle Complete

EcoVerta TSV by-pass closed.
 Hot water flows under main pressure to delivery points.
 No flow to by-pass general connection



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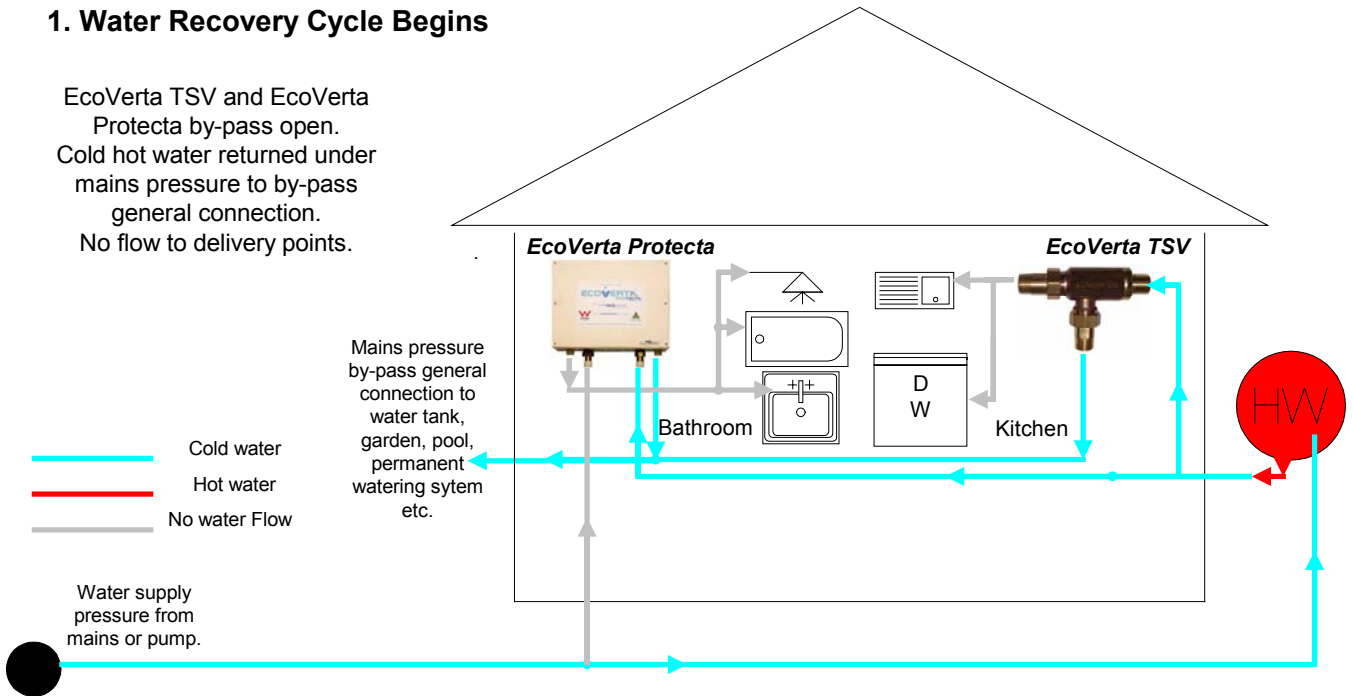
The following two diagrams illustrate the way in which an **EcoVerta TSV** installed in the kitchen and an **EcoVerta Protecta** in the bathroom, switch the flow of water in the hot water supply system. For simplicity the illustration shows flows with both units in operation simultaneously, however the flows are relevant to either location if operated separately.

Notes : :1 That all outlets being supplied by each unit can draw water at any time individually or simultaneously. :2 The EcoVerta Protecta has a cold water supply line fitted to enable the temperature limiting feature of the unit. :3 The flows of water using the EcoVerta Protecta are similar to the EcoVerta TSV except that the EcoVerta Protecta also controls delivery water flow to compensate for supply water pressure fluctuations.

Autonomous water recovery arrangement for single and multi story applications.
Rural example with combination **EcoVerta Protecta** and **EcoVerta TSV**

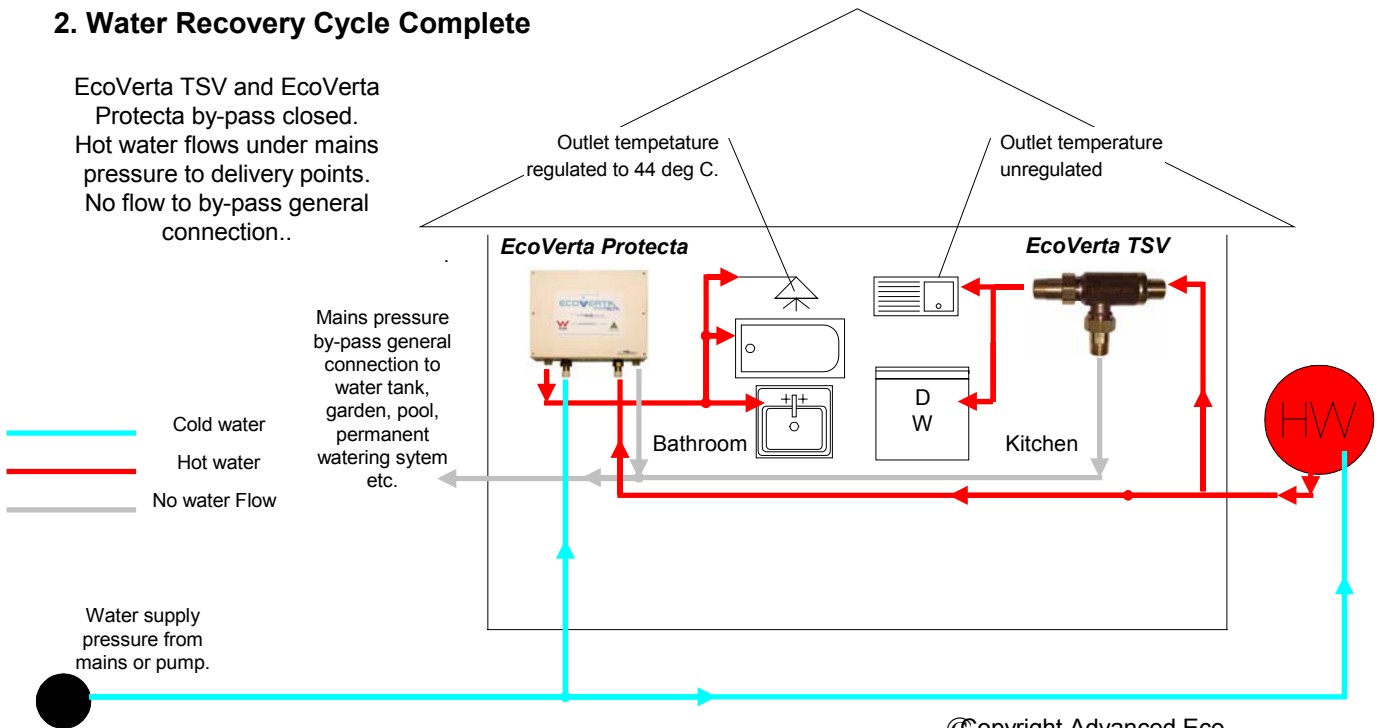
1. Water Recovery Cycle Begins

EcoVerta TSV and EcoVerta Protecta by-pass open.
Cold hot water returned under mains pressure to by-pass general connection.
No flow to delivery points.



2. Water Recovery Cycle Complete

EcoVerta TSV and EcoVerta Protecta by-pass closed.
Hot water flows under mains pressure to delivery points.
No flow to by-pass general connection..



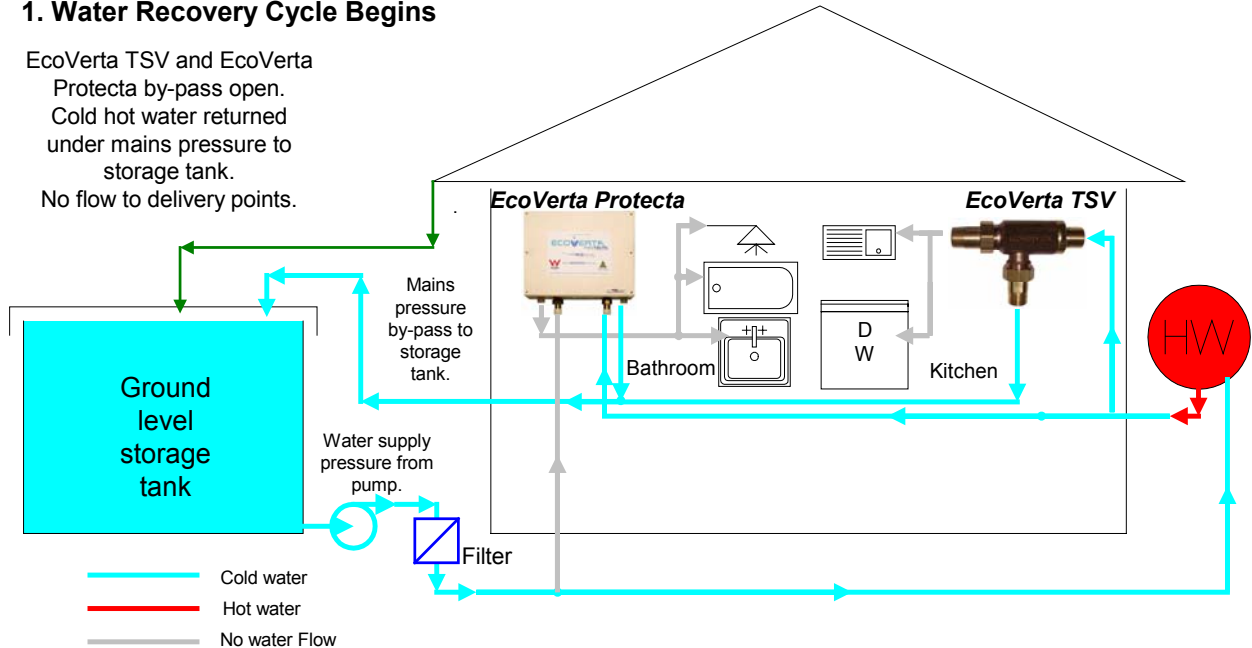
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The following two diagrams extend the previous illustrations to include the flows surrounding the use of **EcoVerta Products** where tank water is the only supply.

Autonomous water recovery arrangement for single and multi story applications.
Rural example with combination **EcoVerta Protecta** and **EcoVerta TSV**

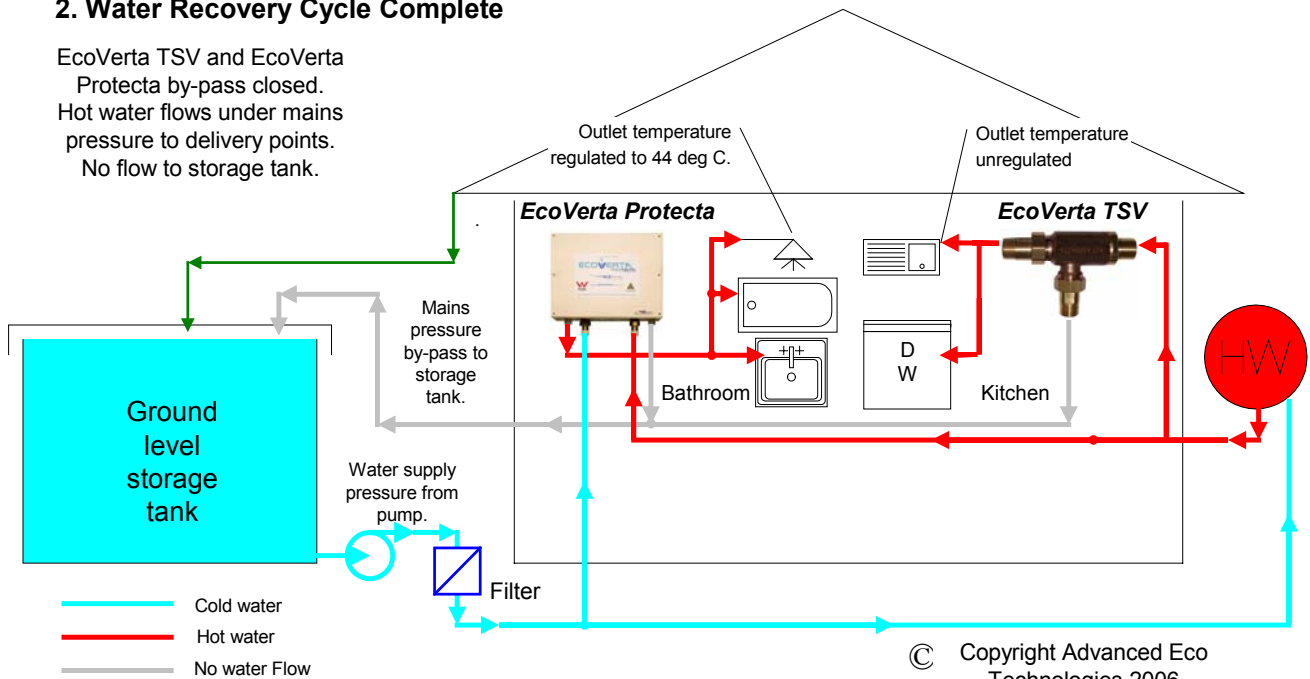
1. Water Recovery Cycle Begins

EcoVerta TSV and EcoVerta Protecta by-pass open.
Cold hot water returned under mains pressure to storage tank.
No flow to delivery points.



2. Water Recovery Cycle Complete

EcoVerta TSV and EcoVerta Protecta by-pass closed.
Hot water flows under mains pressure to delivery points.
No flow to storage tank.



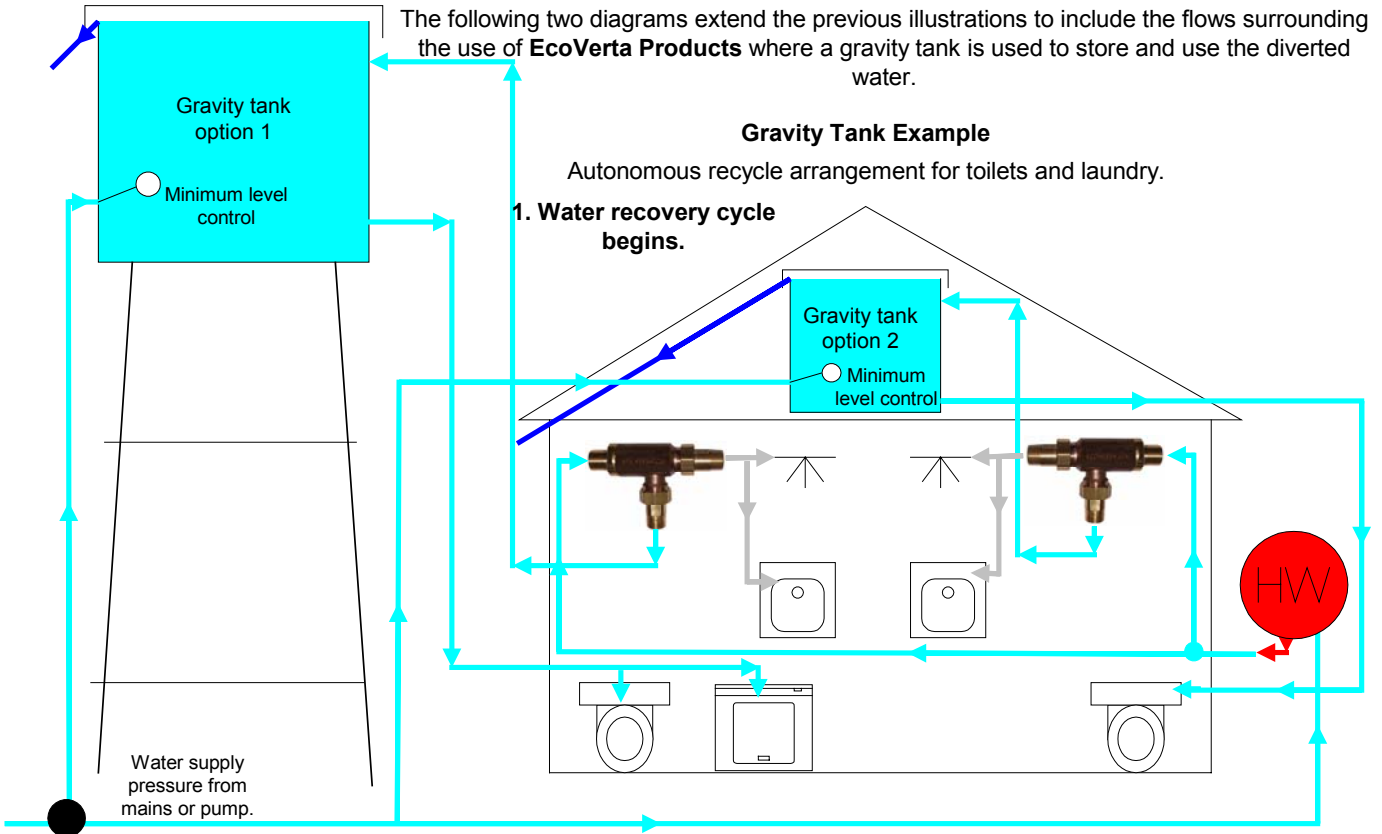
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The following two diagrams extend the previous illustrations to include the flows surrounding the use of **EcoVerta Products** where a gravity tank is used to store and use the diverted water.

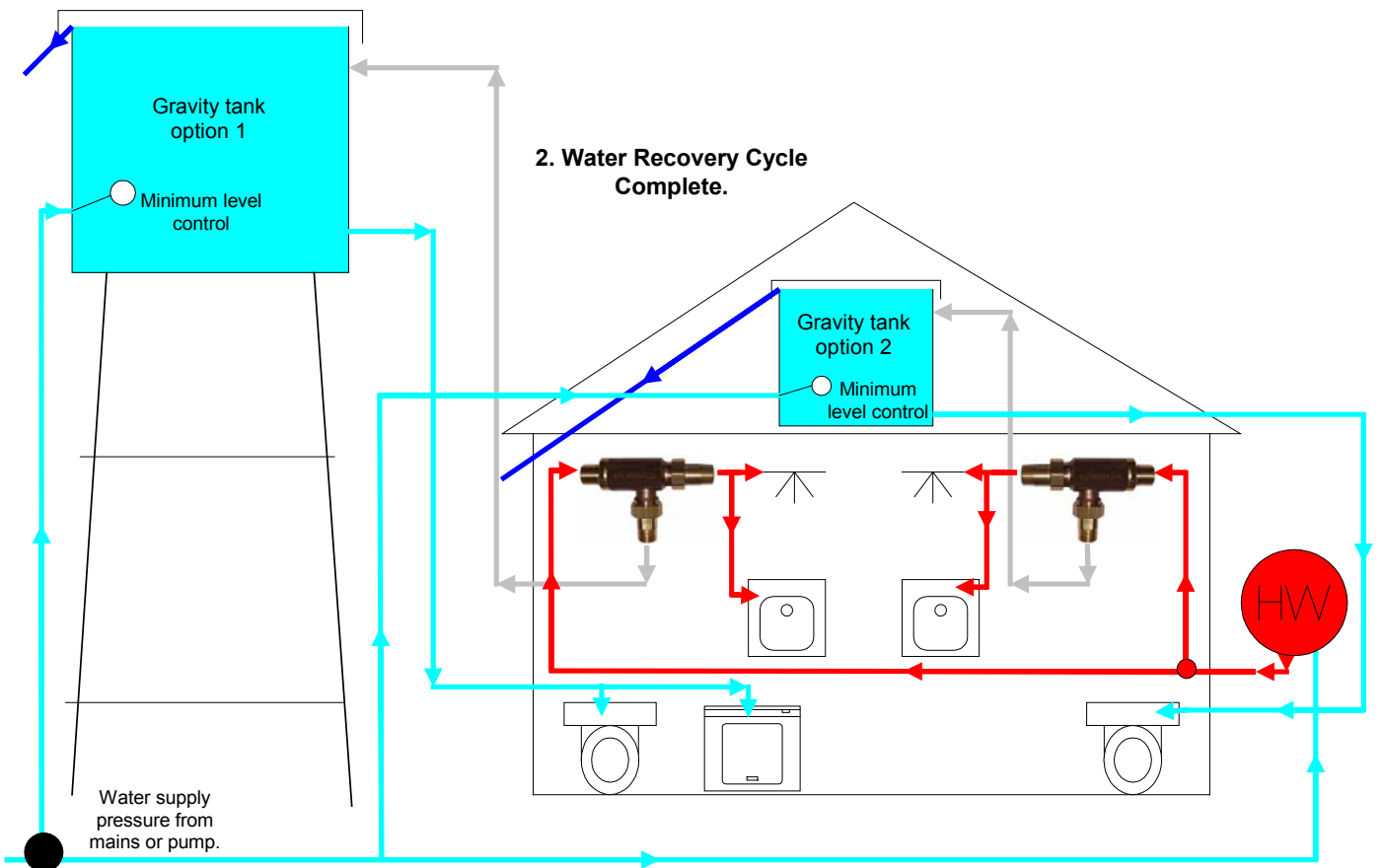
Gravity Tank Example

Autonomous recycle arrangement for toilets and laundry.

1. Water recovery cycle begins.



2. Water Recovery Cycle Complete.



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