

TRAINING OFF THE PAGE - JON PALFREY

HEAT EXCHANGE IN PLUMBING

Jon Palfrey explores the numerous methods of being able to take heat from another source and convert it into usable energy to in term deliver to DHW fixtures etc.

To take a heat source and transfer it into a stored body of energy is becoming a more common objective with the supply of heated water to domestic temperature levels as well as for air conditioning heating purposes.

Traditionally a direct energy source has been used. An example is a burner flame transferring heat via a combustion chamber or a submerged electrical heating element that has a radiant heat transfer capability into a body of stored water.

More and more designers and plumbers are being directed by their clients as to their expectations of energy reduction whether as an environmental/sustainability decision or from an operating cost reduction perspective.

The expectation of creating and using heat in various ways is now becoming more of a directive in mainstream plumbing.

Providing the same outcome of transferring heat energy from one source to another is a design strategy in commercial fields but is now also



Solar PV fields are becoming a popular choice with designers and installers looking for maximum efficiency, durability and a more cost effective energy yield solution.

being used in residential applications where energy gain is desired as well as gathering and holding the energy and to use it in a multifunctional way to reduce mains supply contribution and associated costs and maintenance requirements.

Solar PV panels that can be directly connected into vertical heating elements that are used in Rotex tanks that provide heat exchange via a series of stainless steel coils can provide a DC supply input and therefore remove the need for an inverter to change the power supply to AC.

Waste heat can also be used in the form of taking usable heat from a plant such as an air conditioning system by using a super de-heater plate heat exchanger that acts as a transfer point and with water reticulated through the HX the ensuing energy can be gained and then held in a storage tank.

An energy envelope within a building is now being factored into the potential

for available energy that can be used and converted into other forms and services.

Roof space for solar collectors is an option for new and existing buildings to be served via the ability to exchange heat from solar thermal water or liquid or as a direct power energy source and provide a DC current into vertical heating elements.

Air that can be exchanged via a compressor in new commercial heat pumps is also becoming a popular method of delivering DHW.

The Energy Smart Water PV Solar Hot Water system has been approved for sale in Australia since March 2018, although the MYPV photovoltaic water heating technology has been available in Europe for more than five years.

Due to the heat exchange technology the temperature of the tank water is not depleted like that of a storage water system. The Rotex tank also has exceptional heat retention. ➤



Heat exchange in DHW plumbing using PHX and stainless steel coils.

One combined system with domestic hot water and hydronic heating is available which will optimise space with a small minimal footprint.

INDEPENDENT ENERGY COLLECTION & USE

An ever-increasing demand from homeowners and project designers shows trending towards an energy gathering mode in homes where independent living and independent energy for services is being captured off grid.

Solar PV collectors are providing end users with DC current which can be used in a multifunctional Rotex tank that can accommodate and transform heated stored water into energy use for domestic water heating, floor coil or radiator panels and pool and spa heating.

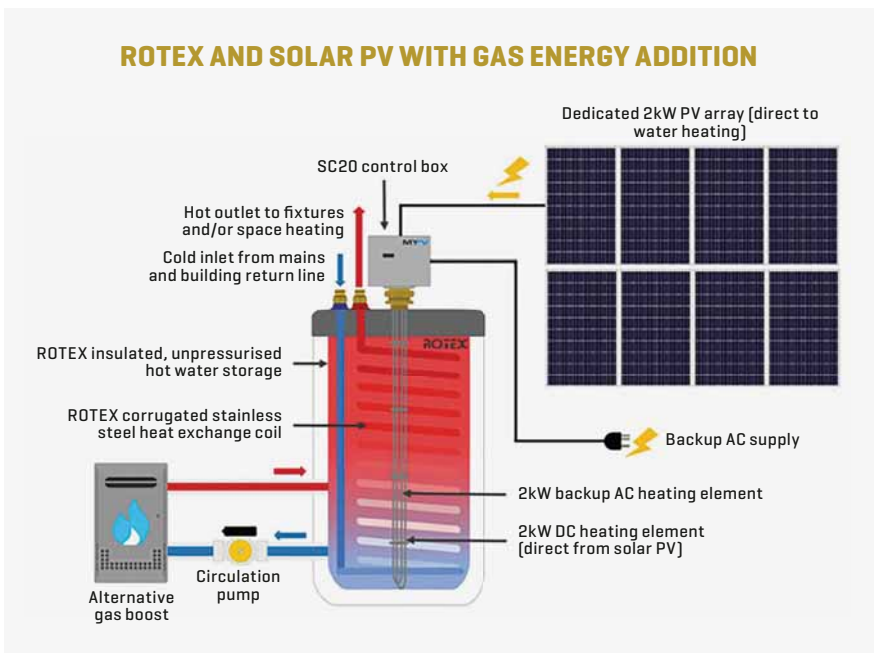
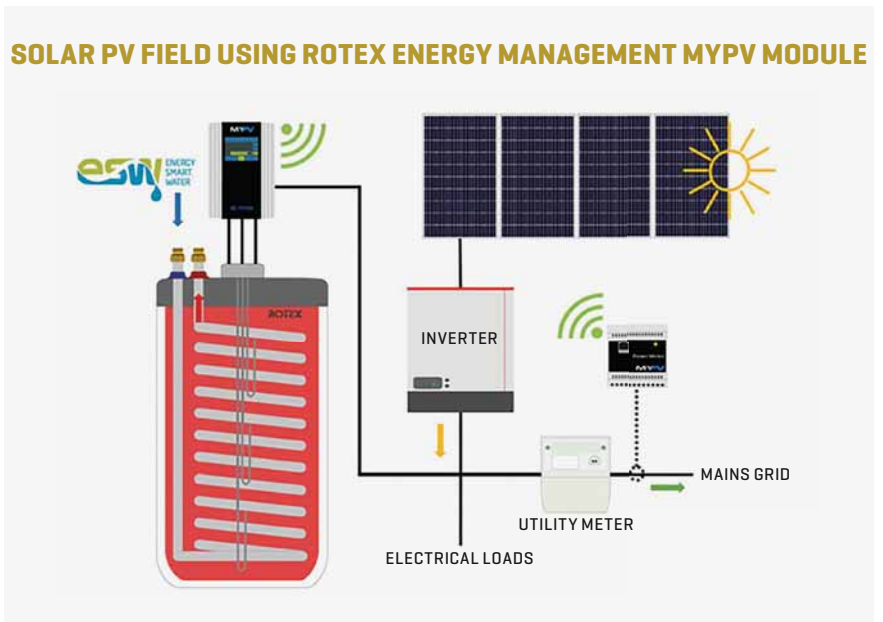
Often with an additional energy source, if the amount of PV gathered does not meet the complete heat load required, heat pumps come into their own thanks to their ability to boost using high COP output and high temperatures to maintain heat loads in the cooler southern states.

An energy system that can accommodate off grid supply as well as serve multiple fixtures is finding is being sought after where the customer/consumer expectation is focused on combining services for living with comfort and the ownership of energy to drive their heating requirements.

Ownership of a family's energy that comes at minimal cost and is available 24/7 through the Rotex thermal battery is being identified as a flexible system of choice.

Solar PV collectors, a cable and a Rotex tank complete with a MYPV element and control module is all that is required to be in a position of energy collection, ownership and use.

Key building industry people are responding to the need for off grid power production and are driven by a client based expectation of the latest technology being used to reduce reliance on transmission supplied energy and the expectation to use roof space and gather what's available for dwelling services, particularly domestic water heating, hydronic heating and pool and spa heating requirements.



Growing veggies, collecting water and now the demand for energy gathering and independent use are all developing expectations from home owners who recognise the need and opportunity to live a sustainable existence.

Plumbed as a standard water heater as per AS/NZS 3500.4 and with no need to install insulated copper flow and return lines, pumps, sensor cables, air eliminators and other standard solar water heating components, a Rotex storage vessel and solar PV can be a

very affordable installation with return on investment outcomes proving the initial cost is reduced once the system is commissioned and activated.

Yours in hot water ... ■

Jon Palfrey is the Thermanl Energy Solutions/Rotex Commercial Manager. He conducts training to industry groups relating to all things water heating.

