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SOLAR POWER TECHNOLOGIES

Microsolar Information Sheet

A lot of us think that all solar water heaters are the same.

The truth is that they are very different, and at a time when electricity costs are projected to rise over the next few years, it is necessary to find out more about the different kinds of solar water heaters available. We all know that using electricity to heat water is expensive, outdated and contributes to global warming.

However, most traditional flat panel solar water heaters cannot provide a convincing alternative. These older designs may have very efficient solar collector panels, but their Achilles heel lies in having only one or maybe two pipes connecting the copper solar collector panels to the storage tank. This is a bottleneck when they all have 10 or 20 very advanced copper or selective black titanium dioxide coated heating pipes in each panel. This single connecting manifold that leads from all these 30 heating tubes into the hot water storage tank above, but it is feeding the tank in an inefficient manner.

So on cloudy days these inefficient systems become sluggish. Thus, the consumer is forced to switch on the electric heater back-up more often than initially planned. This detracts from the original purpose of buying a solar water heater.

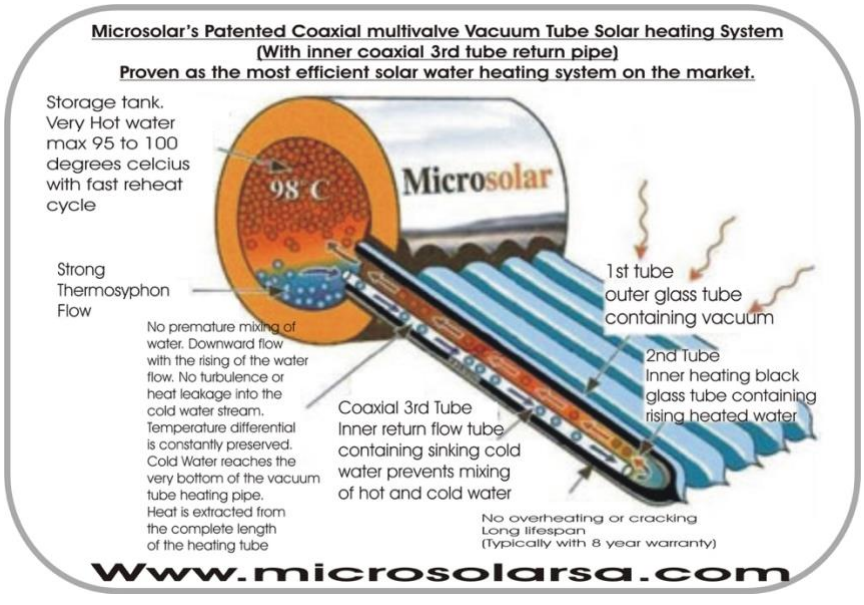
For the discerning house buyer the Microsolar water heating system has between 10 and 30 tubes (Model

dependent) that are all connected directly to the tank. The Microsolar Coaxial Multivalve systems are the world's highest efficiency therrnosyphon solar water heating systems. They can operate totally without electricity and are capable of reaching a maximum temperature of 100°C from 10°C within six hours of full sunshine. This temperature rise is unmatched by any thermosyphon solar heater in the world. Under cloudy conditions and colder climates, electrical backup is required and is incorporated into the system design.

It is assembled and designed in Malaysia, patented worldwide and is used in South Africa, Spain. Portugal, Australia, New Zealand, Japan, Indonesia, Philippines, Singapore, India, Nepal, the Middle East, the Caribbeans, Kenya, Tanzania, Maldives, USA and UK, under various weather conditions

The Microsolar comes with a pressurised indirect heating copper twin coil heat exchanger for long term life-span and low maintenance, using the latest state-of-the-art robotic tungsten argon gas welded stainless steel 304 hot water storage tanks, mirror finish 304 stainless steel casing, 60mm high pressure injected polyurethane foam insulation, high temperature borosilicate evacuated glass vacuum tubes 58mm x 1800mm with mirror finish concentrating parabolic reflectors, coaxial mulitvalves between the collector and tank and return separator pipes within the glass vacuum tubes.

This is definitely a state-Of-the art technology for you.



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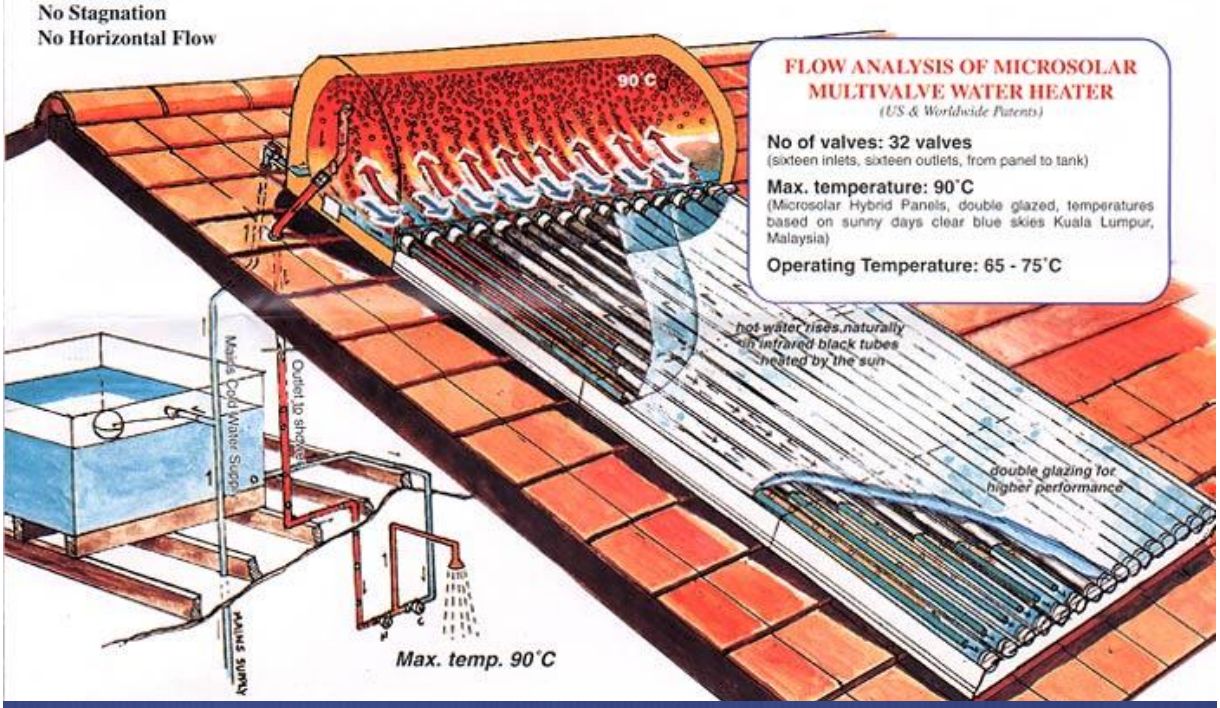
Microsolar Multivalve Solar Water Heater

US Patent 6,014,968 Teoh, 18 January 2000

Strong Thermosyphon Flow
No Bottleneck
No Stagnation
No Horizontal Flow



FLOW ANALYSIS OF MICROSOLAR MULTIVALVE WATER HEATER
(US & Worldwide Patents)

No of valves: 32 valves
(sixteen inlets, sixteen outlets, from panel to tank)

Max. temperature: 90°C
(Microsolar Hybrid Panels, double glazed, temperatures based on sunny days clear blue skies Kuala Lumpur, Malaysia)

Operating Temperature: 65 - 75°C

Conventional Solar Water Heater (Single Valve)

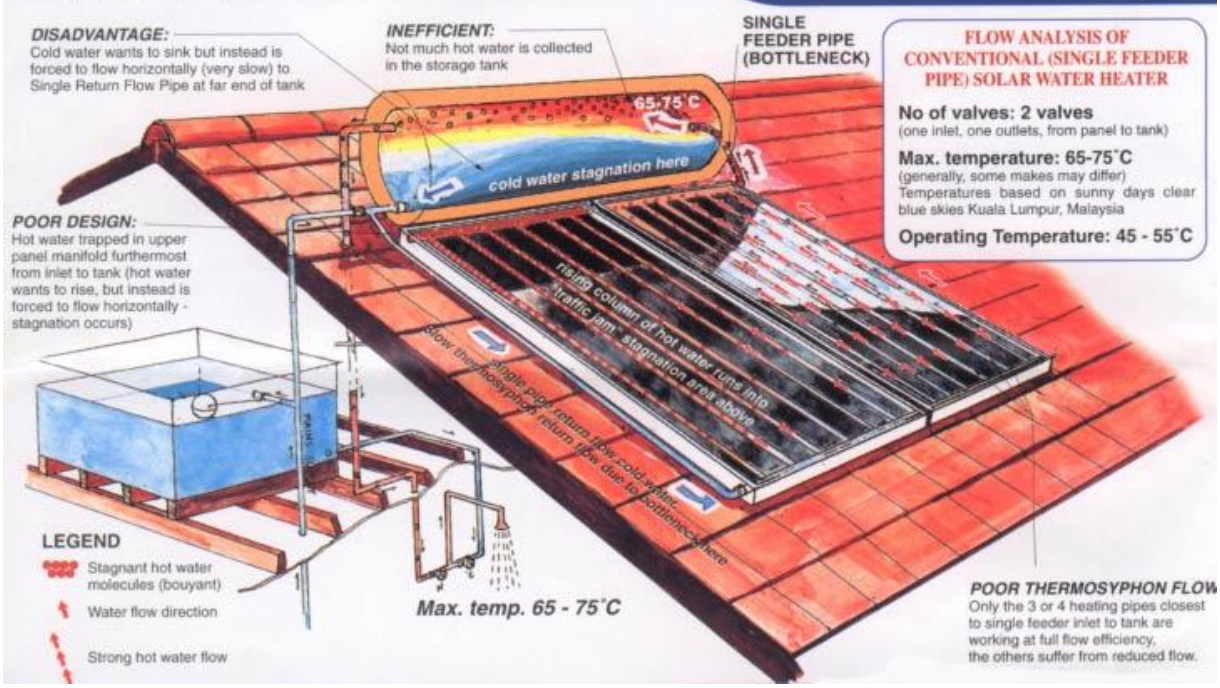
US Patent 4,084,578 Ishibashi, 18 April 1976

DISADVANTAGE:
Cold water wants to sink but instead is forced to flow horizontally (very slow) to Single Return Flow Pipe at far end of tank

INEFFICIENT:
Not much hot water is collected in the storage tank

SINGLE FEEDER PIPE (BOTTLENECK)

POOR DESIGN:
Hot water trapped in upper panel manifold furthermost from inlet to tank (hot water wants to rise, but instead is forced to flow horizontally - stagnation occurs)



FLOW ANALYSIS OF CONVENTIONAL (SINGLE FEEDER PIPE) SOLAR WATER HEATER

No of valves: 2 valves
(one inlet, one outlets, from panel to tank)

Max. temperature: 65-75°C
(generally, some makes may differ)
Temperatures based on sunny days clear blue skies Kuala Lumpur, Malaysia

Operating Temperature: 45 - 55°C

POOR THERMOSYPHON FLOW
Only the 3 or 4 heating pipes closest to single feeder inlet to tank are working at full flow efficiency, the others suffer from reduced flow.