WHAT ARE THE THREE MAIN DOMESTIC WATER HEATING SYSTEMS USED WORLD WIDE?

ICS INTEGRAL COLLECTOR STORAGE, DRAINBACK AND PRESSURIZED.

WHAT IS AN OPEN-LOOP OR DIRECT TYPE OF SOLAR WATER HEATING SYSTEM?

THE DOMESTIC WATER ACTUALLY ENTERS THE SOLAR COLLECTOR, HEATED AND USED IN THE HOUSE.

HOW IS AN ICS SYSTEM CLASSIFIED?

IT IS PASSIVE (NO PUMPS) AND DIRECT (DOMESTIC WATER IN THE COLLECTOR) AND IS THE LEAST EXPENSIVE TYPE OF SOLAR HEATING SYSTEM.
What is a Closed-Loop or Indirect type of solar water heating system?

The Solar fluid is heated in the collectors, circulate to a heat exchanger, where the water is heated. The solar fluid and domestic water are kept in separate systems.

What is a Passive Solar Water Heating System?

It uses convection to circulate solar through the system without the use of pumps. Cheapest to operate.

What is an Active Solar Water Heating System?

A system that utilizes pumps to circulate fluids throughout the system.
What is the Main difference between a passive system and an active solar water heating system?

An active System uses a pump to circulate the fluid while a passive system has no pump and uses convection.

What is a One-Tank System?

A solar storage backup tank, with an electric or gas heating element to heat water when there is insufficient solar energy available to bring the water up to the desired temperature.

What is a Two-Tank System?

A storage tank for solar water and a backup heater tank (electric/gas) or on-demand tankless water heater.
Rooftop solar collector

*Air may be used as a medium in some systems

Water medium*

Hot water tank/storage

Electric pump

Radiator

Sunlight
What is the most versatile of all solar water heating systems used worldwide?

A pressurized closed-loop, antifreeze system, that has an indirect and active solar heating system.

What is a shunt load?

A heat-diversion load (a hot tub or tank) that will cool the solar fluid and keep it from overheating.

What is Thermosiphoning?

It is the movement of a fluid caused by convection. Cold water could siphon back into the hot water tank.
Where is the best location for the expansion tank with the closed-loop, pressurized system?

Place it directly before the circulating pump in relation to the fluid flow.

What two types of heat exchangers could you use in a closed-loop system?

It can use either a tank-integrated heat exchanger or an external heat exchanger.

How is an ICS system classified? (active or passive) and is it classified as (direct or indirect).

It is passive (no pumps) and direct (domestic water in the collector). Least expensive solar heating system.
Where would a drainback system work best in the world? (Warm or cold climate) Why?

Warm climate. When a storage tank gets to temperature, the system shuts off, fluid drains out of the system so it doesn’t over heat.

How is a drainback system classified?

It is classified as an indirect (heated by solar fluid and heat exchanger), closed-loop system, because the solar fluid remains within a single circuit at all times.
THE END