NUETECH

POSITIVE FLOW MODULATOR(PFM)

SMART AIRVENT

Positive Flow Modulator PFM (Smart Airvent)

Solar water heaters are the intermittent devices linking the cold-water source and the hot water usage points by elevating the temperature to the required hotness. Most of the time, hot water use is intermittent, and the water flow is maintained because of higher head from an overhead tank or a pump to push water through the system. Several equipment's / gadgets have played a role in achieving water flow in the system. It is common practice to install Airvent pipes in the hot water line and pressure release valves along with safety plugs or valves to release the air or steam pressure. Practical difficulties have posed challenges to install very tall Airventt pipes and also have reduced the system efficiency significantly.

Nuetech Solar Systems Pvt. Ltd. R&d Team has an invention developed, relating to an equipment for Modulating the positive flow of hot water from a roof top solar water heater in the hot water lines of houses, apartments, residential / commercial buildings.

Presently under consideration for Indian Patent No. 202441009292

PATENT PR - NO. 202441009292

The present innovation - “Positive Flow Modulator” (PFM) - is a device mounted at the outlet pipe of the hot water tank of the solar water heater system. This device is very effective in its function, easy to install and can suit most of the solar water heater systems commercially manufactured.

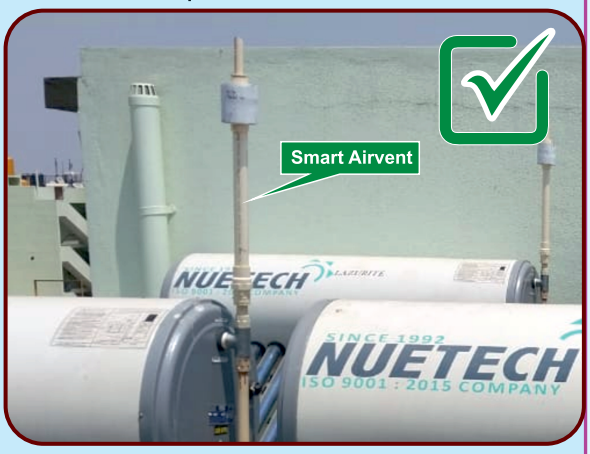
Hot water is lighter compared to cold water and is discharged at the top of the solar water heater tank. Following conditions will result in intermittent flow or slow discharge or no discharge of hot water at the usage point:

1. Non-availability of cold water in the feeder line or 2. Non-availability of cold water in overhead tank or
3. Air lock because of varying pressure in the tank and the pipelines or
4. Steam accumulation in the hot water tank or the hot water pipelines or
5. Excessive withdrawal of hot water beyond the designed capacity or combination of any of the above.

The innovation will eliminate all the above problems and always provide Positive Flow of water in the hot water pipeline.

Advantages of Smart Airvent

1. Eliminates lengthy Airvent pipe/assistant or break level tank and air relief valve(ARV).
2. Allows the Solar water heater to work with slightly elevated pressure for better performance
3. Overall performance improvement of around 10% of the solar water heater system.
4. All in one unit to release air lock, release excess pressure, releases steam formed inside hot water tank.
5. Rugged and foolproof design
6. Positive flow of hot water at tap end
7. PFM works for PRD / pressurized tank systems also, NO PRV and ARV.
8. Easy to install and safe to handle.
9. One standard model for varying sizes and types of SWH
10. Standard product to go with SWH systems.



Problems Identified with lengthy airvent pipes for solar water heaters:

1. Airvent pipe are too tall for solar water heater system size
2. Complicated to support tall Airvent pipe on the roof
3. Aesthetically not appealing
4. Airvent pipe generally will not stand vertical – pipe will bend due to heat and or its own weight
5. Hot water stored in the Airvent gets cold soon and get discharged first each time into the flow of cold water in the hot water line which will reduce the efficiency of the system considerably
6. Hot water pipe leakage because of shaking Airvent pipe due to wind or birds sitting on it or its own weight with hot water.

7. Airvent pipes are non-standard and need to be designed at the site
8. Airvent pipes are the attraction for monkeys on the roof tops of buildings and often break them by trying to climb or swing on the Airvent pipe resulting in draining of the entire water from SWH and cold water tank.

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