# About Solar Water Heating

In South Africa, the Renewable Energy industry is still in its infancy as we have only recently begun to recognise the financial and environmental costs of burning fossil fuels. South Africa is known for having some of the highest solar radiation levels in the world, making it ideally suited to harness the potential of Solar Energy. Eskom has identified Solar Water Heating as the leading renewable energy solution for domestic application due to its high efficiency, broad feasibility and low cost.

Basic Components

Solar Water Heating systems are very similar to conventional electric geyser water heating systems. The critical difference resides in the additional collector circuit.

- **Storage tank (Solar Geyser):** While the solar geyser is very similar to a conventional electric geyser, it offers superior insulation for better heat retention and has additional ports for the collector circuit.
- **Solar collector:** The collector is essentially a heat exchanger that incorporates the conversion of solar radiation into thermal energy. There are two types of collectors for domestic application, namely the flat plate and the evacuated tube system (EVT). For further details please see their relevant tabs.
- **Transfer fluid:** Has a low boiling point allowing the heat gathered in the collector piping to be focused on the area where the potable water flows.

Water in a solar system can either be circulated by density differentials (as with a thermosyphon system) or actively (where a pump is used). The Solar Water Heating cycle itself, however, is made up of four stages irrespective of the components used. This cycle is shown below:
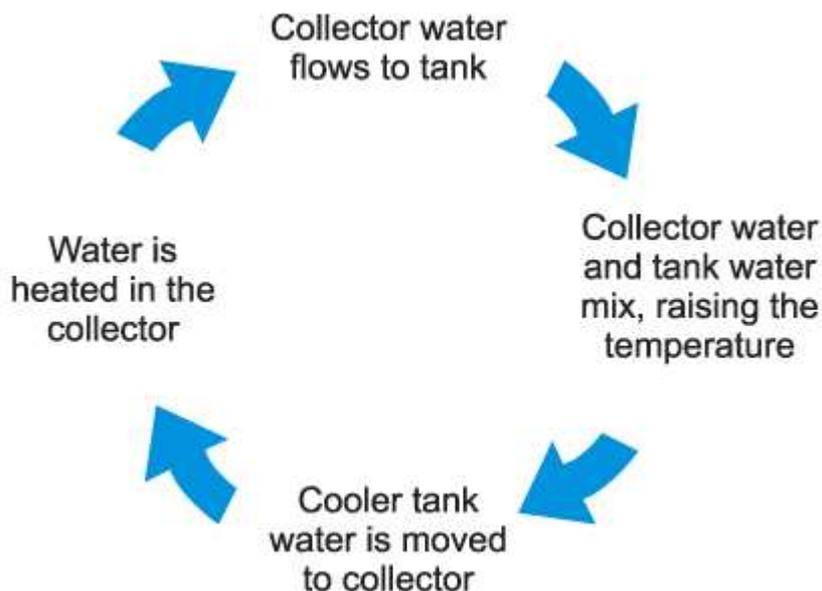
The orientation of the collector is critical to the efficiency of the system. In South Africa (and the rest of the Southern Hemisphere) the collector must face north. The angle of inclination of the collector is determined by the latitude of the collector's site. In South Africa, 35 degrees has been calculated to be the best angle.