

# Liquid Cooling Using Peltier Tile

## Abstract:

Our project is based on the Thermoelectric Effect. The **Thermoelectric Effect** is the direct conversion of temperature differences to electric voltage and vice versa via a thermocouple. A thermoelectric device creates voltage when there is a different temperature on each side. Conversely, when a voltage is applied to it, heat is transferred from one side to the other, creating a temperature difference. The term "Thermoelectric Effect" encompasses three separately identified effects which are: **Seebeck Effect**, **Peltier Effect** and **Thomson Effect**. The detailed description of all these effects you can see by clicking [here](#).

So, for this project we are using a Peltier Module which works on the principle of Peltier Effect. The **Peltier effect** is the presence of heating or cooling at an electrified junction of two different conductors when a current is made to flow through a junction between two conductors, A and B, heat may be generated or removed at the junction.

For our project, we designed our own AVR Controller Board in **Eagle CAD** and it has the minimal peripherals we need because we have size and shape constraints.

The main Objective of the project is to make a Liquid Cooler using a Peltier Tile. In this, the base is created which has the Microcontroller board (Self-designed), Cooling Fan, and the Temperature sensors which continuously detects and display the temperature of the water in the LCD.

As the temp. of water reaches the threshold level i.e., **15 °C**, the Fan and Peltier Tile stops working, and as the temp. again reaches above the threshold i.e., **25 °C**, both again starts working. This will help the battery to work for long duration and resulting the Water remains Cool.

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