Controling and monitoring of a solar thermal system

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Abstract:

Taking care of the natural environment became a very important part in many people's lives over the last few years. In Germany there is a big trend in using renewable energies for heating freshwater and space in private homes.
This project is about developing a low cost control unit and monitoring system for a solar thermal system based on an Arduino UNO and a Raspberry PI.

Control Unit:

The control Unit based on the Arduino UNO controls multiple pumps and valves depending on several temperature values. The figure on the right shows the given setup of a solar thermal system.
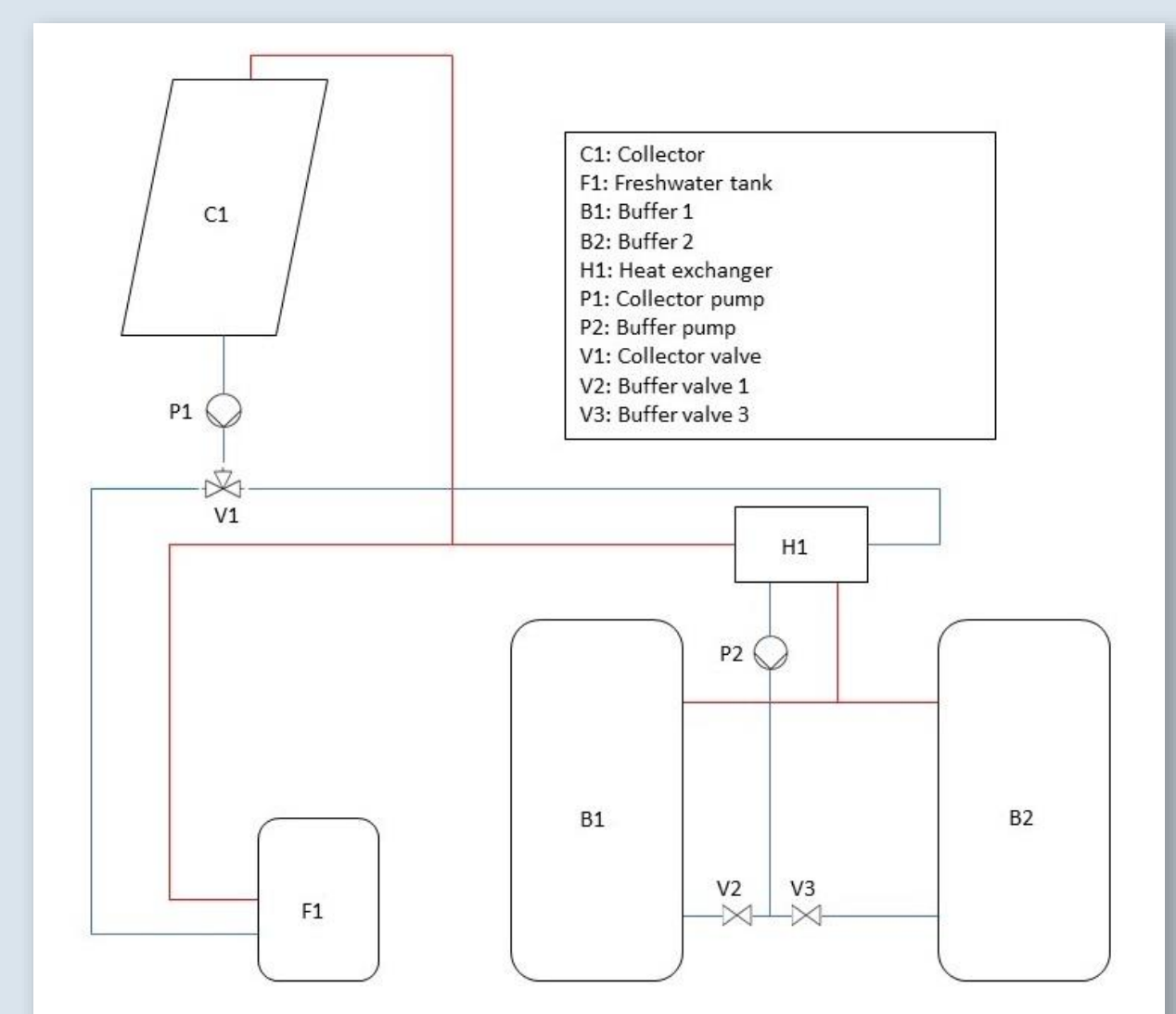
Monitoring system:

The monitoring system provides real time data and a data archive to the user. The dashboard is accessible over with any internet browser. The figures below show the basic software architecture and a snapshot of final dashboard.