A LOW-COST SYSTEM FOR TEMPERATURE CONTROLLING AND MONITORING IN AQUARIUMS.

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First life form on Earth developed at moderate temperatures, before it evolves into a much warmer environment and later in a climate similar to the current one. In this sense, it is well known that temperature has an important role in the life and of all organisms growth around the planet. For example, marine organisms suffer from small changes in temperature, which can affect their behavior and metabolism. Also, a area that requires great attention when the subject is temperature, is aquarium industry, that is the creation of fish and other aquatic organisms in aquariums. However, keeping aquariums in certain conditions, as the summer, requires special attention to preserve life, because temperature increasing creates some risks for this environment. Then, it is necessary an equipment that suppress this failure, making stable the temperature in the aquariums. However, in most cases the high cost these devices is a major constraint for this area. Therefore, this work aims to develop a low cost system for temperature controlling and monitoring in aquariums. This system is based on physical programmable circuit board (Arduino) connected to 1 temperature sensor and 4 peltier modules (2 to heat and 2 to cold). User can be adjust temperature thresholds (minimum and maximum) according to desired. From this, temperature sensor measures and sends information to Arduino. When this temperature exceeds configured thresholds, Arduino turn on the peltier module. For equipment test, was performed an experiment using an aquarium with 1.5l of water. This test showed that for increasing and decreasing of 1 degree the system took 30 seconds and 27 seconds, respectively. Thus, this system prevents abrupt changes in temperature that can be harmful to organisms. The main conclusions that can be drawn are that this system is low cost, quick deployment and customizable.