

Abstract

Project name: Smart Pot - Automatic system of support of a microclimate during cultivation plants based on stm32

Relevance: Today the problem of creating and maintaining climate conditions (humidity and temperature), their control and automation of watering in the care and cultivation of houseplants and microgreens for homes, cafes, and restaurants, in winter gardens, greenhouses, mini-farms.

Caring for and growing houseplants has long been part of people's lives. It is known that houseplants need not only regular watering but also constant monitoring of soil moisture and temperature. The cultivation of microgreens is also gaining widespread popularity. Various microgreens are used not only as healthy food, but also as a visual and taste component in restaurants.

Therefore, the use of automation of plant care and cultivation, namely, automation of irrigation and soil moisture control, as well as further commercialization of development is important today. **The aim** of the project is to develop a device based on the stm32 microcontroller to create and maintain a microclimate in the cultivation of houseplants and microgreens.

The following **tasks were solved**:

1. Device concept development;
2. Algorithm of device operation development;

3. Program for microcontroller development;
4. Creation of automatic watering;
5. OLED display for data output development.

The basis of the developed system of support of a microclimate and watering is a prototype board stm32f103rb; analog capacitive sensor of soil moisture, providing a voltage from 0 to 4.6 V at the input of the board depending on soil moisture; water solenoid valve that supplies water to the soil when needed; and an OLED display that shows the user the current soil moisture. The operation of the automatic watering system allows users to forget about problems such as drying or waterlogging of the soil. The system can be easily modified by adding features such as: settings via Bluetooth, water level sensor in the tank, LED / UV lamp to enhance plant growth and more. Further commercialization of development is possible.

Conclusion: On the basis of the stm32f103rb board, a soil moisture control system was built, which helps to solve the problem of watering houseplants and microgreens.

Keywords: pot; stm32; automation; growing; plants.