

Annotation

The thesis is devoted to the development and implementation of the microclimate monitoring system in basements. Basements are often used to store various materials and equipment, as well as as a room for household needs. However, due to the specifics of their design, they are prone to deterioration of the microclimate, which can damage the stored materials and negatively affect people's health.

In the first chapter, the relevance of the topic was considered, existing problems were identified and the concept of microclimate was described, including the necessary characteristics for maintaining optimal storage conditions.

In the second chapter, different types of basements were described, and an overview of existing microclimate control devices, such as temperature, humidity and air velocity monitoring devices, was carried out. Analogues of automated microclimate control systems and their technical characteristics were also given, which made it possible to make a comparative analysis and determine the best solutions for our system.

The third section is devoted to the features of creating a microclimate control system for the basement. The goals and objectives of the project were determined, the requirements for the system functions were formulated, and the hardware and software were selected. The system includes an Arduino Nano microcontroller, BMP280, DHT11, MQ135 sensors, a photoresistor, an LM2596 stabilizer, and an ESP-01 Wi-Fi module. A functional scheme of the system was created and its principle of operation was described, the necessary elements were selected to realize the functioning of the system blocks, their technical characteristics were considered, the type of ventilation system was chosen, a basic electrical diagram and an algorithm of the device were created.

To check the operation of the system, a program code was written, after which the received data was tested and viewed on a computer using the IoT

concept through a private channel on the ThingSpeak website. The results of the project confirmed that the developed system is an effective solution for automatic control of the microclimate in basements, ensuring stable storage conditions for materials.

Key words: microclimate, basement, humidity, pressure, temperature.