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Development of an Automatic Monitoring System Based on the Open Architecture Concept

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Abstract : Kazakhstan has adopted a carbon neutrality strategy until 2060. In accordance with this strategy, it is necessary to introduce various tools to maintain the environmental safety of the environment. The use of IoT, in combination with the characteristics and requirements of Kazakhstan's environmental legislation, makes it possible to develop a modern environmental monitoring system. The article proposes a solution for developing an example of an automated system for the continuous collection of data on the concentration of pollutants in the atmosphere based on an open architecture. The Audino-based device acts as a microcontroller. It should be noted that the transmission of measured values is carried out via an open wireless communication protocol. The architecture of the system, which was used to build a prototype based on sensors, an Arduino microcontroller, and a wireless data transmission module, is presented. The selection of elementary components may change depending on the requirements of the system; the introduction of new units is limited by the number of ports. The openness of solutions allows you to change the configuration depending on the conditions. The advantages of the solutions are openness, low cost, versatility and mobility. However, there is no comparison of the working processes of the proposed solution with traditional ones.

Keywords : environmental monitoring, greenhouse gases emissions, environmental pollution, Industry 4.0, IoT, microcontroller, automated monitoring system.
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