

# Development Of The Project For Identifying Equipment In Professional Educational Institutions Based On Rfid Technology

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**Abstract:** this article analyzes the project of implementing radio frequency identification (RFID) technology to manage and ensure the safety of equipment in professional educational institutions. The application of RFID technology allows for the automation of the inventory process, remote monitoring of equipment, and prompt updating of information. The article presents the advantages of this technology, the process of its practical implementation, and proposals for increasing its efficiency. According to the research results, RFID technology helps to efficiently manage vehicles and equipment in professional educational institutions, prevent their loss, and facilitate their use in the educational process.

**Keywords:** RFID technology, professional educational institutions, equipment management, inventory, radio frequency identification, educational technologies, equipment control, automated systems.

## INTRODUCTION.

Due to the rapid development of information management systems using modern technologies, the issue of increasing the efficiency and security of equipment, tools and techniques (hereinafter referred to as equipment) on the balance of educational institutions is gaining great importance. Radio frequency identification (RFID) technology is one of the effective methods of identifying and managing equipment. This technology uses radio frequencies to transmit and receive data, thereby creating the possibility of rapid identification and monitoring of equipment. The implementation of RFID technologies helps to manage resources in educational institutions, reduce losses and damage. This article analyzes the development of a project for identifying equipment in professional educational institutions based on RFID technology, its advantages and ways of implementation. The goal is to increase the efficiency of equipment in educational institutions and expand the possibilities of using them.

### Current situation and problems:

There are a number of problems in controlling the movement of equipment on the balance of vocational educational institutions:

- decentralized control - control over the movement of equipment is decentralized;
- detection without inventory - the inability to detect the replacement or loss of equipment without conducting an inventory;
- time-consuming inventory - the process of inventorying equipment takes a lot of time;
- human factors - errors occur due to the intervention of the human factor during the inventory of equipment;
- impact on the work process - disruption of the work process of employees during the inventory of equipment;
- lack of participation of the working group - insufficient participation of working group members in the inventory of material and technical equipment;
- lack of systematic technical service - the work of educational organizations to provide technical

service to equipment is not systematically organized.

### **RFID technology and its advantages:**

RFID (Radio Frequency Identification) or Radio Frequency Identification technology is one of the modern technologies that uses radio frequencies to transmit and receive information. This technology is widely used in industry, trade, medicine and education. The role of RFID technology in solving issues such as automating inventory and maintenance, constantly monitoring them and reducing losses in the process of managing equipment in vocational educational institutions is invaluable.

RFID tag (tag) - a radio frequency chip attached to the equipment;

antenna - a device for receiving and transmitting signals;

RFID tag reader (reader) - receives signals from the tags and transmits data to the central system.

There are several advantages to using RFID technology in vocational educational institutions. Firstly, it helps to significantly reduce inventory time. RFID tags can reduce the time for inventorying equipment by up to 20 times. Since this process is automated, errors associated with the human factor are significantly reduced.

Secondly, RFID technology makes it possible to increase the accuracy of the inventory process. During the inventory process, the identification number and other data of each device or tool are stored in memory and updated. This allows you to accurately monitor the status of each device. Since there is a need to manage a large number of devices in educational institutions, the accuracy of data is important for successful management.

The third advantage is the possibility of real-time monitoring. RFID technology creates the opportunity to monitor the movement of devices and their location online. This process is carried out

by connecting to a central database, which allows you to track the devices at any time, anywhere. Thus, the security of the devices is ensured and the efficiency of their operation is increased. The fourth advantage is the ability to quickly and easily obtain information. With the help of RFID tags, information about devices can be obtained instantly. This will help to quickly resolve various issues in educational institutions. For example, specialists can quickly receive information about equipment and organize technical maintenance or repair work on it.

The fifth advantage is that it is possible to check the equipment without disrupting the work process of employees. It is important that the inventory process in educational institutions does not affect the work process of employees. Through RFID technology, the process of checking the equipment can be fully automated, and this process does not affect the activities of employees in any way.

As a sixth advantage, RFID technology allows you to reduce business trip costs. Since it is possible to monitor the storage and use of equipment online, business trip costs are significantly reduced. This brings great economic benefits to the budget of educational institutions.

As a seventh and most important advantage, it is possible to prevent the loss of equipment. With the help of RFID technology, the likelihood of replacing or losing equipment is reduced, since the exact identification of each piece of equipment is preserved and its movements are monitored.

The last and most important aspect is the simplification of technical maintenance processes. RFID technology allows for systematic organization of equipment maintenance. Since RFID tags provide information about the condition of each piece of equipment, it is possible to identify and implement the need for maintenance in a timely manner.

Thus, RFID technology is a modern and reliable solution for effective equipment management in professional educational institutions. This technology allows for effective management of technical resources of educational institutions, ensuring their security, systematically organizing the maintenance process and using them as efficiently as possible.

### **Conclusion**

The application of RFID technology in professional educational institutions creates a new stage in effective equipment management. The experimental results presented in this article confirm that this technology has high efficiency in automating inventory and control processes. Also, the application of this technology increases the efficiency of using equipment in the educational process. In the future, it is recommended to consider the possibility of its widespread use in all educational institutions by further improving this technology.

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