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ЗМІСТ

THE AUTOMATION SYSTEM FOR THE PRODUCTION OF MATERIALS, SEMI-FINISHED PRODUCTS AND FINISHED PRODUCTS IN LOGISTICS PRODUCTION PROCESSES

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Annotation: This paper considers the development of an automation system for the production of materials, semi-finished products and finished products in logistics production processes. The proposed system improves control and management of resources, increasing the efficiency of logistics operations. Modern automation approaches are used, including integration with ERP systems and the use of IoT solutions.

Key words: Industry 4.0, robotics, production processes, automation system, development, control and management of resources.

Modern manufacturing enterprises face challenges associated with accounting for materials, semi-finished products and finished products. The lack of effective automation can lead to loss of resources, errors in reporting and reduced productivity. The method of this study is the development of systems that allow optimizing posting processes [1-5].

Introduction

Modern manufacturing enterprises face challenges associated with accounting for materials, semi-finished products and finished products. The lack of effective automation can lead to loss of resources, errors in reporting and reduced productivity [3]. The method of this study is the development of systems that allow optimizing posting processes.

Methodology

The following methods were used during the development:
- Analysis of requirements for the resource management system;
- Design of the architecture of the automated system;
- Selection of technologies and software development;
- Integration with existing enterprise information systems.

Main part

The proposed system includes:
- Database for storing information about materials;
- Automated workplace for data entry and control;
- Reporting module that generates analytical data for managers;
- Integration with RFID tags and barcode scanners for automatic posting.

The system architecture consists of a server part, a client interface and an API for interaction with other information systems [2,5].

The architecture of an automated materials accounting system consists of three main components:
1. Server part
- Responsible for processing requests, executing business logic, and storing data.
- Includes a database, application server, security and backup mechanisms.
- Processes incoming requests from clients and API requests from other information systems.
2. interface
- Designed for user interaction with the system via a web application or mobile application.
- Allows you to view balances, post materials, create and edit records, and generate reports.
- Provides simple and convenient access to system functionality.
3. API for interaction with other information systems
- Used for integration with ERP systems, warehouse platforms, and supplier systems

- Implemented via REST or SOAP protocols for fast data exchange between systems.
are presented in Table 1.
- Allows you to automate information exchange processes between enterprises.

Table 1 - REST or SOAP protocols for fast data exchange between systems.

Component	Description	Technology
Server part	Request processing, data storage and management	PostgreSQL, Node.js,
Client interface	User interaction with the system	Python
API	Integration with other information systems	React, Angular, Vue.js REST, SOAP, GraphQL

Additional aspects

To ensure security and reliability, the system implements:

- Data encryption to protect confidential information;
- User access rights separation;
- Automated backup and recovery mechanisms;
- Cloud infrastructure for scalability.

Further improvement is possible through the implementation of artificial intelligence to predict material needs. Example of a materials accounting table are presented in Table 2..

Table 2 - Example of a materials accounting table

Material type	Number	Storage location	Provider
Sheet steel	500 kg	Composition A	SteelCorp Ltd.
Aluminum rods	300 pcs	Composition B	MetalWorks
Plastic granules	1000 kg	Composition C	PolyPlast Inc.
Electronic chips	5000 pcs	Composition D	TechComponents

Conclusions: The developed automation system allows to increase the accuracy and speed of materials accounting, reduce the influence of the human factor and integrate resource accounting with the general ERP system of the enterprise. Further research can be aimed at implementing artificial intelligence technologies for

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ДОДАТОК Б

Демонстраційний матеріал у вигляді презентації

№ документа	Позначення	Найменування	Додаткові відомості
		Текстові документи	
1	ГЮИК.ХХХХХХ.03 ПЗ	Пояснювальна записка	А4, 69 с.
		Додаткові матеріали	
		Демонстраційний	
2		матеріал у вигляді презентації	А4, 10 с.
			.

Змін.	Арк.	Номер докум.	Підпис	Дата	ГЮИК.ХХХХХХ.03 ВД			
Розроб.		Фарига Р.М.			Розробка системи розпізнавання інформаційних позначок для автономних навігації мобільного робота на складському комплексі	Літера	Аркуш	Аркушів
Перевір.		Чала О.О.				Н	1	1
						Кафедра КІТАР ХНУРЕ		
Н.контр.		Стародубцев М.Г.						
Затв.		Невлюдов І.Ш.						