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Retraction

Retracted: Technology and Application of Digital Nondestructive Prescreening Based on Automated Storage

Wireless Communications and Mobile Computing

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] B. Wu, N. Miao, L. Wang, L. Mao, and C. Jin, "Technology and Application of Digital Nondestructive Prescreening Based on Automated Storage," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 9443943, 9 pages, 2022.

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Research Article

Technology and Application of Digital Nondestructive Prescreening Based on Automated Storage

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This project around "DR digital imaging non-destructive prediction based on automatic warehousing screening technology and application" project can be divided into cable full inspection in coil based on DR digital imaging mode of the whole case study, with a small piece of material screening technology research, based on the data acquisition and recognition algorithm used for the detection of automated storage research and pilot test three corpus. The hardware framework structure and software system security access model are designed based on existing warehouse conditions. A non-destructive batch automatic prescreening equipment is developed for small materials, which has both DR and CT functions. Cold cathode pulse ray source for needle tip pulse discharge is improved. A set of non-destructive pre-screening equipment for the whole length of the cable is developed and arranged on the warehouse automatic tray wire rack. Through the multiangle scan imaging of two ray sources, the application of image recognition is expanded, and the automatic size labeling problem warning is realized. The non-destructive pre-screening of the whole length of the cable is implemented synchronously during the process of unloading the cable from the warehouse. The insulation layer scars of the wire diameter and thickness are compared and checked, and the quality problems are visually reflected, and the detection report is automatically generated.

1. Introduction

The development of intelligent information technology in the storage application field (three-dimensional storage and distribution center) can be divided into the following five periods: robot storage period; mechanized storage period; modern logistics process; realize fine logistics process; and intelligent automatic logistics process. Among them, the fifth link is intelligent automated logistics, which has received great attention from the international relevant design and research personnel [1, 2]. In the 1990s and several periods in the early twenty-first century, it will also be the key development direction of China's logistics modernization science and technology [3, 4].

Automatic warehouse management system is generally divided into stacking machinery, storage management, transportation equipment, and goods management system [5, 6].

Palletizing machinery: the key mechanical equipment in the automatic storage system of palletizing machinery oper-

ation needs modular product design, simple structure, and beautiful appearance product design [7, 8]. Stacker, for example, has the following characteristics: Laser ranging is used in horizontal and vertical directions, the kinetic energy department adopts German motor reducer, the German compound wheel is used as the walking device, SEW vector intelligent variable frequency motor controller is selected to realize variable frequency conversion speed regulation, Siemens programmable controller is used, and the large screen display guides the warehousing and sorting operations.

Automatic warehouse management software: automatic warehouse management software is a network based system, set management, and engineering control functions for a comprehensive management software [9, 10]. The information processing subsystem can also be the control subsystem of the enterprise, such as MRP and ERP, which takes security and flexibility into full consideration [11, 12]. However, under normal circumstances, because the control subsystem

of the enterprise is fully independent of the machine to complete the in-and-out operation, when the computer system has problems, if THE ECS (equipment control server) is still running, it may be ECS background system database host to complete the emergency out-library operation. When the ECS management system fails, the palletizer can also be used directly for automatic operation [13, 14]. Automatic inventory management software control system should have the following characteristics: information management subsystem can be a number of workstations to complete the record of incoming and outgoing tasks. Industrial monitoring subsystem can be connected to several ECS at the same time. If the industrial monitoring subsystem has not carried out a shipment operation, you can update all the statistical information of the operation, such as the change of total and target inventory situation, and THE ECS management system can get the updated data immediately and to be unified management. Using the LAN system and the general TCP/IP agreement can be integrated with the enterprise MRP management system; ERP receives the main task of the warehouse operation and reflects the enterprise's current warehouse, inventory dynamics and operation conditions and other information, for the enterprise-specific management department to submit various reports, which visualized and graphically display the basic information of cargo position information, object moving position, and various conditions of mechanical equipment in operation [15, 16]. Taking into account the basic principles such as the first step of the material operation, the light weight of the warehouse shelves, and the shortest time displacement speed of the palletizing machine, distribute the same material reasonably in more than two lanes, so that when one palletizer is broken, the material can be taken out from the other and reasonable adjustment of the palletizing machine busy leisure degree [17, 18].

Conveying system: professional conveying equipment, including roller, chain, belt leather, no power type, and mobile conveying series can be used in electronics, household appliances, food, chemical, logistics, and other goods transportation and distribution. In different transportation planning, according to the layout of the process, choose various forms of roller or chain material transportation, as well as the use of various auxiliary equipment, so that the material to achieve continuous transportation, accumulation, flipped classroom, poverty, confluence, and quality improvement [19, 20]. Then, with PC program system and CPU system, it can be regarded as a more comprehensive automatic transportation system.

Digital cargo sorting system: Due to the rapid development of market economy and industrial production, logistics is becoming more and more kinds of small batch. Therefore, the variety and scale of goods distributed in each logistics distribution center will expand rapidly. The traditional cargo sorting management is very difficult, and the sorting operation has become a key management link [21, 22]. Of course, due to the increase of sorting quantity, the increase of sorting network, the reduction of distribution response time, and the improvement of technical service level, relying on more common sorting methods, such as passing ballot balls, will not be able to meet the needs of mass distribution logis-

tics [23, 24]. Therefore, according to the actual needs of socialist market economy, it is very urgent to develop a kind of auxiliary sorting system, such as stacking drum conveying line and electronic label, which has buffer capacity and can directly connect with upstream and downstream enterprises and factories to improve the picking rate and reduce the picking error rate.

Data picking management system (DPS) is a computer-aided paperless picking management system. Its basic principle is to use LED electronic product marks placed in each group of goods on the supermarket shelf to replace the picking list and through the control of the computer to send the order signal to the electronic product marks. Guide the picking staff to pick goods accurately, quickly, and easily, and press the confirmation button to pick goods after picking goods. Computers monitor the process and automatically manage the accounts.

Electronic labels use new integrated materials to carry communication information on the power wave, and pass power and data information through the light guide of stainless steel. Because the distribution network is only 2 cores, and all the electronic product signs are connected in series on the same line and unified in series on the access box, which greatly reduced the production cost of the distribution network [25, 26].

The operating system is relatively easy to maintain. In the electronic label of ball control system, electronic tag is also equipped with a zero position, and the logo can real time monitor the working condition of the control system of the DPS; when failure state, the electronic tag zero position error prompts the correct position of electronic label, the cause of the problem, and the reference for operation personnel; to replace the fault status of electronic tag, hot plug is also available without switching off the power [27, 28].

When the bins enter the transport line, if there is no sorting work in the next working area, the data will be transmitted to the next working area for the convenience of the sorting staff to prepare [29, 30].

Improve picking speed efficiency and reduce the error picking failure rate. The electronic label system relies on the visual guidance system of clear and easily discernible commodity storage, which can simplify the three simplest actions of "look, pick and press" in the picking operation. At the same time, the time difference between commodity consideration and judgment is reduced, which can reduce the error rate and save the time spent by the staff to find the storage location of the commodity. Improve delivery, distribution, and transportation efficiency, and reduce the operation processing cost. In addition to the improved efficiency of picking, employees do not need special training to work due to the low level of requirements for picking operations. Therefore, it can also absorb a large number of part-time employees to reduce labor costs.

Freight specialized equipment manufacturing companies are close to the international technology, closely tracking the world's most cutting-edge transportation technology. Market demand, continuous creation and development of new products should be analyzed in order to meet the needs of the booming domestic logistics industry, the industry and

the company will also have vitality [31, 32]. The industry has developed independent intellectual property rights of intelligent warehouse management system and digital sorting system of modern logistics equipment system.

2. Five Stages of Warehouse Automation

Logistics technology includes the following main links: material flow, material storage, material management, and monitoring. In a broad sense, the supply of the right kind and quantity of materials should be at the right place, in the right order and direction, at the right time. The rapid development of its technology depends first on the progress of automation science and technology. In order to summarize the development of warehousing automation science and technology in the world at present, American scholar J.A. White divided its vigorous development area into five stages.

2.1. Phase I: Manual Warehousing Technology. In this stage, material transportation, storage, management, and control mainly rely on manual completion. There are now many examples of this approach in manufacturing and service industries [33, 34].

Even though we were also in the point five automation period, the phase 1 approach was still not negligible, and it was still the most efficient way to deal with many cargo problems. The use of trolleys and logistics carts to transport logistics, pallets and shelves to store logistics, and forms and cards to manage and monitor the logistics process are all examples of the first generation. At present, although people often encounter highly mechanized and 0.5 automation places, there are still application examples of manual logistics technology, such as taking the case off the conveyor belt or placing the case on a pallet [35, 36].

2.2. Stage II: Mechanized Storage Technology. The second stage includes the following: using different conveyor belts, industrial transport vehicles, manipulator, wire crane, palletizer, and elevator to move materials; the use of supermarket shelves, pallets, and rotating supermarket shelves for storage of materials; manually operated mechanical access devices; and limit the operation of the device with limit switches, spiral mechanical brake doors, and mechanical monitors.

2.3. Stage III: Automated Warehousing Technology. Automatic technology is also a great impetus to the development of logistics technology. In the late 1950s and 1960s, China successively researched and applied automatic guided vehicle (AGV), automatic pallet, automatic storage system robots, automatic identification of vehicles, and automatic classification systems. In the 1970s and 1980s, rotating shelves, moving supermarket shelves, stacking machines, and other mechanical equipment were also added to the 0.5 automatic control. However, the main feature at this time was the partial intelligence of different types of mechanical devices and their separate use, known as "islands of automation" [37, 38].

In the 1970s and 1980s, due to the development of electronic computers, the focus of operations is on cargo monitoring and command information, cooperation, and unity. Here, information intelligence technology is the basis of goods information development. The internal part of computer system, information collection center, internal equipment inside the controller and their internal information with the main computer can effectively collect information. Warehouse computers accurately query orders and delivery dates and provide inventory levels. Program managers can easily determine the availability of goods, they can know how much to produce now, which goods to order, when to deliver how many goods; Managers can know the supply and demand at any time. The application of computer technology will be the main support of logistics information technology [39, 40].

2.4. Stage IV: Integrated Automated Warehousing Technology. By the late 1970s and 1980s, semiautomated equipment had become more widely used in manufacturing and distribution processes. Of course, "automation island" requires system integration, so the idea of "integrated system" came into being. In the comprehensive integrated system, through the organic cooperation of each system, the comprehensive economic benefit is far higher than the result of the independent value of each aspect.

Integrated warehouse technology, as the technical center of material storage in modern computer integrated production system (CIMS), has attracted extensive attention. Through the summary of the development process of modern storage technology, it can be summarized as follows: the 1960s is the rural mechanization era, the 1970s is the industrial intelligent period, and the 1980s and 1990s is the comprehensive intelligent period. Although humans began to pay attention to system integration in the 1980s, it is still largely impossible to build integrated systems.

The current development status of warehouse information technology is as follows: first, the 4th generation system technology has not been formed, and it is still in the initial stage of "interface." Then, in the era of large system integration, each subsystem will not have their common characteristics, and the independent large system will replace each scattered small system. Thirdly, as far as the current situation is concerned, "interface system" is still required by enterprises. Finally, the main problem is not only the integration of hardware and software functions of the warehouse, but also the integration of production management and inventory allocation.

2.5. The Fifth Stage: Intelligent Automatic Warehousing Technology. The rapid and vigorous development of artificial intelligence promotes the intelligent technology to its higher development stage—intelligent automation to flourish. At present, human intelligent automatic warehouse technology is still in its initial stage. From the 1990s to the twenty-first century, the automation development of warehouse technology will have a great application prospect.

In the rapid development of a new generation of artificial intelligence technology and related artificial intelligence expert system, human scientists are still completing a lot of research work. For example, in self-guided vehicles and

(3) The reader collects information and encodes it

Reader

Computer system

(4) The reader sends the information to the computer host for processing

(1) The reader sends a certain frequency RF signal through the antenna

Antenna

Label

(2) When the tag enters the magnetic field,it generates induced current to obtain energy and send information to the
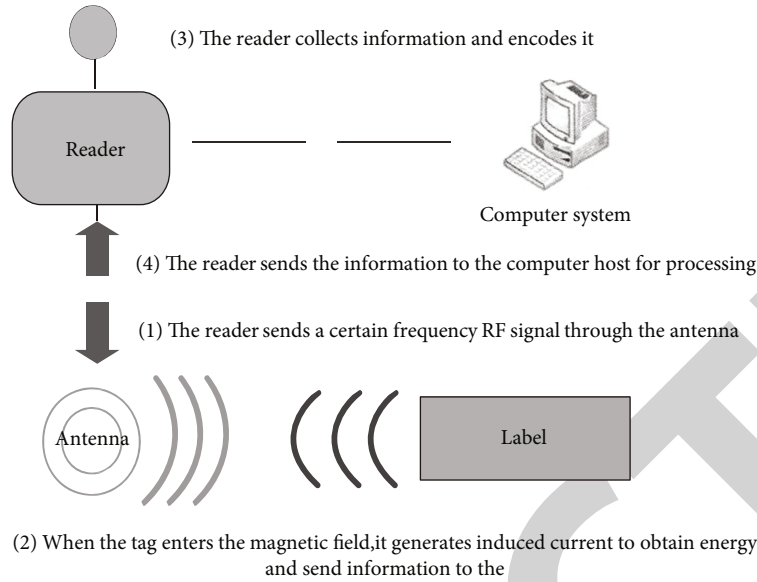
Figure 1: Working principle of digital nondestructive prescreening technology.

intelligent crane system, a special personnel system is used to formulate online path and make decisions. In the process of material sending and receiving, the use of specially-assigned system through the command of the automation robot to achieve the unified control of into and out of the shelf. In the design process, special personnel system is also being developed to realize the auxiliary design, in order to optimize the AGV route and select new storage technology for large unit storage and small piece storage. To design automatic warehouse system, it is necessary to deeply study the knowledge of material management and the science and technology of complex warehouse system [41, 42].

3. Digital Nondestructive Prescreening Technology Based on Automatic Storage

RFID is a noncontact technology, using radio frequency technology information to actively identify the target object and obtain the corresponding information. RFID system is composed of electronic product logo, reader, and antenna system. The reader uses an RF antenna system to emit radio frequency information at a specific time.When the electronic product sign enters the operating area of the transmit antenna system, the perception output is formed.The electronic logo obtains electrical energy and is excited, while the electronic product logo is the data carrier, which contains the storage device microelectronic technology chip, transceiver antenna system, etc. Through the antenna system, the reader receives the modulation carrier information containing the electricity meter information sent by the electronic product logo, and sends it to the background main system to complete the corresponding data processing after mediation. The working mechanism is shown in Figure 1. RFID technology advantages are as follows: The small size of trademark, waterproof, type of magnetic resistance, heat resistance, and long life can seal; information literacy are packing by noncontact through implementation; the higher

the operating frequency, the read distance is more far; and the biggest can reach dozens of meters, identify more digital information, and can handle multiple files at the same time, and a batch identification. However, the disadvantages are as follows: the dual-polarization antennas between the trademark and the reader are inductive elements, and other metal voltages in the vicinity of these components will affect the signal readout, and the system structure is complex, and the cost is high.

Barcode science and technology is related to intermediate decoding technology, light sensing technology, barcode printing technology and computer application technology.It is generally composed of barcode label scanning equipment.The barcode is converted by the scanning equipment into a value that can be recognized by the computer through the intermediate decoding technology, and then sent to the computer to be managed. The most common UPC bar code, for example, is a type of bar code promulgated by the United States National Uniform Code Council. It is a constant length, continuous four bar code character length one-dimensional bar code. It is divided into upC-A code and UPC-E code. The basic set of characters represented are the digits 0 to 9.

Bar code technology has the advantages of fast input speed, high accuracy, high reliability, electromagnetic radiation, and low price, but the disadvantage is that the data information is small; photoelectric technology is used to transmit between the scanning device and the bar code, so it can be read at close range, and there is no gap between the block.

Dual labeling technology refers to that the labels attached to the electricity meter which contain radio frequency electronic labels or bar code labels, which can be both radio frequency identification and bar code identification according to the requirements of the technological process. Bar codes can also identify three system features and applications.

The automatic control system is mainly composed of manual transmission equipment, automatic watt-hour meter inspection equipment, automatic warehouse, and modern distribution equipment and can complete the manual transmission, manual of watt-hour meter (hurt) box, manual loading and unloading, and manual inventory, manual of warehousing, manual position, automatic verification, and the background information processing and process monitoring.

Bar code label reading and writing are realized by bar code reading device fixed on special device.

Rf tag reading is usually done through the RF door arranged on the conveyor belt. To protect the rf read/write area from external influence or electromagnetic interference, a shielded space is provided around the RF read/write area. The maximum number of marks is about 65 at the exit and entry places such as paper boxes or turnover boxes.That is to say, when several tags appear in the function area of the reader, and several tags send information to the reader at the same time.This will cause cross effects, thus preventing readers from accurately marking, this phenomenon is called tag collision or impact. At present, the main methods to deal with this phenomenon are frequency division multiplexing (FDMA), space division multiplexing (SOMA), time division multiplexing (TDMA), and code division multiplexing (COMA). Take a completely different way of processing, its hardware and software technology is different, and the price is also very different. And the more kinds of signs, the more complex the process. Therefore, in actual use, it should be strictly according to the requirements and leave a certain residual number for detection, and its identification rate and ability to identify signs should be higher than the original design value, so as to encourage the backlog formed during transportation.

Radio frequency identification technology and bar code identification technology are not the same; because of the difference in technology implementation methods, the value of the difference is very large and, in use, should be fully considered according to the needs of the production process. For the intelligent control system equipment with annual inspection quantity of tens of billions of pieces, the process technology of the RF signal gate to complete the signal identification is complicated, and the process requirements are extremely high.As an important link, its accuracy, credibility and stability are particularly important, so special attention should be paid in the process of equipment purchase, assembly and debugging.

4. Design of Digital Nondestructive Prescreening System Based on Automatic Storage

4.1. System Device Layout. Combined with the logistics laboratory size (length × width × height) of a college, $1140 \times 720 \times 330$ (cm), the internal facilities layout of the automatic warehouse system was designed through the software system such as CAD. Because the three-dimensional shelf as a storage device occupies a large volume, so the control system will be arranged along the length of the laboratory two rows of shelves. The two shelves in turn is the outlet and warehousing mouth, and the use of conveyor belt and transplant-ing machine or hoist and shuttle car connected the outlet and warehousing mouth, in order to form an automatic warehouse cycle management system, thus highlighting the work efficiency of the management system. And the monitoring computer and task management computer are arranged around the warehouse exit and the warehouse entrance in turn, so that the management system operator can not only directly complete the task management from the warehouse, but also from the exit of the system to get timely monitoring. At the same time, because the site is equipped with PLC control box with strong power supply, so it can be placed in the laboratory staff less walk and not easy to touch the position, so as to improve the overall stability of the system. Figure 2 is the layout of the internal devices of the automated warehouse system. The on-site devices of the warehouse control system mainly include stacking machinery, material conveying, elevator, transplanting machinery, three-dimensional storage shelves, management system, monitoring computer, and its auxiliary devices. The control system is divided into a warehouse entry and three shipping ports' two rows of three-dimensional shelves, length × width × height of $820 \times 90 \times 270$ (cm); a total of 228 cargo spaces, each cargo unit length × width × height: $30 \times 20 \times 15$ (cm), and its maximum rated load is 10 kg [43, 44].

4.2. Control Network. The management computer, control computer, ground system master station PLC, and stacker PLC of the control system all adopt wireless communication method among each other, and the control computer adopts OPC server to communicate with the ground system master station PLC directly. The stackers' PLC uses the wireless communication module equipped with the ground system master STATION PLC to realize the direct transmission of data information between each other, and the bar code scanner, laser rangefinder, and HMI contact screen are connected with the PLC controller by Profibus field bus. Figure 3 is a schematic diagram of network extension of automated warehouse management system.

The control system uses enterprise-class NETGEAR WG103 wireless AP, which can achieve wider coverage of wireless network information and more stable wireless LAN information. The PLC of the monitoring master station and the palletier (monitoring slave station) all use CP U313C-2 DP central processing module of Siemens S7-300 series, SM321 digital quantity input-output communication module, CP 343-1 communication module, and USr-WIFI232-610 wireless network information switch module. The contact screen and frequency converter module adopt PROFIBUS and are directly connected with CP U central processor. The level position of the palletier uses DL 100 series laser rangefinder from German SICK Group, and its level position accuracy reaches ±0.5 mm. The vertical position control system uses BPS348iSM10 bar code position meter of deloise measurement group, and its position accuracy reaches ±.

5. Application of Nondestructive Prescreening Technology in the System

IP addresses must be accurately assigned on stacker PLC, ground master PLC, management computer, and monitoring
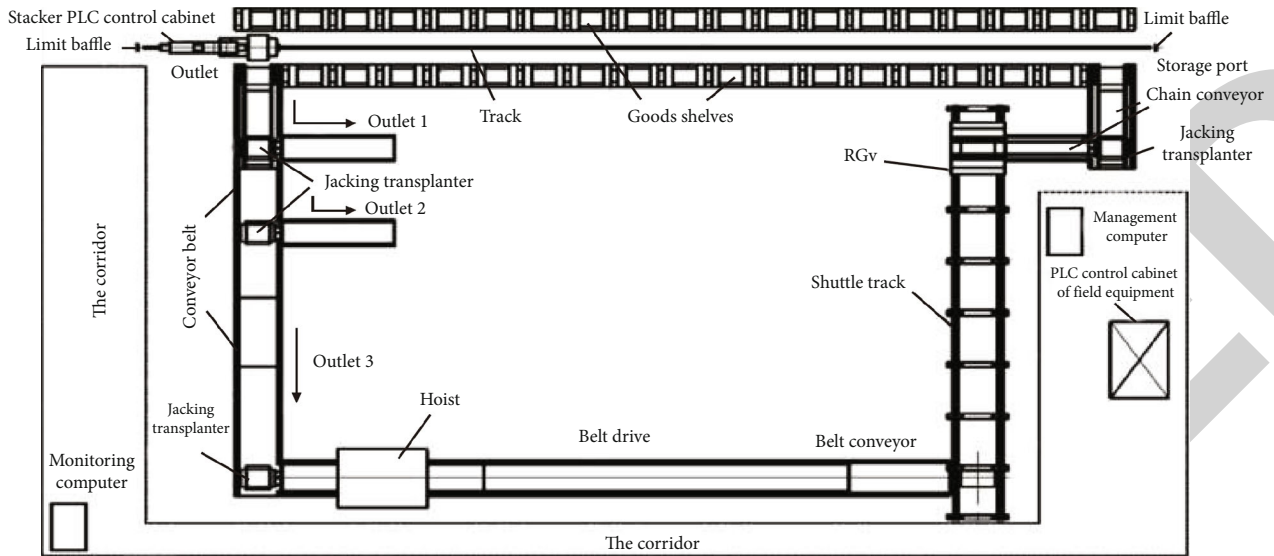
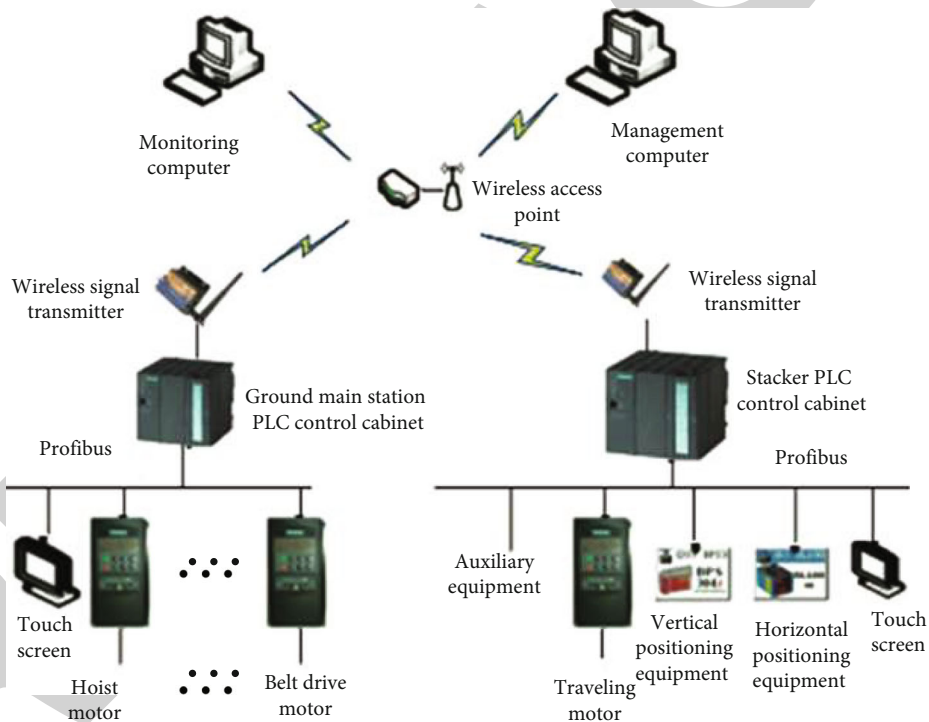Figure 2: Layout of automated warehousing system.

Figure 3: Network extension diagram of automated warehousing system.

computer, and ensure that the network addresses of each device do not conflict, as shown in Figure 4.

In order to verify the real time of wireless transmission in the system, after selecting the appropriate IP address for the communication station, the relevant communication test is carried out. Tables 1 and 2, respectively, show the performance of data transmission time collection under two situations of no task and various tasks in the system.

After the computer is powered on and initialized, the system configuration at each communication point is com-

pleted. The control computer transmits two kinds of signals successively to the control machine station, the PLC DC contactor station of the main ground station and the PLC DC contactor station of the stacker to monitor the transmission of various sizes of data between stations.

In the no-task state, ten data streams with each length of 32 bytes and 64 bytes can be received for checking. As can be seen from Table 1, the average duration of transmission between the stations of management computer system and monitoring computer system is 4 ms and 4 ms in turn, the
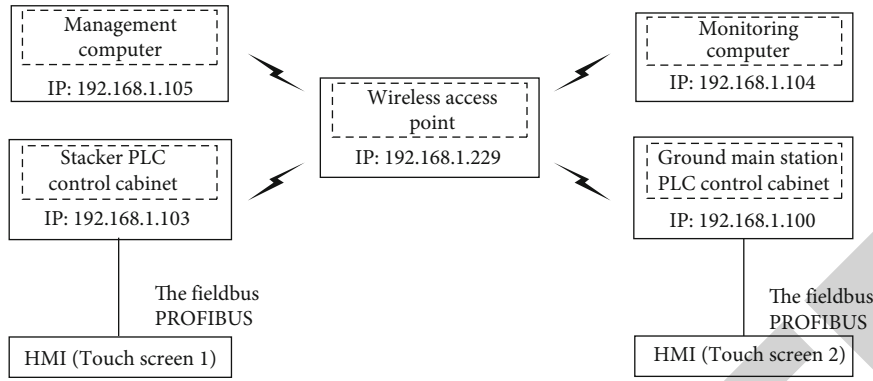
FIGURE 4: Schematic diagram of IP communication address configuration.

TABLE 1: Without task.

Site name and IP address	Manage computers (192.168.1.105)	Monitoring computer (192.168.1.104)	Ground master station PLC (192.168.1.100)	Stacker PLC (192.168.1.103)
Response time for sending 10 packets (32 byte) (unit: ms) response time for sending 10 packets (64 byte) (unit: ms)		Longest = 9 ms Minimum = 1 ms Average = 4 ms Longest = 8 ms Minimum = 2 ms Average = 4 ms	Longest = 7 ms Minimum = 2 ms Average = 3 ms Longest = 8 ms Minimum = 2 ms Average = 4 ms	Longest = 8 ms Minimum = -3 ms Average = 5 ms Longest = 5 ms Minimum = 2 ms Average = 2 ms

TABLE 2: Tasks.

Site name and IP address:	Manage computers (192.168.1.105)	Monitoring computer (192.168.1.104)	Ground master station PLC (192.168.1.100)	Stacker PLC (192.168.1.103)
Response time for sending 10 packets (32 byte) (unit: ms) response time for sending 10 packets (64 byte) (unit: ms)		Longest = 3 ms Shortest = 2 ms Average = 2 ms Longest = 7 ms Minimum = 3 ms Average = 4 ms	Longest = 3 ms Shortest = 2 ms Average = 2 ms Longest = 7 ms Minimum = 3 ms Average = 4 ms	Longest = 14 ms Shortest = 2 ms Average = 5 ms Longest = 4 ms Minimum = 1 ms Average = 2 ms

average duration of transmission to the monitoring points of the main ground station is 3 ms and 4 ms in turn, and the average duration of transmission to the monitoring points of the stacker is 5 ms and 2 ms in turn. In the task state, the transmission duration of the system in the running process is checked, and the data flow is also checked. As can be seen from Figure 4, the average transmission time from the management computer to the computer network station of the ground monitoring center is 2 ms and 4 ms in turn, the average transmission time from the monitoring point of the ground master station is 6 ms and 4 ms in turn, and the average transmission time from the control station of the ground stacker is 5 ms and 2 ms in turn.

According to the above data, if the traditional wireless communication method is used, the response time of data transmission between each station can be guaranteed within 15 ms, which can fully meet the communication needs of the system.

In order to make a comparative study, this paper also measured that if the system uses wired Ethernet communication mode, its transmission time will be less than 1 ms.

Although the adaptability of wireless communication is much higher than that of wired Ethernet communication, it can also fully adapt to the needs of system communication and greatly improve the sensitivity and scalability of the network.

It is worth noting that compared with wireless communication system and wire communication systems, data transmission channel quality is easy to be affected, especially in the large capacity and distance data transmission system, in order to improve the quality of data transmission of wireless Internet communication system, to increase the radio electronic metrology system function, or to increase the signal-to-noise ratio, and, on the communication software, to be perfect. For example, the accuracy of wireless network communication can be further improved by changing the single byte data check method or double byte check method and improving the communication protocol and communication management system.

This paper mainly analyzes the advantages and application prospects of applying the nondestructive prescreening

technology to the environmental monitoring system of logistics warehouse, and puts forward the overall design method of the warehouse environmental monitoring system using the nondestructive prescreening technology, and carries out the function test of the system [45, 46]. The warehouse safety monitoring and management system designed by our products adopts wake up mode to the terminal node in the whole process monitoring, so as to greatly save the power consumption of each node in the wireless network, thus increasing the stability and life of the node. In the aspect of data analysis technology, the product designs a data pool with stack idea, which makes the data of the safety monitoring system transfer smoothly while maintaining good real-time performance. In the warehouse environment, the WSN terminal nodes designed are centralized in one body, and the size is small, which makes it easier to move the location and install, so it can achieve all-round monitoring of different warehouse environments. The upper computer displays the management software, which can show the data information of different nodes intuitively and clearly, which is convenient for the management personnel of logistics warehouse to manage the whole warehouse environment. At the same time, the data can be saved in the database [47, 48]. The implementation phase can start from the communication between a single terminal node and the gathering node, and then to the communication between multiple terminals and the sink node, forming a star-shaped network, on which the expanded functions of nodes can be realized. Wireless sensor node has realized the IO interface of extended function in hardware, which can realize the further expansion of more sensors and more effectively monitor the information storage situation. At the upper computer level, the interface of display and information storage has been completed, which can be further extended to other modules [49, 50].

6. Conclusion

This paper establishes an intelligent warehouse system using nondestructive prescreening technology and describes the construction of intelligent warehouse system and its monitoring software interface program. Through test and analysis, nondestructive prescreening technology not only enhances the flexibility and extensibility of the information system, but also better adapts to the real-time characteristics of the information system. It can also provide reference for the improvement and transformation of the current traditional automatic storage system in China.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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