Application of IoT in Warehouses

Inventory management is a critical aspect of any business that deals with the movement and storage of physical goods. Managing inventory can be a time-consuming and challenging task, particularly for businesses that have many products and a high volume of sales. The emergence of the Internet of Things (IoT) has transformed the way businesses manage their inventory.

IoT in Warehouse Management:

IoT technology is used to monitor inventory levels, track the movement of goods, and provide real-time data that can be used to optimize the inventory management process. IoT in warehouse management refers to the use of interconnected devices and sensors that communicate with each other and with a central system, providing real-time data about the warehouse's operations. This data can be analysed to optimize warehouse processes, reduce errors, and improve customer satisfaction, production plan based on storage etc.,

The following are some of the IoT solutions which D4C offers for warehouse management,

Real-time Tracking and Monitoring:

With the help of sensors placed on inventory items, one track their movement throughout the supply chain. These sensors can provide real-time data on the location, temperature, and other environmental factors that may impact the quality of the product. This data can be used to optimize the movement of goods and prevent damage or spoilage.

Predictive Maintenance:

Multiple sensors are used to monitor the performance of inventory management equipment such as conveyor belts, pallet jacks, and forklifts. These sensors can detect signs of wear and tear and alert maintenance personnel to perform repairs or replacements before a breakdown occurs. This reduces the risk of equipment failure and downtime.

Inventory Optimization:

Organisation is provided with the real-time data on inventory levels, allowing businesses to optimize their inventory management processes. This data can be used to identify slow-moving items, reduce overstocking, and improve demand forecasting. With IoT, businesses can automate the replenishment process and ensure that they always have the right amount of inventory on hand.

Reduce Labour Costs by Automation:

IoT technology can automate many inventory management tasks, reducing the need for manual labour. For example, automated inventory tracking systems can eliminate the need for manual stock counts and reduce the time it takes to locate products. This frees up employees to focus on more critical tasks, such as customer service.

Improved Customer Service:

With the help of real-time data on inventory levels, IoT enables businesses/organisation to respond quickly to customer demand. This can improve customer satisfaction by ensuring that products are always in stock and reducing the risk of stockouts.

Technologies used in IoT enabled Warehouses

RFID

RFID tags can hold far higher quantities of data than barcodes. By integrating RFID technology into a warehouse management system, you will reduce your warehouse operating costs, increase accuracy, and maximize the speed at which things get done. For instance, when an item arrives or exits the warehouse, the RFID tag automatically documents its arrival and exit.

Beacons

Beacons are only the transmitters you can put on the subject you are tracking. Then they will transfer a radio signal to the IoT platform for transmission. You can also use the Beacon/BLE wristbands for tracking vulnerable subjects to add extra sensors like accelerometer or temperature

AR/VR

Warehouse employees can identify items and packages quickly with the help of AR/VR. This in fact saves the time of the employee by avoiding searching for the product across the warehouse. Also, it helps employee to pick the right item/part without getting confused.

Sensors

It helps warehouse managers keep better control of the goods in and out of the warehouse. With their integration into the supply chain, managers can follow items in any delivery step and monitor temperature and humidity in the transit vehicle. Store managers are all commonly utilized for light movement, moisture, and temperature sensors. Another proactive method to minimize supply chain risk is to adopt sensors to trail driver life.

Wearables

In order to measure the efficacy of the corporate training and keep track of the individual results of employees, wearables track the accuracy of the product harvest. Other characteristics include heartbeat and vital monitoring to ensure that people at work are not tired.

Benefits of IoT in Warehouse Management

- Increased Efficiency
- Improved Accuracy
- Better Decision Making
- Enhanced Visibility

Conclusion

IoT technology has transformed the way businesses manage their inventory. Real-time tracking and monitoring, predictive maintenance, inventory optimization, reduced labour costs, and improved customer service are just a few of the benefits that IoT provides. As IoT technology continues to evolve, we can expect to see even more innovations in this space, making inventory management more efficient and effective than ever before.

References

[1] "Examining RFID usage in Warehouses," Prologis, 2022. [Online]. Available: https://www.prologis.com/what-we-do/resources/how-rfid-is-revamping-warehousing.

[2] "Internet Of Things (IoT) is impacting Warehouse Management and here is how," Cobuildlab, [Online]. Available: https://www.cobuildlab.com/blog/IoT-is-impacting-Warehouse-Management-and-here-is-How.

[3] A. S. /, "8 Ways IoT Is Transforming Warehouse Management," ReadWrite, 26 Oct 2022. [Online]. Available: https://readwrite.com/ways-iot-is-transforming-warehouse-management/.

[4] K. R, "Smart Warehouses: Applications Of IoT In Warehouse Management," Intuz, 11 Feb 2022. [Online]. Available: https://www.intuz.com/blog/iot-applications-in-smart-warehouse-management.

[5] "5 Ways IoT can Transform Warehouse Operations," Hopstack, [Online]. Available: https://www.hopstack.io/blog/iot-can-transform-warehouse-operations.