Sharp Solutions

Improved productivity | Improved efficiency | Reduced costs

Kagoshima Factory, Sakura Color Products Corporation | **Stationery** | **Automated guided vehicles (AGV)**

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Automating various types of transport required in the production processes with a wide range of AGVs

Coordinating and linking vertical conveyors and other conveyors through customization


Lifting-type pallet AGV

Lifts pallets and places them on a vertical conveyor for transport up and down floors to specified locations


2-way basket cart/conveyor AGV

AGVs equipped with conveyor carts dock with the production line conveyor to receive cargo and transport it to the next process.

Customer

Kagoshima Factory, Sakura Color Products Corporation

- Kanoya City, Kagoshima Prefecture
- Established in 1971. Part of the corporate group of Sakura Color Products Corporation (head office: Osaka), a general stationery manufacturer, the Kagoshima Factory mainly produces water-based marking pens and ballpoint pens. It added a new assembly plant in June 2022 and is increasing production of water-based pigment “Pigma” pens and other products.

Implemented product

Automated guided vehicles (AGVs)
Customized products
Lifting-type pallet AGV × 3
2-way basket cart/conveyor AGV × 4
Centralized control system (AOS)

- Installed in a new assembly plant having a production line on the first floor and warehouse on the second floor. Began operating in October 2022. Customized handling includes up-down transport to different floors through docking with vertical conveyors, transport based on conveyor docking, etc.

This is what we realized.

Challenges before implementation

In constructing our new plant for writing implements, we decided to automate as much of the production process as possible through mechanization to save labor and improve productivity. To achieve this, we needed various AGVs capable of coordinating/docking with vertical and other conveyors to automatically transport all items used.

Automated transport whereby AGVs lift pallets loaded with 500 kg of materials instead of forklifts.

Conveyor cart-equipped AGVs that are capable of docking to each line and transferring/transporting cargo contribute to production automation.

Unmanned nighttime transport of materials to be used the next day from the second-floor warehouse to the first-floor production line improves productivity.

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Background of implementation

Conceptualizing automation of the new plant’s production processes.
A desire to use AGVs for all forms of transport.

In June 2022, we constructed a new plant to handle increasing domestic and overseas demand for our water-based pigment “Pigma” art pens and other products. During the planning stage, we conceptualized a facility that mechanized and automated production processes as much as possible to save labor and improve productivity. While working to achieve this by adopting various robots and the latest equipment, we came up with the idea of using automatic guided vehicles (AGVs) for the transport of materials, components, finished products, etc.

Reasons for selection

Customized for pallet, basket cart, and conveyor transport.
Linkage with peripheral equipment, such as vertical and other conveyors.

Various transport processes take place within the production facility, and we wanted the AGVs to be capable of handling all of them. We appreciated the fact that Sharp’s AGVs could be customized to handle various forms of transport—such as pallet, basket car, and conveyor—to fit with the new plant’s work environment. We also wanted the AGVs to dock automatically with peripheral equipment, such as vertical conveyors and other conveyors, so another deciding factor was the fact that Sharp has extensive expertise not only in AGVs but also in electrical and communication facility.

Effect after implementation

Full automation, from assembly to packing and finishing.
Better productivity with the elimination of various transport operations.

We achieved full automation of our production processes—from assembly to packing and finishing—by bringing in AGVs. The lifting-type pallet AGVs can carry loads of 500 kg and therefore eliminate work previously done by forklift. The basket cart AGVs bring greater efficiency through the unmanned nighttime transport of materials to be used the next day from the second-floor warehouse to the first-floor production line. During daytime hours, those same AGVs are mounted with conveyor carts and dock with the production line conveyor, where they receive finished products and then transport them to the palletizing robot’s conveyor. The elimination of various transport operations makes it possible to allocate workers to other tasks and helps improve productivity.

Future prospects

Considering inventory management through linkage with in-house systems.
Promoting factory tours as an “Exhibiting Factory”

Having achieved automated transport by docking multiple AGVs with conveyors and other equipment through the AOS (AGV Operating System), we are now considering ways of linking this system to our internal systems and using it for inventory management. In addition, being a state-of-the-art plant, we allow many elementary and junior high school students to tour our facility. We will continue contributing to the local community by serving as a factory that exhibits the latest technologies.

Lifting-type pallet AGV


Lifting by getting under the pallet (allowable load: 582 kg)

2-way basket cart/conveyor AGV

Unmanned nighttime transport of materials to be used the next day from the second-floor warehouse to the first-floor production line

The AGV docks at the conveyor to receive finished products and then automatically transports them to the shipping conveyor.

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