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Nidec-Shimpo Launches AGV with Vision-Based Navigation System

S-CART-V

Sensors for the Vision-based Navigation System

Nidec-Shimpo Corporation (“Nidec-Shimpo”) announces the launch of a new addition to its S-CART brand of automated guided vehicles (AGV). The new AGV—dubbed the S-CART-V—is outfitted with a vision-based navigation system[1] that utilizes *Visual SLAM*[2] technology developed by Canon Inc. (“Canon”). The first model in the S-CART-V series—the first AGV in the industry to rely on vision-based navigation—will be based on the 100 kg payload version of the original S-CART, but Nidec-Shimpo plans to continue launching additional models with visual-based navigation.

The demand for AGVs has increased in recent years as focus has shifted towards increasing efficiency and saving manpower in factories and warehouses in the logistics industry. With the S-CART-V, Nidec-Shimpo offers a solution that can utilize a vision-based navigation system for AGVs, developed by Canon to simultaneously estimate its surroundings in three dimensions as well as the location of the AGV based on wide-angle (horizontal as well as vertical) footage captured by a stereo camera.

The first model in the S-CART-V series combines Canon's world-leading image processing technology and camera / video equipment with Nidec-Shimpo's expertise in dynamic control of guideless AGVs built up through the company's S-CART business. The result is a new AGV that is the first in the industry to utilize Visual SLAM technology.

The S-CART brand, first launched in 2016, is a lineup of AGVs that use 2D laser sensors to

detect their position, allowing them to operate without the aid of magnetic tape. This increases flexibility and makes it possible to make changes to the layout of factories or warehouses. However, some cases involving large-scale changes required users to place "landmark" objects to assist the AGVs in their navigation. The S-CART-V overcomes these limitations by using a visual-based navigation system that utilizes a stereo camera for real-time detection of its surroundings in three dimensions. As a result, this new series of AGVs is suitable for use not only in factories and warehouses but also in changing environments such as commercial facilities or the service industry where there are people walking around and obstacles may suddenly appear or disappear.

A prototype model of the new AGV has been in use by Canon and Nidec-Shimpo in their respective factories since 2019 in order to improve reliability when developing the system.

Nidec-Shimpo is dedicated to contributing to automatization and productivity enhancement in logistics by supplying efficiency-improving industrial equipment based on the company's know-how related to reduction gearboxes and continuously variable transmissions.

- S-CART-V outline
  Name： S-CART100-V
  Maximum payload： 100kg
  Speed： Up to 60 m/min（3.6 km/h）
  Major features： Tablet-PC-based control,
  autonomous operation based on laser sensors or stereo cameras

[1]A vision-based navigation system is comprised of vision-based navigation software, stereo cameras and controller hardware among other components.

[2]SLAM, an acronym that stands for Simultaneous Localization and Mapping, is a type of technology used by AGVs and other equipment to detect their own spatial position and simultaneously map their surroundings. Visual SLAM technology refers to SLAM technology that utilizes cameras.