



AUTOMATED GUIDED VEHICLE SYSTEM BASED ON AUTONOMOUS MOBILE TECHNIQUE AND A METHOD FOR CONTROLLING THE SAME

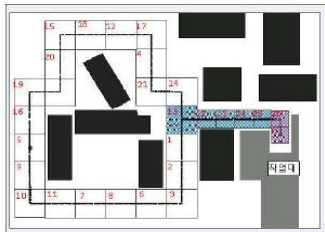
Affiliation : Korea university

Type of Partnership : Open for negotiation

Cost : Open for negotiation

Researcher Information : Jae-bok Song / Department of Mechanical Engineering

Contact Person : Jun-eun Kim / 02-3290-5837 / jekim2018@korea.ac.kr



〈Representative drawing〉

Abstract

It is related to the system and control method of Automated Guided Vehicle(AGV). It is easy to control fast and accurate operation of AGV through the movement route block using the movement path block.

Problems with Existing Technology

The conventional technology is easily limited to the environmental condition. Thus, it needs to improve the conventional technology.

- The conventional AGV use a method that attached to a magnetic tape as an induction line on the plant floor. Thus, it needs a lot of money to use in the factory environment which can change frequently.
- A control method of the conventional invention is not possible to control effectively because of a fixed path. Further, an additional device is required for speed control or the specific job in a certain interval.

Technology Readiness Level

TRL 5 : Technology validated in relevant environment

TRL1	TRL2	TRL3	TRL4	TRL5	TRL6	TRL7	TRL8	TRL9
Basic Technology Research	Technology Concept formulated	Experimental Proof of Concept	Technology validated in lab	Technology validated in relevant environment	Technology demonstrated in relevant environment	System Prototype in operational environment	System complete& qualified	Full commercial application

Differentiation and Effect

Differentiation

AGV control method using a movement path blocks

- Inputting one or more moving path of a block unit in the system input
- On the basis of a sensing signal in the sensing input, I t controls control signal with AGV.

Effect of Technology

AGV control for factory environment

- Movement path block makes it possible to a right control in the factory environment through including a variety of information.

Fast and stable moving operation

- Based on the automatic guided vehicle(AGV) system, the shortest path to the destination station can be an effective control and prevent from collisions in case of overlapping path.



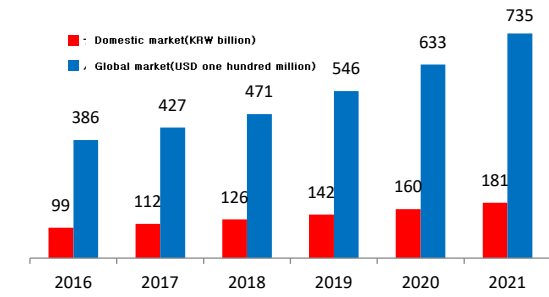
AUTOMATED GUIDED VEHICLE SYSTEM BASED ON AUTONOMOUS MOBILE TECHNIQUE AND A METHOD FOR CONTROLLING THE SAME

Technology Application Field

It can be used in various are such as logistics robots and AGV for transport logistics in factory and hospital.



Market Trends



SMEs technology roadmap, 2017

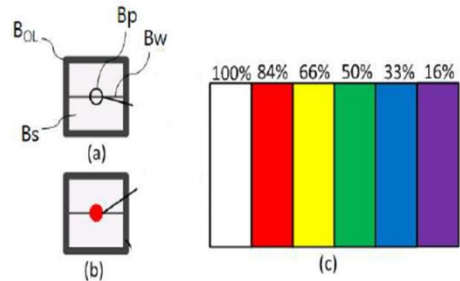
<The prospect of transport logistics market>

- The domestic logistics robot market reached KRW 9.9 billion won in 2016 and is expected to reach KRW 18.1 billion in 2021, with an average annual growth rate of 13.8 percent.
- The global logistics robot market reached USD 386 million in 2016 and is expected to reach USD 735 million in 2021, with an annual growth rate of 16.8%.

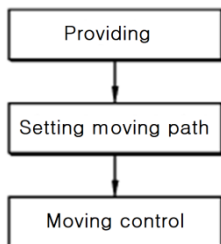
Technology Implementation

The constitution of moving path block of AGV

- Breadcrumb block outline(BOL) represents the space occupied by the car autonomous navigation based on the automatic guided.
- Breadcrumb block way(Bw) is disposed within and to indicate the movement behavior of the automatic guided vehicle.
- The movement route block surface(Bs) indicates the moving speed of the autonomous navigation based on the automatic guided vehicle which is defined by the movement route block outline(BOL).
- The movement path block via point indicates whether the point where the car via the autonomous navigation based on the automatic guided.



<A configuration diagram of moving path block>



<A flow chart showing the system control>

Control process of AGV system

- The System input unit consists of moving path placing the moving path block by dragging and dropping fashion.
- The system storage unit stores the traffic information including the AGV location and moving path of block unit.
- The system control unit is delivered the moving path information which is input in the system control unit and controls the signal through wireless transmission and reception system.

List of related patents

No.	Title of Invention	Patent No./ Application No.
1	AUTOMATED GUIDED VEHICLE SYSTEM BASED ON AUTONOMOUS MOBILE TECHNIQUE AND A METHOD FOR CONTROLLING THE SAME	US 15/211,215
2	METHOD FOR CONTROLLING MOBILE ROBOT BASED ON BAYESIAN NETWORK LEARNING	US 15/606,393