

Autonomous Guided Vehicle for the local market

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Autonomous transport vehicle for factory with auto charging dock-using Proportional, Integral and Derivative (PID) controlling falls under the autonomous guided vehicle (AGV). The intention of this research is to develop fully functional AGV with added functions like battery level indication, automatic docking, intelligent steering drive method using (PID), low-cost ect. Furthermore, this project aims to implement the PID algorithm, control the movement of the AGV by proper tuning of the control parameters, an optimized drive system to suit with the rough industrial environment, the affordable price tag for Sri Lankan market and deliver better performance. AGV mainly used magnetic line following method and the vehicle battery is charged automatically in specific charging dock (charging area). A PLC is used control of the AGV and implement PID algorithms for motor speed control, which governs the robot to smoothly travel along the line. Drive system used brushless direct current motors (BLDC) with the embedded gearbox. This BLDC motor and gearbox combination gives more robust operation compare to chain drive system. An 8-bit magnetic sensor used as the main sensor for the navigation. The end product of this research is to build up "mouse" type affordable AGV platform which can use in Sri Lanka Industries. Future developments will be focused to change the magnetic based guidance system to vision based guidance system and an auto charging system.

Keywords. - PID, AGV, BLDC, Dock