



Maxon DC motors drive autonomous robots.

YLOG are an advancing company that manufacture autonomous robots for logistics applications. An Autonomous Intelligent Vehicle (AiV) is a robot that assists emission reduction and costs. Additionally they improve the use of available space within the logistics centre or warehouse. The incorporated maxon DC motors enable the free and independent AiVs to be accurately controlled.

Heinrich Amminger and Martin Trummer from Austria developed a concept to transform logistics systems in 2007. They developed an automated warehouse that is a clever and eco-friendly system proving to be very popular for YLOG, a newly formed company in Austria. The technology utilises independent, fully autonomous vehicles that can sense other vehicles, obey right of way rules, identify single way paths and conduct errands completely autonomously and devoid of involvement by a central processor. Utilising this system, cost saving processes can be substantiated and validated. Current logistic systems typically have bins that move forward and back beside each level to place and retrieve loads. The YLOG system is the first solution that integrates bin logistics with freely autonomous vehicles.

Various size motor driven transporters are available. The on board navigation system enables the AiVs to work out tasks to be accomplished and to navigate throughout the shelving. Detailed and intelligent design of the system allows each shuttle to be recharged on the fly.



Figure 2: The YLOG, which weigh approximately 50 kg, need very little space for maneuvering. © 2012 YLOG Technologies

The ~50 kilogram robots require minimal manoeuvring room and are rated at roughly 100 W, allowing the use of super capacitors which can charge in mere seconds. The incredibly small power use allows 200 shuttles to be used with a comparable power level of one traditional system, which can use upwards of 20Kw of power. The distinguishing component is the decentralised control system: While a central computer notifies shuttles which bins need to go where, the shuttles navigate independently around the traffic rules. Up to 500 robots can navigate in a single installation.

Small brushless DC motors for accurate steering.

Various functions within the robots are carried out with the use of maxon DC motors and gearboxes. 9 of the 11 axes on the robot are maxon brushless dc motors. They control drive wheels and are used for extracting and depositing the load containers. Various highly modified brushless motors fitted with gearboxes are implemented. 4 maxon brushless 30mm motors are utilised to steer the robotic vehicles. The brushless DC motors have outstanding power levels, very high torque and second to none lifespan. The gearboxes fitted to the motors use the latest in high tech ceramics that give a much higher service life than traditional gearhead materials. Ceramic components also allow for higher speeds at the input to the gearbox and give elevated short term torque handling capabilities.

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Figure 3: In the YLOG robots, the maxon EC-max 30 is used for the swiveling wheels of the AiVs. © 2012 maxon motor



Figure 4: The centerpiece of the maxon motor is the globally patented ironless winding, System maxon. © 2012 maxon motor



Figure 5: An automated storage and retrieval system makes sense in warehouses with more than 1000 storing positions. The shelves are modular and based on a con-



Figure 6: Up to 500 transport vehicles can be driving around in a warehouse. © 2012 YLOG

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