

## Toward Implementation of Autonomous Driving Systems with GMPS\*1

- Investing in Unica Co., Ltd. which manufactures electric in-yard trucks -

Aichi Steel Corporation (President: Takahiro Fujioka) has invested in Unica Co., Ltd.\*2 (President: Toshihide Ito)—a subsidiary of Toyota Industries Corporation—and started development of an autonomous driving conversion kit for in-yard trucks that allows high-precision control of motion paths so as to achieve the implementation of autonomous driving systems using Global Magnetic Positioning System (GMPS).

Since 2017, Aichi Steel has participated in approximately 30 autonomous driving field trials. The advantage of GMPS technology during snow accumulation and in tunnels has come to be widely recognized. Going forward, in parallel with the field trials so far, we will seek the implementation of autonomous driving systems with GMPS in factory logistics, a restricted area that is specifically not subject to restrictions such as those of public roads.

Joint development will be carried out for an autonomous driving conversion kit that combines the manned compact electric tow tractor Tugnova (Fig. 1) manufactured by Unica with GMPS technology. Operational tests are planned to be conducted at actual plants, including those of Aichi Steel. Furthermore, by establishing an autonomous driving platform, the company will also seek to enable low cost improvements to productivity at logistics sites and reduction of workload for logistics workers.

Aichi Steel will continue to accelerate the research and development of GMPS, which has entered a new phase of implementation, and contribute toward the realization of a safe and secure next-generation mobility society that also keeps in mind the future goal of implementing GMPS for general vehicles on public roads.

\*1 Global Magnetic Positioning System (GMPS): An autonomous driving support system independently developed by Aichi Steel that estimates the position of a vehicle with high accuracy from the weak magnetic force of magnetic markers installed on the ground using a magnetic sensor unit (Fig. 2) mounted on to the bottom of the vehicle

Dedicated website: <https://www.aichi-steel.co.jp/ENGLISH/smart/mi/gmps/>

\*2 Overview of Unica Co., Ltd.

- (1) Company name: Unica Co., Ltd.
- (2) Location: 170 Hasuike, Nishi-tanaka, Kiyosu-shi, Aichi
- (3) Representative: President Toshihide Ito
- (4) Established: October 1, 1974
- (5) Investment: 50.4 million yen (ratio of shares after investment: approx. 96% held by Toyota Industries Corporation and approx. 4% by Aichi Steel Corporation)
- (6) Business area: Manufacture and sales of industrial vehicle equipment and electric in-yard trucks
- (7) Website: <https://www.unica-co.com/> (in Japanese)



Fig. 1 Compact electric tow tractor Tugnova by Unica



Fig. 2 Magnetic sensor unit for vehicles



Fig. 3 GMPS roadmap

