

March 31, 2025

Nippon Paint Industrial Coatings Co., Ltd.

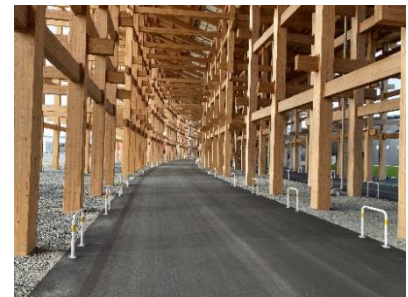
Nippon Paint's Target Line Paint Chosen for Autonomous Buses Transporting Visitors at Expo 2025 Osaka, Kansai, Japan

Nippon Paint Industrial Coatings Co., Ltd. (Head Office: Shinagawa-ku, Tokyo; Representative Director & President: Yutaka Kagami; hereinafter "NPIU") will supply its specialized autonomous-driving support paint, Target Line Paint, for use on autonomous buses transporting visitors at Expo 2025 Osaka, Kansai, Japan ("Expo 2025"), scheduled to be held from April 13 to October 13.

At Expo 2025, electric autonomous buses will run along three key routes: from JR Shin-Osaka, JR Osaka, and Keihan Nakanoshima Stations to the Expo site; from the Maishima parking lot to the Expo site; and around the Expo's internal perimeter road. NPIU's Target Line Paint has been selected for use on all three routes. These routes include technically challenging sections—such as highways, tunnels, the Yumemai Bridge linking Yumeshima and Maishima, and roads beneath the Expo site's iconic Great Roof Ring—where autonomous navigation is often hindered by reduced GNSS^{*1} signal accuracy and ineffective map matching^{*2}. To address these challenges, Target Line Paint has been applied to the road surfaces, enabling more precise vehicle positioning and helping ensure the smooth, stable operation of autonomous buses throughout the event.



Autonomous Electric Buses Set for Operation



Target Line Paint Application Sites (Left: Inside Tunnel, Right: Beneath the Great Roof Ring)

NPIU's Target Line Paint is a specialized paint developed to be detected by LiDAR sensors installed in autonomous vehicles. When applied to roadways, it enables the sensors to detect and follow the painted lines, supporting accurate and stable autonomous navigation. By simply applying the paint to existing roads, it creates essential infrastructure for autonomous driving—keeping implementation and maintenance costs relatively low. The paint can also be customized to blend naturally with the road surface, helping prevent confusion with standard road markings while preserving safety and the visual harmony of the surroundings. At Expo 2025, autonomous electric buses are already operating on all three designated routes where Target Line Paint has been applied, ensuring smooth and efficient transportation for visitors. NPIU remains committed to advancing the adoption of this innovative solution and contributing to the development of safe, reliable autonomous mobility.

*1 GNSS (Global Navigation Satellite System): A collective term for satellite-based positioning systems, such as GPS.

*2 Map Matching: A technology that pinpoints a vehicle's position by comparing pre-mapped route data with real-time sensor information collected during travel.

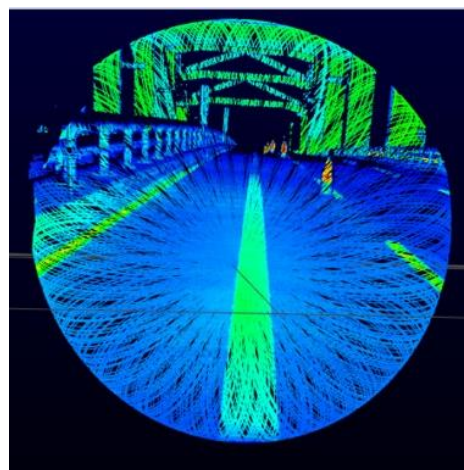
《Supplementary Information》

■ Key Features of Target Line Paint

- Cost-Effective Infrastructure: Applying the paint directly to road surfaces creates immediate infrastructure for autonomous driving, making implementation and maintenance costs relatively low. It also allows for quick and flexible adjustments to driving routes as needed.
- Reliable Navigation in Challenging Environments: The painted lines guide vehicles by enabling sensor-based detection, even in areas where GNSS signals are weak or map matching is unreliable.
- Designed for Safety and Aesthetics: The paint is designed to be detectable by sensors, while also allowing for color customization that blends seamlessly with the road surface—helping prevent drivers from mistaking it for standard road markings.



The Paint Can Be Customized in Colors That Visually Blend with the Road Surface



How Target Line Paint Appears to Vehicle Sensors

■ Overview of Autonomous Bus Driving Routes

| | |
|------------------------------------|--|
| Route | JR Shin-Osaka Station → Expo Site (via JR Osaka Station and Keihan Nakanoshima Station) |
| Autonomy Level | Yodogawa Sagan Line (Phase 2): Supports Level 4 autonomous driving Yodogawa Sagan Line (Phase 1) from Ebie JCT to Ohiraki: Level 2 autonomous driving |
| Painted Sections | Yodogawa Sagan Line (Phase 2) Toyosaki Entrance to Hanshin Expressway Route 2 Around Ohiraki Interchange on Yodogawa Sagan Line |
| Operating Companies | Keihan Bus Co., Ltd., Hankyu Bus Co., Ltd. (Hankyu Kanko Bus Co., Ltd.) |
| Autonomous Driving System Provider | Advanced Smart Mobility Co., Ltd. |

| | |
|------------------------------------|---|
| Route | Maishima Parking Lot → Expo Site |
| Autonomy Level | Selected sections operate at Level 4 autonomous driving |
| Painted Sections | The section on the Yumemai Bridge |
| Operating Company | Osaka Metro Co., Ltd. |
| Autonomous Driving System Provider | Advanced Smart Mobility Co., Ltd. |

| | |
|-------------------|--|
| Route | Outer Perimeter Road within the Expo Site |
| Painted Sections | Selected areas beneath the Great Roof Ring |
| Operating Company | Osaka Metro Co., Ltd. |

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