Optimized Automated Anti-Icing Agent Spraying System

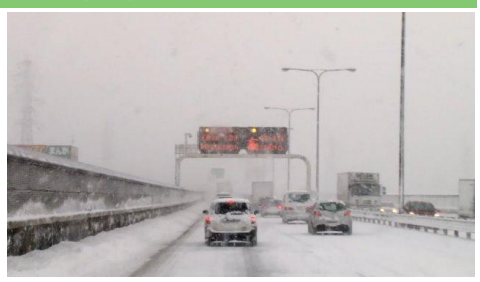
Système automatisé optimisé de pulvérisation d'agents antigivrage

Background

Declining workforce and dependence on experienced operators

Changing road surface condition

Development of a system that optimizes salting operation according to the road surface condition without depending on the operator's expertise



Expressway road surface condition in winter

Improving the efficiency and performance of snow and ice operations by optimizing the amount of salt spraying

System overview

Automation of salting optimized according to the road surface condition by incorporating three systems

(2) Control desk operation system

(2): The road section in need of salting and the amount of salt are determined from road surface condition data and prediction data

(1) Image classification system

Image classification system

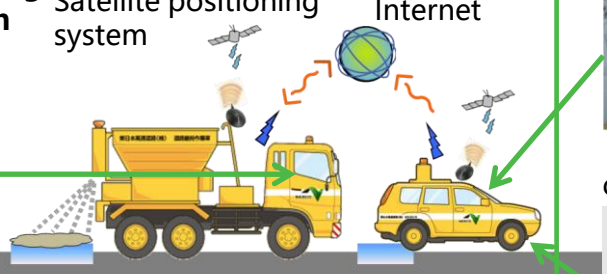
Road surface condition sensor

(3) Automated anti-icing agent spraying system

Satellite positioning system

Internet

Anti-icing agent portioning unit(DD hopper)



Automated anti-icing agent spraying system

(1): The road surface condition is determined and recorded using an image interpretation system and road surface condition sensor.

(3): Based on the result obtained in (2), salt (de-icing agent) is loaded onto the snowplow using a DD hopper. The snowplow applies salt automatically while in motion in the specified road sections.

- **Amount of salt used: Reduced by about 7% (compared with past usage)**
  → Reduction of loads on road structures and less environmental impact
- **Automation of the determination/interpretation of road surface condition: eliminates the need for visual observation and judgment by operators and contributes to workload reduction**

East Nippon Expressway Company Limited
https://www.e-nexco.co.jp/en/

NEXCO EAST