Road Weather Information System(RWIS)

RWIS is a traffic safety technology that provides drivers with real-time information about road hazards, such as icy surfaces or limited visibility, to ensure safe driving.

By utilizing navigation systems and road displays, this system delivers real-time weather monitoring data to drivers, enabling safe driving and preventing traffic accidents caused by adverse weather conditions on highways.

< Navigation >

< VMS >

▲ Road hazard weather information (e.g., black ice warnings) analyzed through various sensors installed on highway CCTV poles is provided to drivers.

Issues to Tackle

☑ Traffic accidents caused by icy roads or fog have higher injury and fatality rates, often leading to major accidents. Thus, preventive measures are necessary. A system is needed to inform drivers about real-time road hazards to prevent highway accidents.

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Expected Benefits ☑

☑ Collecting and providing weather and road information ensures road safety, reducing public anxiety and increasing satisfaction.

☑ By understanding weather conditions and road status, the system enables rapid de-icing and efficient road maintenance.
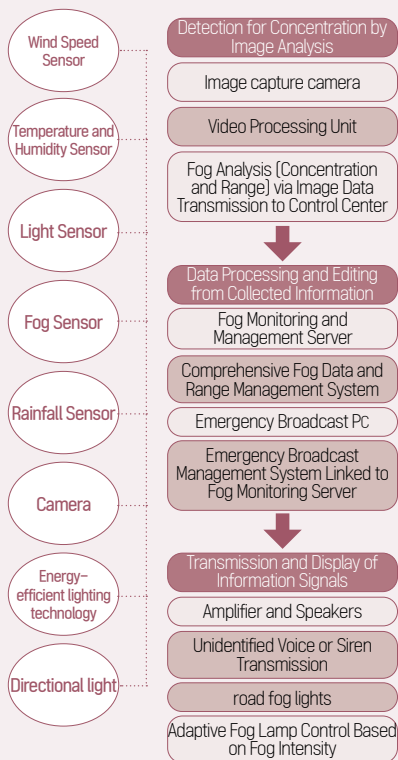
Key Services

· Measures road conditions such as frost, visibility, and precipitation using optical sensors, integrated weather sensors, rainfall sensors, and GPS devices.
· Classifies road hazard information into three levels (Caution, Warning, Risk) and provides real-time updates via Variable Message Signs (VMS) and driver navigation systems.
* e.g. : "Caution: 300m ahead, icy road."

· Provides daily updates on road hazard predictions during winter seasons for proactive management.
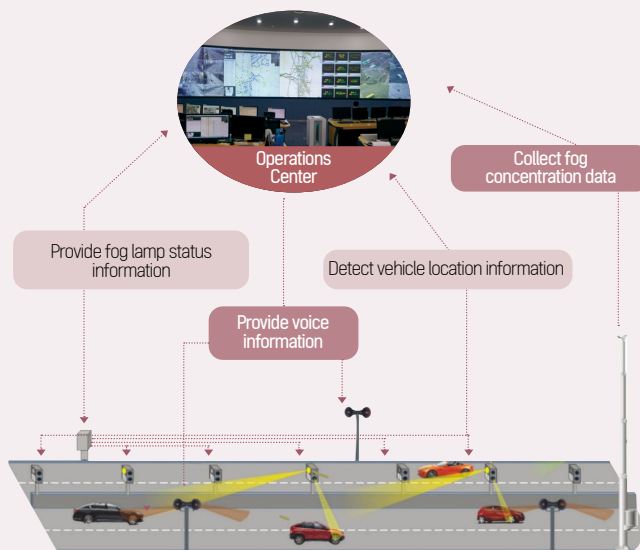
Use Cases

· Since December 2024, the Korea Meteorological Administration (KMA) has been collaborating with navigation services (Tmap, KakaoNavi, and Autoland) to provide real-time road hazard information to drivers across five major expressway routes, including the Gyeongbu, Jungang, Honam, Yeongdong, and Jungbu-Tongyeong-Daejeon expressways via Variable Message Signs (VMS).

· The KMA, in cooperation with the Ministry of Land, Infrastructure, and Transport and the Korea Expressway Corporation, is utilizing highway infrastructure such as power, communications, and facilities to establish a road weather monitoring network. The network will be completed by 2026 for major expressways, with plans to gradually expand the road hazard weather information service.

Key Components

📦 Configuration

Sensors (left to right stack):
- Wind Speed Sensor
- Temperature and Humidity Sensor
- Light Sensor
- Fog Sensor
- Rainfall Sensor
- Camera
- Energy-efficient lighting technology
- Directional light

Detection for Concentration by Image Analysis
- Image capture camera
- Video Processing Unit
- Fog Analysis (Concentration and Range) via Image Data Transmission to Control Center

Data Processing and Editing from Collected Information
- Fog Monitoring and Management Server
- Comprehensive Fog Data and Range Management System
- Emergency Broadcast PC
- Emergency Broadcast Management System Linked to Fog Monitoring Server

Transmission and Display of Information Signals
- Amplifier and Speakers
- Unidentified Voice or Siren Transmission
- road fog lights
- Adaptive Fog Lamp Control Based on Fog Intensity

· Compatible with various systems, including sound alerts, LED indicators, and more.
· Provides precise detection information using 1 to 3 installed cameras.
· Capable of detecting sudden "guerrilla fog" and sea fog.
· Easily integrates with existing CCTV systems.
· Capable of detecting fog up to 1 km away.
· Can be installed in post-insertion type control boxes.

- Operations Center
- Collect fog concentration data
- Provide fog lamp status information
- Detect vehicle location information
- Provide voice information

⚙️ Key Technologies

1. Fog Density Video Analysis Technology
· Collects onsite video and analyzes fog-related data (density, visibility, etc.) before transmitting it to the operations center.
  POINT Detects up to 1 km and integrates with existing CCTV networks.

2. Weather Data Collection and Analysis Device
· Measures real-time data such as road temperature, humidity, rainfall, wind speed, and fog density.
  POINT Manages fog and visibility data for the entire region.

3. Integration with Emergency Broadcasting Devices
· Connects with the fog density measurement server to deliver audio alerts, LED display warnings, and other real-time updates for efficient field operation.

4. Information Signal Transmission and Output
· Utilizes amplifiers and speakers to provide audio guidance, siren alerts, or lighting adjustments based on fog density levels.

Technology Companies

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