INFINITY INNOVATION

www.enitt.co.kr

English Ver.

Company profile ENITT Co., Ltd.

ENITT

It creates a safe world beyond technology. Where infinite innovation begins, ENITT

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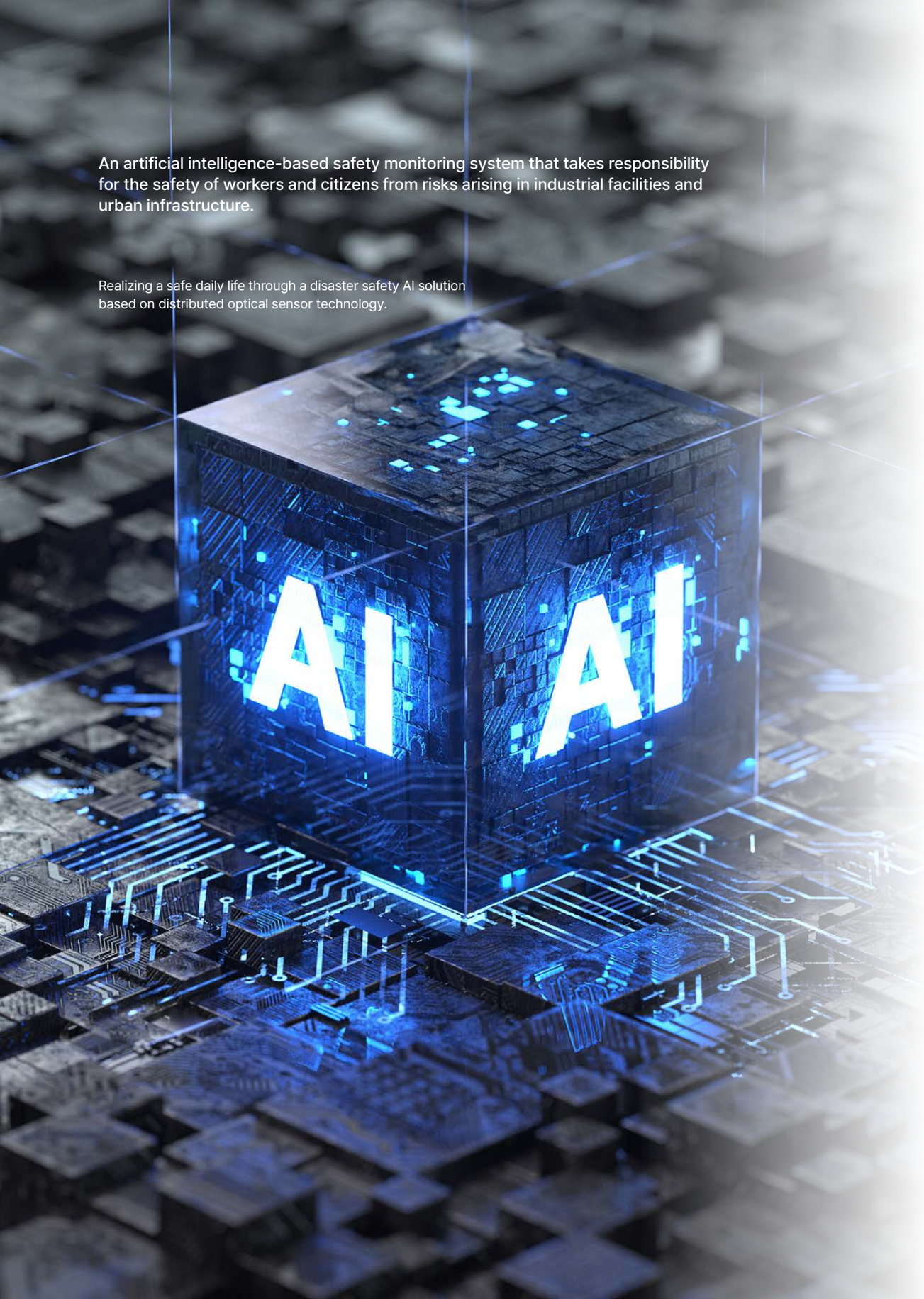
Where infinite innovation begins, ENITT

We were founded in February 2018 and are engaged in business in the fields of AI-based disaster safety and energy efficiency. We have been consistently growing through continuous exploration of new technologies and challenges.

We envision a company where creative thoughts and opinions are freely expressed and actively incorporated. Our goal is to be a company that helps individuals prepare for the future, fostering a joyful and challenging work environment. Through ongoing innovation and persistent challenges, we aim to create a secure future with groundbreaking technologies.

Contents



An artificial intelligence-based safety monitoring system that takes responsibility for the safety of workers and citizens from risks arising in industrial facilities and urban infrastructure.

Realizing a safe daily life through a disaster safety AI solution based on distributed optical sensor technology.

ENITT's History

The dazzling growth achieved by ENITT, based on its outstanding technological prowess, and the company's transformative AI-based solutions.

- Selected as G-Unicorn Company by Gwangju Metropolitan City
- ISO9001 Certification Acquired (No. 18249)
- Received order for innovative product pilot purchase project (Daejeon Urban Development Corporation Design Clean Net)

2024

- Selected as a Youth-Friendly Company by the Ministry of Employment and Labor
- Advanced Technology Enterprise Redesignation (No. 212)
- "Minister of the Ministry of the Interior and Safety Awarded the 'Korea Safety Technology Award'
- "Korea Safety Technology Grand Prize" Minister of Trade, Industry, and Energy
- "Outstanding Company in New Technology Development" Minister of Science and ICT Award
- Enterprise in Technological Innovation" 2023 17th Korea Green Energy Excellence Award
- Selected as "2023 KEPCO Trusted Partner" by Korea Electric Power Corporation (KEPCO)

2023

- KEPCO Innovation Energy Startup(KIES) Certification
- [KEPCO] Delivery of Fiber Optic Vibration/Acoustic Sensing Device
- Certification for Innovative Product (e-DAS) Acquisition (No. 2022-044)
- [POSCO] Completion of the Unmanned Inspection System Project for Raw Material Belt Conveyor Idle Roller

2022

- Certification as a Specialized Company in Materials, Parts, and Equipment (No. 28230)
- ISO14001 Certification Acquired (No. E3454)
- Designated as a prestigious small and medium-sized enterprise in Gwangju
- Business agreement in artificial intelligence with Gwangju
- INNOBIZ Certification (No. 210401-00594)
- Secured investment of 1 billion won from the Technology Guarantee Fund
- Selected as one of the top 1000 innovative companies nationwide

2021

- Designated as an energy-specialized enterprise (No. 2021-4)
- Registered Electrical Construction Business (No. Gwangju-01248)
- Information and Communication Construction Business (No. 62334)

2020

- [Gwangju] Awarded Contract for Underground Shared Facility Smart Management System
- KEPCO KDN Designates as the 1st Cooperative Company for "K-STAR"
- Certification for Establishing Corporate Research Institute

2019

- Venture Enterprise Registration (No. 20180400538)
- Change of Corporate Name to ENITT Co., Ltd

2018

- Establishment of e&i TECH Co., Ltd.

Intellectual property rights status

Reliability and excellence of technologies and products verified by rigorous test evaluation and certification of core technologies

Innovation Product Certification

ISO 9001

ISO 14001

Advanced Technology Enterprise DesignationCertificate

Certification as a specialized company for materials parts and equipment

Patent

Trademark registration

GS certification

KC certification

copyright registration certificate

2023 Safety Technology Excellence Award

Outstanding New Technology Development Company

2023 Small and Medium-sized Enterprise Technological Innovation

2022 Small and Medium-sized Enterprise Technological Innovation

Gwangju AI Business Agreement

Inno-Biz

Gwangju Prestigious Small and Medium-sized Enterprise Designation

KEPCO 2023 KTP Certification

Republic of Korea Green Energy Excellence Award

KEPCO Innovative Energy Startup

Securing and Validating Core Technology for Ensuring Product Reliability

Patent and Trademark Registration Names	Date	Number
Temperature Compensated Fiber Optic Strain Distribution Sensor System	05-10-2024	NO.10-2666345
Distributed optical fiber acoustic sensor and its acoustic measurement method	03-26-2024	NO.10-2652916
Safety monitoring system for nuclear power plants using optical cables	01-12-2024	NO.10-2626049
Power Generation Facility Monitoring System Using Fiber Optic Cables	11-20-2023	NO.10-2604974
Laser Emitter with Narrow Frequency Bandwidth and Optical Fiber Sensor System Incorporating the Laser Emitter	03-29-2023	NO.10-2517180
Code Signal-Based Fiber Optic Acoustic Sensor	05-02-2022	NO.10-2394748
Optical Circulator with Improved Insertion Loss and Fiber Optic Sensor System Utilizing the Optical Circulator	11-24-2021	NO.10-2332244
Distributed Acoustic Sensing Device with Improved Signal-to-Noise Ratio	11-19-2021	NO.10-2330484
Monitoring System and Method Using Fiber Optic Distributed Acoustic Sensing Sensor with Optical Detection Unit Gain Control	09-02-2021	NO.10-2299905
e-DAS	08-17-2021	NO.40-1764527

Authentication name	Date	Number
[GS Certification] Industrial Facility Safety Management System	04-13-2023	NO.23-0155
[Innovation Product Designation] AI-based Fiber Optic Acoustic Distributed Sensor Safety Monitoring System	06-29-2023	NO.2022-044
[KC Certification] e-DAS	05-12-2022	R-R-PYX-e-DAS-R1

The name of the award	Date	Number
2023 Minister of Public Administration and Security Awards	09-13-2023	NO.23-1524
2023 Minister of Trade, Industry and Energy Commended for Outstanding Companies in New Technology Development	06-21-2023	NO.19557
2023 Minister of Science and Technology Information and Communication Award for Technology Innovation Small and Medium Enterprises	05-23-2023	NO.23-03015
2021 Technological Innovation Small and Medium Businesses Small and Medium Venture Businesses Minister's Commendation	10-27-2021	NO.8631

Disaster Safety AI Solution

AI-Based Fiber Optic Acoustic Sensor Safety Monitoring System

··· Underground Duct (Power Lines)

··· Power Plant
··· Power Transmission Station
··· Distribution Station

··· Railroad Tracks

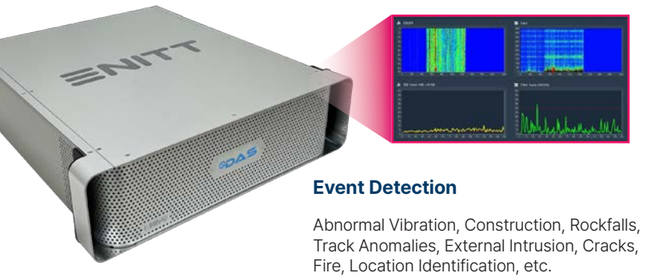
··· Roads
··· Bridges
··· Tunnels

··· Buildings

Other Industrial Structures and Security Facilities

Fiber Optic Cable

1. Optical Measurement Instrument H/W



Event Detection

Abnormal Vibration, Construction, Rockfalls, Track Anomalies, External Intrusion, Cracks, Fire, Location Identification, etc.

2. Big Data-Based AI Analysis S/W

Large-Scale Data Collection/Processing

··· Storing Large-Scale RAW Data
··· Setting Risk Levels
··· Storing Event Information

Big Data Analysis · AI Engine

··· Learning Detection Data Patterns
··· Event Type Classification Algorithms

3. Integrated Control Monitoring S/W

Providing Real-time Monitoring Web Interface

Predictive/Alarm for Anomalies, Providing Data Analysis Statistics

Fiber Optic Cable H/W

Case #01

Utilizing Existing Cables

··· Utilization of Existing Installed Underground Optical Communication Cables

Case #02

Installation of New Cables

··· Apply cables suited to the installation environment

Next-Generation Disaster Safety AI Solution Meeting On-Site Needs

Distributed Optical Sensor – Interrogator Manufacturing H/W

··· A Distributed Optical Measurement System Capable of Detecting Fluctuations in OTDR* Phase Signals and Bifurcation of OFDR** Frequency Events

* Optical Time-Domain Reflectometer
** Optical Frequency Domain Reflectometry

GIS-Based Real-time Trend View Providing S/W

··· GUI** Mapping Functionality Providing Structural and Status Information Based on GIS*
··· Real-Time Monitoring and Status Notification Services Through Real-Time Processing System

* Geographic Information System
** Graphical User Interface

Sensing Data Event Classification AI

··· Big Data Analysis and Computation Using Machine Learning Engine
··· Event Classification Service for Anomaly Detection Signal Analysis Algorithms based on FBE* and Phase Shift** Data

* Frequency Base Events
** Phase Shift

Differentiation of Disaster Safety AI Solution

Accurate Event Detection

Utilizing a Big Data-Based AI Analysis System to Enable Detection in Extreme Environments Where Conventional Systems (CCTV, IoT Sensors) Face Challenges

Simultaneously Measuring Long Continuous Sections with a Single Instrument to Achieve ZERO Blind Spots in Safety Management

Large-Scale Data Collection

Through Multiple Solution Demonstrations, Securing Sensing Data for Various Types of Events (Structural Anomalies, Construction, Rockfalls, Intrusions, etc.)

Introduction of a Preventive Safety Management System Through Event Detection

Enhancement of Efficiency

Overcoming Limitations in Safety Management Due to Visual and Periodic Inspections by Human Eyes

Minimizing Personnel Inspections to Enhance Worker Safety and Prevent Accidents

Real-time Integrated Control Monitoring

Early Incident Location Detection and Accident Prevention Through Real-time Monitoring System

Cost Savings in Maintenance and Labor Expenses Through Real-time Monitoring

Reduced Installation Period

Reduced Development and System Implementation Time through AI Technology Utilization

Tailored to Customer's Site

System Design Optimized for Customer's Environment (Space, Temperature, Humidity, etc.)

Disaster Safety AI Solution Key Products

Segmented Disaster Safety AI Solution H/W tailored to safety management targets and structural characteristics

System Configuration and Common Functions

Sensor (Optical Fiber Cable) → Data Trend Measurement (Optical Spectrometer) → Classification of Measured Data (AI Analysis) → Real-time State Detection (Monitoring)

Common Functions

- 24/7 Maintenance for 100% Operational Efficiency
- Cost Reduction through Securing Cost Competitiveness in System Construction
- Abnormal State Monitoring and Alert

Application Fields

Underground Joint Facility · Railway line · Road/Tunnel · Bridge · Building · Dam · Harbor · Crane · Oil pipeline · production facilities

Operating system configuration

Rack	19" Rack 42U	**Analytical Server**	DAS Analysis Information Visualization
DAQ Unit	DAS Signal Data Collection and Analysis, Processing	**UPS**	Uninterruptible Power Supply (UPS)
Storage	DAS Signal Data Storage	**L2 Switch**	L2 Network Switch
Analytical Server	DAS Signal Data Deep Learning Analysis	**KVM**	KVM for servers

* System configuration may change depending on purpose and environment.

eDAS

Distributed Acoustic Sensing

Acoustic Vibration Data Collection Using Rayleigh Scattering Light

※ Single-Mode Cable

Product Features

- Phase-type distributed photoacoustic vibration measurement system capable of detecting long-distance/fine vibrations compared to the amplitude method
- Measuring changes in physical quantities through changes in backscattered light (Rayleigh scattering) that occurs when a pulsed laser is incident on an optical fiber.
- Real-time structural abnormality monitoring by distance/section through acoustic vibration change data
- Reduce initial construction costs by using communication fiber optic cables as sensors

Product Specifications

Maximum Measurement Distance	50km	Spatial resolution	1~10m
Product Specifications (W×L×H)	422*457*45mm (1U)	Number of channels	1ch, 4ch

eDTS

Distributed Temperature Sensing

Temperature Data Collection Using Raman Scattering Light

※ Single-Mode Cable

Product Features

- Measurement of changes in physical quantities through scattering (Raman scattering) caused by lattice vibration of molecules within an optical fiber
- Real-time structural abnormality monitoring by distance/section through temperature change data
- Supports up to 4 channels in one instrument
- Reduce initial construction costs by using communication fiber optic cables as sensors

Product Specifications

Maximum Measurement Distance	10km	Spatial resolution	1m
Product Specifications (W×L×H)	435*535*129mm (3U)	Number of channels	4ch

eDSS

Distributed Strain Sensing

Collection of deformation data using Rayleigh scattered light

※ Single-Mode Cable

Product Features

- Measurement of location information and physical changes in the fiber optic through Fourier
- Precise detection and safety diagnostics of various anomalies such as cracks, bending, and deformations across a broad spectrum in industrial facilities
- Providing data on strain distribution, impact location and magnitude, and the occurrence of damage
- Reduce initial construction costs by using communication fiber optic cables as sensors

Product Specifications

Maximum Measurement Distance	1km	Spatial resolution	3.5με
Product Specifications (W×L×H)	435*535*129mm (3U)	Number of channels	1ch

HYBRID eDAS

Distributed Acoustic Temperature Sensing

Acoustic Vibration and Temperature Data Collection Using Rayleigh and Raman Scattering Light

※ Single/Multi-Mode Cable

Product Features

- Simultaneous measurement of acoustic vibration/temperature with one instrument
- Real-time structural abnormality monitoring through acoustic vibration/temperature data
- Capable of measuring continuous acoustic vibration/temperature changes for approximately 1km section
- Reduce initial construction costs by using communication fiber optic cables as sensors

Product Specifications

Maximum Measurement Distance	1km/20km	Spatial resolution	1m
Product Specifications (W×L×H)	435*535*129mm (3U)	Number of channels	2ch

Real-world Use Cases of Disaster Safety AI Solutions

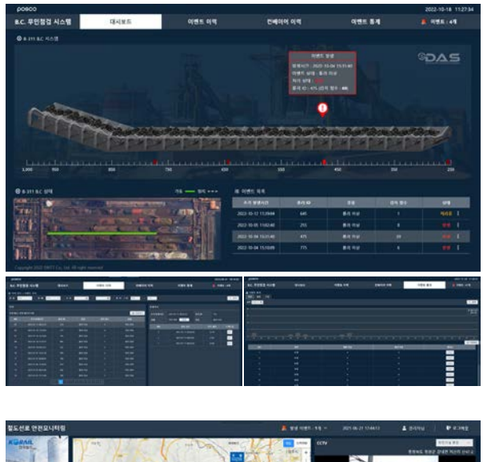
From data collection and storage to analysis and system construction
Providing a world-class Total solution

- Stable real-time detection of structures, resolving blind spot issues
- Precise safety diagnostics enabled by high spatial resolution (accuracy)
- Continuous, simultaneous measurement of entire sections with a single sensor for safety management with zero blind spots

POSCO 06. 2022 — DAS

POSCO Belt Conveyor Idle Roller Monitoring System

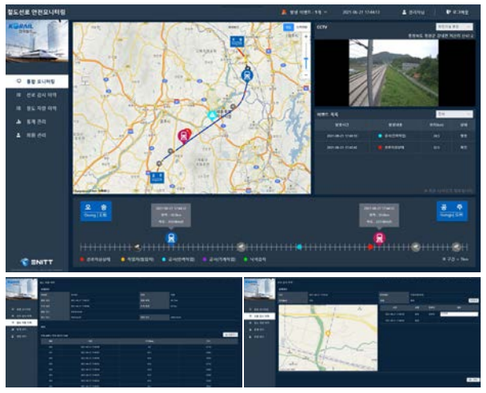
- Real-time condition monitoring of the rotating elements (Rollers) in a 1.3km section of POSCO (Gwangyang) raw material conveyor belt.
- AI analysis of abnormal vibrations for optimal maintenance support.
- Prevention of potential safety accidents and disasters, mitigating the risk of casualties



KORAIL KOREA RAILROAD 06. 2021 — DAS

Railway Track Safety Monitoring System

- Verification of the Osong to Gongju (47km) and West Daejeon-Gyeryong (19km) sections.
- Accident prevention and maintenance efficiency improvement through track condition monitoring.
- Successful verification of real-time monitoring for train position, speed, rail damage, rockfall, trespassing, construction, and more



GWANGJU CITY 12. 2020 — DAS DTS

Underground Joint Structure Monitoring System

- Verification of the 4.8km section of Gwangju Sangmu District Joint Structure.
- Establishment of a 24-hour continuous monitoring and proactive unmanned safety inspection system for the city's life lines (power lines).
- Simultaneous measurement support for vibration and temperature through e-DAS and e-DTS

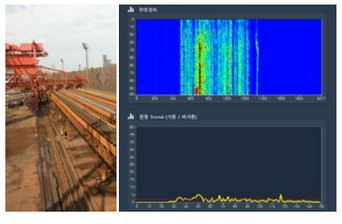
Swift and accurate sensing and event analysis for the prediction and prevention of safety accidents

- No communication constraints with EMI (Electromagnetic Interference) immunity, zero impact from dust, humidity, and other factors
- Cost savings in initial deployment by utilizing communication-grade optical fiber cables as sensors
- 24-hour Integrated Control and Rapid Maintenance

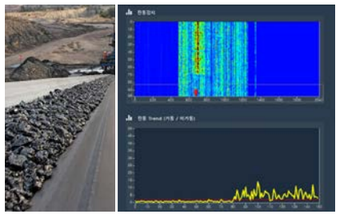
POSCO Belt Conveyor Idle Roller Monitoring System — DAS

Situation-specific Detection Item Trend View

※ Acoustic Vibration Detection



Conveyor Belt Normal Operation



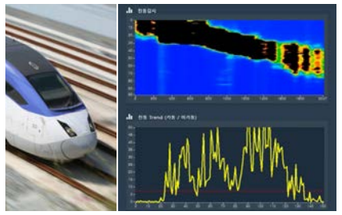
Abnormal Condition During Conveyor Belt Raw Material Transport

Roller Abnormality During Conveyor Belt Raw Material Transport

Railway Track Safety Monitoring System — DAS

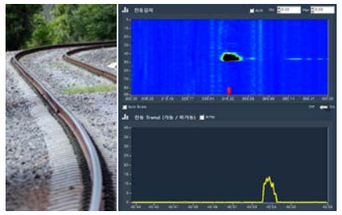
Situation-specific Detection Item Trend View

※ Acoustic Vibration Detection



Railway Track Train Movement

Railway Track Construction (Excavator)

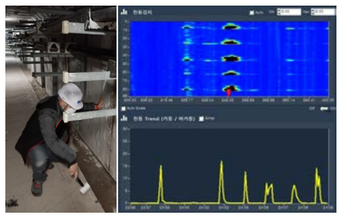


Railway Track Rockfall

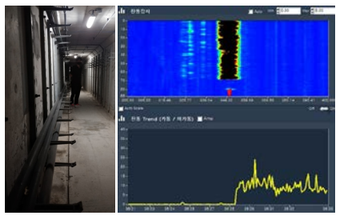
Underground Joint Structure Monitoring System — DAS DTS

Situation-specific Detection Item Trend View

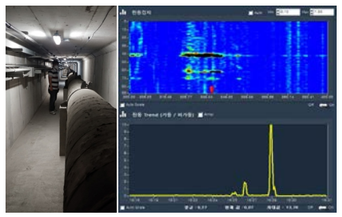
※ Acoustic Vibration / Temperature Detection



Underground Joint Structure Power Line Inspection(Hammer)



Underground Joint Structure Power Line Inspection(Drill)

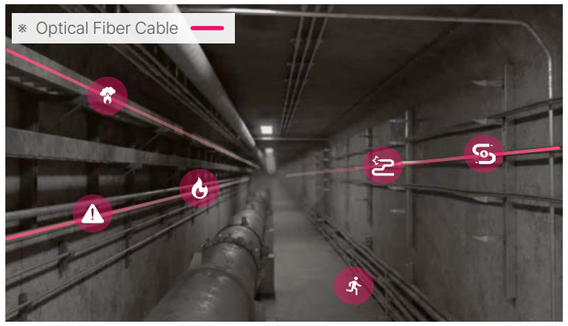


Underground Joint Structure Power Line Worker Movement(Door)

Example of a disaster safety AI solution demonstration

A proactive safety management system that prevents safety accidents through various detection methods and replaces conventional safety inspection systems.

Realizing a Safe Everyday Life through Disaster Safety AI Solutions



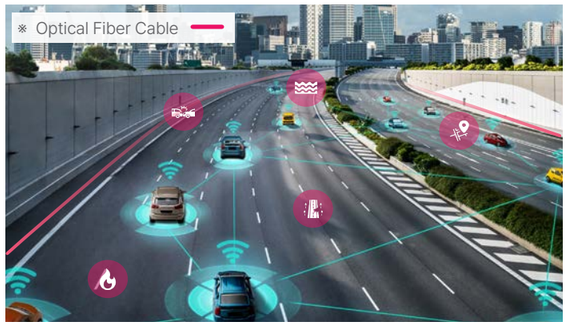
Real-time Monitoring of Underground Joint Structure

Situational Detection Items

- Poor Connection
- Crush Damage
- Unauthorized Intrusion
- Insulation Degradation
- Structural Anomalies
- Fire
- +MORE

Applicable Products

DAS DTS



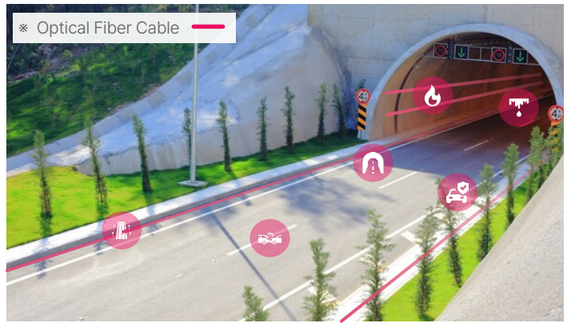
Transportation Infrastructure - Vehicle Sensor, Shared Mobility, V2X (Vehicle-to-Everything)

Situational Detection Items

- Vehicle Collision
- Traffic Conditions
- Fire
- Road Conditions
- Ground Subsidence
- +MORE

Applicable Products

DAS DTS



Tunnel and Road Safety Monitoring

Situational Detection Items

- Leakage
- Collapse
- Fire
- Vehicle Accidents
- Road Ground Subsidence, Cracks
- Vehicle Detection (VDS)
- +MORE

Applicable Products

DAS DTS DSS

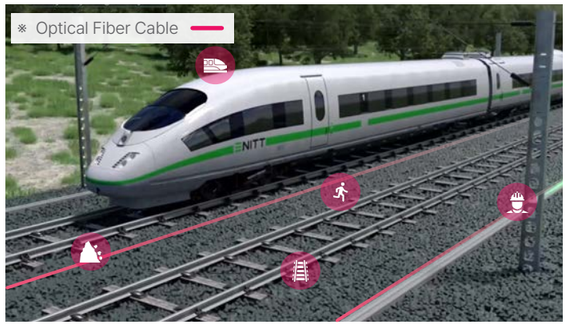
Monorail and Subway Safety Monitoring

Situational Detection Items

- Track Deviation
- Unauthorized Intrusion
- Worker
- Rail Damage
- Finger plate Damage
- Fire
- +MORE

Applicable Products

DAS DTS DSS



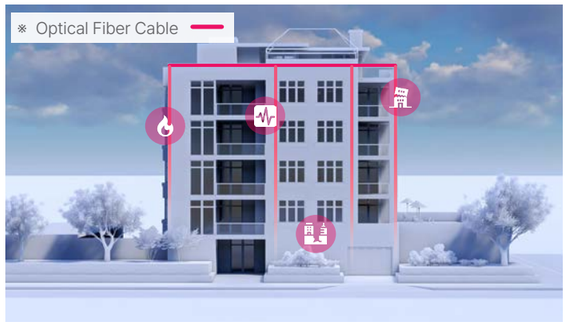
Railroad Track Safety Monitoring

Situational Detection Items

- Track Anomaly
- Worker
- Rockfall
- Unauthorized Intrusion
- Real-time Vehicle Location and Speed
- +MORE

Applicable Products

DAS



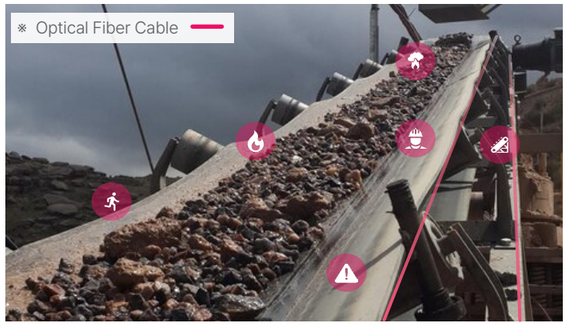
Building Foundation Monitoring

Situational Detection Items

- Ground Subsidence/Collapse
- Abnormal Vibration/ Cracking
- Deformation/ Damage
- Fire
- +MORE

Applicable Products

DAS DTS DSS



Steel Mill and Power Plant Safety Monitoring

Situational Detection Items

- Machine Stoppage
- Conveyor Belt Abnormal Vibration
- Overheating/ Smoke
- Worker Accident
- Unauthorized Intrusion
- Fire
- +MORE

Applicable Products

DAS DTS

Bridge Safety Monitoring

Situational Detection Items

- Abnormal Vibration
- Traffic Conditions
- Deformation
- Ground Subsidence
- +MORE

Applicable Products

DAS DTS DSS

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