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FURUKAWA ELECTRIC GROUP

Passive sensor technologies without a conventional power supply provide effective detection of natural disasters

Optical Fiber Sensing System

Is the measure for the disaster thorough?

Low failure rate

A simple and unbreakable configuration.
The system with a low failure rate and a high reliability can be built.

The reduction of the implementation costs.

Conventional electrical work is not required for the sensor side (measuring location).
The implementation costs are reduced for the total system.

Low operating costs

Because the configuration is simple and nearly unbreakable, the maintenance costs are reduced compared to ordinary systems.

The lives of people are protected from natural disaster.

By using optical technologies (optical fiber, optical component, semiconductor etc.), Furukawa Electric proposes a wide area monitoring system for natural disasters, such as storm and flooding damages, earthquakes and typhoons, and the equipment diagnosis system for building structures and plant equipments leading to the realization of a safe and secure society.

No power supply, no induction

The sensing part consists of only optical fiber and optical components and a power supply is not required.
Unlike ordinary sensors, this design is unaffected by lightning and electrical induction.

Long distance transmission

Optical fiber is suitable for a wide range of remote monitoring. This is useful for the equipment diagnosis of large structures.

High bandwidth

Wide area and multiple points can be monitored remotely.

Anemometer that is not affected by lightning

New product

Optical anemometer

An optical anemometer using optical fiber. It does not require a power supply, and is not affected by the lightning (surge). The wind speed is measured at every location, making it ideal as a measure for safe transportation operations.

For the measurement of precipitation and rainfall intensity

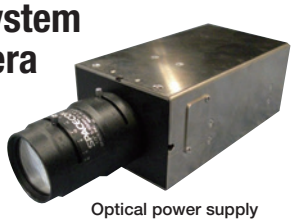
Optical fiber rain gauge

Since the data transmitter is not required, the system is reliable and cost-effective. Power is not required for the system and the measurement of precipitation and rainfall intensity at multiple points becomes possible even in the presence of lightning.

For the power supply to the equipment of remote location and monitoring

Optical Power supply system and optical power camera

This is a system that sends electric power by optical fiber. The power can be supplied to the remote sensor and other equipment. It can be used as the power for the regular measurement or as an emergency power supply. By combining with an optical power supply camera, the monitoring of a remote location becomes possible.



Optical power supply camera

Central equipment for optical power supply camera

For the measurement of unexpected strong rain

High precision optical fiber water gauge. Compact water gauge

The water level and the liquid surface level in the sewer pipe, river, manhole and utility enclosure are measured. It is ideal to measure the water level at multiple points to monitor the effects of unexpected strong rain. A separate power supply is not required.

Compact water gauge

Optical fiber water gauge sensor

Flooding damage of roads and rivers can be detected in advance. This design offers a simple, durable configuration and low maintenance costs

Optical flooding detection sensor

Optical flooding detection sensor using float structure. The feature has a low failure rate because the structure is simple. It is ideal to install for road flooding detection at underpasses, for the water level warning of rivers, reservoirs and drainage pond, for the step-by step water level detection in manholes, water detection in tanks and in sewer pipes.

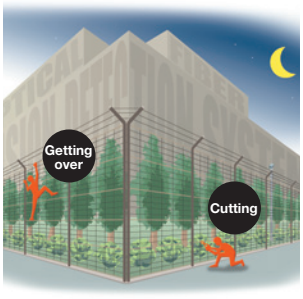
Optical fiber proximity sensor

On/Off sensor using optical fiber reflection and transmission by the proximity of the magnet. It is ideal for the detection of flooding from unexpected strong rain, the detection of water level warning of rivers and underpasses, the opening and closing detection of sluice gates, the detection of floating docks level and many other applications. The sensor part does not have a power supply and has a high impact resistance. This sensor can be installed in places where other types of sensors cannot be considered.

Rapid and reliable intrusion detection

Optical fence sensor system for the intrusion prevention

Outdoor outer perimeter security system associated with the advanced security needs. The system detects quickly the intrusion through the fence. It is ideal for the crime prevention in sensitive locations such as public facilities, airports, harbors and defense facilities.



Application example of optical fence sensor system for intrusion prevention.

Debris flow and landslides can be detected in advance

Optical fiber wire sensor

Optical fiber type wire sensor monitors fiber breaks. It is lightning resistant and the system monitors fiber breaks with high reliability. By monitoring the fiber breaks, debris flows and landslides can be detected in real time. It can be also used as an intrusion detection sensor to prevent intrusion or theft.

Ideal for monitoring of large structures

FBG application sensor / Optical displacement sensor

The sensor allows strain measurements of building structures and the temperature measurement in the plant. Because 1 fiber can measure the strain and temperature at multiple points, a smart measuring system with a high long term reliability and with fewer wires can be configured. Also, tens of kilometers distance remote monitoring system is possible.

Installation example

Optical power supply camera system

Optical fiber rain gauge

Flooding detection sensor

What is a passive sensor?

A sensor utilizing the characteristics of the optical fiber does not use an electrical contact (active).
Because the power supply is not required for the sensor side, the installation is inexpensive. It is less affected by lightning and storm than ordinary systems. The maintenance and operating costs are reduced. In this respect, the passive sensor is a revolutionary system that can take advantage of a communication infrastructure that directly observes large areas or structures, utilizing the optical fiber network to its fullest.

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