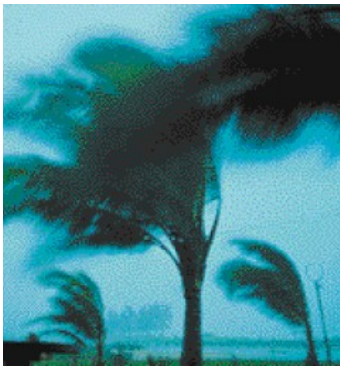
Japan Minokamo Disaster Prevention Department

Motorola SCADA system for flood warning and prevention



Motorola systems offer the additional advantages of remote programming and diagnostic capabilities of MOSCAD RTUs. Many sensors are located in inaccessible sites and can be monitored and tested from the municipal offices.

"There is no doubt that the residents of Japan rest easier knowing that their municipal authorities have installed state-of-the-art technology to help protect them from the risk of unexpected flood damage."

BACKGROUND

Japan is geographically made up of a long narrow chain of islands, with many mountainous regions and rivers. The country is particularly susceptible to disastrous flooding from heavy rains and seasonal typhoons, which increases the risk of loss of human life when floods strike.

Minokamo, a city located near Nagoya on the island of Honshu, has suffered serious damage from urban flooding for many times. The city is located at the confluence of two large rivers that originate in the nearby mountains. Two-thirds of the city had been completely flooded several times in the past.

Motorola installed a system that includes historical data on rainfall and river water levels so that the Minokamo Disaster Prevention Department could predict when flooding was imminent.

The MOSCAD RTUs (Remote Terminal Units) system remotely monitors field sensors. The use of wireless radio technology in the 60MHz band enables the system to continue operating even when conventional telephone lines are disrupted.

Following Minokamo's lead; Japan has installed 18 additional flood warning systems throughout the country. In the city of Kani, the municipality has placed a Flood Warning Map on its Internet site so that all citizens can view the water level and rainfall data 24 hours a day and have access to flood warnings. In addition, a local television station broadcasts information from the Flood Warning System for their viewers.

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The system consists of seven rainfall sensors as part of the city's emergency broadcast system, located in 200 different parts of the city. These activate the MOSCAD RTUs to remotely monitor the rain accumulation sensors. Data is sent to the radio control room, located in the municipal office building.

Based on the data from river level sensors, the MOSCAD system uses the following parameters to declare a flood situation:

• Daily accumulated rainfall data (midnight to midnight).

• Hourly accumulated rainfall data.

• Ten-minute accumulated rainfall data, which is stored every hour, in the MOSCAD RTU.

• Hourly river level data.

• Ten-minute river level data.

• Hourly rate of change of the river level, which is calculated by the system. Flood warning messages are created when predetermined parameters exceed the pre-defined level. Automatic reports of all parameters are generated daily.

By collecting and analysing this data, the Disaster Prevention Department is able to predict flood conditions and provide the public with early warning of flood risk. If implemented properly, this can save lives by allowing sufficient time to evacuate the affected residents. In addition, the system helps authorities design the safest evacuation routes.

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