Zhejiang Dahua Technology Co., Ltd.
Add: No. 1199 Bin'an Road, Hangzhou, CN
E-mail: overseas@dahuatech.com
Website: www.dahuasecurity.com

BLOG

Preventing Forest Fires with Digital Intelligence

In 2020, the forest areas in Dali Prefecture, Yunnan Province were reported to have reached 1.855 million hectares, ranking among the top in the country. In addition to absorbing carbon dioxide, conserving water sources, and maintaining water and soil, these ancient forests also shelter a large number of rare wild animals and plants. These natural wonders are at risk if a forest fire breaks out, causing drastic damages and endangering inhabitants of the forest.

Since 2020, Dahua has been assisting Dali Prefecture in building front-end systems and installing wireless transmission systems in key protected zones as well as areas prone to forest fires. More than 500 cases of illegal use of fire in the wild and 7 cases of forest fires have been detected since then.

24/7 Real-time Monitoring

Dali Prefecture's forest coverage rate reached 65.51% in 2020. Twenty eight nature reserves of various types and levels were established throughout the prefecture, with a total area of 181,000 hectares. The vast forest constitutes an ecological security barrier, but its massive area makes it difficult to monitor forest fires. "Burning straws, cooking fires, etc. are all common wild fires, but even seemingly insignificant areas can become the source of forest fires," a local forest ranger said.

Multiple round-the-clock patrol points were set up to monitor and observe the surrounding forest areas 24/7, with 3 people in each shift (changes every three days). The mountains are high and the slopes are steep, and sometimes thorns are everywhere, especially at night. Nevertheless, with the help of modern technology, these diligent forest rangers always persevere in accomplishing their tasks and duties. The dual-spectrum thermal imaging cameras

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deployed in the forest enables the fire prevention video monitoring system to complete an automatic cruising round in just 15 minutes. Based on visible light and thermal imaging technology, it can detect a fire source about 2 square meters within a range of 5-10 kilometers.

Accurate Multi-dimensional Positioning of Fire Source

Flammable coniferous trees such as Yunnan pine and Huashan pine are widely spread in the forest areas of Dali Prefecture. Large-scale and high-intensity forest fires could start in these areas in a short period of time. In case of a sudden fire, quickly locating the source of the fire can add more significant time for firefighting. Technologies such as dual-spectrum video monitoring, intelligent image analysis and recognition, and three-dimensional positioning enable the smart system to detect a fire, quickly locate the fire source and automatically send alarm to on-duty personnel. In forests with hundreds of hectares (or even thousands of hectares), the source of the fire can be accurately located within 50 meters, allowing the firefighting team to quickly reach the location and providing more time to control the fire.

Efficient Investigation, Assessment and Handling of Fire Situation

Extinguishing forest fires requires full cooperation of the frontline and the command center. The command center quickly communicates with the frontline about firefighting strategies based on the actual fire situation. But how can they understand the situation at the scene if they are far away? This particular job is handed over to the visual forest fire prevention video monitoring system. This smart security system synchronously displays real-time images in the monitoring center, combined with other corresponding data such as space, time, fire type, etc. It enables operators to check and assess the situation in time, and quickly deal with the fire according to the corresponding plan.

Full Coverage of Network Transmission in Forest Areas

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Considering its vast areas, transmitting valuable information from the forest could be a daunting task. "The mountain area is large and widely spread. Sometimes, there's even no mobile phone signal. In order to allow the command center to see the scene in time, we also built a wireless transmission with front-end equipment. The smart system covers all the video points in the forest and sends forest fire information back to the command center in real time," a Dahua technical engineer explained.

The forest fire prevention video monitoring system that Dahua helped build in Dali Prefecture offers wide-coverage, all-weather, high-precision, and intelligent 24/7 monitoring that can automatically detect fire and locate its source in time. Early detection, reporting, and handling of the fire situation using digital intelligence can effectively safeguard the safety of these local ecological barriers. With abundant experience in developing smart fire prevention systems, Dahua will continue to innovate and create technological breakthroughs in order to protect our environment and natural resources.

About Dahua Technology

Dahua Technology is a world-leading video-centric AIoT solution and service provider. Based on technological innovations, it offers end-to-end security solutions, systems, and services to create values for city operations, corporate management, and consumers. With more than 22,000 employees (over 50% engaged in R&D), Dahua has deployed its products, solutions, and services in 180 countries and regions, covering key industries including smart city, traffic management, retail, banking & finance, energy, etc. Since 2014, Dahua Technology has been estimated to be the world's second largest supplier of video surveillance equipment, and has been ranked 2nd on the a&s Security 50 list for 5 consecutive years.

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Media Contact
PR_Global@dahuatech.com