China Forestry Star is a joint-stock company of China Jilin Forest Industry Group Co., Ltd. (listed company code 600189), one of the 4 largest state-owned forest groups in China. The Company possesses three bases in Changchun, Beijing and Shenzhen respectively, and is an integrated high-tech enterprise integrating product planning, hardware and software R&D, industrialized production, sales, project implementation and services.

The Company is a supplier of high-end professional video monitoring platforms, professional monitoring equipments and professional communication equipments. So far, it owns over 30 patent rights and copyrights, and its R&D capabilities in such fields as image recognition and machine design have reached the international leading level.

“Forest Watcher” which is researched and developed independently by the Company, with high integration of advanced information technology, is characterized by short cruise period, fast image recognition, accurate positioning accuracy, real-time data transmission, all-weather monitoring, etc., thereby filling a number of gaps in the professional application field, wherein, the long radius monitoring and image recognition algorithm of “Forest Watcher” has reached the international leading level. The emergence of “Forest Watcher” effectively improves the protection of forest resources, especially forest fire monitoring capability, and successfully propel modern forestry management towards intelligence, refining and high efficiency.

“Forest Watcher” is a product characterized by unattended operation at front end, all-day real-time monitoring and intelligent alarm, including front-end monitoring system and rear-end command center system.

Main achievements

- The Company passed the test conducted by professional testing authorities as CNAS (China National Accreditation Service for Conformity Assessment) and CEPREI (China Electronic Product Reliability and Environmental Testing Research Institute) Laboratory, and the test report confirms that the functions of the system are complete, with reliable operation and outstanding performance.
- It is the first enterprise whose forest fire video monitoring system passed China Compulsory Certification.
- “Forest Watcher” has passed the scientific and technological achievement appraisal operated by the National Agency for Science and Technology, with an appraisal conclusion that “Main technical indexes have reached the international leading level”.
- “Forest Watcher” has been included in the first batch of pilot projects for application and promotion of Internet of Things in China by the NDRC and the Ministry of Finance.
- “Forest Watcher” has gained industrialization project support from the NDRC(National Development and Reform Commission).
- The Company was designated as a leading unit to formulate the technical code for forest fire video monitoring system in China (by China Standardization Administration and State Forestry Administration).
- The Company undertook the construction task for the pilot project of the first batch of forestry information demonstration provinces of Jilin Forest Industry Group.
- The product line has covered an entire series including high-end, mid-end and low-end ones.
- The Company has signed purchase contracts or pilot application contracts on products with over 20 forestry departments or bureaus in Jilin, Heilongjiang, Inner Mongolia, Shanghai, etc., and the products are gradually generalized nationwide.
- “Forest Watcher” has been selected into the foreign cooperation projects of China, for video monitoring of forest fire prevention in China- Laos border regions.

[The overview of the product and the system structure]

Core technology

High-precision spherical rotating platform

· “Forest Watcher” adopts spherical structure design which provides better wind force coefficient, thereby applicable to various atrocious weathers and environments.

· “Forest Watcher” which combines high-precision angle-measuring equipment adopts structural design of high-precision vertical shafting and horizontal shafting, achieving positioning accuracy of 0.0038°and single point positioning in actual business.

· “Forest Watcher” adopts a programmable control variable motion mode of slow start and fast rotation, available for high-speed cruise.

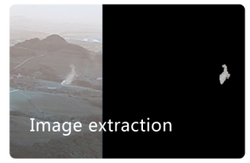
Intelligent image recognition algorithm

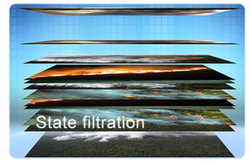
· “Forest Watcher” adopts such recognition technologies as electronic image stabilization, denoising, image extraction, adaptive motion speed compensation, and spectral signatures in combination with smoke shape features to achieve fast image recognition during dynamic cruise.

· “Forest Watcher” adopts two-stage discriminance, i.e., dynamic analysis and static filtration, with the addition of image stabilization, denoising, enhancement, sharpening and other video image processing methods, which improve the accuracy of smoke/fire recognition.

· “Forest Watcher” adopts front-end intelligent detection algorithm, available for high-quality and lossless front-end storage and image recognition so as to ease bandwidth transmission pressure.

· “Forest Watcher” adopts double recognition of IR and visible light, available for all-day real-time cross-validation & recognition of smoke or fire, improving the accuracy and reliability of smoke/fire recognition.





Technological advantages

Early detection

Within15km radius region, cruise time is less than 30min.

Strong recognition capability

False alarm rate is less than 3 times per day (10,000 hectares); missing alarm rate is less than 1‰.

High positioning accuracy

Within15km radius region, positioning error is less than 100m.

Uninterrupted cruise

It adopts double recognition mode of infrared and visible system, with 24-hour uninterrupted cruise.

Quick recognition algorithm

It can accurately recognize smoke and fire (minimum recognition pixels for smoke: 7X7 pixels; minimum recognition pixels for fire: 2X2 pixels).

High quality, stable and reliable operation, strong applicability and long service life

· Ingress Protection rate: IP67 · Spherical structure: Wind and vibration resistance
· Nitrogen charge: Frost and condensation prevention · Service life: Above 10 years
· Designed with lightning prevention and high pressure resistance: 6000V anti-surge design

Multistage deployment, remote management and high intelligence degree

· The system supports multistage platform structure, including the nation, provinces, cities and counties (forest bureaus), and a national unified platform, which achieves information interconnection and multistage synergy.

·The device has achieved closed-loop automatic management. Where a network anomaly occurs, it may automatically manage the intelligent station. In addition, with a remote management function, it monitors the working condition of each device in real time and dispose any anomaly found in a timely manner.

Serialized products, flexible networking and optimal combined costs

· Monitoring a large forest region with large-radius product coverage, both the investment cost and the maintenance cost in the monitoring area per unit forest area, “Forest Watcher” system are far below those of its similar products.

· The monitoring radius of the products ranges between 3KM-18KM, which is applicable to the monitoring requirements of various forest regions and environments.

· For complicated environments and forest regions, the optimization of monitoring effects, construction cost and maintenance cost may be achieved through the coverage of serialized product portfolios of different radiuses.

Close business alignment, multi-business linkage and good compatibility & malleability

· The system is closely align with video monitoring and command for forest fire prevention, and is simple to operate;

· The system provides with a fast data conversion tools of GIS, and is fully compatible with GIS data and old/new GIS platforms;

· The system is available for seamless integration with digital talkback, intelligent terminal and other systems;

· The system is equipped with intelligent fire monitoring, ADM for fire emergency, fire damage assessment, information release and other functions.

For different application and deployment environments, “Forest Watcher” has corresponding integrated construction solutions, which meets the requirement for safe operation guarantee concerning uninterrupted transmission, power supply and maintenance.

（Ⅰ）Settlement of network transmission

“Forest Watcher” is provided with two transmission modes, i.e. optical fiber transmission and microwave transmission, and utilizes the communications management system to conduct management. Under normal operation, it employs optical fiber transmission. In case that a fault occurs on the optical fiber transmission system, it may automatically switch to microwave transmission.

（Ⅱ）Power solution

“Forest Watcher” power supply system has three power supply modes, including mains supply, DC remote power supply and solar power supply.

Power supply mode 1: mains supply
For the transformer capable of supplying power to an intelligent monitoring station within a distance of 1KM, mains supply will be recommended.

Power supply mode 2: DC remote power supply
For the transformer capable of supplying power to an intelligent monitoring station within a distance of 5KM, DC remote power supply will be recommended.

Power supply mode 3: solar power supply
It refers to a power generating system directly converting solar radiation energy into electric energy. It mainly consists of solar cell arrays and an inverter. In the daytime with sunshine, the power generated by solar energy is directly supplied to AC load via a grid-connected inverter.

（Ⅲ）Remote equipment management and maintenance

Remote equipment management & maintenance mainly monitors the operating status of front-end equipment in real time, conducts automatic fault diagnosis based on the feedback data of the front-end equipment, and provides a basis for remote management and fault handling so as to reduce losses and maintenance costs. Besides, it’s equipped with automatic or manual application upgrade of fire recognition algorithm, automatic or manual application upgrade for the electronic control system of the turntable, remote control on the power supply system (startup/shutdown, reboot, charging current and voltage settings, etc.), remote KVM function equipment, alarm signal acquisition and other functions.

森林眼
FOREST WATCHER

森林眼·森林防火视频监控系统

FOREST WATCHER

Forest Fire Video Monitoring System

中林信达
CHINA FORESTRY STAR

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