

An integrated system for environmental monitoring and remote forest fire detection



Apulia's regional wooded area presents a **high fire risk whilst fire-fighting operations are very complex** if not accompanied by technological support systems, capable of introducing innovations in support of the worker's activities.

Regional Irrigation and Forestry Agency (ARIF) **has set itself the goal of creating a fire monitoring system to protect the forest areas** at greater risk, which will make the best use of both human and material resources available.

Summary

Luogo: Region Apulia, ITALY

Work completion: 2019

Focus: Risk due to wildfires

Challenges:

- High forest fire risk and complex firefighting operations
- Creating a fire monitoring system to protect the forest areas

CAE solutions:

- Forest fire monitoring system composed of: 1 operation centre, secondary sites and 6 remote stations for fire detection
- Telecommunication architecture: microwave radio relay, UHF radio network, GPRS/UMTS
- Modularity and ease of expansion

FEATURES

The proposed **forest fire monitoring system** provides operators with a complete and detailed view of the events under observation.

All installations, including the stations, the radio communication systems, sensors and headquarters, are designed with a specific approach: **modularity and ease of expansion**.

The system is able to:

- Calculate the **ignition risk** indices of a **fire outbreak**;
- **Continuously video-monitor the area**, thanks to the use of high-zoom cameras that can be remotely controlled;
- Early and automatically **detect the ignition of an ignition** thanks to the use of infrared cameras and immediately **alert operators**;
- **Integrate predictive models** able to represent on geo-referenced maps the likely **propagation of the flame front**;



COMPOSITION

The Apulia regional forest fire monitoring system, which relies on a telecommunication architecture using a dedicated microwave radio relay, a dedicated UHF radio network and a GPRS/UMTS system, is composed of:

- **1 Operating center** with software for management, remote control and collection of images, scans and weather data from the field stations. The fulcrum of the alert system is the web-based CAE software, **Fi.De.Sys2** (Fire Detection System);
- **Secondary sites**;
- **6 Remote monitoring stations for remote fire detection**, each consisting of the following main components:
 - **1 panoramic fire identification complex**, housed on a dedicated automated pan-tilt mechanism and comprised of **1 infra-red thermal camera** and **1 high-resolution camera** in the visible spectrum
 - **1 dome camera**
 - **1 complete weather station**
 - **1 security and video surveillance system**

