



INDEX

Kyrgyzstan: modernization of the Central Asian hydro-meteorological monitoring system begins **PAG. 1**

CAEtech Rain Gauges: the best performances in the world **PAG.3**

Apulia: new automatic system for detection and warning of fire outbreaks **PAG.4**

Celebrating 75 years of the Vietnam Meteorological and Hydrological Sector and the handover ceremony of Project ODA2 **PAG. 6**

Upgrade and expansion of the environmental monitoring network in the Region of Basilicata **PAG. 8**

Kyrgyzstan: modernization of the Central Asian hydro-meteorological monitoring system begins

Due to regional geographic diversity, **Central Asia** is facing numerous **natural hazards** which are now being intensified by climate change. For example, between 1990 and 2009 in the Kyrgyz Republic there were over 330 **avalanches**, thus representing a serious risk for communities. These natural risks, which also include **landslides** and **floods**, are very often aggravated by conditions of widespread poverty and precarious infrastructures. Funded by the World Bank and approved in 2011, the **Central Asian Hydro-Meteorological Modernization Project (CAHMP)** aims at improving the accuracy and timeliness of hydro-meteorological services in Central Asia, with special attention to the Kyrgyz Republic and the Republic of Tajikistan. The CAHMP will provide positive social benefits by increasing the quantity and quality of hydro-meteorological information, as well as providing an early warning system.

As part of this project, at the end of a public tender procedu-



re concluded in July 2020, CAE has been awarded the contract with the **Hydro-Meteorological Agency** of the Ministry of Emergency Situations of the Kyrgyz Republic (Kyrgyzhydromet); the name of the project is **“Supply of hydrological monitoring networks, glaciers, roads and large cities equipped with automatic weather stations”**.

The project involves the “turnkey” supply of:

- 23 fully equipped Automatic Weather Stations (AWS);
- 1 system for the determination of cloud altitude;
- 13 local data centres;
- 1 national data centre to be installed, which will integrate the already existing infrastructure of the Kyrgyzhydromet.

The AWSs will be equipped with the latest CAE datalogger: the **Compact Plus, based on Linux**; a **complete set of sensors** including the **THS** sensor for air temperature and humidity, the **ULM30/N** sensor for snow measurement, wind speed and direction sensor, the **PBS** pressure sensor, etc. Note that 2 of the 23 stations do not have GSM

coverage, so they will be equipped with **satellite data communication**. Moreover, a system for the determination of cloud **altitude** will be installed in the capital Bishkek to measure cloud base height and vertical visibility.

CAE will also supply all hardware and software for the **13 local data centres** and **1 national data centre**, as well as the integration of the already existing infrastructure of the Kyrgyzhydromet. Data from AWSs will be transmitted in different programmable modes, such as: Basic function, On-line function, Storm function and Data storage mode in response to emergency situations.

In addition to the supply of equipment, CAE will provide a **full range of services** such as site preparation, public works, delivery, installation, preparation of documentation, testing, as well as operator training, warranty service and technical support.

The network will be installed throughout the Kyrgyz Republic, often in remote areas, therefore the extreme environmental conditions in which it will operate will be an **excellent test** of the **quality** and **durability** of CAE products. ■

BACK TO INDEX

CAEtech Rain Gauges: the best performances in the world



Integrated electronics and precision engineering: Hi-Tech pluviometry.

Eng. Luca Benati, CAE Supply Manager, illustrates the range of CAEtech rain gauges, all classified as **Class A** according to the new **UNI EN 17277:2020** standard, thanks to the use of a dedicated **calibration machine**.

CAE has always produced rain gauges which are among the most accurate in the world and use several diagnostic systems, such as remote checking of the leveling and of the clogging of the funnel.

The high-precision mechanical technology of moving parts ensures an **immediate response** and,

thanks to the integrated electronics, our rain gauges also calculate the **rainfall intensity per minute**.

CAEtech rain gauges include:

- **PG10** with a 1000 cm² collection surface, patented product also available in the heated version (**PG10R**);
- **PG2** with a 200 cm² collection surface, also available in the heated version (**PG2R**); the latter can be powered by solar panel only;
- **PG4i** with a 400 cm² collection surface; stand-alone rain gauge powered by batteries with integrated datalogger and GPRS module. ■

BACK TO INDEX

Apulia: new automatic system for detection and warning of fire outbreaks



CAE has won the tender, as group leader in a Joint Venture with TIM S.p.A., for the implementation of an **automatic system for the detection and warning of forest fire outbreaks** in the Region of Apulia. This system serves an extensive area of the "Arco Ionico" and is operating 24/7 in any environmental condition.

The detection of the outbreaks occurs using a cutting-edge FLIR **camera** system, extremely sensitive for the detection of **thermal images** that are analysed in real time by an advanced algorithm. The aim is to identify the outbreaks of fire as quickly as possible and, through the **combination of visible and thermal images**, accurately determine the geographic coordinates of the fire front.

The system developed by CAE is essential in making decisions for civil protection purposes, allowing prompt intervention by the authorities responsible for extinguishing the flames, in order to protect natural ecosystems and the population.

The system, based on the MHAS (Multi Hazard System) platform, is able to:

- **prevent** fires by **calculating the risk indices of fire ignition**;
- **spot** fires through **continuous visual monitoring of the area** and the use of high zoom cameras that can also be controlled remotely;
- **early detect the ignition of a fire outbreak**;
- **manage** fire extinguishing operations in an

emergency situation, **integrating forecasting models** that allow to represent the possible **spread** of fire on the territory on geo-referenced maps.

The system consists of:

- 6 spotting stations, each complete with **Mha-ster dataloggers**, **thermal cameras**, **HD cameras**, **dome cameras** and various weather sensors, such as the **THS thermo-hygrometer**, the patented **PG10 rain gauge**, the **PBS barometer** and the **DV20-VV20 anemometer**;
- 1 physical star centre located in the Municipality of Mottola where communications from peripheral sites are centralized;
- 1 microwave radio telecommunication infrastructure;
- 1 control centre located in Bari-Modugno at the headquarters of the Civil Protection.

Thanks to its specific experience in the field of environmental monitoring, CAE is aware of the importance of a meticulous design of **equipment and field installations**.

All the installations envisaged by the system, from the workstations to the communication systems, the sensors and the control panel, are designed by CAE with a precise approach: **modularity and ease of expansion** at every level, guaranteeing therefore **the highest reliability**.

The Control Centre is equipped with software, such as **AEGIS**, **Patrol** and **Datalife**, specifically developed to allow maximum **interoperability** even with third party software and platforms, therefore allowing us to use:

- basic system functions;
- real-time and archive weather data;
- system alarms and related information;
- recorded video streams. ■

BACK TO INDEX

Celebrating 75 years of the Vietnam Meteorological and Hydrological Sector and the handover ceremony of Project ODA2



On occasion of the 75th Traditional Day of Hydrometeorological sector of Vietnam, CAE and its Representative Office took part in the exhibition **“Use of hydrometeorological applications in forecasting and alerting for the socio-economic development”**, organized by the Vietnam Meteorological and Hydrological Administration (VNMHA) on October 2nd and 3rd in Hanoi.

This is an important event for institutions and manufacturers to introduce and exchange the advancement of hydrometeorological technology in the field of monitoring, forecasting and warning for na-

tural disaster prevention and sustainable socio-economic development.

CAE was proud to be one of the exhibitors, visited by the Prime Minister of Vietnam, **Mr. Nguyen Xuan Phuc**, the Minister of Natural Resources and Environment, **Mr. Tran Hong Ha**, the Director General of VNHMA, **Mr. Tran Hong Thai** and the Ambassador of Italian Embassy in Vietnam, **Mr. Antonio Alessandro**.

In the exhibition, CAE showcased the **latest innovative technologies** for multi-risk alerting, much of which recently installed in various areas of Vietnam.



For example: Datalogger **Mhaster**, Thermo-Hygrometer **THS**, Radar water level sensor **LPR**, etc. And above all, CAE introduced for the first time in Vietnam the **PG4i Stand-alone Rain Gauge** which has gained great interest from the participants. CAE took also the chance to **showcase several projects** implemented in various regions of Vietnam since the 2010s:

- **114** automatic monitoring stations (AWS) and **6** control centers in the south-central of Vietnam in **2020** ([click here](#));
- **14** new AWS with real time river discharge measurement to prevent and manage flood in the Highlands of Vietnam in **2020** ([click here](#));
- **43** AWS and 10 control centers in Southern area in **2016**;
- **101** AWS and 14 control centers in Southern area in **2012** ([click here](#));
- **75** AWS and 7 control centers in Central area in **2009** ([click here](#)).

This event held an immense significance, as CAE recently celebrated the **Final Hand-over Ceremony** of

the project

“Improving the Flood Forecasting and Warning System in Vietnam – Phase II”. The project confirmed once again the fruitful cooperation between CAE and its **local partner ENMO** (Environment Monitoring Southeast Asia). ■



BACK TO INDEX

Upgrade and expansion of the environmental monitoring network in the Region of Basilicata

Because of the relevance and impact that the outcome of the **monitoring** has on regional environmental policies, as well as on the **health and quality of life of citizens**, the Environmental Monitoring Centre (Centro di Monitoraggio Ambientale - CMA) requires very high levels of **operational continuity, timeliness** and **efficiency** in the acquisition, processing and dissemination of data.

The Regional Agency for the Environmental Protection of the Region of Basilicata (**ARPAB**) has therefore launched a European tender to entrust the management and maintenance services of the CMA, with the aim of improving the quality of services in the environmental field by making use of high-quality standards of performance. In this context, where **quality, timeliness** and **efficiency** play an essential role, CAE could not miss the opportunity to take part in the tender and, as group leader in a Joint Venture with Telecom Italia, won the tender.

This is a highly articulated project which involves outsourcing management, operational support, preventive, corrective and evolutionary maintenance of the **control centre, hydrological and meteorological monitoring networks, landslides, noise and radioactivity monitoring networks**, as well as

of the **Mobile Water Laboratory** and the **Sodar - RASS** system for air quality monitoring.

Moreover, the contract provides for the supply of 35 new **weather and water quality monitoring stations**. Finally, in addition to expanding the network, part of the existing instrumentation will be updated. The aim is not only to replace obsolete components, but above all to increase the functional level, operational continuity, timeliness and efficiency of data acquisition of the networks involved in the tender.

The main technologies used are:

- **Mhaster dataloggers**: they are characterized by high-level flexibility and openness, thanks to the Linux operating system. Among upgrades and new implementations, more than 70 units will be installed;
- **PG10 rain gauges**: the latest CAEtech model of rain gauges with a 1000cm² collection surface. This is the most performing and technologically advanced rain gauge on the market today.

Finally, the **ARPAB monitoring network** will be integrated with the network of the **Regional Functional Centre of the Civil Protection Department**; this will connect the two Control Centres with each other via radio, in order to be able to exchange. ■

CAE MAGAZINE

Managing Editor: Guido Bernardi

Editor-in-Chief: Enrico Paolini

Editorial Staff: Mirco Bartolini, Alessio De Faveri, Riccardo Galvani, Emanuela Pedrini

Editorial Assistant: Emanuela Pedrini

<https://www.cae.it/eng/magazine-hm-30.html?mId=74>

