

Integration of the meteorological detection network for civil protection purposes



The project originates from the need of the **Decentralized Functional Centre-Idro (CFD-Idro) of the Sicily Region** to have adequate control and monitoring systems aiming at an effective prevention and real-time control of the **meteorological, hydrological and hydraulic phenomena** occurring on the regional territory and, consequently, at a mitigation of their effects for **civil protection** purposes. The effectiveness of this network is based on its consistency, timeliness, efficiency, reliability and redundancy. Until the beginning of 2018 none of these conditions was fully and adequately met, due to the obsolescence of most of the installed equipment and to its poor distribution; as a matter of fact, 25% of the regional territory wasn't covered by thermo-pluviometric stations. This entailed knowledge gaps that could become prejudicial in the forecasting phase, as well as in the monitoring and post-processing phases.



Summary

Location: Sicily Region, Italy

Conclusion: 2021

Focus: Hydrometeorological risk

Challenges:

- Create an integrated, redundant and flexible meteorological detection system;
- Mitigate the effects of meteorological, hydrological and hydraulic phenomena for civil protection purposes;

CAE solutions:

- N.225 automatic stations, n.19 new repeaters,...
- Adaptation of the current UHF band radio interconnection network;
- Control centres;
- Specialized activities: aerial, LIDAR, topographic surveys, mapping,...

FEATURES

CAE is the **leader company** of the Temporary Grouping of Companies that has won the Sicilian tender for the integration of the regional meteorological detection system for civil protection purposes, which will also include **LIDAR and cartographic surveys** in specific areas of interest.

All the provided supplies and services aim at creating a **complex meteorological survey system**, with a high technological profile, as well as at performing **specialized activities** and services such as aerial surveys, LIDAR surveys, topographic surveys, mapping, DSM and DTM, in order to create and integrate the already existing Geodatabase. This system will focus on the principles of **integration, redundancy, timeliness and flexibility**.

The system consists of a **unique UHF radio network and two main control centres**: at CFD-Idro (DRPC) and Basin Authority (AdB), as well as a **new control centre** at the Sicilian Agro-meteorological Information Service (SIAS).

As far as **redundancy** is concerned, backup repeater devices have been integrated to both all new repeaters and old ones. Furthermore, a **GPRS/UMTS** secondary communication system is integrated for all new stations.

The **overall cycle times** of the network have been reduced within **10 minutes**, for a margin for **future network expansions**.



COMPOSITION

The implementation of the system includes:

- Supply, installation and activation of **n.264 new automatic stations**: n.225 pluviometric, n.25 anemometric, n.14 nivometric stations;
- Supply and installation of **n.19 new repeaters** with backup units and n.8 backup units for the already existent repeaters that were not already provided;
- Adaptation of the current **UHF band radio** interconnection network;
- Adaptation of the current Control Centre (Centrale di Controllo CC.OA);
- Supply and installation of the new **Control Centre** (Centrale di Controllo CC.CF) of the CFD-Idro, new **Secondary Control Centre** (Centrale Secondaria CS.SIAS);
- Technical start-up service and assistance;
- Staff training.

Finally, the system provided is extremely **flexible** and open to any potential subsequent expansions; moreover, it allows to monitor different risk scenarios, in a fully integrated manner, with modular implementations that can be scaled over time, based on a real-time monitoring and alert system based on a multi-hazard technological platform

