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Eng. Paolo Bernardi, President of CAE, passed away

Eng. Paolo Bernardi passed away on August 26th. Founder of the Company, created in 1977, he was appointed its President by his 3 Partners, also engineers and researchers, and led it until his last day. Loved by those who worked with him and respected by all others, thanks to his pragmatism and sensitivity, he was the solid and authoritative anchor to whom everyone knew they could turn. Among his gifts that most contributed to CAE's growth were his great analytical skills, which guided him in both technical and business decisions, combined with his ability to identify priorities and make related, often winning, decisions in a short time.

The ability to select opportunities was an important skill from his earliest steps as an entrepreneur. In an interview a few years ago, talking about the Company, Eng. Bernardi had told how the "*firm*," after a couple of years of working in different sectors, came to embrace the field of environmental monitoring and hydrogeological risk prevention: "*My father worked at the Genio Civile and as a kid*



I often saw him going out at night to go and check the state and levels of the water in the rivers. Hence the idea: why instead of sending technicians out day and night to collect data, don't we rather have the data come directly to their desks?".

With reference to that period, he liked to recall the **fruitful collaborations with early clients**, including Mr. **Cerioni**, working as a surveyor at the "Civil Engineer Department for the Reno River", and the working group of Prof. **Lucio Ubertini**, of the CNR IRPI in Perugia, who, in the early 1980s, created the first knowledge base on which CAE's offerings were developed.

Technical solutions were then born by listening to clients, while the choice to espouse a quality positioning, in which work had to be completed to a workmanlike standard no matter what, was always shared with its partners and a distinctive element of CAE. **Clients knew that by working with the company, they would achieve the result**.

The pinnacle of recognition in the national arena, in the field of real-time hydro-meteorological monitoring for civil protection purposes, was the awarding of the **contract for the implementation of the Functional Centers system**. On this great project, **still recognized as a best practice** for which Italy is admired internationally, the company then built many other developments, coming to be what it is today. A shy, sensitive soul of few words, he was the em-

blem of a generation of entrepreneurs for whom a handshake was worth a thousand clauses. A quality that distinguished him and that, for entire genera-







tions of hydrographic service and Civil Defense officials, has also been associated with the Company's reputation, constituting its strength to this day. Eng. Bernardi had also managed the **generational transition to the top management with foresight**, being joined by his two sons, Giorgio and Guido. Together, they have promoted, in recent years, the important path of growth that projects the Company into the future, in the continuity of the values on which it was founded and grew.



Sicily: the Regional Department of Water and Waste invests on reservoirs

CAE has been awarded the tender for the supply of the goods and services necessary for the realization of the project of "*Implementation of the hydrological detection system using telemetry of the San Leonardo, Jato and Scanzano basins to face water emergencies in Sicily*"; planned to integrate the existing regional monitoring network, related to the Decentralised Functional Centre - HYDRO implemented by the Civil Protection Department of the Sicilian Region (DRPC).

The investment, expected by the Regional Department of Water and Waste, is financed within the Pact for the South of the Sicilian Region, FSC 2014-2020.

In a historical period in which in Sicily it has become

of primary importance to face the problems related to continuous water emergencies, the optimal and predictive management of the available reservoirs and volumes, both for drinking water purposes and for irrigation purposes, has become crucial.

The interventions in the project have been defined on the basis of the need to evaluate in real time the consistency of the inflows and consequent outflows, in order to improve the effectiveness of the control, also from the point of view of the management logic of the floods and the phenomena of reservoir silting.

The objective is pursued by providing for the **integration of some existing stations** belonging to the regional telemetry network, responsible for the



detection of meteorological and hydrological parameters throughout the territory, and to **add new** ones, in particular in the three pilot basins, aimed at improving the **monitoring of outflows** upstream of these barriers, allowing managers to **better conduct discharge and water accumulation policies**. Supply and installation of:

- 5 thermo-pluviometric monitoring stations;
- 3 hydro-pluviometric monitoring stations;
- 4 hydrometric monitoring stations;
- 3 hydrometric sensors to integrate existing stations;
- 3 operational data reception centres to be installed at the watch houses of the respective dams; in addition to the restoration of 2 existing monitoring stations.

At the sections where the installation of a new hydrometric sensor is planned, the **activities necessary for the construction of the water spillway ladder**. In each of the sections indicated the following activities will therefore be carried out:

• determination of the sea level quota of the





hydrometric zero through the materialization of the foundations, the creation of a GPS reference network and the execution of measurements, calculation of the orthometric quotas and determination of the difference in height between the foundation and the hydrometric zero;

- topographic survey of the riverbed geometry with total station;
- application of a mathematical model for the definition of the permanent motion profile and definition of spillway ladders;
- flow rate measurements for the calibration of the permanent motion model.

Among the technologies used there are CompactPlus datalogger, PG10 rain gauges, THS thermohygrometers, WLR radar hydrometers, GNSS instrumentation, total stations, ADCP, reels.

A fixed station directly connected to the Civil Protection server, both via ADSL and the Regional Radio Network, will be installed at each operating centre **in the three Watch houses**, through dedicated Radio panels, which will make them independent in the management and acquisition of data in real time. These stations will count with **Software** specially developed at the basin scale, for the **modelling of inflows/outflows**, through the study of the hydrographic network and three-dimensional analysis of the reference area.

Hydrological **modelling** involves the use of **ground-based data** for short-term forecasts as well as simulated weather model data for medium-term forecasts.

The development will conclude with a procedure capable of directly reading the outputs of the weather forecast models (precipitation and temperature) at a limited area and transforming them into a spatial and temporal scale suitable for **hydrological simulation**.

With the implementation of this project, the set of information available to the managers of the water basins in question will make it possible to administer with greater awareness the foreseeable incoming volumes and therefore to regulate any discharge works.



Sardinia: ENAS for water quality in strategic reserves

In the early 2000s, talking about providing the necessary requirements for the conservation of water resources and for the control of the qualitative characteristics of water intended for human consumption, **CAE** joined **ENAS**, the Water Authority of Sardinia, and **ARPAS** in the creation of a monitoring network that would allow an accurate analysis of the criteria that define **water quality**.

In the eutrophic lakes the water quality is very variable over time and along the depth, for this reason the project led to the installation, in the most important Sardinian drinking water reservoirs, of continuous automatic monitoring systems that, in combination with the manual monitoring systems in any case necessary, provide the managing Entities with support for decisions in particular with the main purpose of indicating daily the **best intake level**, to **optimize the quality of the resource provided and reduce the treatment costs of the same**.

The system currently includes **18 lakes instrumented with CAE rafts** and included in the regio-



nal monitoring network: Bau Pressiu, Bidighinzu, Cedrino, Cixerri, Coghinas, Cuga, Flumendosa, Is Barrocus, Mannu a Monti Pranu, Monte Lerno, Mulargia, Posada a Maccheronis, Punta Gennarta, Rio Leni, S.Lucia Tortoli, Sos Canales, Temo, Tirso. Such improvement has made it possible to optimize the distribution of stations in the regional territory, achieving a greater density of measurement points and consequently a greater degree of significance of the information framework produced by the monitoring system. Each of the basins has been equipped with a **weather station on the lake shore**, a raft in the middle of the lake and a local monitoring system, the data are transmitted via UHF radio or satellite to Cagliari.

CAE confirms its leadership in the sector by winning the tender for the specific maintenance and control service for the servo-assisted functionality of hydrological stations and related local centres, including the general control centre in Cagliari. The service provides for the restoration of the correct functioning of all electrical, electronic, electromechanical equipment and the equipment necessary for the commissioning of the hydrological stations, the related local centres and the main centre of Cagliari making up the system and the continuous control of the operation of the system both remotely and through field interventions.



Intercultural scientific dialogue thanks to the International Summer School of Alta Scuola

From 20th to 26th of August, Todi and Orvieto, in the Umbria Region, hosted the *International Summer School* on "FOREST, TERRITORY, WATER and LANDSCAPE management in the climate change contest". The programme of the specialization course gathered public Universities from Algeria, Argentina, Brasil, Italy, Mali, Moldovia, Pakistan, Paraguay, Romania, Syria, Tunisia and USA, and it was developed by Alta Scuola.

This initiative came about in coherence with the mission of Alta Scuola, aiming at **carrying out higher studies with an international character and a high scientific profile**, intended for researchers and scholars in the disciplines of geology, geotechnics, hydrology and hydraulics, agriculture and forestry, architecture, urban planning and

landscape planning, seismic science and those related to the conservation of artistic and monumental heritage. **International cooperation** in the field of environmental and land policies appears







today, in the season of climate change, more useful and necessary than ever, and the International Summer School was an important opportunity for **cross-cultural scientific dialogue**.

Some of the many issues discussed were: **knowledge** and **surveillance** of the environment and territory through advanced diagnostic systems; **forest**, **land and landscape management**; **landslide protection**; and **water and landscape management**, by talking about climate, floods and droughts. CAE sponsored the initiative and the **President**, **Guido Bernardi**, lectured on August 25th, during the day dedicated to **"Risk management: multi-hazard prevention plan"**, with a speech on **"Early warning instruments"**.

The project The programme

The project "Glaciers & Students" takes shape: CAE's stations installed in Gilgit-Baltistan in Pakistan



The "Glaciers and Students" project acknowledges the urgency of addressing the impacts of climate change in the Region of Gilgit-Baltistan. Through capacity building initiatives, the project aims to equip universities and local government institutes with the necessary skills and knowledge to address the environmental and water resource implications of glacier retreat.

CAE, **present in Pakistan since 2014**, **was involved in the project by Ev-K2-CNR** that has been carrying out scientific and technological research projects at high altitudes for more than 30 years, and it is distinguished by the specificity and excellence of the results achieved in the international scientific investigation context. We talked here about CAE's new experience on K2 to upgrade 3 weather stations in Gilgit-Baltistan, a Region with unique characteristics that need constant monitoring due to the climatic emergency.

As climate change accelerates, **the changes in glaciers intensify**, leading to the formation of glacial lakes and an **increased risk of glacial lake outburst floods** (GLOFs). These events can have devastating consequences for communities and infrastructure downstream. Therefore, building expertise in glaciology, remote sensing, and mapping is vital to effectively **monitor and assess glacier changes, identify potential hazards, and develop appropriate mitigation strategies**. By investing in capacity building and knowledge development, Gilgit Baltistan can strengthen its disaster preparedness and improve water resource management.



Empowering local stakeholders with the necessary skills to navigate the challenges posed by climate change will contribute to sustainable development in the region. Through enhanced expertise in geomatics, weather stations, glaciological field activities, and avalanche risk assessment, the region will be better equipped to address the impacts of climate change on glaciers and water resources.





The project, also thanks to **CAE technology**, takes shape through the **installation** of the **three meteorological stations.** This will **enrich the analysis** of students and researchersby providing **real-time data**.

The main objective is to delineate the new inventory of all the glaciers of Pakistan that represent the third tower of water of the world, the biggest one excluding the poles. Totally there are **7200 glaciers in Pakistan** in the three ranges of Himalaya, Karakoram and Hindukush. The analysis of the satellite images of 2021 gives a precise delineation of the surface of the glaciers and give the possibility to verify the trend that happened in the last 30 years comparing the previous inventory with the new one.

The **Karakorum Anomaly**, results of the studies conducted in 2011, show that the glaciers in the region are more stable compare the other parts of the world: nowadays is this result still true or the Pakistani glaciers are going to retreat as the others? From the first results we can suppose that there is a big difference between the western part of the mountain ranges and the ester one: in Hindukush and the right orographic of the Hunza River are melting much faster. The case of Shisper is a prove of this trend but also what is going on in Chitral in these days confirm this hypothesis.

The really **unique approach of this project is the students involvement**: students of the Italian Universities and Gilgit and Skardu Universities are working together sharing their steps and increasing their capacity building on glaciology studies: at the end of the project this awareness will remain and will create the basis for the development of a glaciology knowledge that has to be strengthened because in the situation of new era of climate change the study on the main resource of water of the Country has to become more important for the students and local institutions.

The World Landslide Forum comes to Florence

The sixth edition of the **World Landslide Forum** dedicated to "Landslide Science for sustainable development" will be held in Florence, from November 14th to 17th. A prestigious international event with the specific focus on geological and hydrogeological risk mitigation is coming to Italy this year. The event is jointly organized by the International Consortium on Landslides (ICL), chaired by **Prof. Nicola Casagli**, Chair of WLF6, the International Programme on Landslides (IPL), ICL's specific programme on landslide risk mitigation, and the UNE-SCO Chair on Prevention and Sustanaible Management of Geohydrological Hazards at the University of Florence.

The 6th WLF focuses on Landslides Science for Sustainable Development as a contribution to the **Kyoto 2020 Commitment for global promotion of understanding and reducing landslide disaster risk** (KLC2020), the Sendai Partnerships Commitment on Landslides 2015-2025, the Sendai Framework for Disaster Risk Reduction 2015-2030, the UN Sustainable Development Goals of Agenda 2030, the New Urban Agenda, and the Paris Agreement.

The goal of the Forum is to provide a platform to achieve **fruitful cooperation among landslide researchers** to define shared priority actions for **hydrological risk reduction on a global scale**. The Forum will cover the main aspects related to landslide analysis, monitoring and early warning, landslide modeling, landslide hazard and risk assessment, mitigation techniques, triggering mechanisms, and climate change.

Specifically, the various sessions will revolve around **six main themes**: the Kyoto Landslide Commitment for sustainable development; remote sensing, monitoring and early warning; testing, modeling and mitigation techniques; mapping, hazard, risk assessment and management; climate change, extreme weather, earthquakes and landslides; progress in landslide science and applications.

The Forum will host lectures and conferences, a large exhibition area and various thematic work-

shops.

CAE will be among the exhibitors to bring its **experience in monitoring and early warning for geological and hydrogeological risk mitigation, real-time monitoring more than 50 landslides in Italy alone**.

WLF6 will be held at the striking locations of **Palazzo dei Congressi and Palazzo degli Affari** and is organized with Ente Fiera Firenze. For more about the event and details on guests and the programme click here.



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