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CAE commitment to business continuity at the time of Covid-19 emergency

The global community is facing a hard challenge for the upcoming weeks, fighting against the COVID-19 virus.

As all of you know, CAE S.p.A. headquarters and main production facilities are located in Italy, one of the Countries the virus currently hit the hardest. Even though as of today there are no cases of traced contagion by COVID-19 among the Company staff, we are all living in a complicated period and we feel like a public notice can better explain what is going on here.

As we employ over 105 people and we serve hundreds of clients in several Countries, we are aware of our social responsibilities and our primary focus is on the safety of our customers, partners and employees. For this reason CAE started to implement all the prescriptions of the Italian Government since the very beginning of the infection, anticipating its enforcement in most of the cases. Here we list some of the most important safety protocols we implemented:

- cancelling all the physical meetings with external personnel;
- rescheduling travels and field activities to make the work suitable for only one staff;
- increasing the distance of working desks;
- introducing shifts at the canteen facility;
- using special products for daily office disinfection.

Also, as part of our efforts, we encouraged many of our employees to make a wider usage of the most modern platforms for remote working. More recently, as the Government published further prescriptions and recommendations, CAE made the deci-

sion to partially and temporarily halt all the activities which are not strictly related to the supply of products and services to our valuable partners and customers.

Notwithstanding all these measures, we are aware that extreme natural events may happen at any time and regardless of the COVID-19 virus. For this reason, despite the partial lockdown happening in our area and the rigorous respect of all the safety rules of this period, we remain committed to make systems and products "Made in CAE" always work effectively. Key decision makers, such as our clients, always need reliable data and information to make the world a safer place.

Thanks to our staff and a reliable network of trusted suppliers, mostly highly specialized and motivated by a long-lasting relationship with CAE, manufacturing continues according to the clients'

needs and delivery schedule is mostly guaranteed. Also, we are proud to announce that the entire team dedicated to remote assistance and maintenance is 100% effective, working "ideally" shoulder to shoulder with the technical staff of our clients and all of our tireless partners around the world.

We are engaged to assist you every time you need us. If you have concerns or if you need our support, please contact us through your regular channels of communication. We will do our best to meet your needs and expectations.

This is a dynamic and rapidly changing situation and CAE will continue to monitor and adapt safety protocols based on Government recommendations.

Be well and please, stay in good health, sincerely, ■

Guido Bernardi
Managing Director

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Serbia invests in the meteorological sector



At the beginning of November, as part of the “Serbia National Risk Management Program” project, CAE was awarded a new tender in the Balkan Republic, launched by Belgrade’s Ministry of Agriculture, Forestry and Water Administration, for the supply of meteorological equipment.

In addition to **three complete meteorological stations**, the order includes a first relevant supply of **PG4i rain gauges**. Moreover, to further complete the Customer service, CAE has also included advanced training, aimed at the personnel in charge, focusing on the operation, maintenance and troubleshooting of the appliance.

The **three meteorological stations**, like almost all CAE stations, will be autonomous from the main power supply: they will be powered by a solar pa-

nel and backup battery, and each station will be equipped with state-of-the-art technology:

Mhaster datalogger, with Linux operating system and on board web service;

THS thermo-hygrometer, designed to protect the sensor from wearing caused by solar radiation and to grand adequate ventilation;

PG2R heated rain gauge.

Going into detail regarding the supply of rain gauges, both the PG2R and the PG4i are CAEtech products that use **ZTB (Zero Breakdown Technology)** through the implementation of several **diagnostic** sensors, essential to ensure optimal sensor operation in all conditions and to facilitate maintenance activities. Both products can be **class A-certified**, according to **UNI 11452: 2012**

- that is, guaranteeing an error of less than 3% even at very high intensities.

The **PG2R** stands out for being a **heated rain gauge** capable of operating even without main power, therefore designed to keep consumption to a minimum. The **PG4i** is also a unique product, in that it is not a simple rain gauge, but an **all-in-one rainfall monitoring system**. It is in fact a

stand-alone rain gauge, which not only does not need to be connected to a power supply, but is also equipped with an integrated datalogger and a 3G modem for data transmission.

All state-of-the-art and made in Italy technology, at the service of a Country that is investing in the Meteorology sector with a view to reducing risk. ■

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The quality of measurements in the era of climate change

The effects of **climate change** are becoming increasingly concrete and relevant; also for this reason, quality of data is essential for models to be able to predict and mitigate the impact of any extreme social and economic event. It is therefore necessary to reduce uncertainties in the measurement of the main climatic parameters: **temperature, humidity, pressure** and **wind speed**, developing methods and techniques useful to increase the accuracy of these measurements. The effectiveness of climate models depends on the quality of the data on which they are based. In order for these to continue to be consistent and of high quality, global standards are needed in order to guarantee consistency between past and future data and between sites in extreme and non-extreme contexts.

CAE participated in the **MeteoMet** project funded by **EURAMET**, under the guidance of Dr. Andrea Merlone of **INRIM** (National Institute of Metrological Research). The case summary is available online ([Case Study](#)) and deals with the importance of temperature measurement in extreme, **high mountain environments**, where a series of natural risks occur. Weather conditions influence the presence of these risks and, in order to efficiently mitigate their effects, networks of **weather stations** have to be implemented to monitor local conditions. In this context, the **quality of the temperature data is crucial** in order to **predict the dangers** and, for example, to **assess the risk** of avalanches or flooding of rivers downstream due to the rapid melting of the snow. The accuracy of meteorological station measurements can be influenced by a series of variables, including:

- location of the stations;
 - design of protective shields for instrumentation.
- In extreme conditions of mountain regions, the



snow cover on the ground can reflect a significant amount of solar radiation on the thermometers; as a result, the measurements of the air temperature may be incorrect due to this unwanted heating effect.

The **EMRP programme** (European Metrology Research Programme) for EURAMET's key climate



variables assessed the influences on the accuracy of weather station measurements, including the effects of surrounding elements such as trees or buildings, station housing design and other local conditions. It emerged how **essential well designed solar shield is are in reducing the errors introduced by the “snow albedo” effect created by**

the reflected solar radiation.

The project allowed CAE to test the design of the **THS thermo-hygrometer** with excellent results. The instrument meets all the requirements described above, thanks to its design attention to detail, which is typical of CAEtech products: the screen has been designed **not to influence the measurement based on the orientation** with which it is installed. The housing structure has been designed to **protect the sensor from wear caused by solar radiation and to ensure adequate ventilation**, which is essential so that the measurement is not distorted by the overheating of the components. Finally, the **lower protective surface is designed to improve the sensor’s accuracy in environments with light reflected from below**, such as snowy contexts.

All these features guarantee high measurement accuracy, even when THS is subjected to extreme temperatures, providing high quality data for the creation of effective forecasting models. ■



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Maldives choose Italian technology again



In about two years from the first order issued for the expansion of the national weather monitoring network with 25 new stations and a control centre (to learn more [click here](#)) implemented in 2018, the **Maldives Meteorological Service (MMS)** has entrusted CAE with other supplies and collaborations; this is an excellent signal that reveals customer's satisfaction. The latest contract was signed on January 23rd, 2020 and provides for the supply of **6 new weather monitoring stations (Automatic Weather Station)** equipped, as the previous ones, with **Mhaster data-logger** and all the sensors necessary for measuring the meteorological parameters. Stations will be integrated into the existing network and will send data to the Control Centre located at the MMS headquarters. The same occurred to other **3 automatic weather monitoring stations** requested in March 2019. The support towers, requested by the MMS for most of the planned installations, were also particularly appreciated.

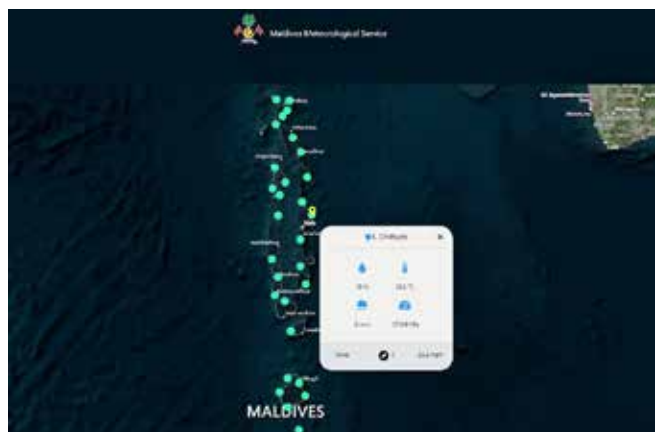


CAE also provided software for data storage and display that could also **integrate stations from other suppliers** in the area. Particularly, 18 Compact stations with Adcon dataloggers and 11 other Campbell stations installed in airports were seamlessly integrated. This has been possible thanks to the **interoperability of Datalife**: CAE's platform that allows the user to completely manage the monitoring network. All the information collected by Datalife is stored in a SQL UDB (Unified DataBase) developed in order to provide a single archive for all applications, within which it is also possible to integrate and manage data from stations not supplied by CAE. Afterwards, the collected data can be



viewed on the display software available to the user, in this case **MapsME**. CAE has also implemented a **public web portal** for the Maldives Meteorological Service to show **real-time weather conditions** on map; moreover, by clicking on the station icon, it is possible to find more information and view its parameters.

Finally, in addition to the hardware and software updates of the network, **2 stand-alone rain gauges (PG4i)** were supplied. As frequently described in the CAE Magazine, PG4i is an innovative instrument that has no equal on the market: **a single product representing a complete pluviometric monitoring system**, without compromising the quality of data, as the sensor has all the characteristics of durability and precision typical of CAEtech products. PG4i is equipped with various diagnostic tools and, in addition to the cumulative precipitation measurement, it provides data on rainfall intensity. It is a flexible instrument, easy to move in different sites for measurement campaigns and also suitable for integration into larger networks. ■



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Underpasses at risk of flooding: Rubiera doubles prevention



The installation of an early warning alert and **monitoring system for a vehicular underpass at risk of flooding** is a typical example of how a prevention strategy can be implemented in a data-enabled urban setting. In this context the **Province of Reggio Emilia** shows its worth and acquires a new early warning alert and monitoring system for another **vehicular underpass** at risk of flooding in the **Municipality of Rubiera**, located in **via Fontana**.

Works are about to start on the setup of a structured system similar to the one installed on **the underpass in Via Contea** (on S.P. 51) ([video](#)), a typical CAE system designed to **minimize false alarms** thanks to the presence of **redundant majority-logic sensors**. The system guarantees an **immediate alert**, which does not need to analyse previous data or await post-alarm samples before proceeding to **traffic inhibition**. Reliability is further guar-

ranteed by power supply redundancy.

Specifically, the system will consist of a station with **MHASTER datalogger** connected to **three level sensors, a high-definition video camera and two** single LED lantern **traffic lights**. The **station** will also be equipped with a **GPRS/UMTS** transmission module which **allows spreading of SMS alarm messages** to pre-set telephone numbers and allows access to **CAE Web Mhaster site** hosted by the datalogger. The site is accessible using the most popular browsers both from mobile devices (tablets and smartphones) and personal computers, allowing users to interact while on-the-go, view the data recorded by the station, photographs and alert reports.

The level sensors - as well as verifying the excess of a critical water threshold underneath the underpass - allow monitoring of water levels and its tendency on the basis of historical data, providing



the authorities with an important tool with regard to adequacy evaluation of imposed thresholds over time.

In normal conditions, in other words, without threshold excess, obtained as a result of a combination of field sensors, the traffic lights remain off or flashing and the video camera takes photos on a scheduled basis.

During emergencies, the datalogger sends a wireless priority command to the traffic lights, which activates the ignition of the red lantern, and the video camera **increases the shooting frequency to five minutes** immediately after the event which has led to the alarm, allowing operators to monitor the situation remotely.

The versatility of the Mhaster datalogger also supports the connection to the control units of **water lifting systems (electric pumps)** and ma-



nagement of data on their functioning.

A complete solution, aimed at mitigating the effects of **hydraulic and hydrogeological risk** and to safeguard human lives by timely alerting both citizens - by automatic traffic limitation - and authorities in charge. ■

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