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Meteorological

TECHNOLOGY

WORLD EXPO 2016

CAE shows its leadership in the monitoring and multi-risk alert industry by participating in the Meteorological Technology World Expo for the third consecutive year. This year, the event will take place in Madrid from September 27th to 29th, and CAE will be there to officially launch the new product line branded CAEtech.

Visitors and insiders will have the opportunity to discover the potential of this new line, representing the experience that CAE has collected with over 40 years of designing and constructing big and medium-sized systems. Among the latest releases, all eyes will be on the new ultrasonic snow gauge ULM30, on the new medium-range communication devices ACTI-Link and much more.

Meteorological Technology World Expo is the most important European exhibition dedicated to companies and institutions working in climate, weather and hydrometeorological forecasting. Now in its 6th year, the event welcomes more than 200 exhibitors and thousands of visitors from over 100 countries worldwide. A unique opportunity to try first-hand the latest measurement and analysis technologies, as well as meeting key decision makers working in meteorological offices, shipping companies, marine/port installations, airports, off-shore exploration companies, research institutes as well as wind farm and agriculture operators.

The exhibition is organised by the publishers of Meteorological Technology International Magazine, the only worldwide publication dedicated to weather, climate and hydrometeorological forecasts, and monitoring and measurement tools and services.

The staff of CAE will be happy to welcome all visitors to their booth, located at number 7100 in the main hall.

*For all event information, including conferences and seminars please visit:
<http://www.meteorologicaltechnologyworldexpo.com>*



From CAE's experience comes the new line of products branded CAEtech

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This evolution has been designed to support all those who wish to build high quality environmental monitoring and warning systems; it is now possible to use the CAEtech products (dataloggers, sensors, telecommunication modules, etc.) embodying the experience that CAE has acquired over the past 40 years in the design and construction of big and medium-sized systems.

All CAEtech products use standard interfaces and can therefore be integrated into any monitoring and warning solution. Moreover, they are also characterised by a high level of reliability guaranteed by stringent testing, mechanical strength and implementation of Zero Breakdown Technology (ZBT).

Mechanical strength is guaranteed by:

- Attention to detail, commencing with the design phase;
- Encoded, tracked and certified production processes;
- Use of high quality materials;
- Experience and training of production engineers.

ZBT allows minimising the risk of sudden failure and loss of data, by using:

- Redundant elements, which ensure that, if a component fails, the product sends an alert but continues to operate normally, allowing time to replace the product without the loss of any data;

- Diagnostic sensors of various types, such as sensors to check for:

- Proper tilting of the instrument,
- Quality of the captured measurement,
- Value of the supply voltage,
- Status of inputs and outputs,
- Internal temperature,
- Reliability of the RF link between all devices,
- etc.

All CAEtech products have obtained the most important international certifications and have been subjected to the most rigorous opera-

tional testing to ensure durability, safety and quality.

With a view to efficient operation of the entire system, CAEtech products apply design criteria that allow consumption to be reduced, making them power efficient and independent from a power supply network. ■

Visit <http://www.cae.it/caetech> to learn more about CAEtech.

CAEtech the toughest technology for the safest solutions

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CAEtech's radar hydrometer and wavemeter gets FCC certification

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As of August 2016, LPR – the first and only water level and wavemeter sensor based on radar technology entirely designed and manufactured in Italy - is available with CE marking and in conformity with FCC certification. This ensures the sensor can be exported and utilised in many countries throughout the world.

LPR is available both in a version for measuring the water level in streams, rivers and reservoirs, as well as in a version for wave measurement applications; as a matter of fact, thanks to its high sampling rate (up to 4 times per second), LPR is suitable for detecting many typical marine science measurements: average height of individual waves, average height of the most significant waves (H1/3), average frequency of the most significant waves, highest wave,

average frequency of the highest wave.

LPR is characterised by a reduced measuring cone, low power consumption, compact design and no underwater components. It has no mechanical moving parts and is therefore extremely robust. LPR is designed for use in a wide range of situations.

Being unaffected by changes in temperature and humidity, as is the case with radar technology, LPR provides accurate measurements in all weather conditions, with a measurement accuracy of ± 2 mm up to 35 metres away.

The reduced warm-up time – under 4 seconds - between the sensor switch-on and the start of the measurement ensures very low power consumption. LPR is also able to pro-

vide a reliable and precise measurement in less than 10 seconds, completing an entire measurement cycle in a significantly shorter time compared to most similar products on the market.

To simplify and reduce the cost of installation, a practical configuration software for PC or tablet is supplied with LPR. Thanks to this interface it is possible to identify and isolate, with the aid of a graph, any obstacles in the measurement area (pillars, boulders, containment structures, etc.) that are not the actual target to be measured. The same software allows the user to adjust all operating parameters, including measurement times.

In addition to providing a 4-20 mA standard analogue physical interface, LPR has an RS485 port that imple-

ments an SDI-12 standard protocol, with a mechanism that makes it simple to install and easy to interface with any data-logger. ■

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ACTI-Link: a new technology for short and medium range telecommunications

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The need to extend the area in which an automatic station can function with alarm sensors and devices led CAE to expand its family of telecommunication products by introducing the medium-range ACTI-Link, based on the standard SRD (Short Range Devices) technology, in addition to the short-range WSN technology (Wireless Sensor Network). These devices work in

free frequency ranges that allow radio connections capable of covering more than 5 km in optimum conditions. ACTI-Link is available in two different versions: with specific remote control features or with specific starting-up and operating features.

The ACTI-Link Remote Control Unit allows wireless connection between the serial port of a sensor and the sta-

tion. This allows the station to receive data from remote installed sensors, as if they were connected to it through a cable, while at the same time avoiding the typical inconveniences of physical connections: greater vulnerability to damage, the need to have extensive and costly cable installations, distance limitations, impossible installation in case of topographic limits.

Another version of ACTI-Link has also been developed which has the capacity to simultaneously function as: an activator, a component actuator, a repeater of signals from and to other modules and a PC interface. This device, which combines different diagnostic functions, is used to manage all components of the monitoring and alert systems for the spreading of acou-

stic and visual alarms, as well as for vehicular traffic prohibition (specifically: sirens, traffic lights, warning lights, etc.) By sending a radio signal, the device activates all "target" modules that form the 'early warning' system and then the signal spreads through point-to-point or point-to-multi-point communications. ACTI-Link also performs the fundamental task to repeat the radio signal, in order to cover

distances greater than the range covered by only two point-to-point communication devices.

The architecture of a field sensor network remote-controlled through ACTI-Link nodes can always be divided into sub-networks which can be activated independently or simultaneously. It is therefore possible to divide complex networks into secondary branches, by

applying both WSN and ACTI-Link communication technologies in sequence to meet the critical issues connected to spatiality and to the most suitable monitoring and alerting typologies according to the situation at hand.

Moreover, the introduction of these devices is a new step for CAE towards environmental protection. ACTI-Link actually stands out for being

the first CAE product with a ROHS certification. This directive establishes a restricted use of Lead, Mercury, Polybrominated Biphenyls, Polybrominated Diphenyl Ether, Hexavalent Chromium and Cadmium in the production of some specific products, for example IT and telecommunications equipment, electrical and electronic tools, monitoring and control instruments. ■

For further technical details about the functionality of these two products, please download the relevant sheets below:

[ACTI-Link](#)

[ACTI-Link Remote Control Module](#)

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Integration of non-structural works and measures: the new monitoring system for the Panaro River detention basin

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CAE has won the tender for the supplying, installation and activation of a system that monitors interstitial pressures in the Panaro River detention basin in Modena, with a total utility volume of 25,000,000 m³. Winning this tender, for which 5 different proposals have been evaluated by the tender administration, is an important opportunity to strengthen our relationship with AIPO.

The project aims at controlling the interstitial pressures inside the river banks and the foundation soils of the work site, both during the implementation of the experimental basins aimed at works testing, and during its operating phase, in order to constantly evaluate the correct capacity of the detention basin over time. Moreover, the surveys carried out for the installation of piezometers will

give us a better picture of the lithological and stratigraphic information available relating to foundation soils and the soils that form the basin banks.

The monitored area covers approximately 16 Km² and the punctual piezometric monitoring points are scattered throughout the area of interest. It is a typical situation where a large range of telecommunication products are utilised by CAE. The proposed system is actually equipped with WSN short-range communication modules (Wireless Sensor Network) based on wireless technology, as well as ACTI-Link medium-range communication modules based on standard SRD technology (Short Range Devices). The architecture of the field sensor network, remote-controlled through ACTI-Link nodes, al-

lows us to meet the critical issues connected to spatiality and to the specialized geotechnical nature of the monitoring. The system supplied will easily adapt to extended geographical areas, characterized by a very broad variety in terms of measurement type and evolution dynamics of measured phenomena which vary from node to node.

The system is composed of 2 monitoring subsystems: one for the Southern zone which uses the ACTI-Link communication modules, and one for the Northern zone which uses the W-Point communication modules. Both subsystems are composed by a Master station and a series of piezometers (up to 57), installed at different drilling sites set at a depth from 5 to 40 meters.

The geotechnical monitoring system desi-

gned by CAE sends the data collected during the measurement campaigns to the main control center of AIPO in Parma and to the control center in Modena, as well as to the ARPA regional monitoring network in Emilia Romagna, which belongs to the trustee network of the Po Basin.

The professionalism and high level skill set of our expert staff coupled with the technology we utilize led CAE to win this tender, creating an important opportunity for us to demonstrate our company's ability to meet our customers' varying needs and to face new challenges with success. ■

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