ATSTORM® SYSTEM

Smart early warning system for risk prevention against lightning storms

APLICACIONES TECNOLÓGICAS | SMART LIGHTNING

The technological solution that prevents risks from lightning storms

ATSTORM® is the smart lightning storm early warning system, designed to activate and deactivate temporary preventive actions **that minimise the risks derived from a possible lightning strike**.

The ATSTORM® lightning storm detection system **is a smart solution supported by IoT technologies**, based on the evaluation of the conditions of the area to be protected and multiple data that support the expert algorithms.

The ATSTORM® system makes it possible to prevent occupational hazards, **objectively determine real local risk and optimise downtime due to a possible lightning storm**.

PREVENTION OF OCCUPATIONAL HAZARDS

Maximum anticipation time for the protection of personnel before the first lightning strike in the area.

OBJECTIVE ASSESSMENT OF THE ACTUAL RISK

Local risk assessment is based on **continuous monitoring of the ambient electrostatic field**, the only direct indicator of lightning risk.

OPTIMISATION OF DOWNTIME

The **objective information of the real risk** allows optimising the downtime to the minimum necessary, always maintaining the safety of the workers.

Lightning risk assessment based on local sensors, IoT technology and expert algorithms

ATSTORM® is the most advanced system on the market thanks to its unique detection technology and centralised monitoring via IoT. Its continuously learning algorithms are based on more than 15 years of accumulated experience.

The electrostatic field is the only direct and unambiguous indicator of the risk of lightning strikes under any circumstances, according to IEC 62793:2020.

Functioning system

The ATSTORM® system collects real-time information from detection units and transfers it to AT-CLOUD. Through specialised algorithms the system estimates the risk of a lightning storm on the site, recognising the conditions that require an alert to be provided.

Data collection

Continuous monitoring of the **electrostatic** and electromagnetic **field**, detecting local risk before the start of discharges, as well as lightning strikes tens of kilometres away.

Precise diagnostics

Local data is sent to the cloud where **expert algorithms** accurately identify storm formation or approaching storm in the area.

Objective multichannel alerts

The processed information is sent to the user in form of alerts, providing anticipation time (tens of minutes) to initiate preventive actions.

Objective decision making: Smart system for risk control and management

ATSTORM® allows the proper management of the risk of lightning storms, making objective decisions on the activation of preventive measures such as evacuation of people in the area or delay of potentially dangerous fire and explosion activities.

Application areas:

▶ Personnel in charge of occupational risk prevention.

▶ Companies with opencast operations such as mining, shipyards, energy, etc.

▶ Potentially hazardous sectors such as oil, gas, chemicals, etc.

▶ Defence, military equipment & bases, telecommunications, etc.

▶ Infrastructure operators in airports, ports, etc.

▶ People in charge of outdoor activities: sports, culture, tourism, etc. Public and private administrations responsible for open spaces such as parks, beaches, educational institutions, municipalities, etc.

▶ Environmental risk, natural disasters, etc.

▶ Sectors with intensive use of electronic technology: data processing centres, industry, hospitals, etc.

Results of using the system

With the ATSTORM® system users, owners, occupational risk prevention officers and infrastructure operators achieve.


PREVENT RISKS

Identification of the risk generated by the formation or approach of a lightning storm at the earliest possible stage to activate temporary preventive measures.

REDUCTION OF DOWNTIME: SAVING TIME AND MONEY

Notifications of "no risk" based on real-time analysis of conditions rather than pre-established safety times for the resumption of regular functions.
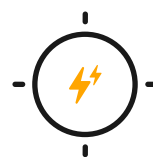
OBJECTIVE DECISIONS

Real-time information about local storm conditions. Easily available historical data.

Standard preventive actions:

▶ Alert people for evacuation.

▶ Suspension of work or outdoor activities.

▶ Suspension or delay of dangerous operations.

▶ Disconnection of electronic equipment.

▶ Activation of auxiliary power systems.

The ATSTORM® system features

- **Ad-hoc projects**

  Lightning storms are complex and highly dynamic phenomena. To ensure the best system performance at the location to be protected, we analyse the location individually and determine the best system configuration in terms of the number of sensors and their location.

- **Smart early warning system**

  Identification of pre-lightning storm conditions, providing alerts for objective decision making.

- **Sensors with uninterrupted operation and high reliability.**

  Electronic detectors without moving parts minimise maintenance requirements and optimise efficiency.

- **Expert system**

  System performance improves the longer the service time at a given location thanks to self-learning techniques and adaptive algorithms.

- **Remotely controlled by expert personnel via IoT**

  The sensors are permanently connected to the centralised calculation system of Aplicaciones Tecnológicas S.A., where the signal is processed, performance is monitored and alerts are sent to users.

ATSTORM® system features

## Patented technology

- **Dual sensing technology**

  The electrostatic field is the only technology capable to warn of lightning storm formation in the area. ATSTORM® also has electromagnetic field sensing to extend the detection area of approaching active lightning storms.

- **Redundancy of power and communications systems**

  Maximum performance guarantee by duplicating the power (solar panel + backup AC supply) and communications (wireless coverage + wired connection) systems to ensure system availability under any conditions.

- **An autonomous system with no need for wiring**

  No power or communications supply is required from the customer, which greatly simplifies the installation of the system and eliminates the need for any wiring.
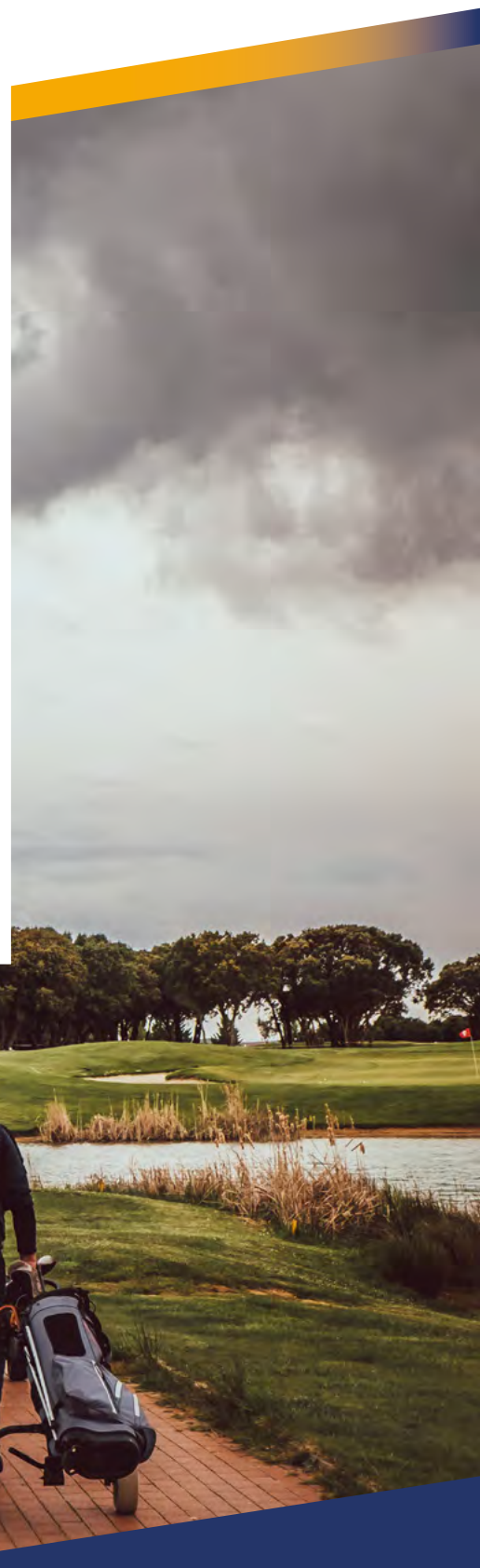
ATSTORM® system features

Adaptive alarms

- **Adaptation to the customer**

  Adjustment of the system to local conditions and customer needs by calculating alarm parameters for warning periods time adjusting at each location to improve overall performance.

- **Tiered alerts**

  The system emits different levels of alerts that allow graded preventive actions to be taken on each occasion.

- **No false alarms**

  By assessing local atmospheric conditions, the system issues an alert only when there is a real risk of lightning strikes.

- **Alarm automation**

  By using the system's remote relay module, preventive actions linked to the starting and stopping of peripherals (visual alarms, audible alarms or auxiliary power generators, etc.) can be automised.

- **Continuous updating of the system**

  Thanks to the centralised calculation configuration and the design as an expert system, ATSTORM® is constantly upgraded and updated automatically, without a need for user intervention.

ATSTORM® system features

Connectivity

- **Cloud-based system**

  Triple AT-CLOUD secured server, where A.I. algorithms such as deep learning algorithms operate, transforming locally measured data into useful information for the customer.

- **Permanent connection**

  Redundant and secure system with 24/7 service guaranteed at all times by the availability of servers in three different locations. Real-time consulting of monitored sites. Access to the personalised dashboard from any device.

  Availability of information and data 24 hours per day.

- **Communications structure**

  Multiple wireless communication technologies (mobile 2G/3G/LTE-M/NBIoT), via Ethernet and, optionally, via satellite, all of them secured through a virtual private network (VPN) for greater security.

ATSTORM-Connect: visualisation platform.

Multi-channel alert system

The information is centralised for customers with multi-location and can be managed from anywhere using multi-channel management solutions (private web portal, mobile devices, SCADA integration, e-mail, sound alarms, etc.).

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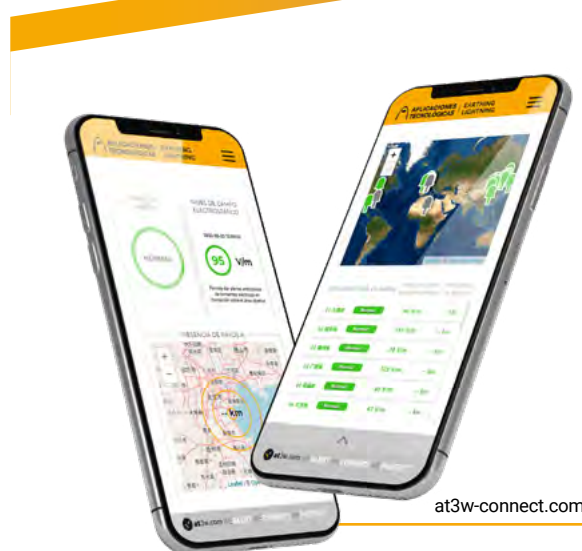
▸ Mobile App for the visualisation and reception of alarms in real-time.

▸ Real-time status visualisation of the equipment on a private web portal with an indication of the local risk.

▸ Real-time data integration with SCADA systems through various protocols.

▸ Alerts indicated on the map and in a pop-up element accompanied by sound.

▸ Generation of reports in PDF and downloading of CSV format files for studies and reports for the user.

▸ Access to the history of alerts and details of the electrostatic field evolution.

ATSTORM® technical data

Reference

▶ AT-550

Electrostatic sensor

▶ Measuring range: -32 kV/m to 32 kV/m
▶ Resolution (max): 1 V/m
▶ Range: 20 km
▶ Fully electronic technology (Field-Controlled Electrometric Sensor, FCES). No moving parts

Electromagnetic sensor

▶ Range: 40 km

Power supply

▶ Batteries with 7 days autonomy 10Ah
▶ Solar panel 20 W
▶ Supply: 110 ~ 250 VAC

Communication

▶ Mobile VPN 2G/3G/LTE-M/NBIoT
▶ Ethernet
▶ With satellite (optional)

Alert services

▶ Android / iOS APP
▶ Email
▶ Private portal Website
▶ Instant messaging system
▶ SCADA system integration
▶ Remote action relay

IP(Class)

▶ IP 66

Ambient conditions

▶ -40ºC to 85ºC

Standards

▶ Complies with EMC IEC 61000-6-4.
▶ Complies with Electrical Safety IEC 61010-1.
▶ Certified: FCC CFR 47, Part 15, Subpart B (Edition 10-1-16) & ICES-003 (January 2016, updated April 2017)

Other services and products we recommend

Services

- Advanced geoelectric studies.

- Earthing systems projects 4.0

- Advanced monitoring of earthing systems.

- Lightning and surge protection projects.

Products

- **SMART EARTHING MONITORING SYSTEM**
  Centralised earth monitoring system.

- **OVERVOLTAGES**
  Transient and permanent.

- **DAT CONTROLER® REMOTE**
  Smart ESE air terminal with IoT technology.

Contact

☐ **Engineering**
Projects and consultancy

☐ **Distributor**
Partnership conditions

☐ **Installer**
Information and products

☐ **Final User**
Assessment

Name: _____

Company: _____

e-mail: _____

Country: _____

Message:

☐ I accept the terms and conditions **Read terms and conditions**

SEND

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