

Fire protection in Antarctica

How Ajax provides security for Vernadsky Research Base

Client

National Antarctic Scientific Center

Industry: **Non-profit** Country: **Ukraine**

Main NASC facility is the Vernadsky Research Base in Antarctica. There are 10 to 14 members of the Ukrainian expedition living at the Base. They are scientists and the people who run the station. Every year, one team of polar explorers replaces the other. They study the Southern Ocean, the Earth's magnetic field, and Antarctica's climate, flora, and fauna. They make daily meteorological measurements to predict the weather worldwide and global climate change.

Challenge

Equip the remote facility with a fire alarm

The Ukrainian Antarctic research base is located 16,000 km from Kiev. Antarctica is the windiest place on earth, where hurricane-force winds blow most of the time. Even a tiny flame can quickly turn into a large blaze.

A fire alarm hasn't been upgraded since 1985. For the first 10 years, the base was used by British polar explorers. At the time, the base was called "Faraday" and belonged to the United Kingdom. After 36 years, some detectors became inoperable. Finding spare parts for them (and bringing them to Antarctica) was becoming more difficult. The old system malfunctioned and caused false alarms. In the spring of 2021 it was replaced by Ajax.

Challenge

Equip the remote facility with a fire alarm

Solution

Wireless fire detectors with built-in sirens. The equipment operates seamlessly in Antarctic conditions. Monitoring alarms with the app. 20 more fire detectors are to be installed

Products

Hub, FireProtect, FireProtect Plus, StreetSiren, HomeSiren





«The policy of the Antarctic Center is to buy Ukrainian. And only buy the best – you can't economize on Antarctica. The price of failure is very high, and shipping costs a lot of money. A marker was triggered: if a security system – then Ajax. And we were not mistaken with the choice».

Viacheslav Marchenko, Deputy Director of the National Antarctic Scientific Center

Why Ajax was chosen for the project in Antarctica

Communication reliability. The station is a complex of buildings, so it is important to cover them with one system. For this, the most reliable radio communication with a long range is required.

Maintenance. There is no opportunity to invite a professional installer to a station in Antarctica; the station engineers maintain the system themselves. It mustn't require a lot of attention. Devices must operate from batteries for years, and instantly alert if something goes wrong. For example, if a detector loses connection or if batteries need to be replaced in a couple of months.

Fire alert. There is a person at the station who monitors the system. You need a system with a handy alarm-monitoring app for PCs as well as loud sirens to alert people to danger.

Solution

Wireless fire detectors with built-in sirens

In addition to the hub (the security system control panel) and two sirens, ten Ajax fire detectors were delivered to Antarctica. They protect against fire, detect smoke and rapid temperature swings, and prevent carbon monoxide poisoning. When connected to the Ajax security system via the secure Jeweller radio protocol, the detectors can operate at distances of up to 1,300 meters from the hub.

The equipment operates seamlessly in Antarctic conditions

Ajax fire detectors will do the job even if the station loses access to the Internet or there is no one to monitor alarms. The devices can operate independently from the system control panel. Even if there will be no connection with the hub, detectors will recognize the threat, and the built-in sirens (85 dB) will alert the danger.



During the cold season, the temperature outside drops to -27°C . In residential premises, it is kept at $+16-18^{\circ}\text{C}$, and in non-residential ones, it is kept with a slight "plus". Ajax will also handle it when the temperature in the station premises drops to $+11-12^{\circ}\text{C}$ (happens when there are strong winds). Detector's operating temperature ranges from 0°C to $+65^{\circ}\text{C}$.

The system can be installed and maintained even at the South Pole

Staying in Antarctica, any questions can always be resolved by contacting the Ajax support team, which is available 24/7/365 and helps users from all over the world in multiple languages. The system was installed by the lead specialist, the system mechanic of the Vernadsky Research Base.



The system mechanic supervises the quality of installation and ensures the reliable operation of the equipment. For participation in the expedition, the competition committee of the National Antarctic Scientific Center selects the best candidate among applicants from all over Ukraine. Security system must be installed by a professional.

The system is easy to maintain. Battery life of detectors is up to 4 years. This is important for the place where it is so difficult to deliver things.

Monitoring alarms with the app

The station uses the computer with the PRO Desktop app installed. A screen with all the indicators is placed in the lobby of the main building. Another computer in the on-duty person's office is used as an alarm monitoring station. To manage the system on the go, station engineers have Ajax apps on their smartphones.



There were two alarms at the station: in the kitchen, when the polar explorers were grilling steaks, and in the carpentry shop, where welding work was taking place. In both cases, the equipment responded to the smoke.

20 more fire detectors are to be installed

Also, the ReX radio signal range extender will be added to the Ajax system. The research station consists of 12 buildings (including living quarters, a carpentry workshop, and a boathouse), located at a distance from each other. The buildings are covered with profiled iron, which can interfere with the radio signal. The range extender will increase the reach of the devices and become a reliable link between the detectors and the hub.

The new devices are to be delivered to the station in February 2022, when a new polar expedition will leave for Antarctica. It will take three planes, one ship and about 7 days of travel.