

Environmental monitoring system at GVIDON Fish Conservancy Post using renewable energy resources.

BytErg and EcoEnergy have launched the GVIDON environmental monitoring system using Axis cameras operating on renewable energy.



Organization:

EcoEnergy Research and Production Organization

Location:

Astrakhan Oblast, Russia

Industry segment:

Government

Application:

Remote monitoring

Axis partners:

BytErg LLC, Milestone

Mission

The main objectives of the new GVIDON complex are: to track watercraft traffic in the observation sector; to inspect sturgeon catch for research or poaching purposes; to record watercraft registration numbers to create a database; and to transmit video data to territorial divisions of the Russian Federal Fisheries Agency in real time.

Solution

Achieving the set objectives required cameras with maximum image detail and quality under extreme natural conditions in the Astrakhan region. A set of three video cameras was created to organize round-the-clock, multi-layer recording. The main tool is the AXIS Q6034-E camera, which was selected for its unique functions. Arctic Temperature Control ensures connection of cameras at a temperature of -40°C ; Active Gatekeeper and Autotracking indirectly track watercraft.

An AXIS Q1921-E Thermal Network Camera is used for surveillance under poor visibility conditions and at night. It is installed on a YP3040 Pan-Tilt Motor, which is controlled by an AXIS T8311 Joystick. AXIS Q1755-E Network Camera was selected to continuously monitor the ship channel and record registration numbers.

Result

At the present time, only one fish conservancy post is equipped, but it is already having a positive effect. In particular, AXIS Q1921-E even allows the system to track watercraft in the reed beds of the Volga-Caspian Ship Channel.

“The GVIDON System has become an irreplaceable aid to the Fish Conservancy’s employees at Ognevka 15. Due to the high resolution of cameras installed 18 meters high, we can easily distinguish an armed poacher from a simple fisherman from 2 km away and take appropriate action quickly. I hope that the GVIDON System will be expanded to the entire Volga-Caspian Channel from Astrakhan to the Caspian Sea.”

Sergei Selivanov, Shift Foreman at Ognevka 15 Fish Conservancy Post.

System parameters

Nearly 90% of the world’s sturgeon stock lives in the Caspian Sea, which attracts poachers in search of black caviar. In 2002, Russia imposed a unilateral moratorium on the sturgeon trade. Sturgeon fishing is currently only permitted for research purposes by the Caspian Fisheries Research Institute to study young sturgeon growth. The Caspian Fisheries Research Institute has barges along the entire length of the Volga-Caspian Channel to collect sturgeon for further cultivation in fish farms.

Pilot launch

The GVIDON prototype system was installed at Ognevka 15 Fish Conservancy Post in the Volga River Delta. This post is located at the very boundary with the Caspian Sea and monitors the area that is most vulnerable to poachers.

The post is on a manmade island, with barges continuously passing nearby. The main power sources for such posts are generators using internal combustion engines, which is not terribly convenient, firstly due to limited service life and secondly due to high operating costs. At the same time, the post’s geographic location is favorable from the standpoint of natural resources: sunlight and wind. The unique GVIDON system is based on using these energy sources. Another advantage is the lack of emissions that pollute the environment.

GVIDON system components

The GVIDON system includes four elements:

- > Power plant, consisting of a kilowatt wind turbine unit, a 120-watt photovoltaic module, PN-1000 inverter, and rechargeable batteries
- > Monitoring and video recording system consisting of AXIS Q6034-E, AXIS Q1755-E, and AXIS Q1921-E Network Cameras on a YP3040 Pan-Tilt Motor
- > Video archive system with Milestone Systems XProtect® software
- > Data transfer system

The cameras and wind generator are installed on an 18-meter stationary tower. This height provides for surveillance of the Volga-Caspian Channel with a radius of 5–6 kilometers. The power plant’s 1,120-W capacity provides enough energy not only for the equipment, but also for the everyday needs of the Fish Conservancy’s employees.

Project outcome

Today, the GVIDON system is in the implementation stage. Future plans call for equipping all Fish Conservancy posts and connecting them to a single system with a control center at the Fish Conservancy’s Astrakhan headquarters.

Once the project is complete, the Volga-Caspian territorial division of the Russian Federal Fisheries Agency will have a finished tool for audio and video recording of all events in the Volga-Caspian Ship Channel in real time. Recording all watercraft and events will help significantly improve security not only for the region’s fish and water resources, but also for officers monitoring and supervising fisheries and conserving water and biological resources. This is very important, because Fish Conservancy employees “on the front line” are often threatened by poachers.

Round-the-clock surveillance of the river delta will also help prevent environmentally harmful activity, as one of the key conditions for protecting rare and valuable fish species is conserving their natural habitat.

