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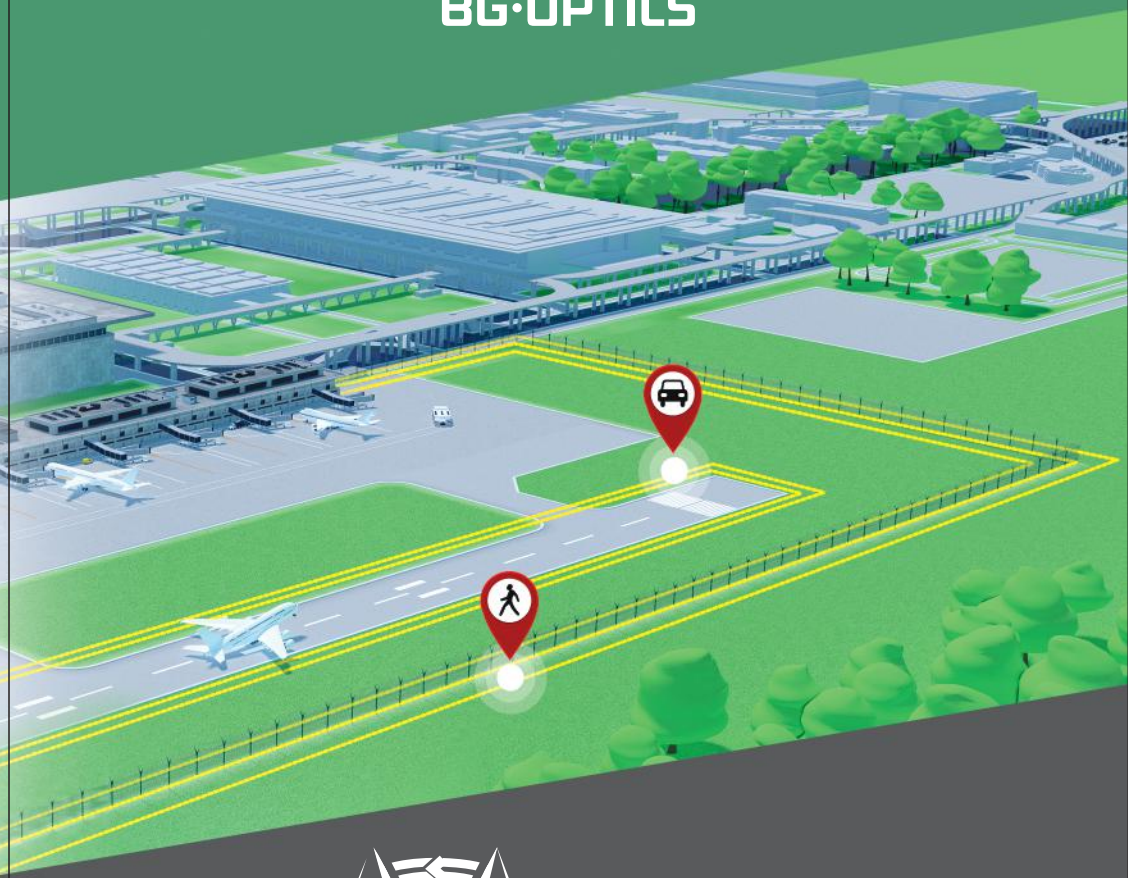
"WOLF" complex can detect the following activities:

- crossing border by a foot-slogger and / or a vehicle
- digging tools operation
- excavation equipment operation
- movement and / or operation of heavy vehicles



WOLF COMPLEX

Warning Optic-fiber Line Facility

Wolf Complex Application For Airport Territory Protection

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WOLF
COMPLEX
Warning Optic-fiber Line
Facility

Wolf Complex Application
For Airport Territory Protection

2016

In view of the raising terror threat in the world airport security becomes an essential complex task where protection of the airport perimeter and aircraft parking zones is complicated key element.

Perimeter protection is usually provided by:

- fences;
- perimeter video surveillance systems;
- fence intrusion detection systems

The correct choice of modern protective measures is guarantee of the protected object security.

Let's consider the choice of perimeter protection systems using the example of Sochi airport. The length of the airport perimeter is about 10 km. Standard video surveillance application scheme is constructed so that cameras have to be placed at intervals of not more than 100 m from each other. Thus about 100 cameras have to be placed to control the whole perimeter.

It is necessary to build a separate dispatcher service for continuous monitoring of the perimeter by such amount of cameras. Dispatcher work requires a constant high concentration of attention. Fence intrusion detection systems are used as additional information channel to reduce the risk of missing the offender.

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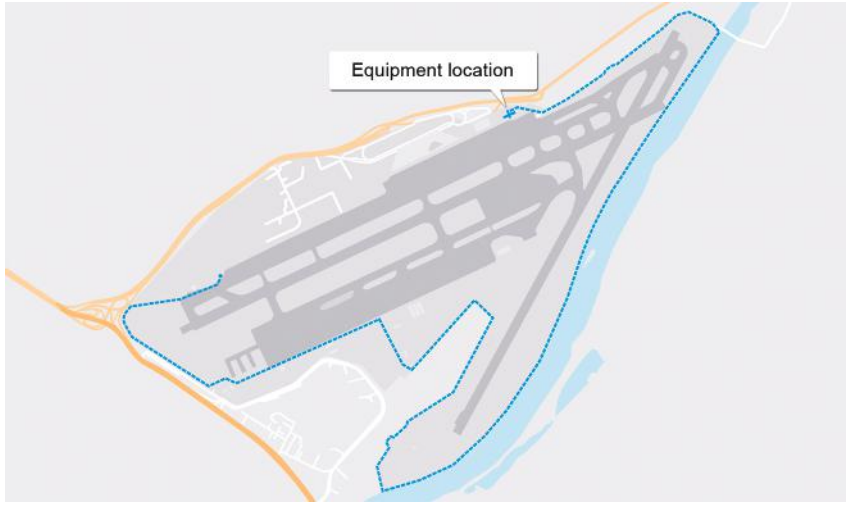
In most cases triboelectric sensor cables or ray systems are used as an additional means of perimeter control. Either of them has significant shortcomings.

Triboelectric sensor cables are placed on the fence and are highly sensitive to fence vibrations that occur at high wind load. In view of the season winds this problem is relevant for Sochi Airport that we consider as an example. That is why triboelectric systems give a lot of misoperations and it leads to ignoring the readings of these sensors by dispatchers.

Ray systems placed on fence are sensitive to the weather conditions thus cannot guarantee system operations through the year at any time of the day. Ray systems' range of coverage is not more than 100 m so about 100 sets of detectors should be placed to protect the perimeter of 10 km. It should be noted that this system requires further expenses for maintenance and repair.

Modern perimeter security systems have no such shortcomings.

One of the most effective representatives of such systems is WOLF complex – Warning Optic-fiber Line Facility.



WOLF complex is designed for perimeter protection of stationery objects and monitoring moving objects in controlled area:

- primary and secondary data processing server;
- multichannel fiber-optic detector of vibro-acoustic effects;
- optical cable-sensor;
- operator's workstation.

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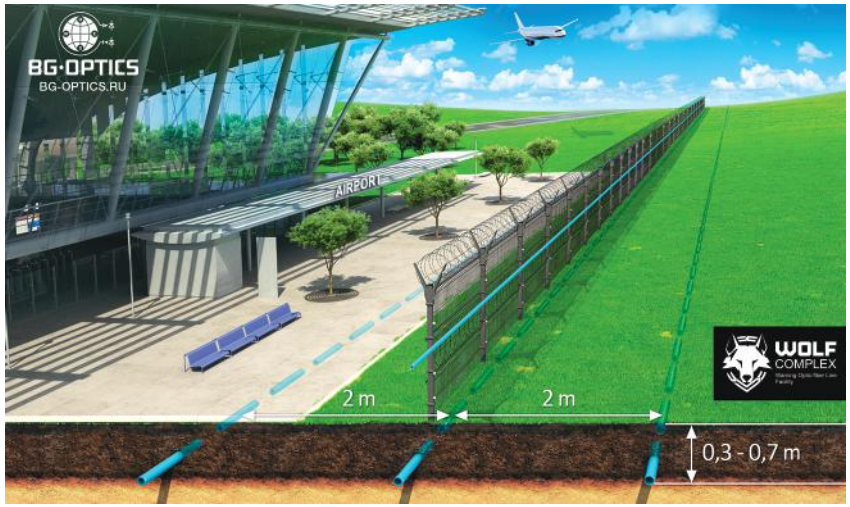
PROTECTED OBJECT PERIMETER CONTROL

The following deployment scheme is offered for organizing perimeter protection of standard object.

Optical cable-sensor is placed along the fence of the protected object in 4 parallel lines:

- at 30-70 cm in the ground at 2-5 m outside the fence;
- at 30-70 cm in the ground directly under the fence;
- at 30-70 cm in the ground at 2-5 m from the inner side of the fence;
- directly in the center of the fence.

If cable-sensor has to be placed in the asphalt coat the cable can be laid in 3-5 cm indent and covered by bitumen, cement mix, or asphalt.



This cable-sensor's position in gallows to solve the following tasks:

detecting the offender at a stage of approaching to the fence;

detecting attempts of undermining of the fence;

detecting attempts of climbing over the fence;

detecting attempts of digging the tunnels under the fence by manual or machinery tools up to 3 m in depth;

detecting facts of the fence overcoming and penetration into the protected area.

Offender's detection accuracy is 10 m, that makes his detention easier. Besides, high accuracy allows to coordinate WOLF signals more effectively and display the signal from camera directed to the location of detected dangerous activity on alarm monitor.

MONITORING MOVING OBJECTS IN CONTROLLED AREA

The following deployment scheme of WOLF complex is offered for monitoring moving objects along the aerodrome territory and particularly for preventing illegal people or vehicles entrance to the runway.

Optical cable-sensor is placed in two lines on both sides of runway. The distance between lines is 5 m and layout depth is 30-70 cm.

Suchcable-sensor's location allows to detect following types of objects and their parameters:

moving of a personup to 5 m from the cable-sensor;

moving of a vehicle up to 15 m from the cable-sensor;

determine the direction and speed of moving objects.

According to aerodrome service's regulations, speed of the special vehicles near aircraft parking zones should not exceed 20 km/h or 5 m/s. Thus approaching of such vehicle to the runway can be detected within several seconds and a warning signal can be sent to dispatcher services.

In comparison with existing systems of airport area control (optical and radar) this solution has the following benefits:

passive mode (doesn't create noise for other radio electronic facilities);

all-weather operation (quality of the complex operation doesn't depend on weather conditions in contrast to optical and radar systems);

covert detector (sensitive element) of offender.

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