GEODESIC AND TOPOGRAPHIC PERFORMED IN CITIES MODERN GEODESIC INSTRUMENTS USED WHEN PERFORMING EXPLORATION WORK

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Geodesy is the science of measuring the earth. The data obtained during geodetic and topographic studies are used to create accurate maps and plans, when designing the construction of industrial and civil real estate, to create navigation systems and in many other areas.

Thanks to the capabilities of geodesy, it is possible to accurately measure the distance between buildings, determine where the borders of settlements, municipalities, administrative borders between districts and regions, state borders between countries pass.

The specialist performing such work is a surveyor. He performs topographic and geodetic, survey, center, design work. At the moment, this profession is one of the most popular in Russia.

The main task of the surveyor: calculation of coordinates of characteristic points of the terrain. A specialist in this field performs geodetic or topographic survey, depending on the task. After that, it processes the measurement results, analyzes the data obtained and makes a topographic plan or map.

Topographic survey (topography) is a complex of geodetic works that are carried out on the ground, the purpose of which is the compilation of maps and plans. There are topographical surveys for drawing up topographic maps and large - scale plans (1:500, 1:1000, 1:2000, 1:5000) and shooting for small scales (1:10 000, 1:25 000 and smaller).

Topographic survey of a land plot is a set of geodetic works to determine the boundaries and heights of a land plot, as well as all underground and surface communications and facilities within a given land plot. The location of the boundaries of the land plot and communications is established by determining the coordinates and heights of the characteristic points of the boundaries with special equipment: GPS receivers and a total station, a tracer.

The purpose of topographic survey of a land plot is to create topographic maps or terrain plans of various scales, with a detailed indication of the objects and communications located on them, depending on the technical task. On a topographic map, using conventional signs, the following is displayed: terrain, vegetation, boundaries of buildings and structures, underground and aboveground communications.

Modern methods of geodesy and the development of technologies have made it possible to simplify the procedure of topographic survey. Today, quadrocopters came to the aid of surveyors.Topography from a quadrocopter is in demand, first of all, to create a 3D model of the terrain, orthophotoplanes and a height matrix.

Aerial photography is the most effective, fast and inexpensive method when using a quadrocopter. At the same time, the image obtained from a drone is much better than a similar one from a satellite.

However, special requirements apply to the technique, because only the need for maximum accuracy remains unchanged in geodesy.

1. The quadcopter must conduct a long flight without recharging, so special requirements are imposed on the accumulator.

2. The camera must be at the maximum resolution to ensure the quality level of the pictures.

3. The quadcopter must have sufficient signal reception and transmission power. This is necessary so that the drone can rise to the height necessary for shooting.

With the help of aerial photography with a quadcopter, you can get: video recordings and pictures of the terrain, as well as:

• orthophotoplane;

• 3D model;

• topoplan.

