

Література

1. Деякі питання надання субвенції з державного бюджету місцевим бюджетам на розроблення комплексних планів просторового розвитку територій територіальних громад. Постанова №853 від 28.07.2021 р. URL: <https://zakon.rada.gov.ua/laws/show/853-2021-%D0%BF#Text> (дата доступу: серпень 2021 р.).
2. Про внесення змін до деяких законодавчих актів України щодо планування використання земель. Закон України № 711-IX від 27.05.2021 р. Відомості Верховної Ради (ВВР), 2020, № 46, ст.394.
3. Угода про позику (Програма "Прискорення приватних інвестицій у сільське господарство") між Україною та Міжнародним банком реконструкції та розвитку № 8973-UA від 27.06.2019 р. URL: https://zakon.rada.gov.ua/laws/show/996_005-19#Text (дата доступу: серпень 2021 р.).

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AIR LASER SCANNING – ADVANTAGES AND OPPORTUNITIES

Laser scanning is a type of active imaging. The laser scanner (leader) performs a discrete scan of the Earth's surface and objects located on it, recording the direction of the laser beam and the time of passage of the beam. Thus, it is possible to unambiguously locate in space the point from which the laser beam was reflected. The current position of the laser scanner is determined by a high-precision satellite receiver. Knowing the angles of rotation and relative displacements between the components of the described system, you can determine the absolute coordinates of each point of laser reflection in space [1, 2].

Air Laser Scanning is used for high-precision mapping of linear and field objects in scales 1:500–1:5000 from air carriers (airplane, helicopter, autogyro) [1].

Simultaneously with aerial laser scanning, as a rule, aerial photography of the earth's surface is performed using a digital camera that detects radiation in the visible, infrared, or thermal or IR range of electromagnetic radiation [1].

Advantages of laser scanning [1, 2]:

1. **Cost.** The cost of shooting and modeling objects is about 3 times lower than when using classic technologies.
2. **Speed of work.** The total speed of capturing and processing data obtained by laser scanning is several times faster than conventional surveying and aerial photography.
3. **Accuracy.** The accuracy of laser scanning can be compared with the ground surveying and much higher than the aerial photography.
4. **Unique properties.** Laser scanning allows you to scan 3D wires and small hanging structures (insulators, trusses), completely inaccessible to classical methods.
5. **Flexibility.** Vegetation, haze and night time are not obstacles to work. The complexity of the terrain does not matter.
6. **Versatility.** Laser scanning can be performed from the air, car, train, boat, all-terrain vehicle, infantry crew.

It can help to solve the following problems [1]:

3. creation and updating of topographic plans 1: 500-1: 5000;
4. deciphering zones of development of dangerous geological processes;
5. monitoring of objects.

As a rule, aerial laser scanning is accompanied by simultaneous digital aerial photography with a resolution of 5-15 cm in the visible and near infrared ranges. It is mainly used in engineering research at infrastructure facilities, in the municipal economy, to assess the volume of displaced soil (quarries, shelves, landfills for solid waste), monitoring of any kind [2].

To perform surveys with this method requires very little ground work, which makes it indispensable in uninhabited areas or on dangerous sites [2].

In conclusion, we can say that laser scanning is an extremely useful and promising technology that allows you to map spaces with high accuracy and monitor ground objects.

References

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WHY WE SHOULD STOP NUCLEAR POWER PLANTS

As we know, nuclear energy is one of the most widespread forms of energy in Ukraine. In 2021, the production of energy by nuclear power plants increased by 3.9%, which is more than half of all energy in the country. Due to the production of a large amount of energy – it is cheaper than alternative forms of energy. Advantages of nuclear energy over other types of energy are high calorific value of nuclear fuel, as it is 2 million times more than oil and 3 million times more than coal, the best economic indicators. In addition, there is no need to use oxygen, which is burnt for energy needs 5 times more than is consumed by living beings. In addition, the