

Use of RPAS/Drones in Norway

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About Drones

Drones

Use of drones, or RPAS (Remotely piloted aircraft system) is regulated by its own regulation, known as Regulation for Civilian aircraft A 7-1, regulation for unmanned aircrafts, etc.

There are three operator categories, based on weight and flight. These are described as RO1, RO2, and RO3. We differentiate between drones that are operated in visual line of sight (Visual Line of Sight – VLOS), and beyond line of sight (Beyond Line of Sight – BLOS).

If the flight's purpose is exclusively for recreation, sport or competition, it is considered as flying model airplanes.

Secure distances and maximum height of flying.

All flights must be carried out in a considerate manner, that doesn't expose aircraft, people, birds, animals, or property to damage, or is in any way a nuisance to the general populace.

The aircraft must at all times be visible to the operator. When you are flying you have to stay within the secure distances. It is not legal to fly any higher than 120 meters above ground or water, and you cannot fly closer than 150 meters from a gathering of more than 100 people.

It is also not allowed to fly closer than 50 meters from other people, vehicles or buildings that are not under the operator or aircraft managers control. This entails that people, or owners of vehicles or buildings have to consent that the flight can be closer than 50 meters. There are separate regulations for aircraft weighing more than 250 grams or more.

When the aircraft is that small you can fly within visual line of sight (VLOS), expanded visual line of sight (EVLOS), or beyond line of sight (BLOS), but not higher than 50 meters over ground or water. The secure distances to people, vehicles or a building does not count. This flight must also be carried out with consideration to others.

Terms used in unmanned air traffic

Below are some definitions and explanations of terms that are often used in the regulations for unmanned air traffic.

- **VLL: Very Low Level**

International term that comprises “Non-standard” VFR or IFR operations under 500 feet AGL (AGL – Above ground level), including VLOS, EVLOS, and BLOS. This term has not been included in the Norwegian regulations as part of our guidelines.

- **VLOS: Visual Line Of Sight**

Flying an unmanned aircraft must be carried out so that the aircraft can at all times be seen without visual aids such as binoculars, camera or other tools, except glasses. The aircraft must also be operated in such a manner so that collisions with other aircraft, people, vehicles, vessels, and ground construction can be avoided. Maximum height of operation in Norway is 400 ft. AGL.

- **EVLOS/E-VLOS: Extended Visual Line of Sight**

VLOS operations above 400 ft. AGL and/or where an agreement for maintaining visual control with the aircraft beyond the pilots line of sight has been acquired from Civil Aviation Authority.

- **BLOS: Beyond Line Of Sight**

Flying unmanned aircrafts beyond line of sight for pilot and/or observer. BVLOS/B-VLOS Beyond Visual Line of Sight. Subgroup/specification of BLOS, same criteria as BLOS.

- **BRLOS/B-RLOS: Beyond Radio Line Of Sight**

Subgroup/specification of BLOS where there is no direct link between ground station and the aircraft, and another form of relay is used (for example, Satcom, Mobile technology, etc.). The aircraft can physically be VLOS/EVLOS, but is not considered an VLOS/EVLOS operation without specific approval.

Definitions for unmanned air traffic

Formally we use the term unmanned aircraft, but the normal term is drone. There are also other abbreviations, both in Norway and internationally:

- **UAS - Unmanned Aircraft System**

Describes the entire system, consisting of a ground station and the aircraft that is operated from there, in addition to all the other components that is needed for operating the system, such as equipment for launch, communication, and automatic landings etc.

- **RPAS - Remotely Piloted Aircraft System**

Just like UAS, but is used as a subgroup of UAS, to describe that there is at all times a person in control of the remotely piloted aircraft.

- **UAV - Unmanned Aerial Vehicle**

Only describes the flying part of the UAS. This definition is on its way out in civilian application, but is still used by the military. Corresponds to the Norwegian term “unmanned aircraft.”

- **RPA - Remotely Piloted Aircraft**

The flying part of a RPAS. Also corresponds to the Norwegian term “unmanned aircraft.”

- **RPS - Remote Pilot Station**

The ground station where the pilot is steering one or more RPAs. Can be compared to a cockpit, only on the ground.

Other subgroups of UAS where we don't use abbreviations are:

- **Automatic Unmanned Aircraft Systems**

A system where the aircraft flies according to a predetermined route and are carrying out preprogrammed activities. These can often be reprogrammed during the flight, and the degree of this possibility decides if this can be called an RPAS or not.

- **Autonomous Unmanned Aircraft Systems**

A system where the aircraft flies according to preprogrammed guidelines and makes "own" automatic decisions based on these. It is not possible for a pilot to make corrections during the flight when the system is operated autonomously. Civilian UAS operation are limited to "Remotely Piloted" system for the time being, this means that there is a pilot on the ground who can take over control of the aircraft at all times.

RO1

The regulation is worded so that simple operations with smaller drones can be carried out without approval from the Civil Aviation Authority.

Operators who are carrying out operations that fall under RO1 will only need to notify the Civil Aviation Authority before starting the operation. An RO1 operator has to follow all general rules and regulation in Chapter 3 and the operative requirements in Chapter 7 of the Regulation. In addition there are rules/limitations in Chapter 4 of how operation in RO1 is to be carried out. The regulations set conditions for start of operation, and requirements for proper qualifications.

RO1 operators can only operate aircraft weighing up to 2.5 kg, and with a maximum speed of 60 knots. All operations must be carried out within visual line of sight (VLOS) during the day within secure distances as specified in § 51. You also have to ensure that you are only flying under 120 meters.

The aircraft must have a security system that automatically sets it on the ground if you lose control over it. If you are flying aircraft with permanent wings it has to have an additional system that ensures that the aircraft can land if an emergency occurs. An alternative solution is that another pilot can also control the aircraft with a secondary radio if you lose connection.

RO1 operators can therefore not operate in expanded visual line of sight (EVLOS), or beyond line of sight (BLOS).

RO1 operators also cannot operate any higher than 120 meters.

RO1 operators can however operate an aircraft that has a MTOM of 250 grams or less, VLOS, EVLOS and BLOS, but with a maximum height of 50 meters.

The secure distances for gatherings, people, vehicles and property in § 51, second section, letters b & c does not count. An operator of RO1 is responsible for any damage or loss, regardless of fault, that occurs outside the aircraft as a direct result of it being used for flying. The operator of RO1 has to have insurance that covers third party damages.

The operator also has to notify the Civil Aviation Authority when the operations cease. The Civil Aviation Authority has legal authority to fine the operator for breach of the rules in the Regulations Chapters 3 to 9. Air traffic regulations do not cover flying of drones inside.

RO2 and RO3

The regulations consist of chapters, where the different chapters respectively cover RO1, RO2, and RO3. You will find the regulations here

Chapters 1, 3, 7, and 11 cover all operators. Chapter 3 contains general requirements and limitations. Chapter 6 contains operative decisions that cover all operators, while chapter 11 contains individual regulations.

Chapter 5 sets additional requirements of RO1 operators. Chapter 8 contains additional regulations that cover individual operations that RO2 operators can carry out.

Chapter 6 contains additional requirements for RO3 operators.

Chapter 9 contains additional operative regulations that cover operations that RO2 operators can carry out.

If an RO3 operator carries out an operation that falls under Chapter 8, these regulations covers the flight.

Air traffic regulations do not cover flying indoor with drones. In certain cases the RO3 operator has permission to fly closer than 50 or 150 meters, but only by explicit permission from the Civil Aviation Authority.

Requirements for RO2 and RO3

Requirements for equipment: As of January 1, 2016, there is a fair amount of equipment you need to have in place to be able to operate an unmanned aircraft. This also covers those who already hold an operators license.

You have to ensure that your aircraft can carry out the planned flight. If you plan on flying at night, you need to be approved as RO2 or RO3 operator and the aircraft must be equipped with lights. This means when the sun is 6° under the horizon or higher. In "the Norwegian Almanac" you'll find the table for complete darkness for all of Norway.

If you, as an RO2 or RO3 operator are to fly beyond line of sight (BLOS), the aircraft must be equipped with low intensity white light, with at least a strength of 10 candela. This light must also rotate (strobe lighting), and blink at least 20 times per second.

You must also ensure that the aircraft is equipped with a height gauge or similar to ensure that the flight stays under 120 meters. The aircraft must also be equipped with a safety system that will automatically land the aircraft you lose control.

If you are flying planes, fixed wings, you must also have an additional system that will land controlled if an emergency situation arises. An alternative solution is that another pilot can control the plane with a secondary radio if yours loses connection.

Requirements for organization: You as the responsible manager or operations manager must familiarize yourself and acquire knowledge about the factors that may be important when you operate RO2 and RO3. This will be, for example topics such as safety, airspace, communications, signal density or other relevant information in aviation (NOTAM, AIC, AIP, local airspace restrictions, etc.). Technical manager must be able to document or prove necessary expertise in the field. Responsibilities of the senior personnel should be described in the operating manual.

Fees for RPAS operator license

There will be an application fee for RO2 and RO3 operator license, and a yearly fee for RO2 and RO3.

As of January 1, 2016, there will be a fee for the renewal application for RPAS operator. Approved operators (RO2 and RO3) must in addition pay yearly fees. You can find the amounts in the Regulation for fees to the Civil Aviation Authority. Updated fee regulations are available on our webpage and at www.lovdato.no.

Breach of regulations

The regulations contain clear restrictions on how model aircraft flying should be carried out. The regulations also contain some prohibitions. According to the Aviation Act § 14-29 breach of the regulations or limitations is punishable with fines or prison up to 3 months. Indoor flying of model aircraft is not regulated by the regulations.

FAQ - RPAS

FAQ - Model Airplanes

Online Training

Declaration and application

Forms

Operators

Regulation