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## LEGAL REGULATIONS OF UAVS IN POLAND AND FRANCE

**Summary.** The article presents issues related to legal regulations pertaining to unmanned aerial vehicles (UAVs) in Poland and France. It describes commercial and non-commercial rules of UAV use. It also summarizes conditions concerning UAV weight, procedures of personnel and certification, as well as the space where UAVs may perform flight operations. Additionally, the application and use of UAVs in civil and military environments are described. It allows for the statement that the UAV role in air transport is increasing. Due to the benefits they offer, such as the possibility to remain in the air for a long time, performing flight operations in a harmful environment and little influence on the natural environment, UAVs will be increasingly important and systematically replacing manned aircraft.

**Keywords:** unmanned aerial vehicle; unmanned aerial system; drone; using UAVs in civil and military environments in France and Poland

### 1. INTRODUCTION

The first term referring to unmanned aerial vehicles (UAVs) dates from the period of the Second World War, when they were known as “pilotless aircraft”. Then, in the period 1940-50, the term “drone<sup>4</sup> aircraft” was adopted. The term refers to the noise made by the engine.

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In the 1960s, the expressions “remotely piloted vehicles” and “remotely piloted aircraft”, were used, which referred to the steering of the aircraft from the ground.

According to the literature on the subject, the current terminology uses the expression “unmanned aerial vehicle”<sup>5</sup> or “unmanned aerial system” and refers to an unmanned, propelled aircraft for single or multiple use, with remote or automatic steering, or combining both methods, for the purpose of carrying useful equipment or cargo and perform operational actions.

On the basis of the Chicago Convention on International Civil Aviation<sup>6</sup>, signed in Chicago on 7 December 1944 (Journal of the Laws of 26 June 1959), aircraft capable of flying without a pilot may fly above the territory of a contracting state only upon special authorization issued by the said state and in accordance with the conditions thereof. Every contracting state seeks to ensure the air traffic control of pilotless aircraft in areas open to civil aircraft in such a way as to avoid hazards for civil aircraft (Article 8). The above statement allows for the possibility of UAVs to fly in areas outside the segregated airspace of International Civil Aviation Organization (ICAO) member states<sup>7</sup>.

Annex 2 to the Convention<sup>8</sup>, Appendix 4 - Remotely Piloted Aircraft Systems, points to the fact that it is not permitted to perform flights over the territory of another state without special authorization issued by this state, nor is it permitted to fly over high seas without prior agreements with the appropriate ATS authority. Such a flight might be made upon receipt of appropriate permission to perform this flight before take-off. Flights may be performed pursuant to the conditions determined by the state of registry, the state of the operator if it is different and the state(s) in which the flight is to be performed. The flight must be made on the basis of the flight plan, while the UAV must be compliant with the requirements concerning airworthiness and equipment determined for the airspace in which the flight is to operate.

The EU does not regulate the civil use of remotely piloted aircraft (RPA) with a weight of 150 kg or less. Aircraft with such a weight undergo national regulations adopted by EU member states. UAVs weighing over 150 kg are subject to restrictions of the European Aviation Safety Agency (EASA). Since 2014, the European Commission has been involved in the promotion of the integration of RPA in European airspace. In accordance with the technical opinion issued by EASA, adopted in 2015, the Commission has taken a risk-based regulatory approach with reference to the permission for UAV flight operations. Its purpose is to integrate all unmanned aircraft, irrespective of their size, within the EU aviation safety framework. The main objective is to ensure that the designing, manufacturing, maintenance and exploitation of unmanned aerial systems complies with the basic requirements concerning manned aircraft.

The European Parliament and other EU bodies strictly regulate personal data processing and the right to protect one’s privacy. Drone operators will be subject to stricter norms and requirements contained in Regulation (EU) 2016/679 of the European Parliament and of the

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<sup>4</sup> Drone: Dynamic Remotely Operated Navigation Equipment. Abbreviation used and explained by: R. Klir. 2015. “Unmanned Aerial Vehicles vs. Safety”. In M. Majernik, N. Daneshjo, M. Bosák (eds.) *Production Management and Engineering Sciences*: 413.

<sup>5</sup> BSP/UAV - AAP-6. NATO Standardization Agency. 2011. *Dictionary of Terms and Definitions of NATO*: 386. Brussels: NATO Standardization Agency.

<sup>6</sup> Convention on International Civil Aviation (also known as the Chicago Convention), signed in Chicago on 7 December 1944. Available at: <https://www.icao.int/publications/pages/doc7300.aspx> (accessed 10 June 2018).

<sup>7</sup> International Civil Aviation Organization.

<sup>8</sup> Annex 2 to the Convention on International Civil Aviation. Air Traffic Regulations.

Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation)<sup>9</sup>.

## 2. UNMANNED AERIAL VEHICLES IN POLAND AND IN FRANCE

In France, flight operations of a UAV weighing no more than 25 kg, used for experimental or resting purposes, do not require special permission, if this activity is compliant with particular requirements concerning the flight<sup>10</sup>.

UAVs with a mass below 150 kg, making flight operations for commercial purposes, are subject to valid regulations. UAVs with a weight of 150 kg or higher are subject to regulations at the EU level. The conditions for such a flight and its performance are authorized on a case-by-case basis.

Currently, Polish regulations do not involve UAVs weighing less than 25 kg for registration purposes. If the weight exceeds 25 kg, flight authorization is required and there may be operational restrictions.

In general, UAVs weighing 20 kg or less are exempt from the requirements connected with authorization concerning airworthiness and the operator's certification, whereas UAVs weighing 20-150 kg are subject to coordination with the Air Navigation Service. Hence, operators of these aircraft are obliged, i.e., to obtain an airworthiness certificate and operator certification<sup>11</sup>.

In France, the application for authorization to perform flights for experimental and testing purposes must contain a description of the proposed conditions of experimental flights and measures taken to ensure safety for third parties, both on the ground and in the air. Authorization for flight operations made by UAVs for commercial purposes requires certification for UAV projects with information showing that appropriate analysis and tests have been conducted in order to ensure safe airspace use. UAV performance also requires an operator's declaration with a description of an activity, i.e., a flight<sup>12</sup>.

In France, operators of UAVs for commercial purposes are usually obliged to have a certificate of theoretical competence for flying a manned aircraft. These certificates are also required to qualify for a practical training course. UAVs flying a horizontal distance not greater than 1 km from the operator are subject to additional requirements, which involve having a manned aircraft pilot's licence and meet defined time criteria concerning practical pilot experience. Pilots of drones other than tethered aerostats weighing more than 25 kg must

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<sup>9</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32016R0679>).

<sup>10</sup> Direction de la sécurité de l'aviation civile [Directorate for Civil Aviation Security]. *Aéromodélisme: modèles réduits et drones de loisir: guide 8*. [Model Aircraft Flying: Small-scale Models and Hobby Drones: Guide 8.] 22 December 2015. Available at: <http://www.developpement-durable.gouv.fr/>; archived at: <https://perma.cc/C2T6-BQ5D>.

<sup>11</sup> Regulation of the Minister of Infrastructure and Construction of 8 August 2016 amending the regulation on the exclusion of certain provisions of the Act - Aviation Law for certain types of aircraft and defining conditions and requirements for the use of these ships (*Journal of Laws*, 2016, Item 1317), Regulation of Drones, The Law Library of Congress, Global Legal Research Centre, April 2016.

<sup>12</sup> Arrêté du 17 décembre 2015 relatif à l'utilisation de l'espace aérien par les aéronefs qui circulent sans personne à bord [Order of 17 December 2015, Regarding the Use of Airspace by Unmanned Aircraft] (Airspace Order), Available at: <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000031679868&dateTexte=20160330>; Archived at: <https://perma.cc/ZFA4-5L63>.

perform a demonstration flight before an agent of the ministry in charge of civil aviation before they are authorized to perform a flight<sup>13</sup>.

Polish law distinguishes commercial and non-commercial applications of UAV flights. Pilots/operators of commercial UAV flights, including providers of services related to photography and video filming, must have a certificate issued by the Civil Aviation Authority (CAA), given to individuals who have passed a medical examination and theoretical and practical tests, and possess civil liability insurance. The certificate may allow for performing operations in visual line of sight (VLOS) or beyond visual line of sight (BVLOS) conditions.

In order to obtain an operational VLOS certificate, an applicant is required to sign a declaration of knowledge about the relevant regulations and theoretical foundations concerning airspace, emergencies, rules of performing flights, etc., and to pass theoretical and practical examinations conducted by a CAA examiner. The BVLOS operations certificate entitles a pilot to perform flights beyond the line of sight, with the applicant required to undergo training, as well as pass theoretical and practical tests. The certificate may be restricted to certain mass ranges (below 2 kg and from 2 kg to less than 150 kg) and UAV classes (airplane, helicopter, airship or multirotor)<sup>14</sup>. By October 2015, over 1,500 certificates had been issued.

In Poland and France, registration is not required in the case of a UAV that weighs below 25 kg. If the weight exceeds 25 kg, authorization to perform a flight operation is required, and operational restrictions may apply (e.g., only VLOS and/or within a minimum distance from peopled areas, people and property). Additionally, telecommunications law requires a licence if a UAV uses certain frequencies for communications purposes; however, the majority of UAVs use a frequency that does not require a licence.

In Poland and France, the VLOS mode must allow the pilot to retain separation and avoid collision with any other aircraft. Flights must be performed outside the controlled zones. The operator is obliged to ensure that UAV flight operations do not pose risks to other airspace users, property or third parties.

Usually, a UAV cannot perform flight operations above people and public gatherings in several analysed countries, including France and Poland. In many countries, including France and Poland, there are restrictions concerning flights above sensitive locations, such as military installations, air traffic zones, prisons and nuclear power plants. Without prior authorization, flights are also forbidden above certain historical monuments and national parks or natural reserves in France.

In Poland, a certificate of competence for UAV flight operators may allow for acting in VLOS or BVLOS conditions. If the weight exceeds 25 kg, authorization for a flight is required, and there might be operational restrictions (e.g., only VLOS and/or within a minimum distance from peopled areas, people and property)<sup>15</sup>.

In France, a certification of design is a prerequisite for UAV operation. Moreover, in France, there are numerous safety requirements, which apply to particular types of UAV. Requirements related to the certificate for flights outside a densely populated area, where no third party is present in the area of operation, and within a horizontal distance no greater than 1 km from the pilot, impose on a UAV the obligation to have an automatic system preventing

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<sup>13</sup> Idem: N. Boring. 2016. "France". In *Regulation of Drones*. The Law Library of Congress, Global Legal Research Centre.

<sup>14</sup> Regulation of the Minister of Transport, Construction and Maritime Economy of 3 June 2013 regarding qualification certificates (*Journal of Laws*, 2013, No. 664).

<sup>15</sup> Regulation of the Minister of Transport, Construction and Maritime Economy of 26 March 2013 on the exclusion of certain provisions of the Aviation Act to certain types of aircraft (*Journal of Laws*, 2013, Item 440).

it from going beyond the horizontal distance limits of the flight, or an alarm system to warn the pilot when it flies beyond those limits<sup>16</sup>.

In the case of a UAV weighing 2 kg or more, in a populated area in France, yet without flying over any third party, staying within the pilot's line of sight and within a horizontal distance no greater than 100 m from the pilot, it is obligatory for the UAV to be equipped with a system of protection for third parties. This system is to be activated automatically if a UAV lands automatically after the loss of contact with the pilot. A UAV weighing 4 kg or more will have to have additional equipment ensuring that the pilot has current information about its speed. This equipment must be independent from the UAV's main control link. Additionally, there must be an audible alarm to warn of the UAV's fall.<sup>17</sup>

### 3. UAV APPLICATIONS

Due to the increased use of UAVs in civilian areas, many countries are facing challenges related to developing new legal regulations. Such challenges involve the need to carry out UAV flights without compromising public and national safety, and the necessity to protect areas of national, historical or natural importance. Aviation authorities, both in Poland and in France, are striving to solve problems related to property and property rights of real estate owners or other persons affected by UAV activity.

Performing flights with the use of UAVs is increasing systematically as they are used both in civil and in military environments. It should be assumed that, in the future, UAVs will compete with manned aviation. The advantage of UAV flights in comparison with manned aircraft is that they are cheaper, safer and stay in the air for longer time, while their negative impact on the natural environment is reduced to minimum. Additionally, flights with the use of UAVs may be performed in areas of military activity, dangerous zones and areas difficult to access, as well as in harmful atmospheric conditions (e.g., volcanic dust emissions, high temperatures). Moreover, a UAV may perform a flight operation for a considerably longer time than a manned aircraft. Taking into account the character and the objective of a UAV flight, it is important to adjust a UAV to the task being performed (range, flight level, velocity and time of completion of a flight operation).

Thanks to their versatility, the intensity of UAV flights is on the increase, in both civil and military environments. They are becoming competitive with manned aviation, for operational, financial and safety reasons, as well as with respect to protection of the environment.

In the civil environment, UAVs are used, among others, to patrol forests, in agritourism, to monitor the natural environment, the observation of dangerous phenomena on the ground and urban traffic density, and to patrol pipelines and natural disasters. Additionally, the use of UAVs in mail delivery services is being observed in areas that are difficult to access or remote, where getting there with the use of manned transport is hampered and time-consuming. UAVs are also used in scientific research, such as monitoring subpolar regions, including measurements of the ozone layers, reservoirs with melting water and testing the thickness of ice and air pollution.

Additionally, due to the height of a flight where aviation operations are performed, and the possibility of long-haul flights, the installation of solar panels on the wings and fuselage of UAVs, using light construction parts and external surfaces, they can serve as

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<sup>16</sup> N. Boring. 2016. "France". In *Regulation of Drones*. The Law Library of Congress. Global Legal Research Centre.

<sup>17</sup> Idem.

telecommunications transmitters. They can also be used to deliver cargos in a short time to locations that are hard to access or distant, while UAVs are being increasingly used in emergencies, where there is an urgent need to deliver medicinal products. Further, UAVs are frequently being used in SAR operations and forensics.

They are also used in commercials, events and the real estate industry to take photos and record videos on locations that are hard to access, as well as in profile shoots. Using UAVs offers an opportunity to expand the area of transmission, when an operator is in a transmission vehicle in a distant place. It is indispensable for present-day sports events, such as football matches, ski jumps and marathons, in terms of utilizing images from cameras installed on UAVs.

The main areas of UAV use by the military are: reconnaissance, using armour, lighting and pointing at targets for aviation and other task forces, and retranslating a radio signal. UAVs are equipped with devices for observation, such as optoelectronic heads mounted under the UAV fuselage.

UAVs are also used by organized and non-organized crime groups for the surveillance of computer networks or protection systems in various civil and military centres. On the other hand, they can be used for smuggling, provocation, testing the readiness of systems that are part of border protection, or air defence, and diverse counterterrorist applications.

The image may be recorded on board a UAV or transmitted to particular locations, often with the use of satellite communications. To provide full image coverage, often several cameras are used, which can observe selected targets, with the image in a certain configuration sent to a defined location.

Thanks to the use of appropriate sensors and operational levels, UAVs are exceptionally useful and effective on the contemporary battlefield. The appropriate flight altitude, compact structure, and a limited surface for optoelectronic deflection are advantageous in present-day conflicts. UAVs may be practically invisible and inaudible for soldiers who are not equipped with appropriate optic and recognition devices. An additional advantage is the fact that a pilot/operator may perform their duties from a distant and safe location throughout the whole flight operation, without putting their life at risk.

The division of UAVs according to their weight has a crucial significance during their operational use. Maximum take-off weight has a direct effect on the type and location of a task due to the length of the flight, operational latitude and equipment that can be installed on board a UAV. An operational task depends upon the possibility of take-off and landing. Both in military and in civil environments, multicopter vertical take-off and landing platforms are enjoying increasing popularity. They are characterized by considerable stability during the flight, spot hovering, possibilities of precise steering, and lifting capacity, which provides for proper task completion. Using UAVs is also of interest to crime groups that smuggle various materials across a border and carry out their criminal activity through the use of various cameras.

Performing flights by unmanned and manned aircraft for both commercial and non-commercial purposes is systematically increasing; however, it cannot adversely affect the level of safety of airspace users. It is a process that has started and, undoubtedly, it is going to continue, mainly because performing flights with the use of UAVs is cheaper and safer in comparison with manned aircraft. Additionally, UAVs stay in the air for extended periods, thanks to which they can perform operational tasks that require a longer time, as well as fly into a zone where there are dangerous conditions for manned aircraft. Finally, the pilot/operator is not directly affected by the completion of the flight task.

Due to appropriate technical equipment, through the use of programmes for the design and

implementation of the flight trajectory, UAVs can perform a flight autonomously and are equipped with an autopilot function that takes control of the flight in all flight phases, including the take-off and landing. Additionally, UAVs do not need such a huge engineering and technical background, as it is the case for manned aircraft.

Finally, systematic activities should be undertaken to ensure safety for airspace users. These actions must be precisely coordinated and correspond to the development of technology, as well as the increase in the number and awareness of the presence of UAVs in the airspace.

### 3. SUMMARY

The performance of UAV air operations weighing up to 150 kg is subject to the national laws of EU member states, while regulations concerning UAVs weighing more than 150 kg are the responsibility of European organizations dealing with air traffic safety. Therefore, current UAVs weighing more than 150 kg, both in France and in Poland, perform air operations in segregated air spaces.

The integration of manned and unmanned aviation will be based on an analysis of the risks associated with the operation of air operations by manned and unmanned aircraft in one airspace. Due to the wide application of UAVs, it is expected that, in the near future, there will be full integration of manned and unmanned aviation, regardless of commercial or non-commercial use, and use in civil and military environments, regardless of their size and speed.

In order to ensure safety in the airspace, it is reasonable that UAV regulations in EU countries should be the same and ensure the safety of air traffic users, as well as clarity and transparency in decision-making by air traffic personnel and pilots of manned aircraft and pilots/operators of unmanned aircraft vehicles.

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