Camera Drones
Lecture – Regulations for camera drones in Austria

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WS 2022
Outline

- Overview of EU wide regulations
- Categories and drone classes
- No-Fly zones
- Example case DJI Mavic AIR 2
Regulations in Austria – Austro Control

Willkommen bei dronespace.at, dem Austro Control Drohnen-Portal. Wir sind zentrale Ansprechstelle für alle Fragen rund um das Thema unbemannte Luftfahrzeuge. Von der Registrierung, über den Drohnenführerschein bis hin zum Drohnenflug.

www.dronespace.at
EU wide drone (UAV) regulations

- Since 2021 EU wide rules apply for drone operation
- Regulations apply when a drone is operated outside
- Depending on the type of drone different rules may apply:
  - Registration might be needed
  - Pilot certificate might be needed
  - Permit might be needed
- Insurance is needed in any case
## Categories for drone operation

<table>
<thead>
<tr>
<th>OPEN Category</th>
<th>SPECIFIC Category</th>
<th>CERTIFIED Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk operation</td>
<td>Increased risk operation</td>
<td>Risk as manned aviation</td>
</tr>
<tr>
<td>No pre-approval needed</td>
<td>Authorization of Austro Control needed</td>
<td>Certification needed</td>
</tr>
<tr>
<td><strong>Limitations:</strong></td>
<td>Authorization based on risk assessment (SORA)</td>
<td>Needed for air taxi, transportation of goods over people</td>
</tr>
<tr>
<td>25kg, Visual line of sight, height &lt; 120m, 3-sub categories: flying over, close to or far from people</td>
<td>Suitable for industrial applications, transport of goods, BVLOS</td>
<td></td>
</tr>
<tr>
<td>Suitable for general public, photographers</td>
<td></td>
<td></td>
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</table>

[Image credit: By User:Stahlkocher CC BY-SA 3.0]
Drone classes for open category

- Drones will be classified by the manufacturers depending on size and technical capabilities

<table>
<thead>
<tr>
<th>Class C0</th>
<th>Class C3</th>
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<tr>
<td>• below 250g and 19m/s</td>
<td>• below 25kg and 3m size</td>
</tr>
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<table>
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<th>Class C4</th>
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<tr>
<td>• below 900g and 19m/s</td>
<td>• below 25kg</td>
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<tr>
<th>Class C2</th>
<th></th>
</tr>
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<tr>
<td>• below 4kg</td>
<td></td>
</tr>
<tr>
<td>• maximal flight height 120m</td>
<td></td>
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<tr>
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Open sub-categories

- 3 sub-categories
  - A1: Over people
  - A2: Close to people
  - A3: Far away from people

- Each subcategory defines a specific mode of operation, the usable drones and requirements for the pilot
Open Subcategory A1

- Permitted flight maneuvers
  - Basically flying everywhere, but no flying over crowds of people
  - For C1 drones: Avoid overflight over uninvolved persons,
  - In follow-me mode, drone needs to be closer than 50m

- Permitted drone
  - Class C0, C1 drones, self built drones (<250g)

- Required qualification
  - Pilot has studied the user manual
  - Online exam needed for piloting class C1 drone
Open Subcategory A2

- Permitted flight maneuvers
  - A horizontal distance of at least 30m must be maintained to uninvolved people.
  - No overflight of uninvolved people is allowed

- Permitted drone
  - Class C2 drones

- Required qualification
  - Pilot has studied the user manual
  - A2-exam needed
Open Subcategory A3

- Permitted flight maneuvers
  - Horizontal distance of 150m must be maintained to residential, commercial, industrial and recreational areas
  - Endangerment of uninvolved people must be excluded

- Permitted drone
  - Class C3,C4 drones, self built drones (<25kg)

- Required qualification
  - Pilot has studied the user manual
  - Online exam needed
Drone classes for open category

Drones will be classified by the manufacturers depending on size and technical capabilities

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Classification of many drones not yet available

- Temporary rules until end of 2022
- Drones with a weight of less than 500g can be operated under category A1. Flight over uninvolved people is only allowed with a drone with a weight up to 250g. (No online exam needed for drones with less than 250g)

- Drones with a weight up to 2kg can be operated under category A2. A minimal distance of 50m has to be kept to uninvolved people.

- Drones with a weight up to 25kg can be operated under category A3. Category A3 defines the following restrictions. The drone can be operated only when keeping a minimal distance of 150m to residential, industrial or recreational areas. The flight area is not allowed to include uninvolved persons. (This means operation in unpopulated areas)
Rules for typical drones

- List of rules for typical drones:

- Only 1 drone so far has a C-label

<table>
<thead>
<tr>
<th>Drone</th>
<th>subcategory</th>
<th>registration needed</th>
<th>Online exam needed</th>
<th>weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DJI Mavic 3 (C1 label)</td>
<td>A1</td>
<td>yes</td>
<td>yes</td>
<td>899g</td>
</tr>
<tr>
<td>DJI Mavic Mini, Mini 2, Mini 3</td>
<td>A1</td>
<td>yes</td>
<td>no</td>
<td>249g</td>
</tr>
<tr>
<td>DJI Mavic Air 2</td>
<td>A2/A3</td>
<td>yes</td>
<td>yes</td>
<td>570g</td>
</tr>
<tr>
<td>Ryze Tello</td>
<td>A1</td>
<td>yes</td>
<td>no</td>
<td>80g</td>
</tr>
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Registration requirement

Registration is required for operators in the following categories:

- **Open category:**
  - for drones with a weight > 250g
  - for drones with a weight < 250 (if they have a camera)
  - for drones which can produce a kinetic energy of more than 80J (racing drones)

- **Specific category**
  - for all drones

- Toys according to the EU „Toy guideline“ are exempted from registration, even if they have a camera

- Registration needed for operator but not for individual drones.
  Registration number needs to be fixed to drone when operated.

- Costs: 32,40 EUR, valid for 3 years
Online exam

- Sub-category A1, A3
  - [https://www.dronespac...](https://www.dronespac...)
  - Exam free of charge

- Sub-category A2
  - [https://www.dronespac...](https://www.dronespac...)
  - Additional theoretic exam, in person at AustroControl (43,20 EUR)
  - Practice training with drone
When you fly

- Have your proof of registration with you
- Registration number on drone
- Have proof of online exam with you (if needed)
- Not under influence of alcohol
- Start only from public grounds or ask permission from owner (e.g. farmer)
- Flying over other property is allowed, only starting place needs permission
Specific category

- If conditions for “Open” category not met, a permit for operating in specific category needs to be applied for.

- Specific allows:
  - Beyond visual line of sight, BVLOS
  - Drone weight larger than 25kg
  - Drone weight larger than 4kg over residential area

- Application needs to contain a „Specific Operation Risk Assessment“ (SORA)

- Alternative: Mode of operation falls into a so called “Standard Szenario”
Standard scenario

- Standard scenarios are defined by Austro-Control
- If drone operation falls within a standard scenario, only a declaration of drone operation needs to be sent to Austro-Control
- Currently 3 standard scenarios defined
Standard scenario 1

- Definition: Operation of a drone with a maximum weight of 5kg in not populated areas.

- Purpose of the flight is Photography, Surveying or agricultural spreading

- Conditions:
  - unpopulated area
  - no uninvolved people allowed in area
  - max flight height 120m
  - operation only with direct line of sight
  - only at daytimes
Standard scenario 3

- **Definition:** Operation of a drone with a maximum weight of 25kg in populated and not populated areas.

- **Purpose of the flight is Photography, Surveying**

- **Conditions:**
  - Aviation license or remote piloting license or uLFZ exam
  - physical fitness proof
  - max flight height 120m
  - operation only with direct line of sight
  - only at daytimes
  - safe distance to uninvolved people or crowds of people
Standard scenario 4

- **Definition**: Operation of a drone with a maximum weight of 5kg in densely populated, populated and not populated areas.

- **Purpose of the flight**: Photography, Surveying

- **Conditions**:
  - Aviation license or remote piloting license or uLFZ exam
  - Physical fitness proof
  - Max flight height 120m
  - Operation only with direct line of sight
  - Only at daytimes
  - Safe distance to uninvolved people or crowds of people
Betriebsanleitung – UAS (Einsatz-Szenario 1)

Erklärung über den Betrieb im Rahmen eines nationalen Standardszenarios für den UAS (Einsatz-Szenario 1 für den Betrieb im unbesehenen Gebiet mit unbemannten Luftfahrzeugen bis einschließlich 5 kg gemäß Art. 5 Abs. 5, Art. 23 Abs. 4 und UAS SPEC 020 der Durchführungsverordnung (EU) 2019/947 über die Vorschriften und Verfahren für den Betrieb unbemannter Luftfahrzeuge (Verordnung S 5 des Luftfahrverordnungen und -beschränkungen Nr. 67 (LBTH 67)).

1. Information

Name des UAS-Betreibers

Registriermelder des UAS-Betreibers

UAS-Model

UAS-Identifikationsnummer

2. Dekläration


Ich bestätige, dass für jeden in der Erklärung genannten Flug ein angemessener Sicherheitsplan vorgelegt wird.

3. Datenschutz


Sollte Sie weitere Informationen zur Verarbeitung Ihrer personenbezogenen Daten wünschen, oder beschnitten, Ihre Rechte wahrzunehmen, indem Sie z.B. Zugang zu Ihren Daten oder die Berichtigung ungenauer oder unvollständiger Daten verlangen, werden Sie bitte an die Kontaktstelle der zuständigen Behörde.

4. Sicherheitsvorkehrungen

• Analog der Durchführung von Flügen wird nur besiedeltes und dicht besiedeltes Gebiet aufgezogen, wobei der Flughöhe entspricht, mindestens jedoch 50 m.

• Während des Betriebs des unbemannten Luftfahrzeugs wird zwischen Flugbereich und unbemannten Personen ein Abstand eingehalten, wobei der Flughöhe entspricht, mindestens jedoch 50 m. In einem Umkreis von 160 m um den Flugbereich befinden sich keine Menschenansammlungen oder Orte mit vermehrter Passantenaufkommen. Dies wird durch geeignete Maßnahmen sichergestellt. Sollten Personen in diesem Bereich auftreten, wird das unbemannte Luftfahrzeug sofort geladen.

Datum

Unterschriften

22.10.2021

22.10.2021
Flight restriction zones

- Around airports control and safety zones are defined
- Other restricted zones are defined by Austro-Control
- Flying in control zones and safety zones and restricted zones need a special permission or clearance, either by Austro Control or the Air Traffic Controller (ATC)

Example:
- City of Vienna is a restricted area
- Lake Neusiedl
map.dronespace.at
Control zone Airport Graz (CTR LOWG)

- Luftfahrtgesetz LFG (§24)
- The operation of drones within control zones is not allowed.
- Exempted of this is the operation of RC models at designated RC model sites.
- The operation of drones can be granted with consent of the responsible air traffic control authority.

- How to get such a permit:
  - Call the airport tower approx. 1 hour before the flight
  - Airport Graz Tower +43517036710
Control zone Airport Graz (CTR LOWG)

https://eaip.austrocontrol.at/lo/170203/Charts/LOWG/LO_AD_2_LOWG_24-9_en.pdf
Control zone Airport Graz (CTR LOWG)

- Exemption starting from 12.8.2022

- Drone flights with drones below 250g and with a maximum flight height of 30m do not need to apply for a permit for flights in a control zone or a flight restricted area.

- This means, drone flights in Graz and Vienna are now possible.
Safety zone Airport Graz (SIZO LOWG)

- Safety zone: complex 3D shape around an airport
- Luftfahrtgesetz LFG (§24)
- The operation of drones is only allowed with consent of the responsible authority (Austro Control).

- How to get such a permit:
  - Apply for permit at Austro Control at least 3 weeks before the flight
  - Tower can call to stand down with operation if airspace is not cleared

- Safety zones are also defined around helicopter pads at hospitals!
Safety zone Airport Graz (SIZO LOWG)

FPV – First person view

- FPV flight with goggles does not fulfill the condition of “direct visual line of sight”
- It is considered Beyond visual line of sight.
- Operation needs a second person (spotter) which is able to take over control as well.
Privacy issues – Data protection law

- Datenschutzgesetz (§ 45 DSG 2000)
- Operating video surveillance needs to be registered (DSG)
- Relevant for DSG is video data and not still photography

- The DSG allows the creation of video data for private use (e.g. travel documentation etc.) then it is not video surveillance and is not regulated by DSG. Storing such data and processing it can be done without a registration.
- Sharing such data is only allowed with consent of every identifiable person in the video/image.

- https://www.dsb.gv.at/fragen-und-antworten

- If commercial, each filming has to be applied for online. Does not allow for publication of the material.
What is needed to fly this drone?

- DJI Mavic Air 2, 570g
What is needed to fly this drone?

- DJI Mavic Air 2, 570g
- No C classification yet
- Can be operated in populated areas with:
  - Registration, Insurance, Online Exam, A2-Exam
  - No flight over uninvolved people or crowds
  - Safety distance to people need to be kept (min(flight height, 50m))
What is needed to fly this drone?

- DJI Mavic Air 2, 570g
- No C classification yet
- Case of flying in not-populated areas:
  - Registration, Insurance, Online Exam, A2-Exam
  - Safety distance of 150m to buildings and no uninvolved people in flight area allowed
What is needed to fly this drone?

- DJI Mini 3, 249g
- No C classification yet
- Can be operated under category A1
- Can be operated in populated areas with:
  - Registration, Insurance
  - No flight over crowds
- Can be operated in control zones

[Image credit: DJI]