

---

# Camera Drones

## Lecture – Regulations for camera drones in Austria

Prof. Friedrich Fraundorfer

WS 2020

# Outline

---

- Categories and Permits
- No-Fly zones
- Toy planes
- Example cases
- New EU-wide regulations

# Regulations in Austria – Austro Control


**austro**  
CONTROL

LOWK Klagenfurt -2 °C / 3 km/h

AIM C

Suchbegriff eingeben

UNTERNEHMENFLUGSICHERUNGPILOTENLUFTFAHRTBEHÖRDEWETTER



**LUFTFAHRTBEHÖRDE**

Luftfahrzeuge

Luftfahrtunternehmen

Lizenzen & Bewilligungen

Pilotenlizenzen

Flugmedizin

Fluglotsenlizenzen

Wartungslizenzen

Flugbewilligungen

Charter

Linie

Staatsluftfahrzeuge

Special Performance

Permit to fly

Einflug/Überflug: §18 LFG

Unbemannte LFZ

FAQ

Unbemannte Luftfahrzeuge / Drohnen

> Startseite > Luftfahrtbehörde > Lizenzen & Bewilligungen > Flugbewilligungen > Unbemannte LFZ

**Betrieb von unbemannten Luftfahrzeugen**

Gemäß der Novelle zum Luftfahrtgesetz (LFG) ist seit 1.1.2014 der Betrieb von unbemannten Luftfahrzeugen (umgangssprachlich auch Drohne genannt) möglich. Wir haben für Sie die wichtigsten Informationen zur technischen Zulassung und zum Betrieb (insbesondere der Klasse 1 gem. Luftfahrtgesetz) zusammengefasst:

- Der Betrieb von unbemannten Luftfahrzeugen ist seit 1.1.2014 möglich. Rechtliche Grundlage ist das novellierte Luftfahrtgesetz.
- Die konkreten Durchführungsbestimmungen dazu finden Sie am Ende dieser Seite.

**Unbemannte Luftfahrzeuge (zuständige Behörde Austro Control)**

Austro Control erteilt ausschließlich die luftfahrtrechtliche Bewilligung. Es liegt in der Verantwortung des „Betreibers“ alle weiteren rechtlich relevanten Bestimmungen einzuhalten (z.B. Datenschutz, Bewilligung zum Betrieb innerhalb von Sicherheitszonen, gewerberechtliche Bewilligung, Naturschutz usw.).

**Unbemannte Luftfahrzeuge der Klasse 1 (mit Sichtverbindung)**

**Kontakt**

**Technische Zertifizierung**

Florian Glatzl, Msc

Tel: +43(0)51703 1616

**Betriebsbewilligung**

Vinzenz Mittl

Tel: +43(0)51703 7010

**E-Mail**

**Liste Betriebsbewilligungen**

Zur besseren Orientierung haben wir nachfolgend mit Zustimmung der jeweiligen Betreiber eine Liste von bereits erteilten uLFZ Betriebsbewilligungen veröffentlicht mit Kategorie, Einsatzgebiet sowie genehmigter uLFZ (Drohnen) Type.

**Übersicht Bewilligungen uLFZ**

(PDF, 1.06 MB)

# Regulations in Austria – Austro Control

---

- Defined in LFG (Luftfahrtgesetz) and LBTH 67 (Lufttüchtigkeits- und Betriebstüchtigkeitshinweis Nr. 67)
- <https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10011306>
- [https://www.austrocontrol.at/jart/prj3/austro\\_control/releases/de/upload/6\\_LBTH\\_67.pdf](https://www.austrocontrol.at/jart/prj3/austro_control/releases/de/upload/6_LBTH_67.pdf)
- <https://www.austrocontrol.at/drohnen>

# When is a permit necessary?

---

- **When is a permit for the operation of a UAV (drone) needed**
- If you operate a drone within a circumference of larger than 500m
- OR commercially (payment)
- OR not just for the fun of flying
- Then a permit from AustroControl is needed.
- Such a UAV is then called a UAV of class 1 and is not a RC model.
- Clarifications: If you have a camera on board and are filming or taking pictures then the flight is not just for fun and a permit is needed. Independently of the flight being of private or commercial nature

Exception: UAV's with a maximal kinetic energy up to 79 Joule operated below 30m height.

# When is no permit necessary?

---

- **No permit is needed when the UAV is categorized as a RC model**
- UAV's with a weight of less than 25kg
- Operation within line of sight with a maximum distance of 500m
- Flying just for fun
- Insurance is mandatory

# Where can you fly without permit?

---

- If your UAV is considered a RC model then operating it is allowed generally anywhere except in defined no-flight zones and controlled zones (LFG)
- It is allowed to fly over other properties, however the land owner has to be asked for starting and landing sites.
- The pilot is responsible for not endangering people and properties.
- <http://www.prop.at/b208/fliegen-im-freien-gelaende.html>
- Insurance needed!

# UAV classes (when your drone is not a RC model)

---

- Class 1: UAV's operating within line-of-sight
  - These are all typical drones (multicopter etc).
- Class 2: UAV's operating beyond line-of-sight
  - Are treated like regular airplanes. Pilots license needed.



## Permit types A,C,D (Class 1)

operating weight	operation area		
	I not populated	II populated	III densely populated
$\leq 5\text{kg}$	A	C	C
$>5\text{kg},$ $\leq 25\text{kg}$	C	C	D
$>25\text{kg},$ $\leq 150\text{kg}$	C	D	D

# UAV requirements for A,B,C,D

---

- A:
  - Less than 5kg
  - No requirements
- B: not available anymore
- C:
  - Redundancy: > 4 rotors, redundant battery, redundant controller
  - Position hold, homing, automatic landing
- D:
  - Same regulations as for real airplanes (CS-LURS)

# Pilot requirements for A,B,C,D

---

- A:
  - Age of 16years
  - Written declaration of pilot
- B: not available anymore
- C-D:
  - Age of 16years
  - Pilot needs to take specific UAV exam

# When you have no permit?

---

- **Consequences if you operate a UAV of class 1 without a valid permit**
- Such an operator is subject to a charge
- A charge can be filed by AustroControl and every citizen
- A fine up to 22000 EUR can be charged

# When you fly

---

- Have your permit with you
- License plate on drone
- No alcohol
- Have flight journal with you and note down flight location, date and time
- Start only from public grounds or ask permission from owner (e.g. farmer)
- Flying over other property is allowed, only starting place needs permission

# Control zones and Safety zones

---

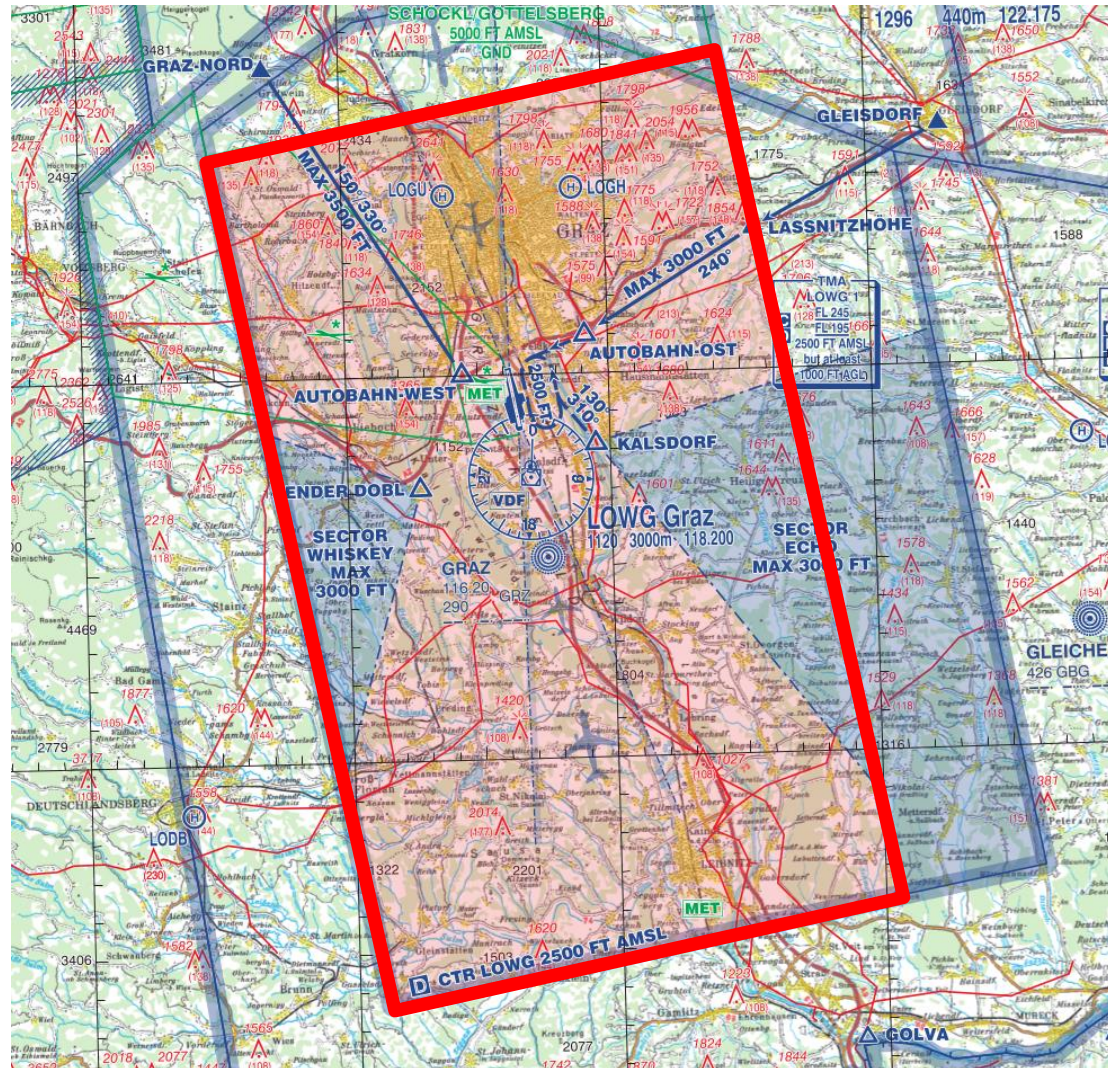
- Around airports control and safety zones are defined
- Regular permit does not allow flying in control zones and safety zones
- Special permit or clearance needs to be requested

# Control zone Airport Graz (CTR LOWG)

---

- Luftfahrtgesetz LFG (§24)
- The operation of RC models within control zones is not allowed.
- Exempted of this is the operation of RC models at designated RC model sites.
- The operation of UAV's of class 1 is only allowed 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 051703/6712

# Control zone Airport Graz (CTR LOWG)





# Safety zone Airport Graz (SIZO LOWG)

---

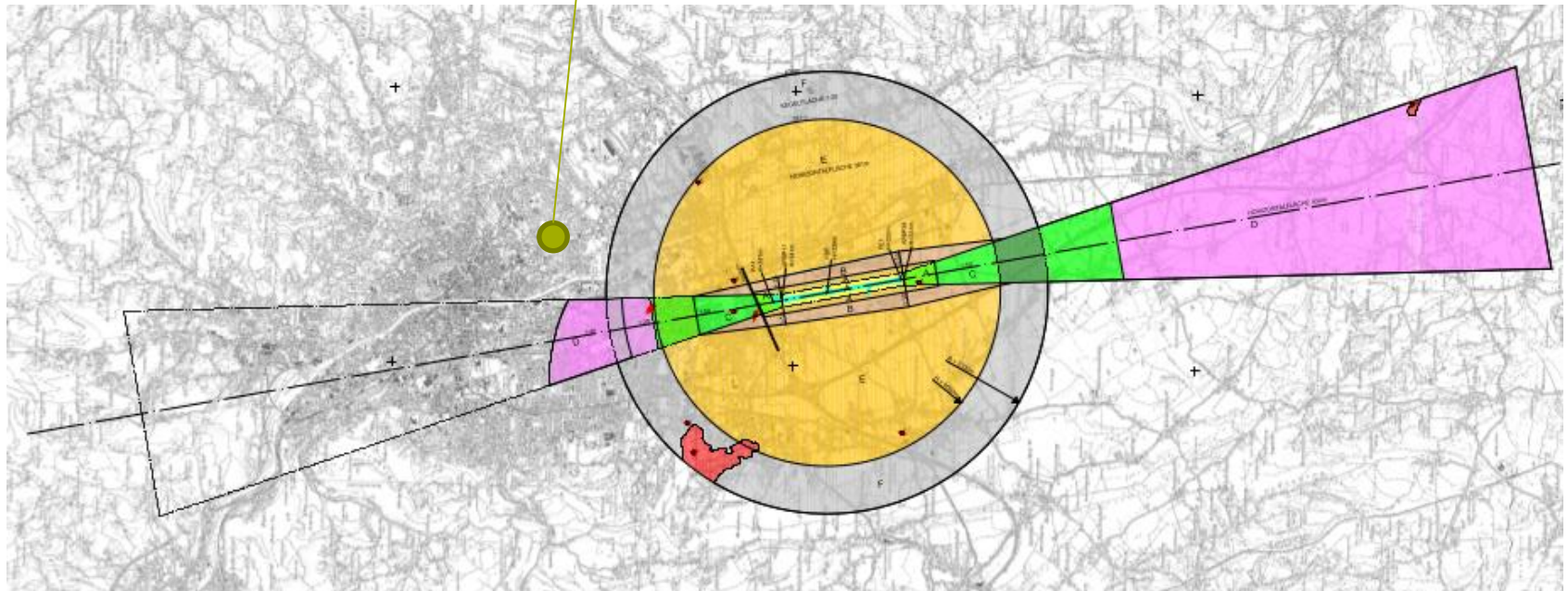
- Safety zone: complex 3D shape around an airport
- Luftfahrtgesetz LFG (§24)
- The operation of RC models and UAV's of class 1 is only allowed with consent of the responsible authority (Austro Control).
- How to get such a permit:
  - Apply for permit at Austro Control at least 3 weeks before the flight
  - Costs: 350 EUR
  - Tower can call to stand down with operation if airspace is not cleared

# Safety zone Airport Graz (SIZO LOWG)

Norden

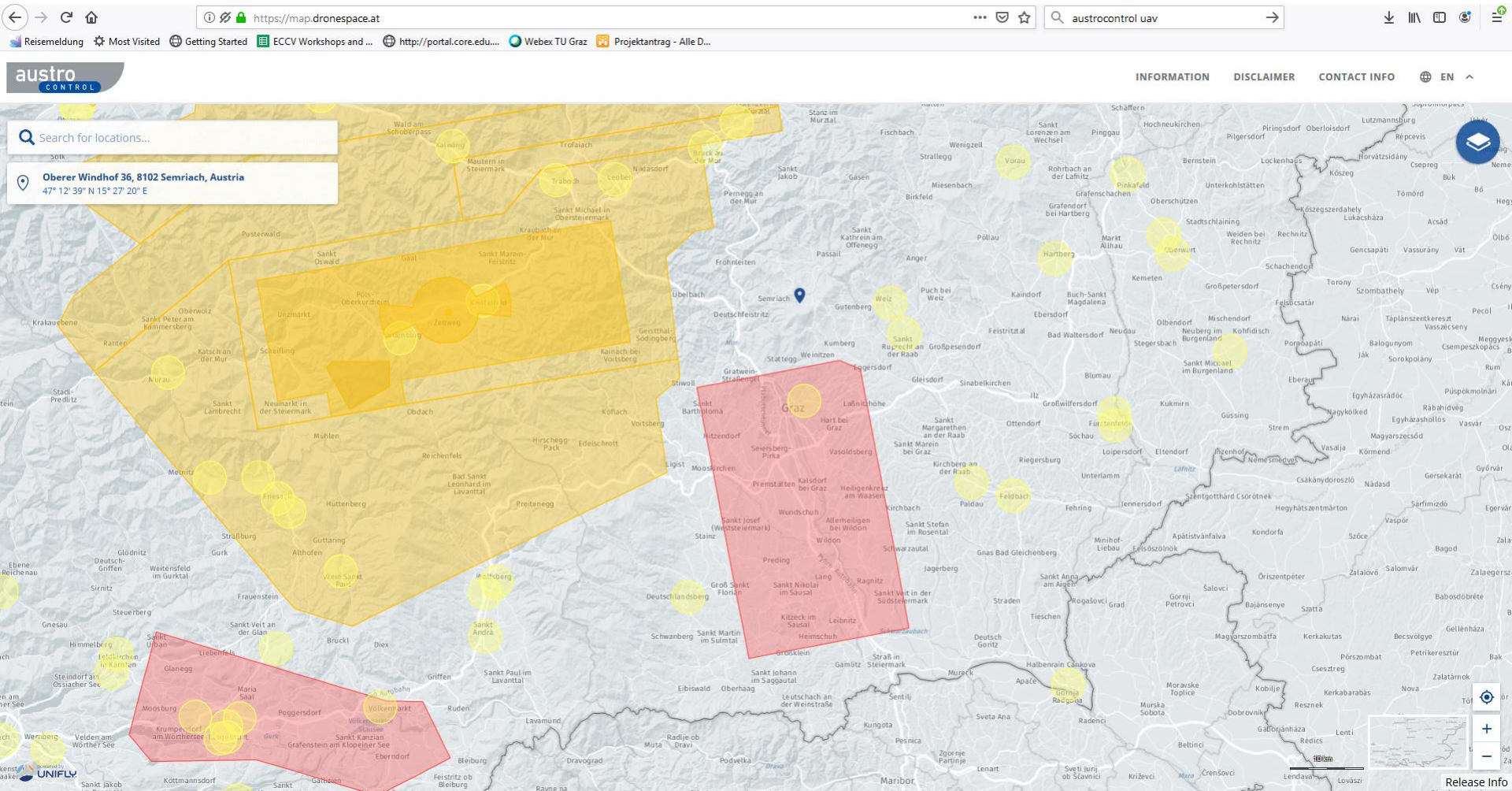


Infeldgasse



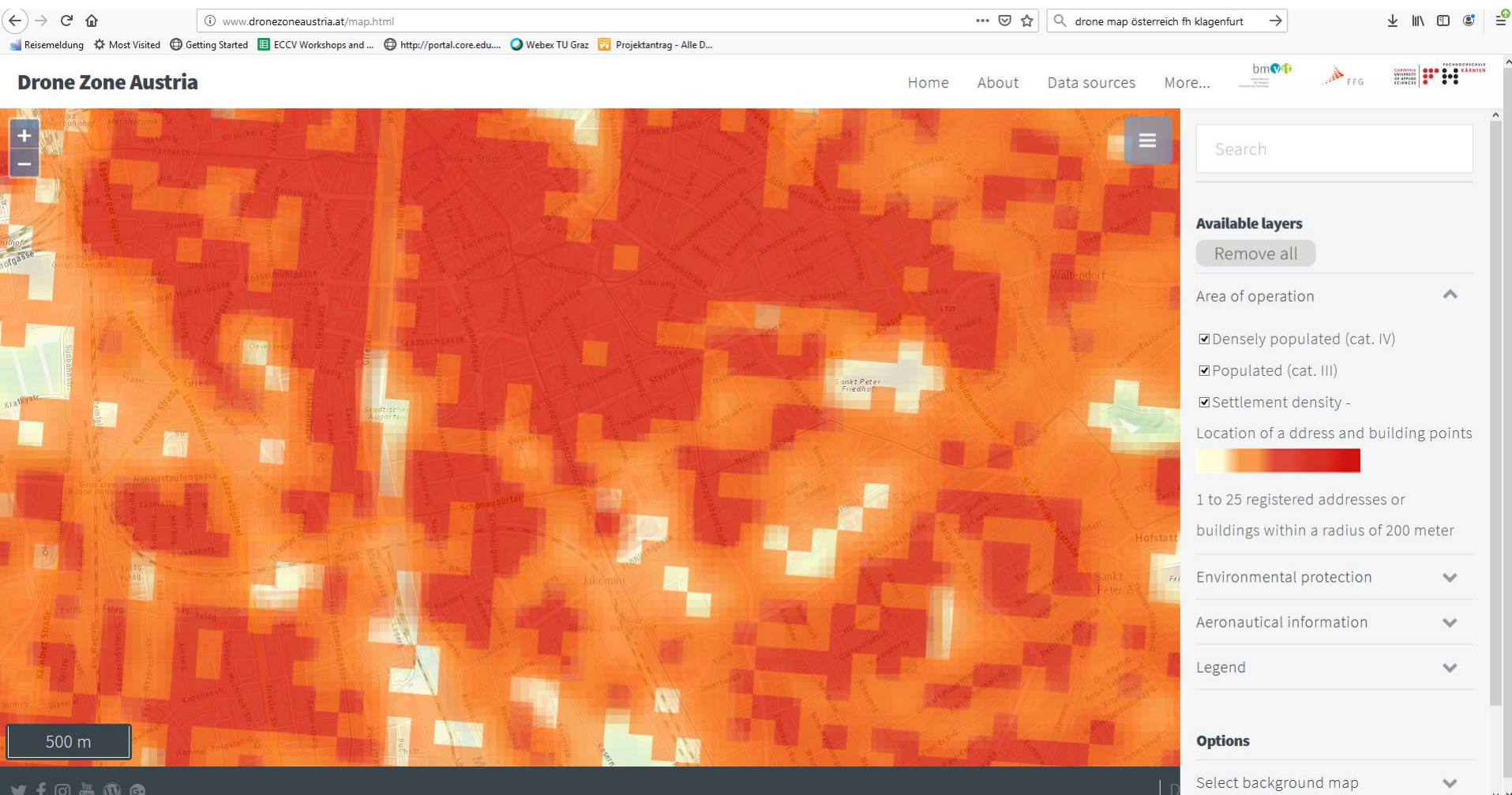
<https://www.bmvit.gv.at/verkehr/luftfahrt/flughaefen/downloads/sizolowg.pdf>

# map.dronespace.at



- Also as App available (Drone Space – App)





- Information not legally binding

## Additional requirements – Printed in the permit

---

- The permit does not allow an operation over crowds of people and over inflammable or explosive industrial areas. This requires a special permit.
- Within a radius of 50m only the pilot and people needed for the flight are allowed. Measures have to be taken to ensure this. The UAV has to be landed immediately if other persons enter this area.
- Within a radius of 150m no crowds of people or frequent passerby's are allowed.
- The operator needs to carry a measurement device for wind strength and direction. The UAV is not allowed to operate at winds stronger than 8m/s.
- Maximum height of 150m over ground

# Do you need a permit for this?

---



[Image credit: DJI]

# Do you need a permit for this?

---



[Image credit: DJI]

- Yes, if you take an image with the camera
- No, if you don't take an image.
- If you just fly for fun, it counts as an RC model. No permit needed. However, no flying of RC models in control zones and the whole area of Graz is a control zone!
- If you take an image you need a permit. Categories apply. No flying when there are buildings, etc. Which means, even flying in garden is not allowed. Permit C would be necessary for this!

# FPV – First person view

---

- Camera stream is only used for flight control (not recorded) and flying is just for fun – then it is an RC model
- However, control has to be done with unaided line-of-sight (no telescopes etc) – otherwise it would be a UAV of class 2!
- Therefore, a second person needs to act as an observer with the possibility of taking over control (second remote control)
- Such a situation does not require a permit



# Toy plane category

---

- Drones that have a maximum kinetic energy of less than 79 Joule and are operated below 30m are considered toys and for this drones the LFG does not apply.
- Toy planes are not RC models and not UAV's of class 1 or 2.
- LFG does not apply (safety zones, control zones).
- The user is responsible such that the operation of the toy planes does not endanger people and properties or objects.
- Insurance not mandatory
- Example: A drone with less than 250g weight will have less than 79 Joule if operated below 30m.

# Toy plane category

- Interestingly: Even a more powerful drone can be considered as a toy, when it is operated within the limits of 79 Joule kinetic energy.
- This can be achieved by limiting the flight height and the maximum speed!
- E.g.: Maximum allowed flight height for drones heavier than 250g
- $\text{Max height [m]} = 79 \text{ [J]} / (\text{weight [kg]} * 9.81 \text{ [m/s/s]})$
- Examples:

Model	Weight (kg)	Max Flight Altitude [m]
Toy drone 250g	0,25	32,21
AR Drone 2.0	0,4	20,13
Parrot Bebop 2	0,5	16,11
DJI Mavic	0,743	10,84
DJI Phantom 4	1,38	5,8
AscTec Falcon	2,2	3,66
DJI M100	3,6	2,24

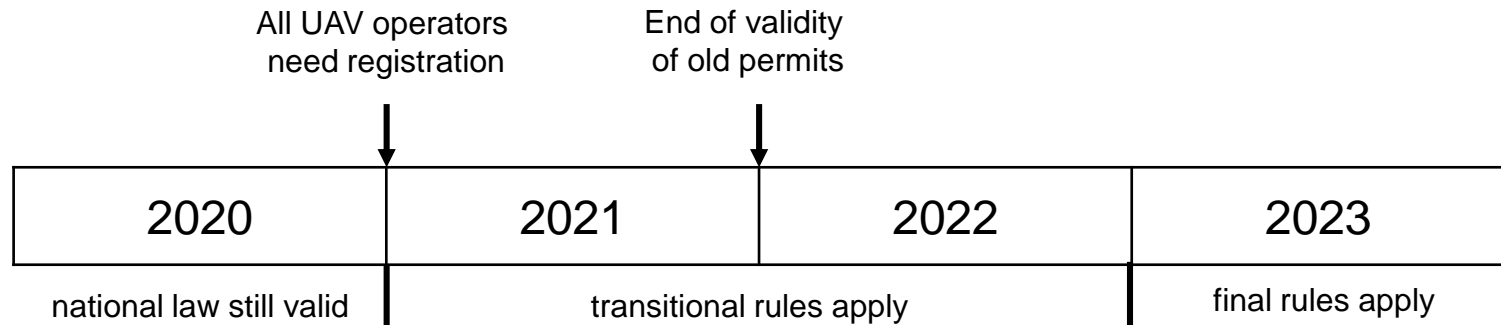
# Privacy issues – Data protection law

---

- 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.

# New EU-wide rules - Timeline

- Will be valid starting from 31.12. 2020. Until then the current national law is still valid.



# Categories for drone operation

[Image credit:  
Parrot]



[Image credit:  
By User:Stahlkocher  
CC BY-SA 3.0]

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

# Drone classes

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

<p>Class C0</p> <ul style="list-style-type: none"><li>• below 250g and 19m/s</li><li>• maximal flight height 120m</li></ul>	<p>Class C3</p> <ul style="list-style-type: none"><li>• below 25kg and 3m size</li><li>• maximal flight height 120m</li><li>• Equipped with Remote-ID and Geo-Awareness</li></ul>
<p>Class C1</p> <ul style="list-style-type: none"><li>• below 900g and 19m/s</li><li>• maximal flight height 120m</li><li>• Equipped with Remote-ID and Geo-Awareness</li></ul>	<p>Class C4</p> <ul style="list-style-type: none"><li>• below 25kg</li><li>• maximal flight height 120m</li></ul>
<p>Class C2</p> <ul style="list-style-type: none"><li>• below 4kg</li><li>• maximal flight height 120m</li><li>• Equipped with Remote-ID and Geo-Awareness</li><li>• Secured communication</li></ul>	

# Open Subcategory A1

---

- Permitted flight maneuvers
  - 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
- 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
  - Online exam needed (might be different exam than for A1)



# 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
- Required qualification
  - Pilot has studied the user manual
  - Online exam needed

# Drone classes

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

<p>Class C0</p> <ul style="list-style-type: none"><li>• below 250g and 19ms/s</li><li>• maximal flight height 120m</li></ul>	<p>Class C3</p> <ul style="list-style-type: none"><li>• below 25kg and 3m size</li><li>• maximal flight height 120m</li><li>• Equipped with Remote-ID and Geo-Awareness</li></ul>
<p>Class C1</p> <ul style="list-style-type: none"><li>• below 900g and 19ms/s</li><li>• maximal flight height 120m</li><li>• Equipped with Remote-ID and Geo-Awareness</li></ul>	<p>Class C4</p> <ul style="list-style-type: none"><li>• below 25kg</li><li>• maximal flight height 120m</li></ul>
<p>Class C2</p> <ul style="list-style-type: none"><li>• below 4kg</li><li>• maximal flight height 120m</li><li>• Equipped with Remote-ID and Geo-Awareness</li><li>• Secured communication</li></ul>	

# Registration requirement

---

Registration is required for operators in the following categories:

- Open category:
  - for drones with a weight  $> 250\text{g}$
  - for drones with a weight  $< 250$  (if they have a camera)
  - for drones which can produce a kinetic energy of more than  $80\text{J}$
- Specific category
  - for all drones

**Will be required from 31.12.2020 on!**

# Summary

---

- If your drone is a UAV class 1, an RC model or a toy does not depend on the hardware itself, but on the current usage.
- A drone can be considered as a toy when it is low flying.
- The same drone can be considered as a RC model when you just fly for fun.
- The same drone can be considered as a UAV class 1 and then requires a permit when you take a picture.
- New rules will apply soon, registration already needed by end of this year!