

Urban Air Mobility
**The Regulatory Regime
in Germany**

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Do we need new rules?

Do we have rules?

- Air Traffic Act of 1 August 1922 (as amended)

Criticism

- New technology
- Legislator could not have had UAM in mind when drafting the existing set of rules
- Existing rules do not fit

Are they applicable and appropriate?

UAM as aircraft

§ 1 (2) Air Traffic Act

Aircraft are:

1. Aeroplanes
2. **Rotary wing aircraft**
3. Airships
4. Gliders
5. Motor gliders
6. Free and tethered balloons
7. (deleted)
8. Rescue parachutes
9. Flight models
10. Air sports equipment
11. **Other equipment (...)**

UAM (eVTOL)

(most of them)

Let's have a closer look...

UAM as aircraft

§ 1 (2) Air Traffic Act (continued)

Aircraft are: [...]

11 Other equipment intended for the use of the airspace, provided that it can be operated at altitudes of more than thirty metres above ground or water



Conclusion:

UAM are aircraft and subject to the German Air Traffic Act

UAM (eVTOL)



European Union Air Safety Agency (EASA) introduced two additional categories:

- CS 23 - small-category VTOL aircraft
- CS 27 - small rotorcraft

Requirements for aircraft 1/2

- **Type certification**

(articles 77 and 11 of Reg. (EU) 1139/2018 in conjunction with Reg. (EU) 748/2012, Annex I, Part 21)

- Verification that each *type* of eVTOL meets the safety criteria established by EASA
- (P): possibility of different standards between EASA and FAA

Requirements for aircraft 2/2

- **Airworthiness certification**
(article 14 of Reg. (EU) 1139/2018 in conjunction with Reg. (EU) 748/2012)
 - Certification of *each* manufactured aircraft upon compliance with type certificate
 - Ensures compliance with quality standards throughout the supply chain

Requirements for operators 1/2

- **Airline operator certificate (AOC)**
(art. 3 para. 1 of Reg. (EU) 1008/2008)
 - Commercial transport of passengers is an "air service" in the meaning of Reg. (EU) 1008/2008
 - Operator requires operating licence

Requirements for operators 2/2

- Airline permit (§ 21 Air Traffic Act)
 - May be necessary depending on the operating plan of the eVTOL operator
 - Necessary if
 - defined routes
 - regular schedule
 - public accessibility
 - If service provided upon request only:
occasional service ⇒ no transport obligation

Air space integration 1/2

- Integration into air traffic control system required
- Operating altitude up to 1,000m (3,300ft)
- Visual or instrument flight rules
- DFS: initially visual flight operations only
- Minimal weather conditions required:
 - Ground visibility
 - Horizontal visibility
 - Cloud distance
- No air traffic control, no staggering of aircraft
- Pilot's responsibility: safety distance incl. regarding wake vortex

Air space integration 2/2

- Operations according to instrument flight rules (i.e. as controlled flights) would enable weather-independent and thus always available services
- Air space structure would allow for this in class E air space (2,500ft/sometimes as low as 1,000ft)
- Radio communication mandatory
- Instrument take-off and approach procedures mandatory

Physical infrastructure 1/4

- **eVTOL are aircraft** ⇒ use of airfields mandatory
(§ 25 para. 1 Air Traffic Act)
- **Airfields require permits**
(§ 6 para. 1 Air Traffic Act)
- **Exemptions not appropriate**
 - Minimum of physical infrastructure required, as well as
 - Statically load-bearing surfaces for touchdown and takeoff
 - Visual aids for flight operations in the form of markings or illuminations
 - Charging infrastructure
 - Access points for PAX and ground handling

Physical infrastructure 2/4

- eVTOL developers demand exemptions
 - Existing rules not appropriate!
 - Too complicated!
 - Procedure too lengthy!
- However
 - Only in an approval procedure under aviation law can all interests be carefully assessed and balanced.
 - In urban landscapes, in particular in inner cities, air taxi operations are accompanied by a high level of nuisance and danger to local residents.
 - Typical risks: noise, crashes, emergency landings, parking

Physical infrastructure 3/4

- What must be considered before the permit to build and operate an airfield for eVTOL is issued?
 - Environmental impact assessment
 - Operator must be personally, technically (fire fighting, rescue services) and financially capable
 - Justification required: planning of airfield justified if there is need for the concrete project (more likely in large metropolitan areas, near transportation hubs)
 - Suitability of site: soil conditions, topography, meteorology
 - Last but not least (!): zoning law, urban development

Physical infrastructure 4/4

- eVTOL at existing airports?
 - Impact on capacity
 - Wake vortex separation
 - Airport charges
 - Significant changes or expansions to an airport's facility are subject to approval.

Outlook

- German and European air traffic law already regulate eVTOL/air taxis
- More specific regulation regarding airfields desirable
- Recently, the "U Space Regulation" (Reg. (EU) 664/2021) came into force: more competition, less government
- Member States may designate appropriate U-Space airspace, but are not required to do so.
- BMDV has published a first concept

Merci beaucoup

Vielen Dank

Thank you

谢谢

Muchas gracias

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