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Type Gyroplane	Model any	Subject Specifications / Comments EASA Rules	0	FoC / ATA DE
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Proposal Input to EASA

Fraundorfer Aeronautics AG makes the following proposal to implement a Gyroplane into the EASA FCL regulations.

Introduction of Gyroplane

Strengths and commercial areas of deployment:

From a quick response task at natural disaster sites, control of energy infrastructure and geological surveys to commercial cargo and passenger transport – the number of tasks, which can be accomplished more effectively in the air rather than on the ground, are rising constantly. However, only a small part of those applications can be accomplished by existing aircraft like fixed wing aircraft and helicopters. Reasons are on the one side the required lengthy takeoff and landing distances, as well as very limited slow flight capabilities of fixed wing aircraft, high complexity and high cost of helicopters on the other side.

It is already proven by numerous concepts and considerable investments in various drone and e-VTOL companies that there will be new and high demand. So far, there is not a single aircraft which can support all the requirements of the commercial market. Commercially used gyroplanes will not only provide a realistic technical solution, but will foremost be safe, affordable and environmentally friendly. This kind of category of gyroplanes will fulfil the current and future requirements under commercial exploitation. It should be of the interest of the European economy to support customers as well as manufacturers with a useful and viable framework of regulations for the third largest category of aircraft, next to fixed wing aircraft and helicopters – to lead the way in Europe.

Fraundorfer Aeronautics AG would like to amend the Class- and Type Rating List for “GYROPLANE” in the Airplane Category (see attachment) as well as creating a class rating in the Helicopter Type rating list. As a result, the Gyroplane could be flown with an airplane(A) or helicopter(H) license. This is not a new principle, since the TMG class can already be flown with an airplane(A) or glider(SPL) license.

The reasoning behind this instead of implementing a PPL(G) is the following:

1. Gyroplanes piloted with PPL(A)/CPL(A)

1.1. Flight Characteristics, Procedures and Pilot workload speaking for a PPL(A) / CPL(A) flight crew license with a class rating “Gyroplane”

1.1.1. A Gyroplane flies and handles a lot like a fixed wing aircraft with a few exceptions (see next argumentation points) which could be best instructed in a class rating training course.

1.1.2. Procedures differ from a fixed wing aircraft mainly in ground operations like start and taxi and the initial part on the takeoff phase until climb out. The takeoff roll and landing roll distances are greatly reduced. Making it possible to land or takeoff from very short runways. This speaks clearly for a class rating in perspective of safety.

1.1.3. Pilot workload is very much comparable to fixed wing aircraft in a SEP or SET class rating. However, it is impossible to enter a stall or spin with a gyroplane, which speaks for the aircraft itself.

1.2. Safety

1.2.1. In case of experienced pilots the class rating “gyroplane” is taught in an ATO environment to the desired skill level.

1.2.2. In case of a new student pilot the scope and detail of a PPL(A) training already exists and can be used to train student pilots in the gyroplane class.

1.2.3. Instructors and evaluators would be generated from a much more experienced background and thus ensuring a much safer environment.

1.2.4. Future gyroplanes could be different from the existing ones. Therefore, the safe operation and qualification of pilots could be controlled via a class rating where each gyroplane has to be listed in the class rating list and specific training has to be accomplished (like the SET class rating).

1.2.5. Based on the experience in Germany in the ultralight gyroplane segment with a Sports Pilot License, it requires about 5 hours of training for an experienced fixed Wing Pilot (PPL(A)/CPL(A)) to acquire the gyroplane rating.

1.3. Regulation

1.3.1. The regulations for PPL(A) and CPL(A) training already exist.

1.3.2. For future upcoming variants of gyroplanes it would be easy to amend the class rating list and making sure EASA stays frontline competitive on the aviation market raising the value and economy of the EU.

1.3.3. Regulation maintenance is simplified.

1.3.4. The FAA and the German Sport Pilot License is using the practice of an additional class Rating “Gyroplane” already.

2. Gyroplanes piloted with PPL(H)/CPL(H)

2.1. Pilot requirements

2.1.1. Helicopter pilots are already very familiar with the principles of flight with a rotary wing. However, a gyroplane uses only a part of the helicopter aerodynamics – the autorotation phase of flight. The autorotation flight of gyrocopters is, compared to helicopters autorotation flight, much easier to handle.

2.1.2. A helicopter pilot would be the most competed flight crew to operate a gyroplane regarding aerodynamics and related topics.

2.1.3. Application of controls are even simplified in a gyroplane and could be easily instructed in a class rating training course.

2.2. EASA Certification Specification 27

2.2.1. For building and certification of a rotary wing, the EASA CS-27 is applicable for helicopters and already applicable to gyroplanes. In this respect, the gyroplane should also be in the same category as a helicopter for the flight crew licensing.

2.3. ICAO Flight Minimums

2.3.1. Weather minimums for conducting VFR flights are also referenced to rotary wing aircraft. That puts the helicopter aircraft and gyroplane aircraft into the same weather requirement category.

2.4. Safety

2.4.1. All points listed in 1.2 are still valid and applicable in the helicopter category, and they also strongly support a class rating to be introduced.

2.5. Regulations

2.5.1. Also, a set of regulations for PPL(H)/CPL(H) already exists and could be executed as is. Except the Type Rating List.

2.5.2. The Type Rating List would need to be amended for a gyroplane class rating. It would also be acceptable to add a Type Rating for the helicopter category since the helicopter category does not have class ratings.

2.5.3. Regulation maintenance is again simplified.

2.5.4. The FAA already has helicopters and gyroplanes in the rotorcraft category and makes then a difference between helicopters and gyroplanes. The EASA could get the same result by adding a class rating to the helicopter category.

2.5.5. A more complex approach would be to a change helicopter category into a rotorcraft category and then differ between helicopters and gyroplanes. However, we do not think this would be beneficial to the existing rulemaking.

3. Downsides of implementing a PPL(G)

- 3.1. Most pilots would be transferred from the ultra-light pilots with a lower standard of knowledge and skill in the introduction phase of the rule making.
- 3.2. It is very complicated to get experienced pilots, instructors and evaluators over into the PPL(G) License.
- 3.3. Loosing EU value due to being restricted to private pilot privileges in the beginning.
- 3.4. Fraundorfer Aeronautics AG's customers are already waiting to use our gyroplane for commercial purposes.
- 3.5. We fear that the broad implementation on a PPL(G) does not cover the possible variety of gyroplanes in the future. In the interest of safety this issue would be much better addressed/covered by a class rating in the airplane category or type rating in the helicopter category, which puts the focus on specific needs and safety aspects.

Summary

Fraundorfer Aeronautics AG would rather support the implementation of a Gyroplane Class rating in the interest of flight safety in European & international skies. Furthermore, to keep the European aviation products competitive on the international level and boost the EU economy.

For any further details and discussions, the Fraundorfer Aeronautics AG Team is open to discuss at any level with the responsible departments to pave the ground for a new way of mobility and business in aviation. Our technology implemented in the TENSOR is only the start for all kinds of applications in the hopefully upcoming new categories of gyroplanes. With our technology gyroplanes can go far beyond the 600kg MTOW restrictions, which are currently set-up for gyroplanes. Although the Special Conditions (SC-Gyro-1) are the first step into the new categories.

APPENDIX A:

Proposed additional Category General Overview:

Manufacturer:	all
Aircraft Model / Name:	Gyroplane – Single Engine
License Endorsement:	Gyroplane
Variants:	x
Complex:	- (no)
SP / SP HPA / MP:	SP
Remarks:	Class rating: Gyroplane

Proposed categorization of Fraundorfer Aeronautics AG Product:

Manufacturer:	Fraundorfer Aeronautics AG
Aircraft Model / Name:	TENSOR 600x
License Endorsement:	T600X
Variants:	x
Complex:	- (no)
SP / SP HPA / MP:	SP
Remarks:	Class rating: Gyroplane

APPENDIX B:



EASA type rating and licence endorsement list flight crew – all aircraft excluding helicopters

XXXXXXXXXX Change proposal

The EASA type rating and licence endorsement lists constitute the class and type of aircraft categorisations in accordance with FCL.010 (category of aircraft, class of aeroplane, and type of aircraft) and FCL.700 of Annex I (Part-FCL) to Commission Regulation (EU) No 1178/2011 of 3 November 2011, as well as in accordance with GM1 FCL.700. Furthermore, the lists provide aircraft-specific references relevant to flight crew qualifications and air operations. Additional information concerning these lists is provided in the associated explanatory notes.

Manufacturer	Aircraft model / name	Licence endorsement	Variants	Complex	SP / SP HPA / MP	OE GM / OEB / OSD FC available	Remarks
All manufacturers	All powered sailplanes having an integrally mounted, non-retractable engine and a non-retractable propeller, capable of taking off and climbing under its own power.	TMG	X	—	SP		Class rating TMG Aircraft within the class rating touring motor glider (TMG) are not listed individually in this table, unless specific provisions have been established.
All manufacturers	Single-engine piston (land)	SEP (land)	X	—	SP		Class rating SEP (land) Aircraft within the class rating SEP (land) are not listed individually in this table, unless specific provisions have been established.
	Single-engine piston (land) with variable pitch propellers (VP)						
	Single-engine piston (land) with retractable undercarriage (RU)						
	Single-engine piston (land) with turbo- / super-charged engines (T)						
	Single-engine piston (land) with cabin pressurisation (P)						
	Single-engine piston (land) with tail wheels (TW)						
	Single-engine piston (land) with electronic flight instrument system (EFIS)						
	Single-engine piston (land) with single lever power control (SLPC)						
All manufacturers	Single-engine turbo-prop engines	SET	X	—	SP		Class rating SET All aircraft within the class rating SET are listed individually in this table and require EASA classification. All aircraft within the class rating SET require differences training, unless indicated otherwise in the list. Revalidation for each SET aircraft must be accomplished individually, unless indicated otherwise in the list.

All manufacturers	Single-engine Gyroplanes	GYRO	X	—	SP		Class Rating Gyro All aircraft within the class rating GYRO are listed individually in this table and require EASA classification. All aircraft within the class rating GYRO require differences training, unless indicated otherwise in the list. Revalidation for each SE- aircraft must be accomplished individually, unless indicated otherwise.
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							Class rating SET has been established by the JAA. Training levels between DHC3 SET land and sea aircraft have not been evaluated.
De Havilland – AirTech Canada (Bombardier)	DHC-2 Turbo-Beaver	DHC2 SET	—	—	SP	—	Class rating SET Class rating SET has been established by the JAA.
De Havilland - Canada (Bombardier)	DHC7	DHC7	—	X	MP	—	
Diamond Aircraft Industries GmbH	DA 42 (DA 42, DA 42 M, DA 42 NG, DA 42 M-NG) DA 62	MEP (land)	X	—	SP	X	Class rating MEP (land) OE GM (OEB report DA42 series, dated 1 November 2014)
Dornier	DO 128-6	D128	—	X	SP	—	
Dornier	DO 28-G92	D28-G92	—	X	SP	—	
Dornier	DO 328-100	DO 328-100	—	X	MP	—	
Dornier	DO 328-300	DO 328-300	—	X	MP	—	
Eclipse Aerospace	Eclipse EA500 - Eclipse 500 - Eclipse 550	EA500	—	X	SP HPA	X	OE GM (OEB report EA500, dated 9 December 2015) OE GM (OEB report Jet Ready EA500 oxygen system (STC), dated 19 July 2011)
Embraer	Bandeirante EMB 110	EMB110	—	X	SP	—	
Embraer	EMB 120 Brasilia	EMB 120	—	X	MP	—	
Embraer	EMB - 145 -135, 145 series	EMB 135/145	X	X	MP	X	OSD FC EMB-135/145
	EMB - 145 -135,145 series equipt with Autothrottle						OSD FC EMB-135/145 Revision D 26. Oct.2018
Embraer	EMB-500 (Phenom 100) EMB-505 (Phenom 300)	EMB 500/505	X	X	SP HPA	X	OSD FC EMB-500/505
Embraer	EMB-550 (Legacy 500) EMB-550 (Praetor 600) EMB-545 (Legacy 450) EMB-545 (Praetor 500)	EMB 550	—	X	MP	X	OSD FC Embraer 550
Embraer	ERJ 170-100 / Embraer 170 ERJ 170-200 / Embraer 175 ERJ 190-100 / Embraer 190 ERJ 190-100 ECJ / Lineage 1000 ERJ 190-200 / Embraer 195 ERJ 190-300 / Embraer 190 E2 ERJ 190-400 /Embraer 195 E2	EMB170	X	X	MP	X	OSD FC EMB 170
Fraundorfer-Aeronautics-AG	Tensor600X	GYRO	X	—	SP	—	Class-Rating-GYRO