Student Pilot Footprint

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Internal

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EASA @EATS 2021

Exemplary CO_2 footprint & share per ATPL Student Pilot

ATPL Program 15,6 t CO_2						Type Rating 12,1 t CO_2	
ATPL Syllabus						**Type Rating A320**	
Theory @BRE Classroom	**Various*** FNPT II	**SEP*** DA40 NG	**UPRT*** G120A	**MEP*** DA42	**MCC*** Theor.& FNPT	**FTD A320*** FNPT/FFS	**Landing TRG*** A320
3,0 t CO_2	0,3 t CO_2	7,3 t CO_2	0,5 t CO_2	4,2 t CO_2	0,3 t CO_2	0,6 t CO_2	11,5 t CO_2
750h	55h	107h	3h	30h	40h	58h	6 T/O
11%	1%	26%	2%	15%	1%	3%	41%

*all data: only direct CO2 emissions of flight training (product carbon footprint i.e. w/o consideration of nominal vs. actual consumption, airport, maintenance, training location, additional briefing/classroom, housing, transport etc.

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Exemplary CO$_2$ footprint & share per ATPL Student Pilot

ATPL Student Pilot Carbon Footprint

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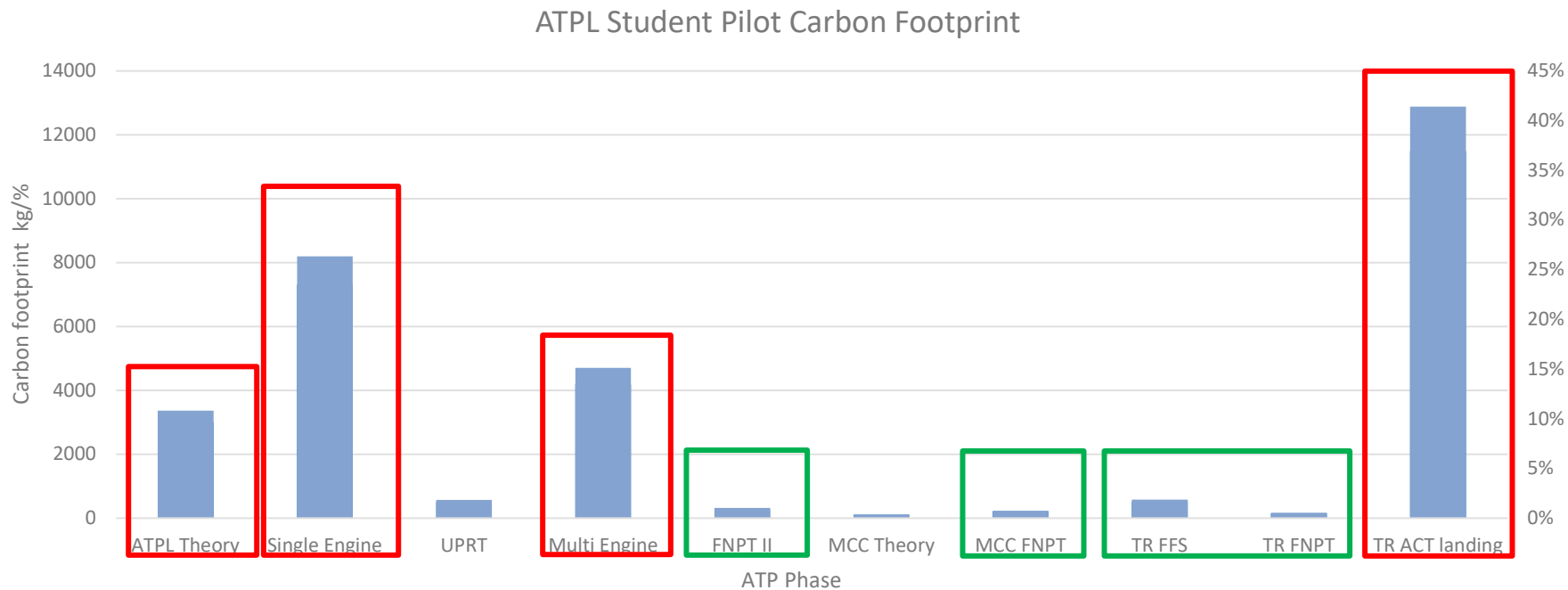
Green Flight School – avoid, reduce, compensate

Avoid — **Reduce** — **Compensate**

Dimensions

New Syllabus	Fleet Renewal	Ops Efficiency	Sustainable Fuel	Compensation
Major CO2 effect and high public/political impact	**Reasonable CO2 effect** but high investment cost	**Significant CO2 effect** at lowest cost and invest	**Significant single CO2** reduction measure	**Highly relevant** until other measures scale, but **disputed**
▪ "Green" ATPL (clean MPL) ▪ FSTD instead of AC training	▪ eFlyer exp. RFT by 2023 ▪ Shift fleet from AVGAS to JET-A1 and SAF	▪ Green OPS e.g. paperless, power setting, drain, SEP-IR ▪ Green Ground Infrastructure and energy-saving measures	▪ Purchasing of SAF (PtL)	▪ Higher prices of "good" compensation projects ▪ Scope of compensation to be clarified and accessed

- **High relevance of holistic and flexible measures and approaches**
  - **Evidence for every change inevitable**

Good approach: Final version of RMT 190 based on data from cooperation Ab Initio ATO & AoC holder

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Conclusions

- ATOs must be enabled to perform training development projects with the perspective for approval, provided it can be demonstrated, that the training outcome is as good or better than the "old/traditional" training

- NAAs must be supported in the oversight and monitoring of such training development projects

- A cooperation between EASA, NAAs and industry should be initiated to enable the start of such training development projects.

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Thank you.

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Excel source

	Acc. FCL.515 Appendix 3 to Annex (Part-FCL), FCL.735.A (MCC), FCL.745.A (Advanced UPRT)							LHG Type Rating A320			Total kg/CO2	Total t/CO2
Phase	ATPL Theory	Single Engine	UPRT	Multi Engine	FNPT II	MCC Theory	MCC FNPT	TR FFS	TR FNPT	TR ACT landing		
required hours	750	107	3	30	55	25	40	30	28	6 T/O		
carbon footprint	3000	7307	505	4190	284	100	207	517	145	11485	27740	**27,74**
share	11%	26%	2%	15%	1%	0%	1%	2%	1%	41%	100%	
remarks	exemplary	DA40 NG	G120A	DA42-IV	CAE 500XR		CAE 500XR	CAE 7000XR	CAE 500XR	A320		

all data: only direct CO2 emissions of flight training (product carbon footprint i.e. w/o consideration of nominal vs. actual consumption, airport, maintenance, training location, additional briefing/classroom, housing, transport etc.

* @60%/65% Powersetting (OEM Factsheet)
** Source: internal estimation
*** Source: DIN EN 16258:2012 S. 23
**** German energy mix 2021; Source: IEA Emissions Factors 2021
***** Airfiled traffic pattern mix consumption estimate

Aircraft	fuel type	liter/h cons.*	desity factor	emission factor**** tank-to-wheel	well-to-wheel (gw)	kg/CO2/h (gw)
DA42-IV	Jet A-1	45	0,8	3,18	3,88	139,7
DA40	Jet A-1	22	0,8	3,18	3,88	68,3
SR20	AVGAS	35	0,8	3,13	3,76	105,3
Grob G120A	AVGAS	56	0,8	3,13	3,76	168,4
A320 *****	Jet A-1	3700	0,8	3,18	3,88	11484,8

FTD / AC	power	kWh cons.**	FTD type	emission factor****	kg/CO2/h
A320 FNPT	Electric	15	CAE 500XR	0,34	5,1675
A320 FFS	Electric	50	CAE 7000XR	0,34	17,225

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