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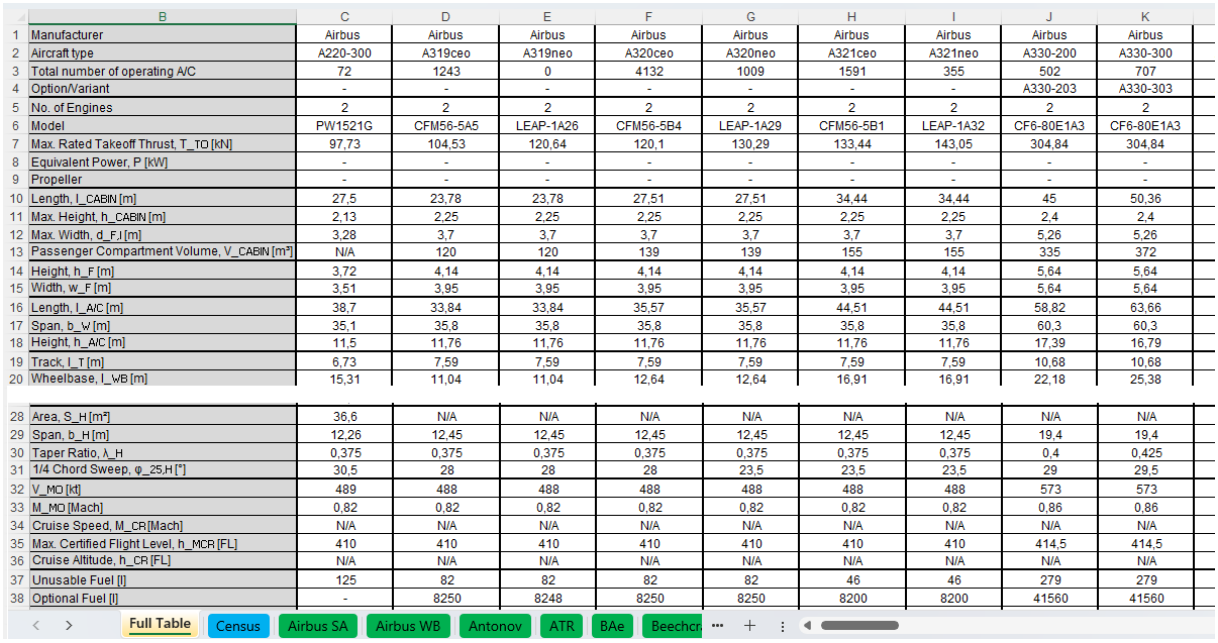
The 50 Most Important Parameters of the 60 Most Used Passenger Aircraft

Purpose – This project creates a database of more than 60 passenger aircraft types, which are most in use (based on in-service data from 2020). The aircraft are characterized by the most important 50 parameters.
Methodology – Almost all parameters were retrieved from manufacturer's documents for airport and maintenance planning as well as from EASA and FAA type certificate data sheets. Numbers were uniformly converted to SI units or aviation units (nautical mile, knot, feet / flight level).
Findings – In 2020 many aircraft were in storage, but got also considered here. The Boeing 737-800 and the A320ceo account already for a 30% share of the market. With 60 aircraft types more than 95% of existing passenger aircraft are covered. The database contains general parameters, overall dimensions, parameters from the engine, cabin, fuselage, landing gear, wing and tail. In addition, fuel tank volume, mass, range, and parameters from cruise flight are available. (Figure 1)
Research Limitations – For aircraft still in development, certificate data sheets and manufacturer's data will be available only after certification.
Practical Implications – The database is convenient for general use. It is available in Excel and HTML. The Excel table can be used to calculate further values and to easily add parameters.
Originality – The well known database from Jenkinson et al. is from 2001. This new approach includes recent aircraft types and shows its data sources.

This informative poster is based on a student project with the same title. Details here:
https://nbn-resolving.org/urn:nbn:de:gbv:18302-aero2022-10-01.013



	B	C	D	E	F	G	H	I	J	K
1	Manufacturer	Airbus	Airbus	Airbus	Airbus	Airbus	Airbus	Airbus	Airbus	Airbus
2	Aircraft type	A220-300	A319ceo	A319neo	A320ceo	A320neo	A321ceo	A321neo	A330-200	A330-300
3	Total number of operating A/C	72	1243	0	4132	1009	1591	355	502	707
4	Option/Variant	-	-	-	-	-	-	-	A330-203	A330-303
5	No. of Engines	2	2	2	2	2	2	2	2	2
6	Model	PW1521G	CFM56-5A5	LEAP-1A26	CFM56-5B4	LEAP-1A29	CFM56-5B1	LEAP-1A32	CF6-80E1A3	CF6-80E1A3
7	Max. Rated Takeoff Thrust, T_TO [kN]	97,73	104,53	120,64	120,1	130,29	133,44	143,05	304,84	304,84
8	Equivalent Power, P [kW]	-	-	-	-	-	-	-	-	-
9	Propeller	-	-	-	-	-	-	-	-	-
10	Length, l_CABIN [m]	27,5	23,78	23,78	27,51	27,51	34,44	34,44	45	50,36
11	Max. Height, h_CABIN [m]	2,13	2,25	2,25	2,25	2,25	2,25	2,25	2,4	2,4
12	Max. Width, d_F,I [m]	3,28	3,7	3,7	3,7	3,7	3,7	3,7	5,26	5,26
13	Passenger Compartment Volume, V_CABIN [m³]	N/A	120	120	139	139	155	155	335	372
14	Height, h_F [m]	3,72	4,14	4,14	4,14	4,14	4,14	4,14	5,64	5,64
15	Width, w_F [m]	3,51	3,95	3,95	3,95	3,95	3,95	3,95	5,64	5,64
16	Length, l_A/C [m]	38,7	33,84	33,84	35,57	35,57	44,51	44,51	58,82	63,66
17	Span, b_W [m]	35,1	35,8	35,8	35,8	35,8	35,8	35,8	60,3	60,3
18	Height, h_A/C [m]	11,5	11,76	11,76	11,76	11,76	11,76	11,76	17,39	16,79
19	Track, l_T [m]	6,73	7,59	7,59	7,59	7,59	7,59	7,59	10,68	10,68
20	Wheelbase, l_WB [m]	15,31	11,04	11,04	12,64	12,64	16,91	16,91	22,18	25,38
28	Area, S_H [m²]	36,6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29	Span, b_H [m]	12,26	12,45	12,45	12,45	12,45	12,45	12,45	19,4	19,4
30	Taper Ratio, λ_H	0,375	0,375	0,375	0,375	0,375	0,375	0,375	0,4	0,425
31	1/4 Chord Sweep, φ_25,H [°]	30,5	28	28	28	23,5	23,5	23,5	29	29,5
32	V_MO [kt]	489	488	488	488	488	488	488	573	573
33	M_MO [Mach]	0,82	0,82	0,82	0,82	0,82	0,82	0,82	0,86	0,86
34	Cruise Speed, M_CR [Mach]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
35	Max. Certified Flight Level, h_MCR [FL]	410	410	410	410	410	410	410	414,5	414,5
36	Cruise Altitude, h_CR [FL]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
37	Unusable Fuel [l]	125	82	82	82	82	46	46	279	279
38	Optional Fuel [l]	-	8250	8248	8250	8250	8200	8200	41560	41560

Figure 1: Aircraft database in Excel.

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