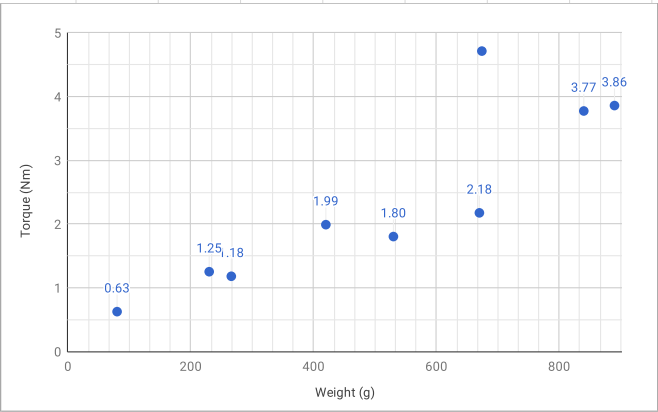
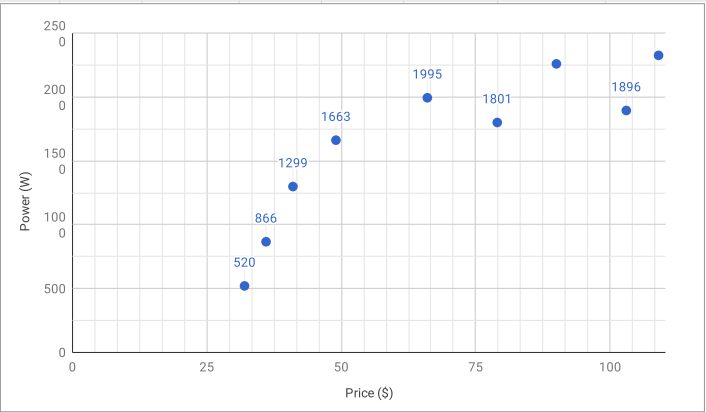
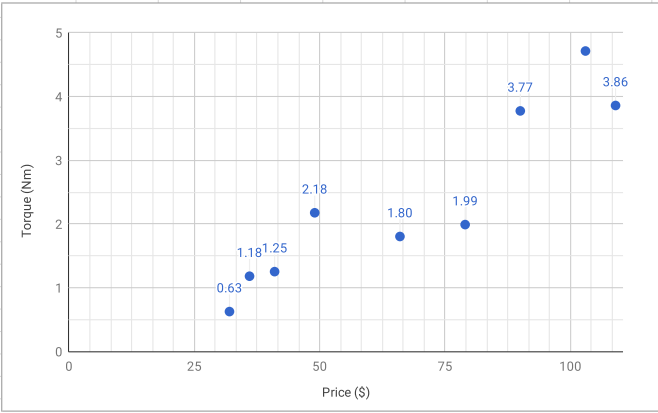


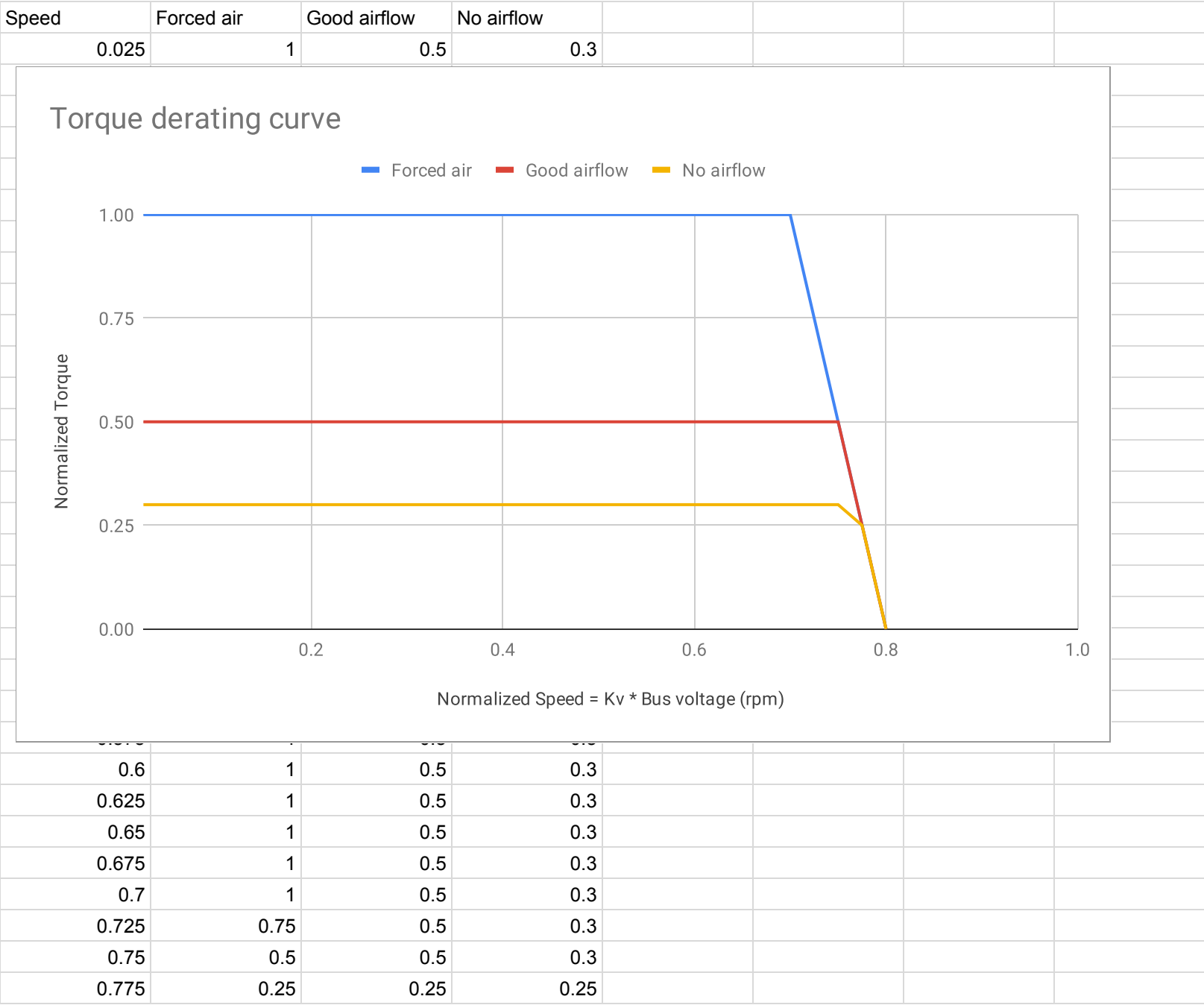
Copy this spreadsheet to customize your analysis!	Speed Constant (Kv)	Max Current*	Max voltage	Phase Resistance	Price (qty 1pc)	Mass	Link	Torque	No-load speed		Power at base speed	Motor size constant (Km)		Force	Linear Velocity	Linear Acceleration	Time to base speed	Distance to base speed	Base speed kinetic energy	Encoder freq. (base speed)
(feilds highlighted in blue are inputs)	rpm/V	A	V	mOhm	USD	g		Nm	RPM	Rad/s	W	Nm/sqrt(W)		N	m/s	m/s^2	ms	mm	J	kHz
ODrive Robotics D5065 - 270kv	270	65	32	39	79	420	https://odrive.com	1.99	8640	904.78	1801	0.13		208.49	8.64	69.57	124.18	536.47	70.92	294.912
ODrive Robotics D6374 - 150kv	150	70	48	39	109	890	https://odrive.com	3.86	5760	603.19	2328	0.23		404.15	5.76	134.87	42.71	123.00	31.52	196.608
Tarot 4008 330kv	330	25	24		32	80	https://www.tarot-robotics.com	0.63	7920	829.38	520			65.61	7.92	21.89	361.74	1,432.50	59.59	270.336
Turnigy Aerodrive SK3 - 4250-350kv	350	50	20		36	266	https://hobbyking.com	1.18	7000	733.04	866			123.72	7.00	41.29	169.55	593.42	46.55	238.9333333
ACK 5312CP - 330KV	330	50	30		41	230	https://hobbyking.com	1.25	9900	1,036.73	1299			131.22	9.90	43.79	226.09	1,119.14	93.11	337.92
Turnigy Aerodrive SK3 - 5065-275kv	275	60	40		66	530	https://hobbyking.com	1.80	10560	1,105.84	1995			188.95	10.56	63.05	167.47	884.26	105.94	360.448
KEDA 63-64 190KV	190	50	40		49	670	https://hobbyking.com	2.18	7296	764.04	1663			227.90	7.30	76.05	95.93	349.97	50.57	249.0368
Turnigy Aerodrive SK3 - 6374-149kv	149	68	48		90	840	https://hobbyking.com	3.77	5722	599.16	2261			395.23	5.72	131.89	43.38	124.10	31.10	195.29728
923S-100KV Turnigy Multistar	100	57	48		103	674	https://hobbyking.com	4.71	3840	402.12	1896			493.63	3.84	164.73	23.31	44.76	14.01	131.072
Hoverboard Hub-motor	16	25 [1]	48		40	a lot	https://www.aliexpress.com	12.92	614	64.34	831			1,353.16	0.61	451.56	1.36	0.42	0.36	20.97152

*Note that torque and current ratings are with Extremely good forced air cooling
[See Torque derating curve](#)

Parameter	Value
Bus voltage	48 V
Max modulation	0.8
Load mass	1.9 kg
Rotor inertia [2]	1.00E-04 kg m^2
Pulley circumference or screw pitch	60 mm/rev
Radius	0.009549296 m/rad
Reflected inertia	1.10 kg
Peak brake power	1200 W
Brake resistor resistance	1.92 ohm
Conversion constants	
l by kv to Nm	8.269933431
Encoder	
Encoder resolution	2048 ppr
Linear resolution	7.32 um
Max speed	15000 RPM

There are more tabs!





0.8	0	0	0				
0.825							
0.85							
0.875							
0.9							
0.925							
0.95							
0.975							
1							

	Rotor mass	Rotor diameter	Shaft length	Shaft diameter	Shaft density	Shaft mass	Shaft Mol	End Face thickness	End face density	End face mass	End Face Mol	Rotor casing mass	Rotor casing Mol	Total Mol
	g	mm	mm	mm	kg/m^3	g	kg*m^2	mm	kg/m^3	g	kg*m^2	g	kg*m^2	kg*m^2
Red 5065	190	50	83	8	7850	32.750475	5.24E-07	7.5	1350	19.8803910	6.21E-06	137.36913	8.59E-05	9.26E-05

Trapezoidal motion profiles

Parameter	Value
full travel distance	1000 mm
minimum travel distance	50 mm

Legend:

- Turnigy Aerodrive SK3 - 4250-350kv
- ACK 5312CP - 330KV
- ODrive Robotics D5065 - 270kv
- KEDA 63-64 190KV
- ODrive Robotics D6374 - 150kv
- 9235-100KV Turnigy Multistar
- Hoverboard Hub-motor

[illegible]

[1] Assuming improved cooling mod

[2] Note: We should measure inertia of each individual motor. This is an estimate of 5065 size motors.

[3] Data from <https://www.ecalc.ch/motorcalc.php>, high accuracy not guaranteed

[4] Data from <https://www.ecalc.ch/motorcalc.php>, high accuracy not guaranteed