



TECHNOLOGY PROTECTS THE FUTURE



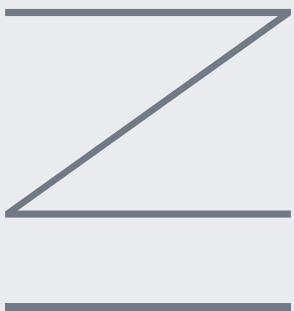
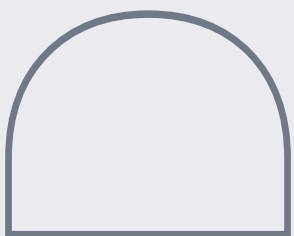
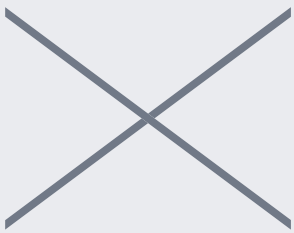
SAYA
GRUP



VOLT TECHNOLOGY

By combining the concept of R&D with continuous development and sustainability, it has adopted the aims and objectives of being a leading player in its field with an approach that reduces foreign dependency by producing innovative products and technologies.

In line with the determining principle, it continues the design, production, and integration studies with the leading companies in the sector in order to gain technological competence and localization in the field of engines and power trains, which are among the essential needs of Power Group Development Platforms and Systems.



OUR COMPETENCIES

- Design
- Manufacturing
- Test

MOTOR SERIES

- VsOm Slotless
- VsSr Servo
- VsGm Frameless

Performance Data, Dimension,
Performance Chart

Design

Volt Defence has the prototype and mass production capabilities by hi-tech electrical, electronical, mechanical and analytical model methods.

Besides, automatic mass production band setups, design and production of test systems, machines, moulds and kits are being implemented.

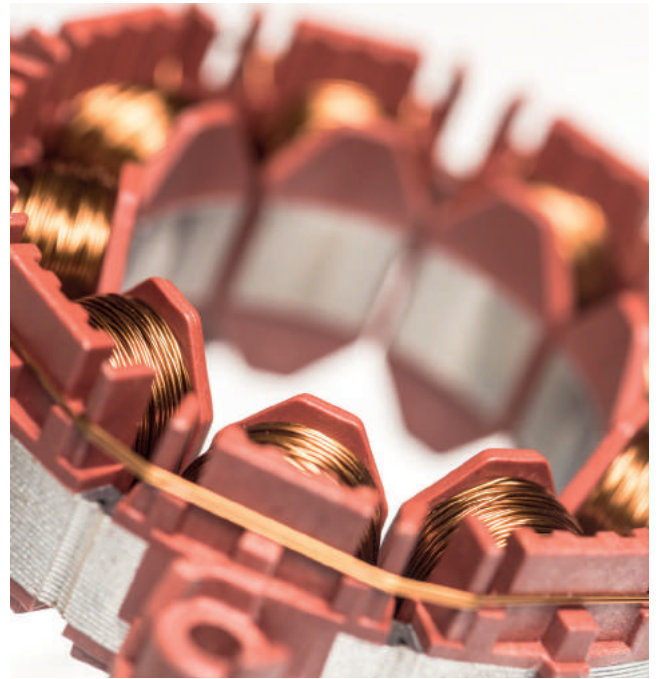
Manufacturing

- | | |
|-----------------|---------------------|
| Machining | Plastic Injection |
| Coil Winding | Mould Manufacturing |
| Mounting | Cabling |
| Lamination | Wire Erosion |
| Metal Injection | Dyeing |

Test

Within our workspace, MIL-STD-810 compatible tests are being performed with qualified personnel with 24 kinds of different test equipments perform;

CMM Measurement
Climatization Test
Salt Fog Test
Hardness Measurement
Optical Emission Spectrometry Analysis
Profile Projection Measurements
Shaft Measurements
Enamelled Magnet Wire Tests
Lamination Sheet Metal Control and Analysis
Detriment Inspections and Analysis via Stereo and Optical Microscope





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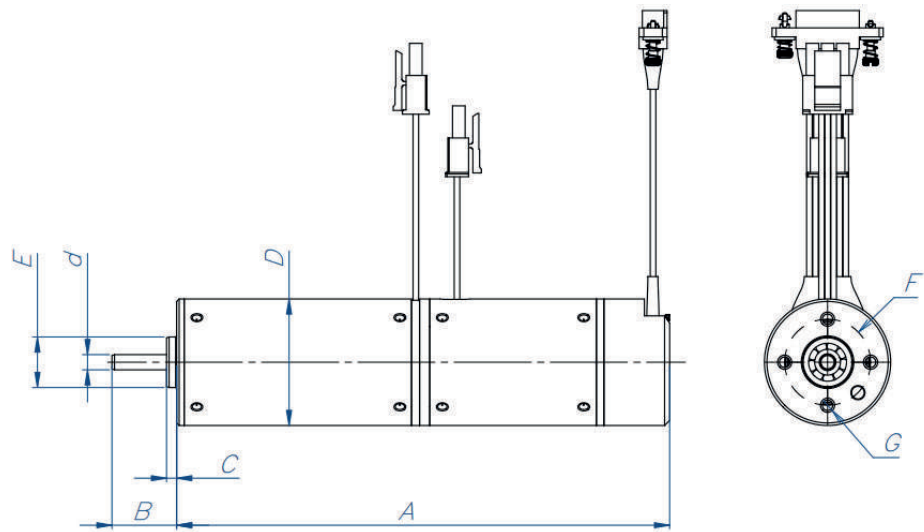
Volt TECHNOLOGY



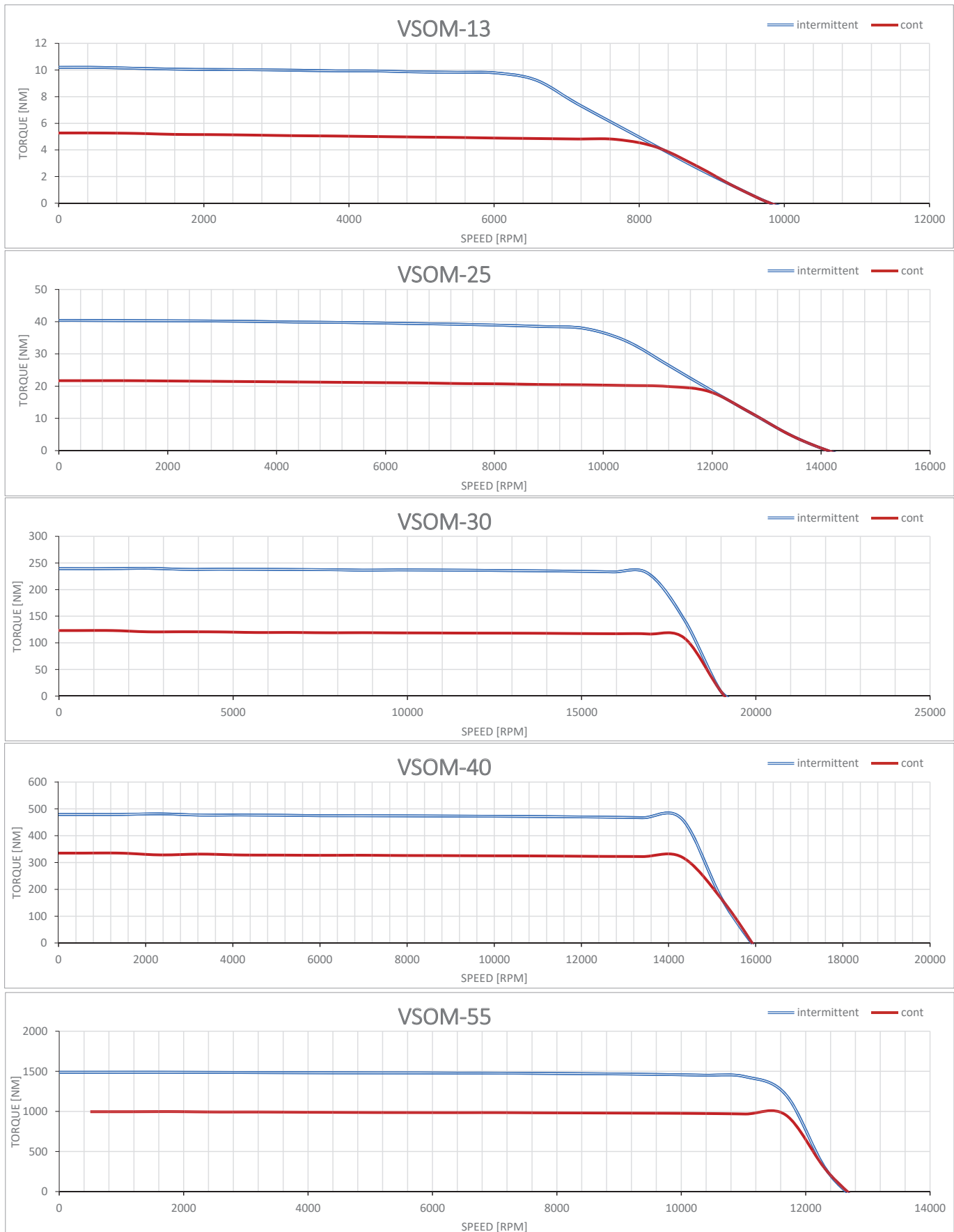
SLOTLESS MOTORS



SLOTLESS MOTOR PERFORMANCE DATA & PARAMETERS							
MOTOR PARAMETERS	SYMBOL	UNITS	Ø 13	Ø 25	Ø 30	Ø 40	Ø 55
Rated DC Voltage	U	V	6	24	48	28	48
Continuous Stall Torque	T	Nmm	5	20	120	330	1000
Continous Phase Current	I	A	0,85	1,3	4,5	19,6	28
Peak Stall Torque	T	Nm	10	40	240	480	1500
Peak Phase Current	I	A	1,7	2,6	8,6	29	45
Rated Shaft Torque	T	Nmm	5	21	120	330	1000
Rated Phase Current	I	A	0,8	1,2	4,2	19,6	28
Rated Shaft Power	P	W	3,2	22	201	484	838
Rated Shaft Speed	n	Rpm	6.000	10.000	16.000	14.000	8.000
Torque Constant	K	Nmm/A	5,7	16,1	24,2	17,2	36,6
EMF Constant	K	V	0,006	0,0168	0,0252	0,0178	0,0377
Motor Constant	k	Rpm/V	0,0053	0,0101	0,0445	0,0832	0,1422
No Load Speed	n	Rpm	9600	13800	18300	15100	12200
Line to Line Resistance	R	Ohm	1,14	2,5	0,29	0,042	0,065
Line to Line Inductance	L	mH	0,077	0,42	0,062	0,012	0,027
Motor Inertia	J	k g m m	0,049	0,56	3,2	11,8	42,8
Motor Mass	m	gr	40	165	260	460	920



SLOTLESS MOTOR SIZE PARAMETERS								
Dimensions [mm]	A	B	C	Ø D	Ø d	Ø E	Ø F	G
VSOM-13	48	8	1,5	13	2	6	10	2x M1,6 ↓1,5
VSOM-25	70,1	12,8	2	25	3	10	17	4x M2,5 ↓5
VSOM-25-W/BRAKE	97,6							
VSOM-30	84,1	12,2	2	30	4	16	22	4x M3 ↓4
VSOM-30-W/BRAKE	117							
VSOM-40	127	18	2	40	5	22	32	4x M3 ↓6
VSOM-55	101	16	3	55	8	30	38	4x M4 ↓5





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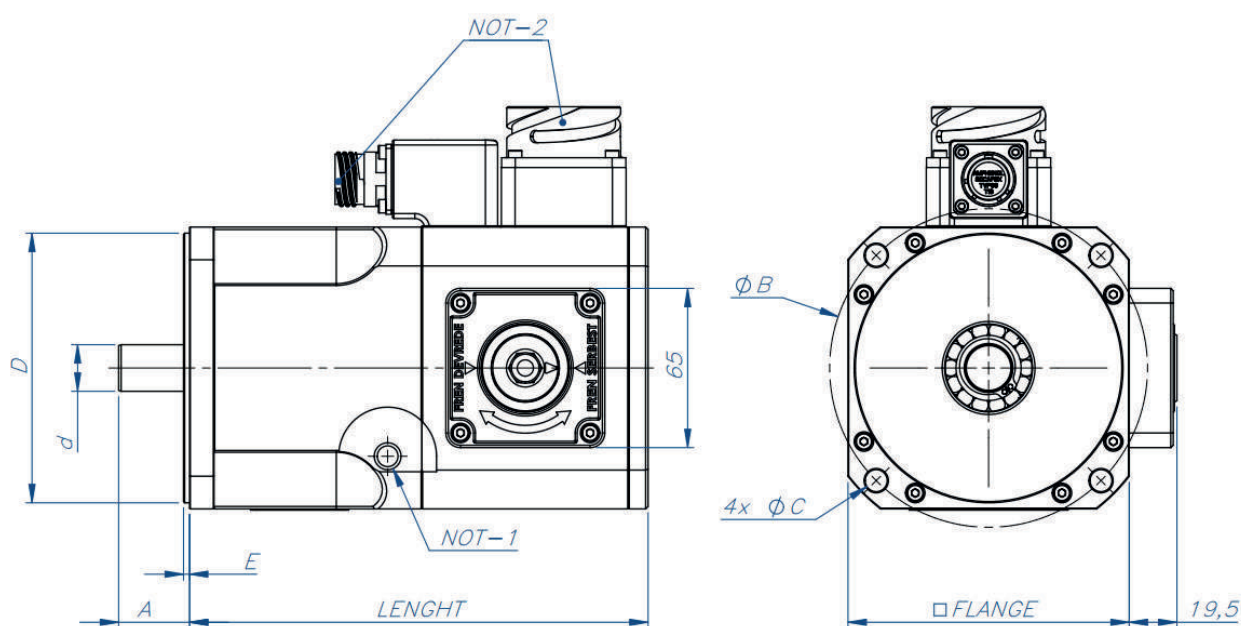
Volt TECHNOLOGY



SERVO MOTORS



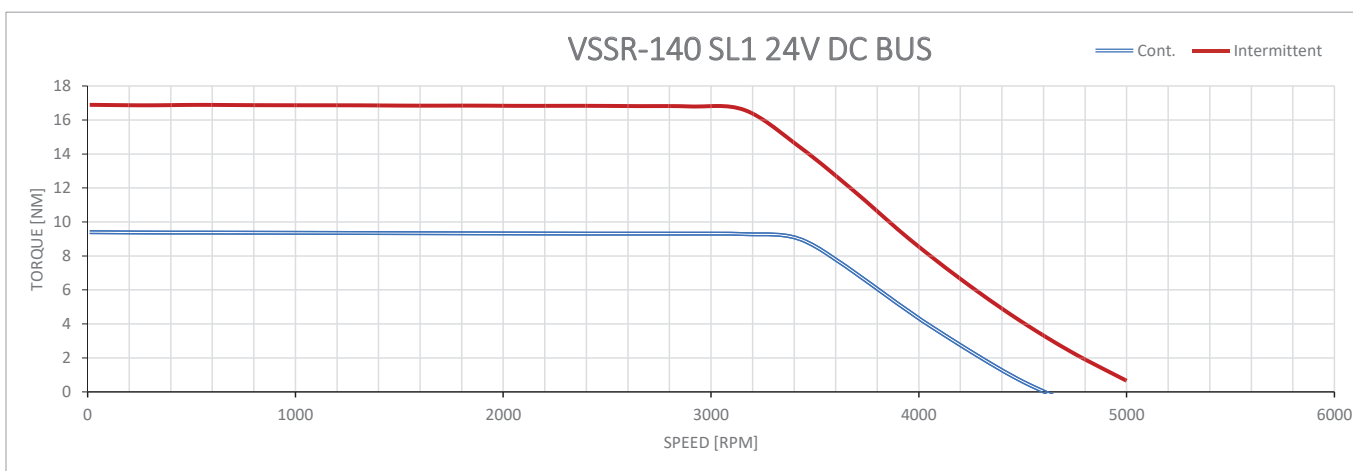
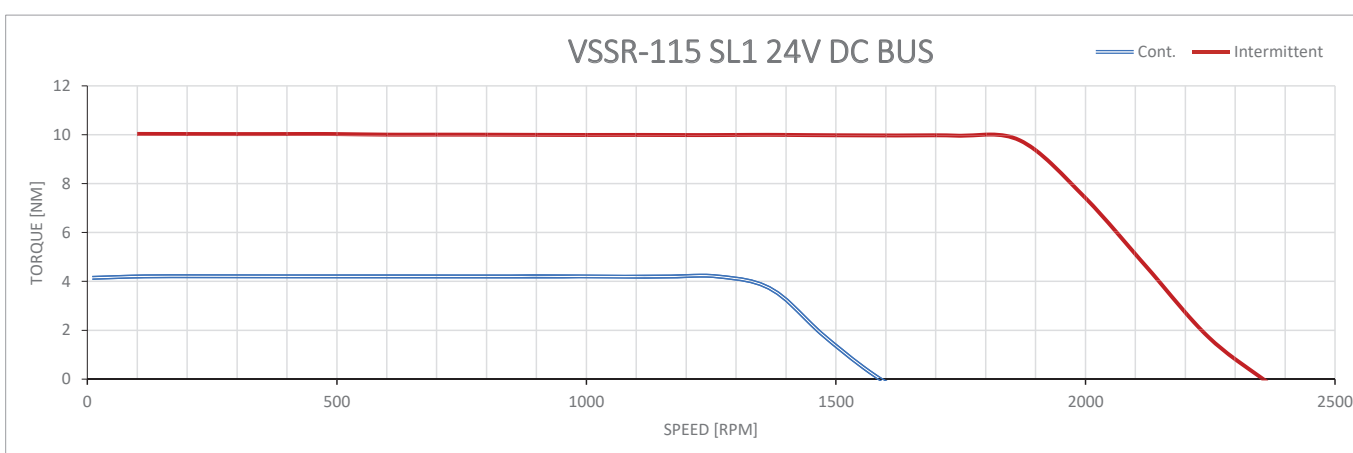
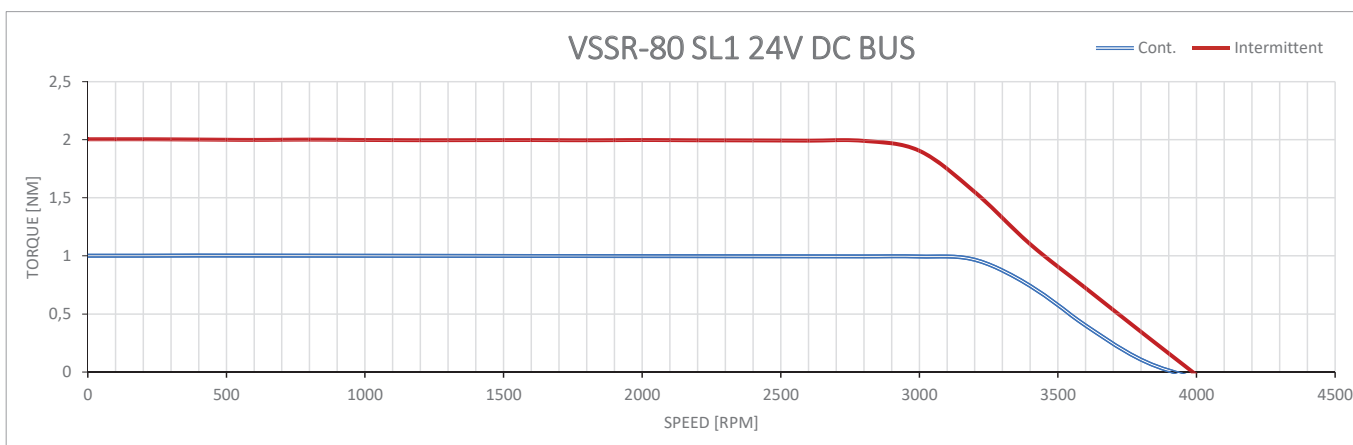
SERVO MOTOR PERFORMANCE DATA & PARAMETERS															
MOTOR PARAMETERS	SYMBOL	UNITS	80 x 80				105x105	115 x 115				140 x 140			
			SL1	SL2	SL3	SL4	SL1	SL1	SL2	SL3	SL4	SL1	SL2	SL3	SL4
Maximum Phase Current	$I_{\max}$	A_{rms}	40	50	120	180	300	120	180	190	400	600	600	1000	1500
Rated DC Voltage	U_n	V	24	24	24	24	24	24	24	24	24	24	24	24	24
Rated Shaft Speed	n_N	rpm	2400	2300	1280	1500	3150	1280	1500	1600	1700	2924	2200	2500	3000
Continuous Stall Torque	T_p	Nm	1,1	1,9	4,2	5,5	9,4	4,2	5,5	6,5	8	9,3	13,2	18	20
Continuous Phase Current	I_o	A_{rms}	13,2	20,8	20,5	32,1	127	20,5	32,1	45,8	64,8	115	117	200	266
Peak Stall Torque	$M_{\max}$	Nm	2	3,5	6,7	10	22,5	6,7	10	10	12	16,8	22	30	32
Peak Phase Current	$I_{\max}$	A_{rms}	24	38	32,6	57,9	300	32,6	57,9	70,1	96,8	210	194	330	425
Rated Shaft Torque	M_N	Nm	1	1,7	3,8	5	8,5	3,8	5	6	7,5	8,4	12	16	18
Rated Phase Current	I_N	A_{rms}	12	18,6	19	29,2	115	19	29,2	42,4	60,8	110	107	177	240
Rated Shaft Power	P_N	W	250	410	510	785	2800	510	785	1005	1338	2575	2765	4188	5655
No Load Speed	n_o	Rpm	3700	2950	1490	2000	4150	1490	2000	2200	2700	4110	2950	3500	4300
Maximum Shaft Speed	$n_{\max}$	Rpm	9000	9000	9000	9000	8000	9000	9000	9000	9000	8000	8000	8000	8000
Torque Constant	K_t	Nm/ A_{rms}	0,08 5	0,0929	0,190	0,174	0,075	0,190	0,174	0,144	0,125	0,081	0,114	0,0917	0,0765
EMF Constant	K_e	V_s	0,06 9	0,0757	0,169	0,142	0,062	0,169	0,142	0,118	0,102	0,066	0,093	0,0746	0,0623
Line to Line Resistance	R_{LL}	Ohm	0,08 48	0,0596	0,04	0,022	4,2	0,04	0,022	0,0104	0,0078	0,0045	0,0047	0,0022	0,0012
Line to Line Inductance	L_{LL}	mH	0,19 75	0,162	0,261	0,153	22,4	0,261	0,153	0,079	0,0697	0,027	0,0385	0,018	0,0098
Motor Ataleti	J_m	kgcm ²	0,65	0,81	3,41	4,53	7,5	3,41	4,53	5,65	7,25	13	18	23	28



SERVO MOTOR SIZE PARAMETERS											
Dimensions [mm]	FLANGE	LENGTH				A	Ø B	C	Ø D	Ø d	Ø E
		SL1	SL2	SL3	SL4						
VSSR-80	80	115	122,5	135	155	24	80	4x Ø4,8	60	11	2,5
VSSR-80- W/BRAKE		150	157,5	170	190						
VSSR-105	105	204,5				32	115	4xØ9	95	16	3
VSSR-105- W/BRAKE		244,5									
VSSR-115	115	142,5	157,5	172,5	187,5	40	130	4x Ø9	110	19	2,5
VSSR-115- W/BRAKE		187,5	202,5	217,5	232,5						
VSSR-140	140	151	166	181	196	50	165	4x Ø11	130	24	3,5

Not:1 Manual brake mechanism of the 80" motor is located on the rear cover.

Not: 2 Connector positions can optionally be customized.





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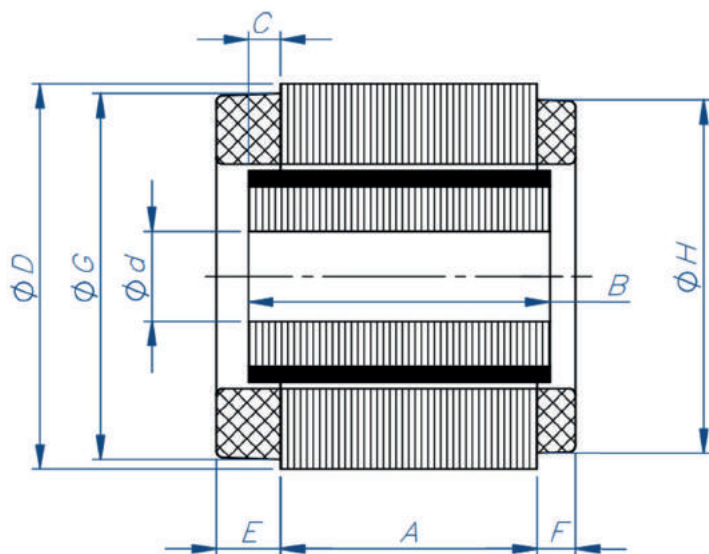


FRAMELESS MOTORS

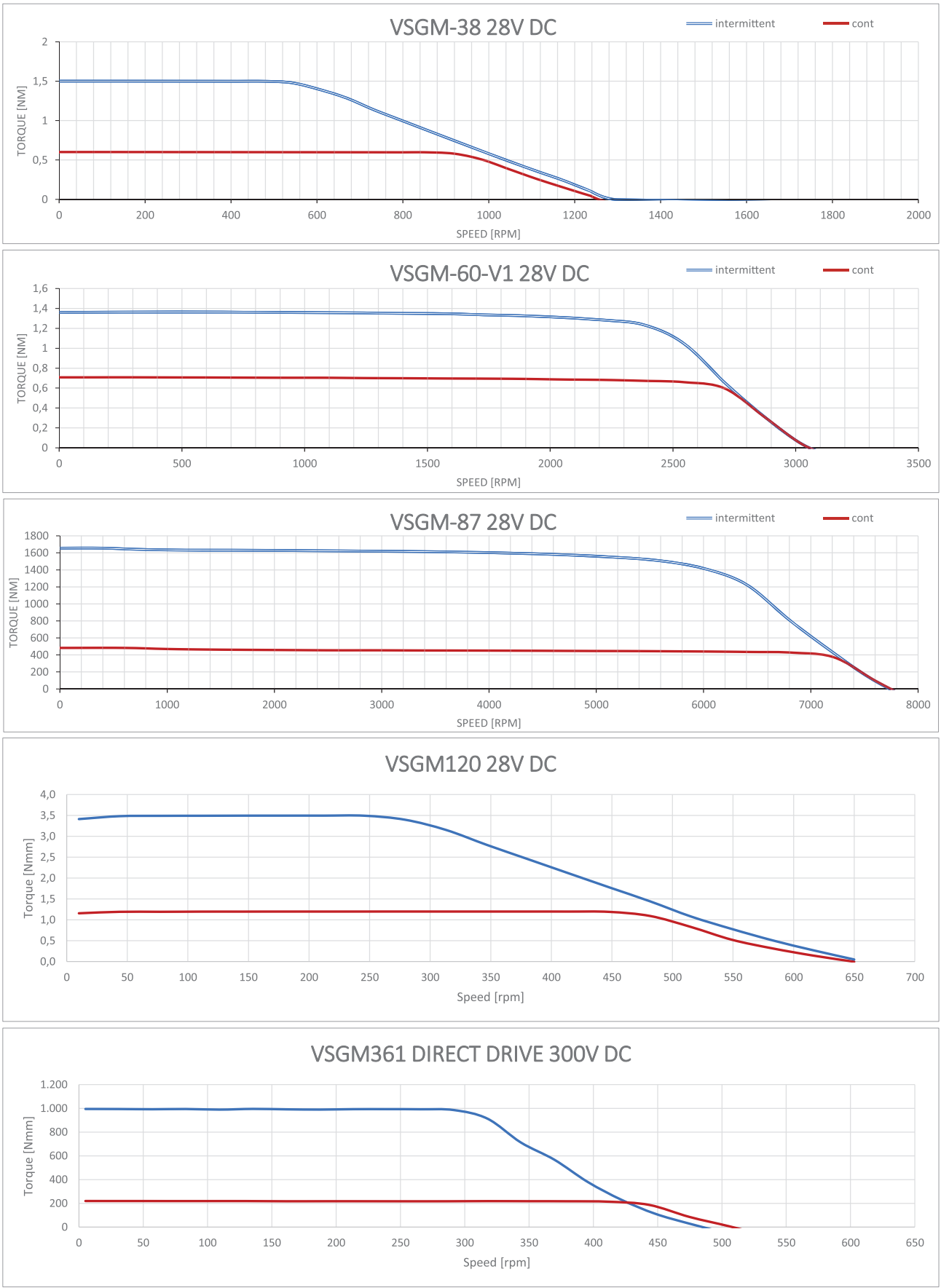


FRAMELESS MOTOR PERFORMANCE DATA & PARAMETERS															
MOTOR PARAMETERS	SYMBOL	UNITS	FRAMELESS MOTOR												
Outer Diameter	Ø	mm	Ø 20	Ø28	Ø 36	Ø37,78	Ø 38	Ø 40	Ø 60		Ø 87	Ø120	Ø155	Ø202,9	Ø361
Cover Length	L	mm	9	43,2	6,1	58,4	38	81,2	40	51,2	9,55	13	10	81,8	101,6
Maximum Phase Current	I _{max}	A _{rms}	0,62	8	2,0	20	9,5	4,3	15	26,5	5,5	6,4	6,5	28	129
Rated DC Voltage	U _n	V	28	120	28	120	28	120	28	28	28	28	48	300	300
Rated Shaft Speed	n _N	rpm	1800	20000	300	6000	3600	5500	2700	2100	350	400	400	100	220
Continuous Stall Torque	T _p	Nmm	10	150	60	0,42	240	600	700	1250	600	1,3	4	60x10 ³	240 x10 ³
Continuous Phase Current	I _o	A _{rms}	0,32	4	1,0	3,2	5,5	3,2	8,5	11,2	2,3	2,4	4,4	7,5	31,4
Peak Stall Torque	M _{max}	Nmm	20	330	60	2,35	400	1620	1350	3000	1500	3,5	6	225x10 ³	1000 x10 ³
Peak Phase Current	I _{max}	A _{rms}	0,62	8	2,0	20	9,5	8	26,5	15	5,5	6,4	6,5	28	129
Rated Shaft Torque	M _N	Nmm	6	130	30	0,25	240	450	700	1250	60	1200	4000	50	220
Rated Phase Current	I _N	A _{rms}	0,2	4	1,0	2,2	5,5	3,2	8,5	11,2	2,2	2,2	4,4	6,3	28,8
Rated Shaft Power	P _N	W	1,10	315	1,0	157	90	260	198	210	22	50	168	525	5070
No Load Speed	n _o	Rpm	7500	27500	11000	8500	5600	8000	3100	2300	1300	650	670	465	480
Torque Constant	K _t	Nm/ A _{peak}	0,034	0,040	0,031	0,121	0,046	0,148	0,09	0,114	0,287	0,55	0,94	8,35	8,04
EMF Constant	K _e	V _s	0,036	0,042	0,025	0,127	0,048	0,155	0,092	0,12	0,236	0,45	0,775	6,81	6,55
Linet o Line Resistance	R _{LL}	Ohm	3,0	1,9	2,33	1,9	0,6	1,2	0,24	0,3	2,33	1,75	1,45	3,45	0,318
Line to Line Inductance	L _{LL}	mH	2,5	0,91	0,21	1,4	0,5	0,7	0,21	0,32	0,54	0,85	4,1	14,9	1,45
Motor Inertia	J _m	kgmm ²	0,115	0,37	3,0	4,63	3,02	13,2	46,4	58,2	83,2	295,3	546,2	22372	2,42xe5
Motor Mass	m	gr	26	210	45	410	300	700	760	900	215	450	1370	13,3	30,1
*Custom supply voltage can be requested.															

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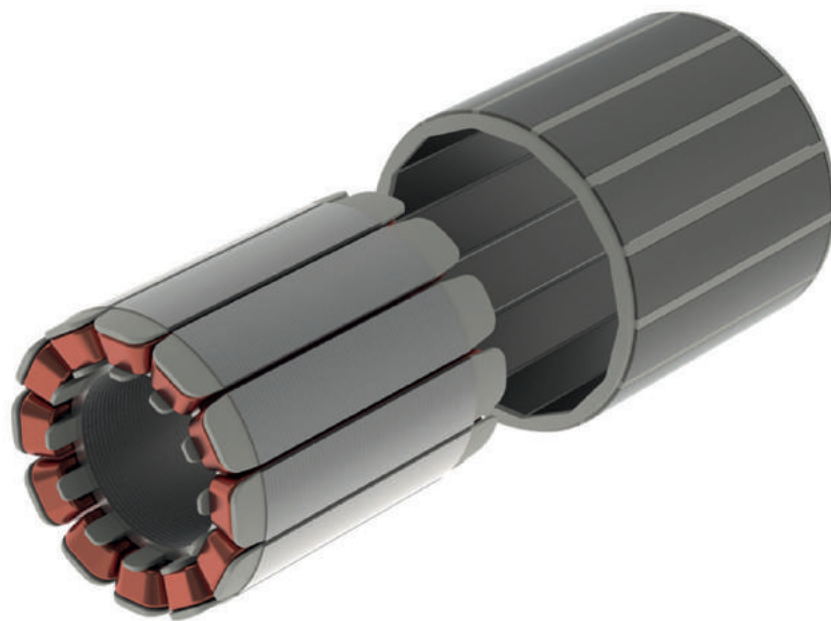
FRAMELESS MOTOR SIZE DATA & PARAMETERS									
Dimensions [mm]	A	B	C	$\varnothing D$	$\varnothing d$	E	F	$\varnothing G$	$\varnothing H$
VsGm-20	9,00	12,20	2,60	20,0	3,00	3,75	1,75	19,00	19,00
VsGm-28	43,20	46,50	0,76	28,0	5,00	8,9	7,62	25,4	25,4
VsGm-36	6,10	6,10	0	36,0	15,24	2,85	2,85	33,15	33,15
VsGm-37,78	58,50	66,1	0,89	37,78	9,53	6,99	10,16	36,07	36,07
VsGm-38	38,10	45,70	6,35	38,1	9,21	7,60	3,00	37,00	34,20
VsGm-40	81,20	88,90	6,81	40,0	10,20	9,80	3,30	36,80	36,80
VsGm-60-V1	40,00	46,20	5,20	60,2	10,00	11,20	7,00	58,50	56,50
VsGm-60-V2	51,20	57,20	5,00	60,2	12,70	11,20	7,00	58,50	56,50
VsGm-87	9,55	9,55	0	87,0	58,00	4,10	4,10	84,30	84,30
VsGm-120	13	13	0	120	87	3,5	3,5	115	115
VsGm-155	10	14	2	155	20	5,5	5,5	148,5	148,5
VsGm-202,9	81,8	86,36	2,3	2,3	104,17	12,32	12,32	198	198
VsGm-361	101,6	104,14	2,21	2,21	225,04	10	10	22,23	21,59





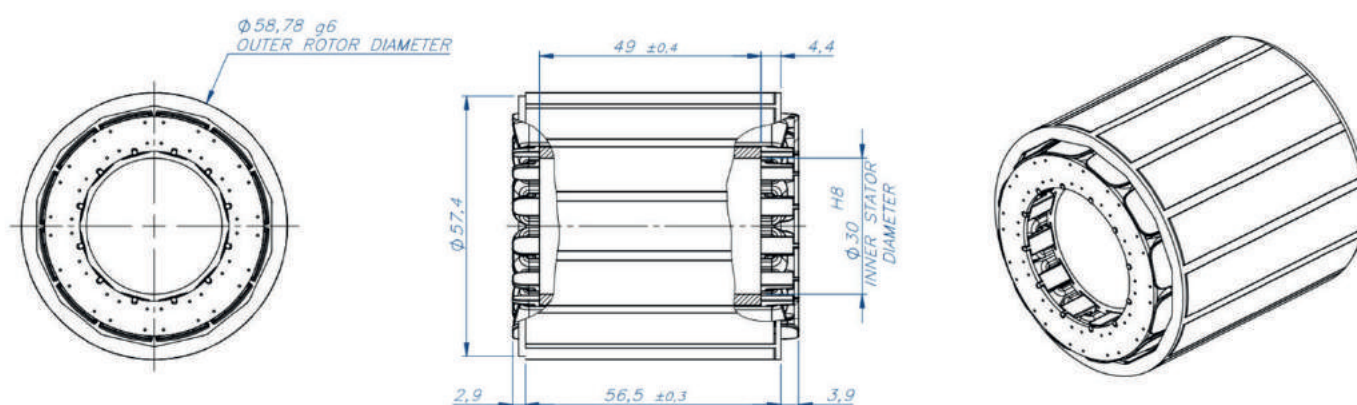
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PERMANENT MAGNET ALTERNATOR

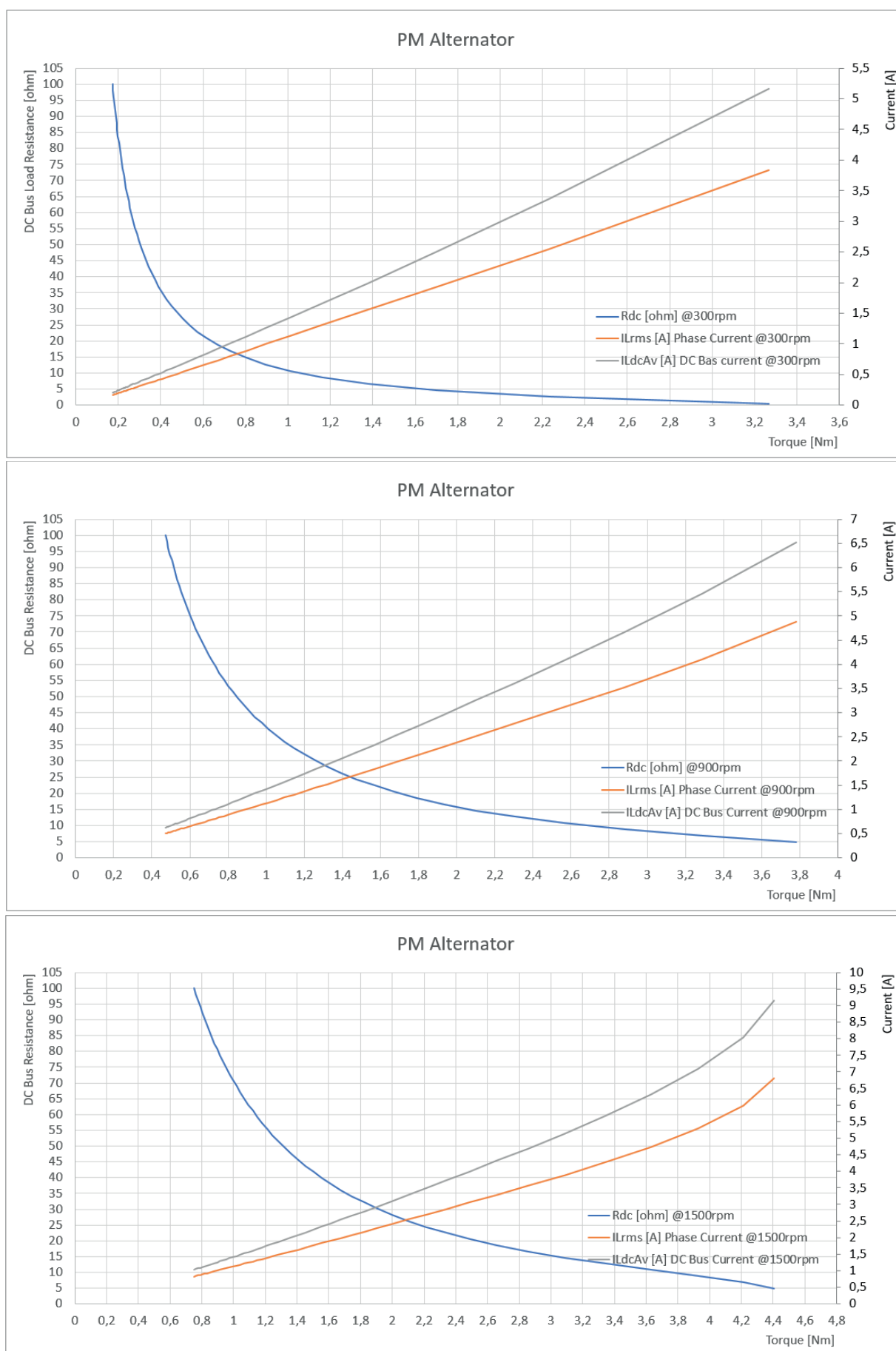




MAIN FEATURES

- Permanent Magnet Alternator
- Outer rotor construction
- 3 Phase sinusoidal output voltage
- High efficient power generation
- Resistance magnet on rotor
- Up to 1500 rpm

MOTOR DATA & PARAMETERS	SYMBOL	UNITS	PERMANENT MAGNET ALTERNATOR
Outer Diameter	Ø	mm	64
Axial Thickness	L	mm	130
Voltage constant @no-load (RMS)	K	VT	63,1
Rated phase current (RMS)	I	A	1,3
Efficiency	η	-	>65%
Torque @300rpm	T	Nm	28
Torque @1500rpm	T	Nm	2
Environment temperature	T	-	-40 / +50°C
Minimum endurance life	-	-	500h
Winding Type	-	-	Wye





Strong Values, **Strong Future**

Saya Group and its companies grow with a people-centric perspective. They produce for Turkey in all their industries with the following values in mind: "Stakeholder Satisfaction," "Respect for Society and Environment," "Development and Innovation" and "Trustworthiness."

Saya Group is a "Strategic Architect and Auditor," which supervises diverse business models while serving as a consolidator in steering the Group companies' different business models and strategies in line with the Group's goals, and determining and supporting the subsidiaries' tactical and operational business needs.

The Group has the following goals to be achieved by 2023 - the centennial celebration of the Republic of Turkey: Attain at least 25 percent of its total revenues from exports, employ over 4.000 people and in keeping with social responsibility objectives, continue to carry out projects that support education, culture and the arts and help the needy.

