



 **HYOSUNG GENERATOR**





Power & Industrial Systems Performance Group

Power & Industrial Systems Performance Group of Hyosung has made remarkable contributions to the development of key and electric industries in Korea through advanced technology and production capacity, and the best customer service for the past 40 years since it started its operation in 1962, along with earnest opening of heavy industry era in the country.

Industrial Machinery Performance Unit

Generator

Electric Motor

Gear Reducer

Chemical Process Equipment

Industrial Machinery

Ropeway

CNG Refill Station

Power Systems Performance Unit

UHV Power Transformer Power TR

EHV Power Transformer Power TR

Distribution Transformer

Cast Resin Transformer

Gas Circuit Breaker

Gas Insulated Switchgear

Control Panel



Industrial Machinery Performance Unit

HYOSUNG

The industrial Machinery Performance Unit has played a pivotal role in Korea's infrastructure industry by producing and supplying AC and DC motors, gear reducers, power generators, cast-iron products, industrial machinery for petrochemical plant and power plant, and cranes. **Hyosung** will emerge as a world-class machinery manufacturer and plant engineering provider and then will make contributions to improve the quality of human life, which is Hyosung's ultimate goal.

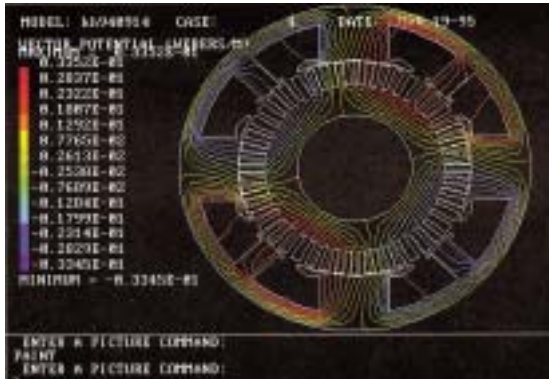
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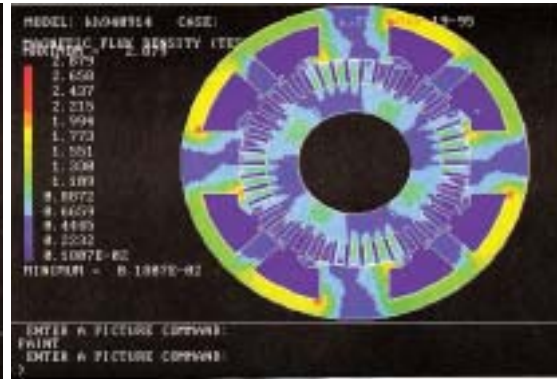


I. 효성 발전기

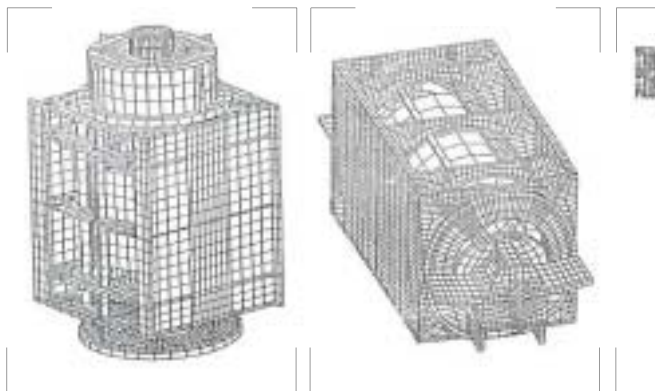
완벽한 방진 및 소음방지는 물론, 안정된 전압발생과 최고의 품질을 실현합니다.



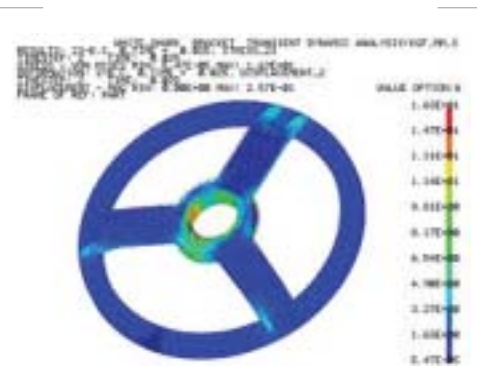
Magnetic Flux Vector Potential in core



Magnetic Flux Density in core



Stress analysis by ANSYS



Stress Analysis in bracket by NASTRAN

효성발전기는 자계, 구조해석 프로그램 및 3DAUTO CAD로 설계 제작되어 제품의 신뢰성을 한층 향상시켰으며 산업설비의 주 전원 및 비상용 전원 등 현장여건에 알맞게 생산하고 있습니다. 그리고 Brushless 여자시스템을 채택함과 동시에 Thyristor Control 방식을 사용함으로써 종래의 Brush 구조보다 더욱견고하고 보수 점검이 용이하며 부하의 변동에 관계없이 안정된 전압을 발생시키도록 개선하였습니다. 또한 국내 최초로 PMG(Permanent Magnetic Generator) 여자방식의 개발에 성공하여 보다 뛰어난 품질의 발전기를 자랑하고 있습니다.

■ 생산품목 (Products)

- 고속 비상/상용 디젤엔진 발전기
 - 4극, 20~3,000kW
- 중속 상용 디젤엔진 발전기
 - 중속 6~12극, 300~10,000kW
- 기타
 - MG Set (AC, DC)
 - Gas Turbine Generator
 - Gas Engine Generator
 - 풍력 발전 System
 - 열병합 발전 System
 - 고객 주문 비표준 제작



- ① 중속, 1,500kW 발전기 세트
- ② Motor-Generator Set
- ③ 발전기 제어반



II. 효성 발전기의 특징

소형경량 (Compact & Light)

Computer에 의한 Design으로 재료를 유효하게 사용하여 소형 경량화입니다.
Compact & light is performed form compact structure design and electric design.

안정된 전압 발생 (Stable Voltage Occurrence)

사이리스트를 이용한 전압 조정기(Auto Voltage Regulator)를 사용하였으므로 부하변동에 관계없이 안정된 전압을 발생시킵니다.
We can get stable voltage AVR with Thyristor.

용이한 기동 (Convenient Operation)

자동 및 반자동 겸용 시스템으로서 현장조건에 맞게끔 설계되어 운전이 용이합니다.
Stable operation, the system with auto and manual at the same and it is designed fit to field condition so it makes operation conveniently.

완벽한 방진 장치 (Completed Vibration Device)

진동 완화 장치 (Isolator)를 사용하여 진동에 대한 대책이 완벽합니다.
Vibration damping is completed by vibration isolator.

완벽한 소음 대책 (Completed Controlling Noise)

규격화된 Silencer를 사용하여 소음이 적습니다.(공해방지법 기준치 이하)
Noise is little using standard silencer.

간단한 보수 (Simple Maintenance)

Brushless Type으로 구조가 간단, 견고하여 보수점검이 용이합니다.
Maintenance is easy because generator is brushless type, simple structure and strong.



Auto Spreading M/C



Auto Taping M/C



Manual Taping



Uniform Shape
by Spreading M/C



Coil Insulated
with MICA Tape

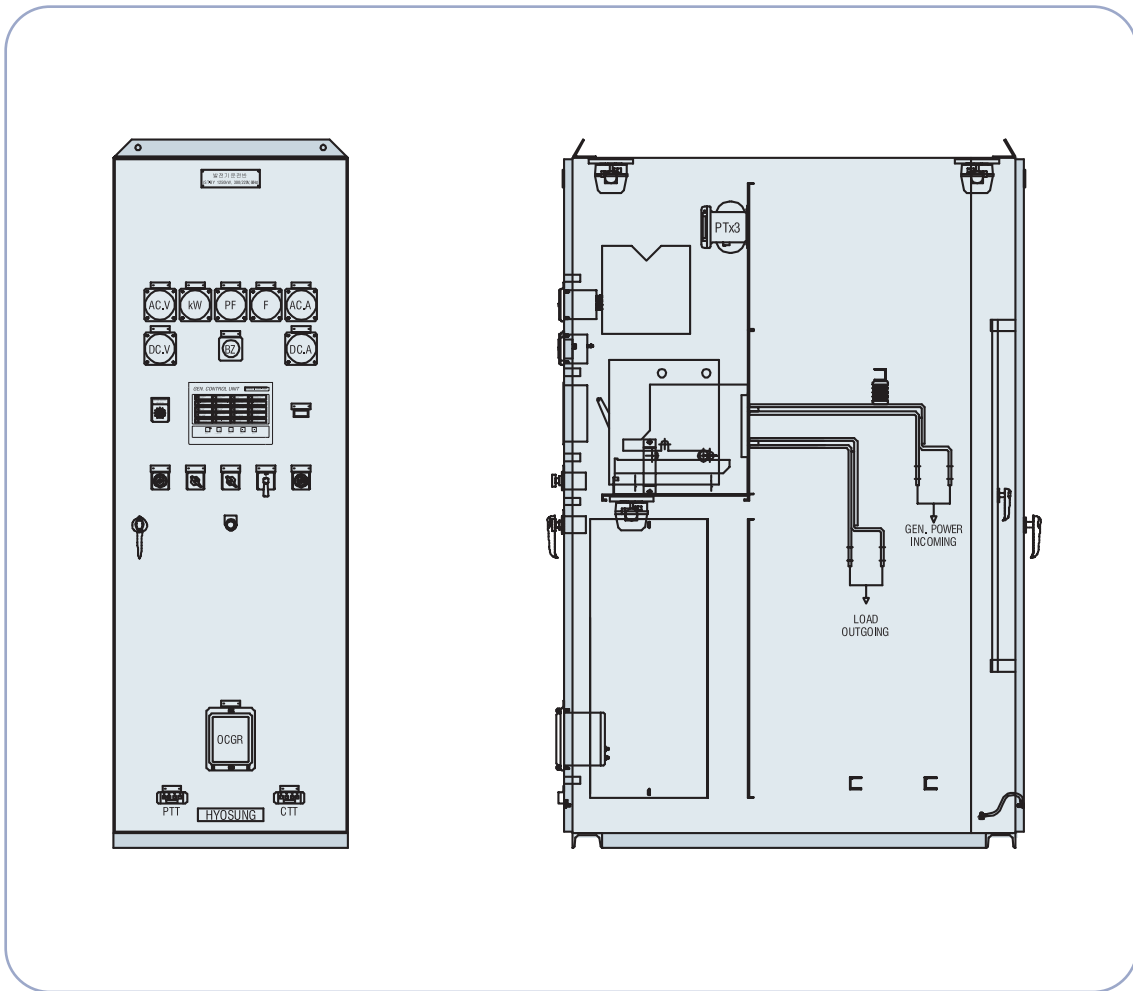


End Section of Coil
Taped Manually



III. 제어반

외형도 (Control Panel Outline Drawing)

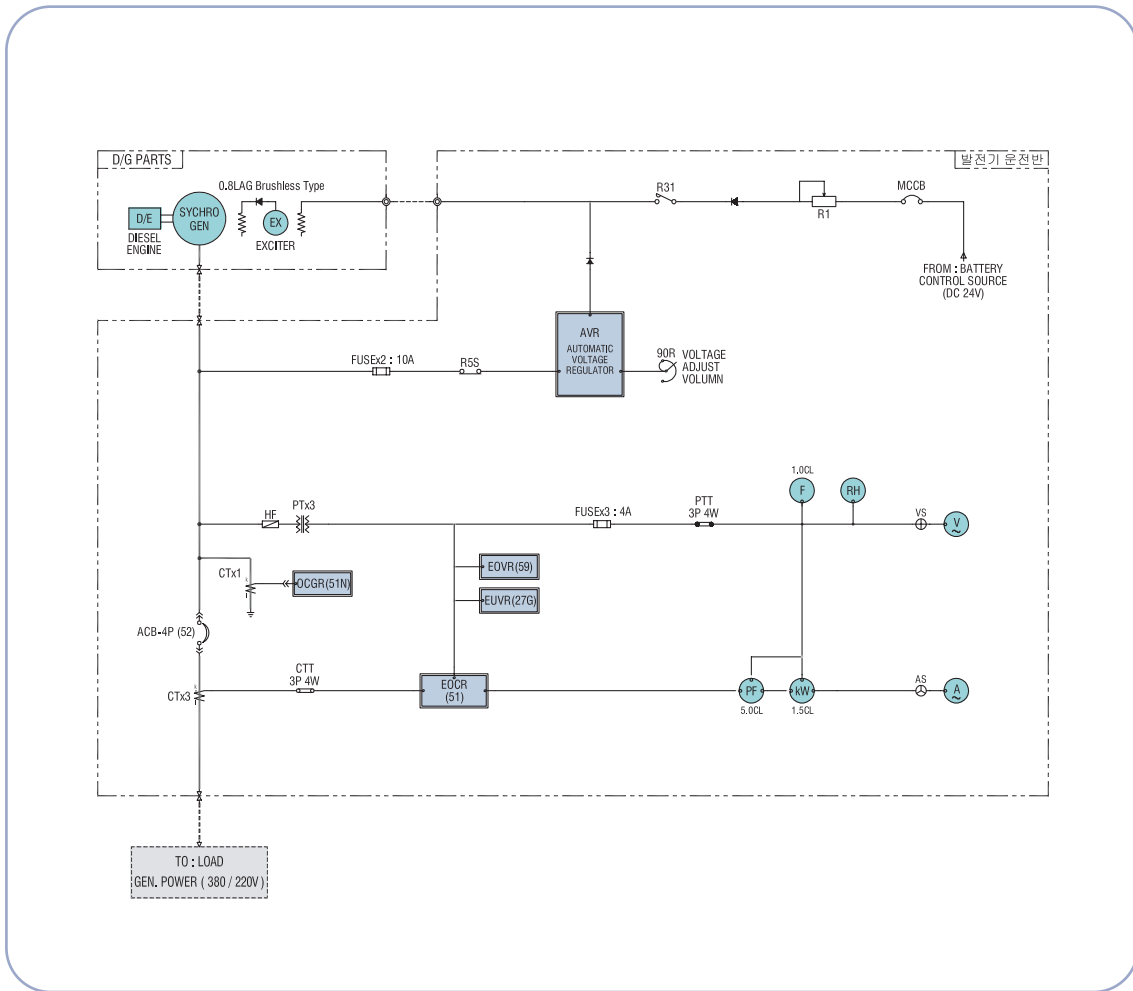


제어전원 (Control Power Source)

DESCRIPTION	VOLTAGE	SUPPLIER
For Engine	DC 24V	Battery Charger
For Sequence	DC 24V	Battery Charger
For Circuit Breaker	DC 110V*	Customer
For Battery Charger	AC 220V*	Customer
For Heater & Lighting	AC 220V*	Customer

주) * 고객의 요구에 따라 전압 사양의 변경이 가능합니다.
 NOTE) * Voltage can be changed as per customer's requirement.

회로도 (Control Panel Single Line Diagram)



보호방식 (Protection)

DESCRIPTION	SYMBOL	ENG STOP	CB TRP	BUZZER	LAMP
과속도 (Over Speed)	12	○	○	○	○
냉각수온도상승 (Water Temp High)	26W	○	○	○	○
윤활유압력저하 (Oil Press Low)	63Q	○	○	○	○
기동실패 (Starting Failure)	48	○	○	○	○
과전압 (Over Voltage)	59	○	○	○	○
저전압 (Under Voltage)	27	X	○	○	○
과전류 (Over Current)	50/51	X	○	○	○
지락보호 (Ground Fault)	51G, 64	X	○	○	○

주) 고객의 요구에 따라 보호 계전기의 추가나 보호방식의 변경이 가능합니다.
 NOTE) Relay and IP can be changed as per customer's requirement.

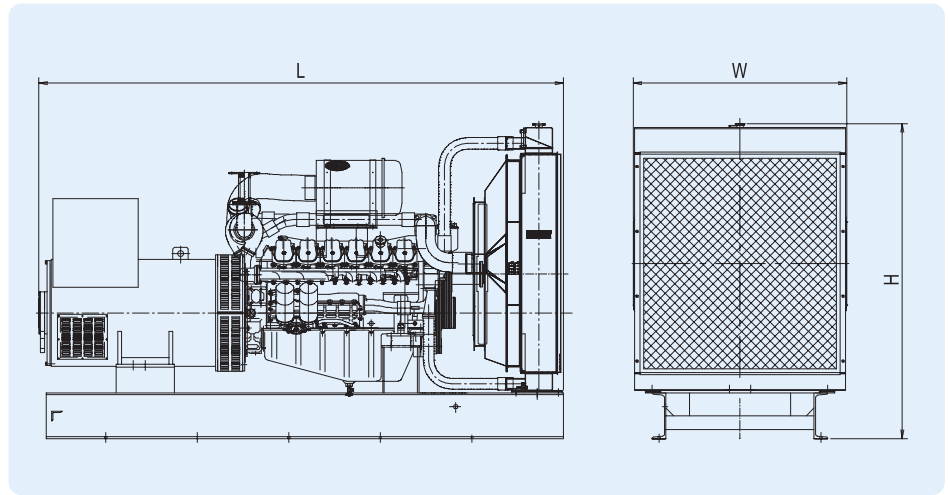


IV. 고속 비상/상용 발전기

DOOSAN Engine



외형도 (Outline Drawing)

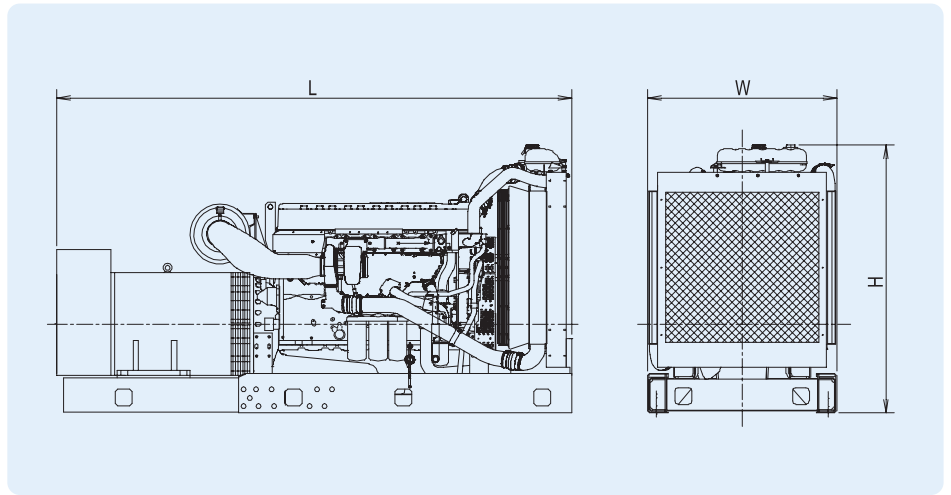


Data Sheet

(60Hz, 1800rpm)

발전기 모델	비상출력 (kW _e)	상용출력 (kW _e)	엔진모델	비상출력 (ps)	상용출력 (ps)	발전기세트(mm)			중량(kg)		배기관 (inch)	공기흡입구(mm)		공기배출구(mm)		연료소비량 (l/h)	냉각수량 (l)	윤활유량 (l)
						L	W	H	Dry	Wet		W	H	W	H			
SF002	26	24	DB33	47	43	1898	750	1203	720	750	3	600	600	500	500	9.2	25.0	7.5
SF005	50	46	P034TI	82	75	2035	750	1299	890	920	3	600	600	500	500	15.6	21.5	6.5
SF006	60	55	DB58	95	87	2327	830	1208	1060	1110	4	790	760	725	700	18.1	34.0	19.0
SF009	90	82	D1146	143	130	2500	830	1420	1430	1490	4	845	960	775	880	26.6	38.5	15.5
SF013	130	109	D1146T	202	170	2500	830	1420	1640	1700	4	845	960	775	880	35.9	38.5	15.5
SF017	175	159	DE12T	270	245	2785	920	1441	1940	2010	4	980	960	900	880	49.0	52.0	23.0
SF020	200	184	P086TI	303	279	2728	946	1519	1960	2030	4	1130	960	1035	880	56.8	48.5	15.5
SF025	250	229	P126TI-3	375	343	2994	1015	1686	2200	2270	5	1200	1100	1100	1005	68.2	60.0	23.0
SF027	275	257	P126TI	405	378	2994	1015	1686	2320	2400	5	1200	1100	1100	1005	76.5	60.0	23.0
SF030	300	270	P126TI-II	465	418	2994	1015	1686	2450	2520	5	1200	1100	1100	1005	89.5	60.0	23.0
SF033	330	304	P158LE-2	510	470	2990	1400	1875	2710	2820	6	1380	1500	1250	1350	93.5	88.5	28.0
SF036	360	328	P158LE-1	546	498	2990	1400	1875	2810	2920	6	1380	1500	1250	1350	104.0	88.5	28.0
SF040	400	351	P158LE	623	547	2990	1400	1875	3010	3120	6	1380	1500	1250	1350	115.7	88.5	28.0
SF045	450	408	P158LE-III	690	625	2990	1400	1875	3110	3220	6	1380	1500	1250	1350	129.8	88.5	28.0
SF050	500	460	P180LE	734	676	3170	1400	1875	3460	3580	6	1380	1500	1250	1350	144.6	94.0	35.0
SF055	550	506	P180LE-II	827	761	3170	1400	1875	3560	3680	6	1380	1500	1250	1350	155.6	94.0	35.0
SF061	610	552	P222LE	898	813	3390	1400	1875	4140	4280	6	1480	1600	1350	1450	173.5	113.0	40.0
SF066	660	602	P222LE-II	1000	912	3390	1400	2075	4300	4450	6	1480	1600	1350	1450	192.1	125.0	40.0
SF075	750	671	P222FE-II	1115	998	3390	1620	2098	4530	4720	8	1800	1600	1650	1450	201.6	161.0	40.0

외형도 (Outline Drawing)



Data Sheet

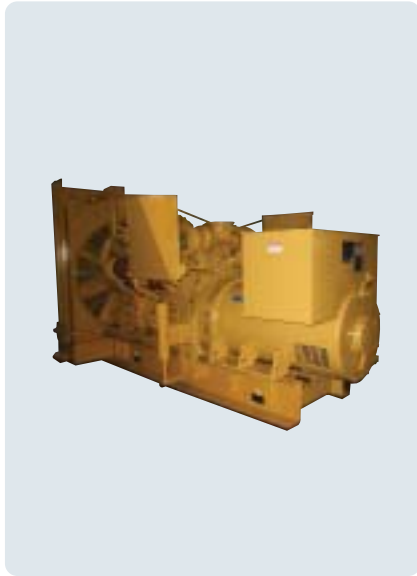
(60Hz, 1800rpm)

발전기 모델	비상출력 (kWe)	상용출력 (kVb)	엔진모델	비상출력 (BHP)	상용출력 (BHP)	발전기세트(mm)			중량(kg)		배기관 (inch)	공기흡입구(mm)		공기배출구(mm)		연료소비량 (l/h)	냉각수량 (l)	윤활유량 (l)
						L	W	H	Dry	Wet		W	H	W	H			
SF008	77	70	TD520E	115	105	2158	664	1456	1280	1310	4	630	630	550	590	19.5	22.0	13.0
SF009	92	84	TAD 520GE	138	127	2280	729	1456	1455	1486	4	670	670	570	640	22.2	23.0	13.0
SF012	117	106	TD720GE	172	161	2428	741	1351	1630	1670	4	790	790	730	710	29.2	22.0	20.0
SF014	141	129	TAD 720GE	213	194	2471	866	1351	1640	1684	4	830	830	730	770	33.7	24.0	20.0
SF018	181	165	TAD 721GE	268	243	2526	1005	1555	1805	1846	4	1030	1030	730	1190	44.3	38.0	34.0
SF020	201	181	TAD 722GE	296	268	2526	1005	1555	1710	1751	4	1030	1030	730	1190	49.2	38.0	34.0
SF018	180	153	TWD710G	267	226	2696	1000	1514	1915	1978	4	1160	1160	1050	1050	44.1	42.0	29.0
SF021	210	190	TWD740GE	310	281	2696	877	1491	2020	2083	4	1260	1260	950	1380	51.4	42.0	29.0
SF023	231	210	TAD 740GE	341	310	2696	945	1491	2053	2121	4	1250	1250	940	1370	54.9	37.0	29.0
SF021	210	190	TAD 741GE	310	281	2696	945	1491	2053	2121	4	1250	1250	940	1370	52.2	37.0	29.0
SF025	251	228	TAD 940GE	371	338	2848	1120	1591	2279	2329	6	1090	1090	1010	980	60.3	41.0	35.0
SF030	303	276	TAD 941GE	443	403	2848	1120	1591	2529	2579	6	1090	1090	1010	980	73.8	41.0	35.0
SF031	307	279	TAD 1240GE	449	408	2946	1120	1587	2820	2895	6	1090	1090	1010	980	74.8	44.0	35.0
SF035	352	320	TAD 1241GE	526	479	2946	1120	1587	3045	3120	6	1090	1090	1010	980	85.4	44.0	35.0
SF040	400	364	TAD 1242GE	585	532	2946	1120	1587	3245	3320	6	1090	1090	1010	980	99.8	44.0	35.0
SF045	451	406	TAD 1640GE	651	585	3292	1160	1881	3610	3720	8	1400	1400	1640	990	109.4	93.0	48.0
SF052	518	461	TAD 1641GE	743	660	3292	1160	1881	3810	3920	8	1400	1400	1640	990	128.0	93.0	48.0
SF055	550	500	TAD 1642GE	796	724	3292	1160	1881	3810	3920	8	1400	1400	1640	990	137.2	93.0	48.0

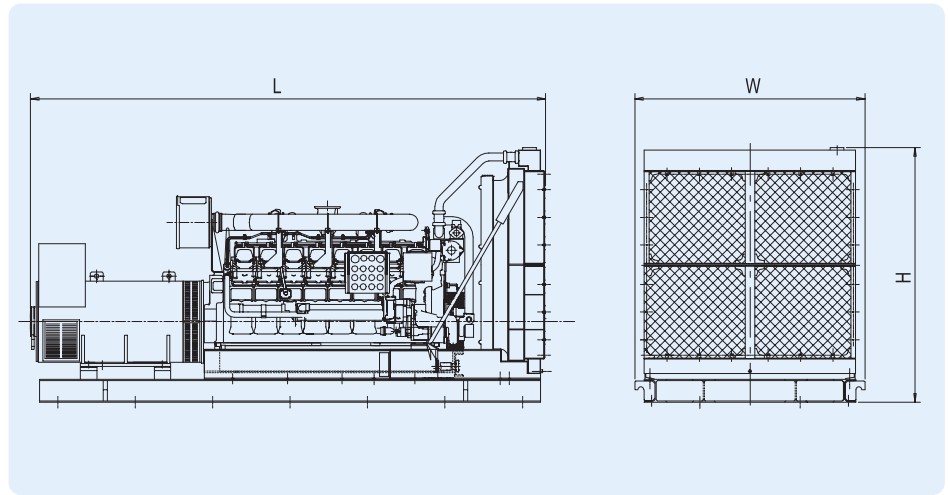


IV. 고속 비상/상용 발전기

CATERPILLAR Engine



외형도 (Outline Drawing)

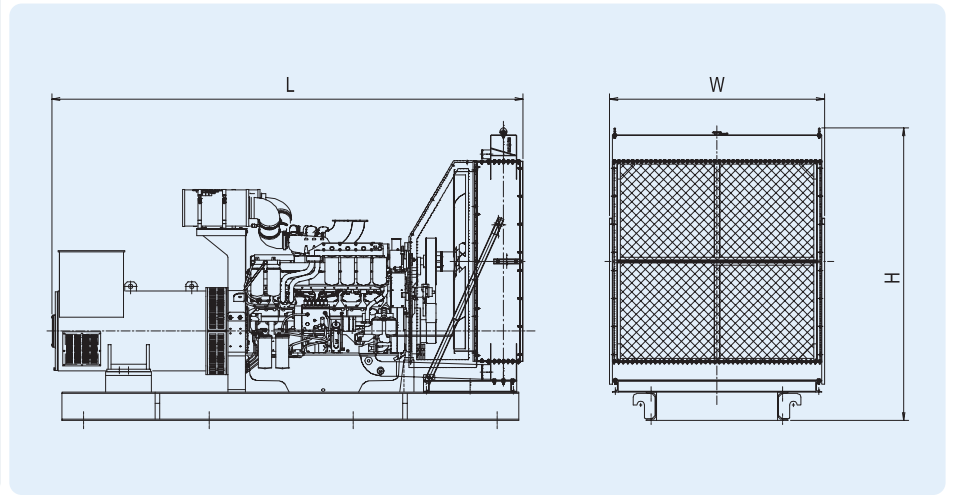


Data Sheet

(60Hz, 1800rpm)

발전기 모델	비상출력 (kWe)	상용출력 (kWe)	엔진모델	비상출력 (BHP)	상용출력 (BHP)	발전기세트(mm)			중량(kg)		배기관 (inch)	공기흡입구(mm)		공기배출구(mm)		연료소비량 (ℓ/h)	냉각수량 (ℓ)	윤활유량 (ℓ)
						L	W	H	Dry	Wet		W	H	W	H			
SF023	230	210	3306	343	314	3800	1100	1903	3432	3500	6	1000	1000	900	900	68.0	36.0	38.0
SF025	250	225	3306	377	343	3800	1100	1903	3432	3500	6	1000	1000	900	900	73.0	36.0	38.0
SF030	300	275	3406	449	405	4182	1107	2150	3943	4000	8	1200	1200	1000	1100	87.0	25.0	38.0
SF035	350	320	3406	519	475	4182	1107	2150	3943	4000	8	1200	1200	1000	1100	101.0	25.0	38.0
SF040	400	365	3406	587	536	4182	1107	2150	3943	4000	8	1200	1200	1000	1100	111.0	25.0	38.0
SF045	450	410	3456	685	623	4182	1110	2162	4398	4500	8	1500	1500	1100	1500	119.0	70.0	38.0
SF050	500	455	3456	764	691	4182	1110	2162	4395	4500	8	1500	1500	1100	1500	137.0	73.0	38.0
SF055	550	500	C18	839	665	4237	1536	2166	4855	5000	10	1400	1600	1400	1500	147.0	27.0	139.0
SF060	600	545	C18	900	775	4237	1536	2166	4855	5000	10	1400	1600	1400	1500	163.0	27.0	139.0
SF065	650	591	3412	968	890	4485	1748	1986	6269	6500	10	1600	1800	1600	1500	175.0	113.0	139.0
SF070	700	635	3412	1039	947	4485	1748	1986	6722	7000	10	1600	1800	1600	1500	188.0	160.0	139.0
SF075	750	680	3412	1109	1011	4485	1748	1986	7220	7500	10	1600	1800	1600	1500	206.0	162.0	139.0
SF080	800	725	3412	1180	1051	4485	1748	1986	7220	7500	10	1600	1800	1600	1500	222.0	162.0	139.0
SF090	900	820	C32	1357	1220	4767	2024	2223	8253	8500	12	1600	2000	1600	1700	237.0	190.0	68.0
SF100	1000	910	C32	1502	1341	4767	2024	2223	8253	8500	12	1600	2000	1600	1700	272.0	190.0	68.0
SF110	1100	1000	3512	1603	1455	5173	2094	2367	11950	12500	14	2200	2400	2200	2000	305.0	287.0	310.0
SF125	1250	1135	3512	1818	1662	5173	2094	2367	11950	12500	14	2200	2400	2200	2000	354.0	287.0	310.0
SF140	1400	1275	3512B	2032	1844	5128	2286	2332	12915	13500	14	2200	2400	2200	2000	385.0	322.0	310.0
SF150	1500	1360	3512B	2172	1757	5128	2286	2332	12915	13500	14	2200	2400	2200	2000	411.0	322.0	310.0
SF175	1750	1600	3516	2520	2304	6086	2286	2332	14762	15500	16	2200	2400	2200	2000	470.0	398.0	401.0
SF200	2000	1825	3516B	2876	2628	6444	2588	3051	15739	16500	16	2400	3100	2400	2500	531.0	421.0	401.0
SF225	2250	2000	3516B	3210	2876	6867	2588	3022	16642	17500	16	2400	3100	2400	2500	594.0	518.0	401.0
SF250	2500	-	3516C	3634	-	7072	2450	2916	17656	18500	16	2500	3300	2400	2400	656.0	504.0	401.0

외형도 (Outline Drawing)



Data Sheet

(60Hz, 1800rpm)

발전기 모델	비상출력 (kWe)	상용출력 (kWe)	엔진모델	비상출력 (BHP)	상용출력 (BHP)	발전기세트(mm)			중량(kg)		배기관 (inch)	공기흡입구(mm)		공기배출구(mm)		연료소비량 (ℓ/h)	냉각수량 (ℓ)	윤활유량 (ℓ)
						L	W	H	Dry	Wet		W	H	W	H			
SF023	230	210	LTA10-G1	380	345	2660	970	1570	3407	3492	6	1080	1080	900	900	59.0	54.0	36.0
SF025	250	225	LTA10-G1	380	345	2660	970	1570	3407	3492	6	1080	1080	900	900	64.7	54.0	36.0
SF027	275	250	NTA855-G6	435	395	3160	990	1945	2874	2966	6	1320	1320	1100	1100	77.0	60.0	37.9
SF030	300	270	NTA855-G2	465	420	3160	990	1945	3044	3138	6	1320	1320	1100	1100	85.0	62.0	37.9
SF035	350	315	NTA855-G3	535	480	3160	990	1945	3269	3363	6	1320	1320	1100	1100	92.0	62.0	37.9
SF045	450	410	KTA19-G3	685	620	3700	1220	2230	4250	4402	6	1440	1800	1200	1500	122.0	109.0	50.0
SF050	500	455	KTA19-G4	755	680	3700	1220	2230	4391	4543	6	1440	1800	1200	1500	136.0	109.0	50.0
SF040	400	350	QSK15-G9	755	680	3865	1524	1812	3728	3880	8	1560	1560	1300	1300	103.0	80.0	83.3
SF045	450	410	QSK15-G9	755	680	3865	1524	1812	3828	3980	8	1560	1560	1300	1300	114.0	80.0	83.3
SF050	500	455	QSK15-G9	755	680	3865	1524	1812	3928	4134	8	1560	1560	1300	1300	130.0	134.0	83.3
SF060	600	545	VTA28-G5	900	815	3850	1600	2270	5816	6086	10	1920	1920	1600	1600	173.0	199.0	83.0
SF060	600	545	QSK23-G1	905	811	4200	1502	2100	5818	6190	10	1680	1680	1400	1400	158.0	285.0	102.0
SF075	750	680	QSK23-G2	1135	1030	4200	1502	2100	6018	6390	10	1680	1680	1400	1400	196.0	285.0	102.0
SF080	800	725	QSK23-G3	1200	1080	4200	1502	2100	6118	6490	10	1680	1680	1400	1400	212.0	285.0	102.0
SF090	900	818	QST30-G3	1350	1220	4050	1830	2530	6510	6965	10	2040	2040	1700	1700	224.0	323.0	154.0
SF100	1000	900	QST30-G4	1490	1350	4500	1830	2530	7070	7589	10	2280	2400	1900	2000	262.0	387.0	154.0
SF125	1250	1100	QSK45-G4	1850	1622	4500	1830	2650	10243	10893	10	2280	2400	1900	2000	336.0	518.0	154.0
SF125	1250	1100	KTA50-G3	1850	1635	5100	1830	2530	10758	11427	12	2400	2400	2000	2000	330.0	518.0	177.0
SF150	1500	1250	KTA50-G9	2220	1855	5500	1830	2630	11268	11946	14	2400	2400	2000	2000	392.0	504.0	204.0
SF175	1750	1600	QSK60-G6	2922	2647	5860	1880	2622	14292	15109	16	2640	2640	2200	2200	443.0	579.0	280.0
SF200	2000	1825	QSK60-G6	2922	2647	5860	1880	2622	14292	15109	16	2640	2640	2200	2200	510.0	579.0	280.0
SF225	2250	-	QSK60-G8	-	-	6175	2500	3120	14878	15696	16	3000	3000	2500	2500	569.0	579.0	280.0
SF264	2640	2375	QSK78-G6	3740	3371	8100	2500	3452	18401	19319	12EA	3120	3120	2600	2600	652.0	667.0	295.0

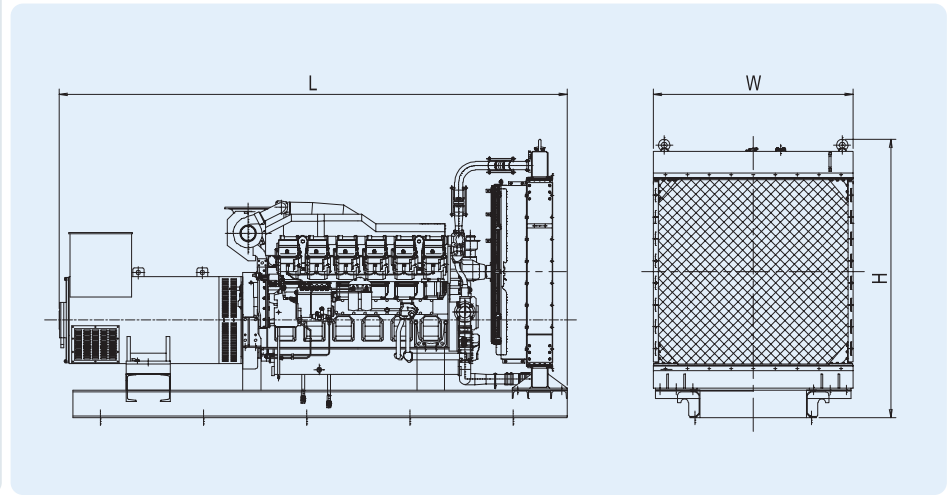


IV. 고속 비상/상용 발전기

● MITSUBISHI Engine



▣ 외형도 (Outline Drawing)

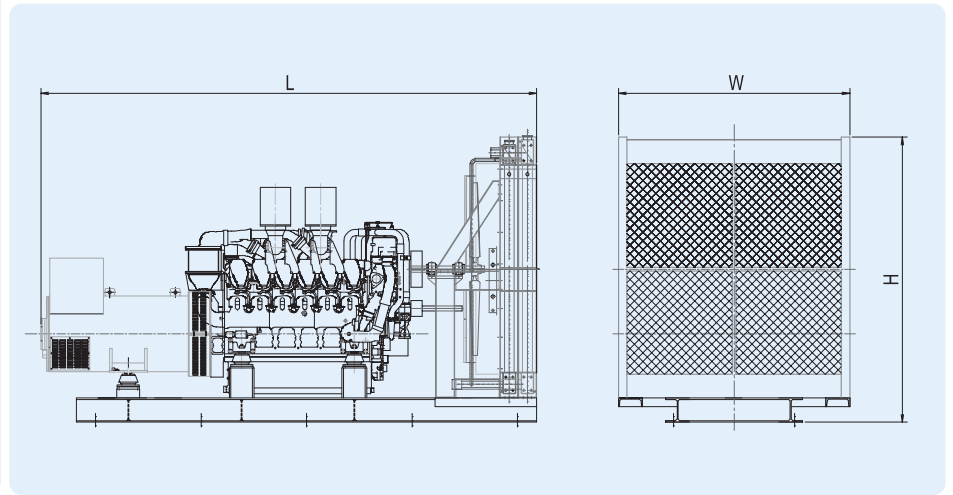


▣ Data Sheet

(60Hz, 1800rpm)

발전기 모델	비상출력 (kW _e)	상용출력 (kW _e)	엔진모델	비상출력 (kW _m)	상용출력 (kW _m)	발전기세트(mm)			중량(kg)		배기관 공기흡입구(mm)			공기배출구(mm)		연료소량 (ℓ/h)	냉각수량 (ℓ)	윤활유량 (ℓ)
						L	W	H	Dry	Wet	(inch)	W	H	W	H			
SF055	550	498	S6R-PTA	635	575	3560	1430	1450	5290	5497	8	1620	1260	1350	1050	154.0	113.0	94.0
SF075	750	668	S12A2-PTA	821	731	3970	1600	1850	6290	6625	8	1860	1560	1550	1300	214.0	215.0	120.0
SF100	1000	907	S12H-PTA	1080	980	4390	1660	2070	8180	8624	10	1920	1920	1600	1600	266.0	244.0	200.0
SF1250	1200	1077	S12R-PTA	1270	1140	4640	1820	2290	9620	10135	12	2100	2040	1750	1700	314.0	335.0	180.0
SF130	1300	1181	S12R-PTA2	1420	1290	4710	1820	2620	11000	11485	12	2100	2460	1750	2050	358.0	305.0	180.0
SF150	1500	1304	S12R-PTAA2	1596	1387	4980	2020	2680	11400	11897	12	2280	2556	1900	2130	388.0	317.0	180.0
SF160	1600	1449	S16R-PTA	1700	1540	5370	1860	2630	13050	13630	14	2100	2520	1750	2100	426.0	350.0	230.0
SF180	1800	1634	S16R-PTA2	1900	1725	5150	2590	2810	12840	13515	14	2940	2820	2450	2350	479.0	445.0	230.0
SF200	2000	1800	S16R-PTAA2	2105	1895	5710	2220	3080	13670	14300	14	2520	3060	2100	2550	521.0	400.0	230.0

외형도 (Outline Drawing)



Data Sheet

(60Hz, 1800rpm)

발전기 모델	비상출력 (kWe)	상용출력 (kWe)	엔진모델	비상출력 (BHP)	상용출력 (BHP)	발전기세트(mm)			중량(kg)		배기 (inch)	공기흡입구(mm)		공기배출구(mm)		연료소모량 (ℓ/h)	냉각수량 (ℓ)	윤활유량 (ℓ)
						L	W	H	Dry	Wet		W	H	W	H			
SF065	650	591	12V2000G43	986	896	3800	1580	2186	5920	6650	10	1620	1620	1350	1350	173.7	170.0	77.0
SF075	750	684	12V2000G83	1120	1021	3800	1580	2186	5920	6650	10	1620	1620	1350	1350	189.5	174.0	77.0
SF090	900	818	16V2000G43	1350	1227	4250	1752	2400	6950	7270	10	1980	1980	1650	1650	237.3	210.0	102.0
SF100	1000	908	16V2000G83	1495	1358	4250	1752	2400	6950	7270	10	1980	1980	1650	1650	262.4	210.0	102.0
SF110	1100	916	18V2000G83	1676	1395	4680	2000	2695	8150	8550	10	2100	2100	1750	1750	285.9	240.0	130.0
SF135	1350	1228	12V4000G41	1998	1817	5310	2200	2700	8609	9430	12	2280	2280	1900	1900	341.3	600.0	260.0
SF150	1500	1363	12V4000G81	2199	1998	5310	2200	2700	8799	9690	12	2280	2280	1900	1900	382.1	670.0	260.0
SF180	1800	1637	16V4000G41	2669	2427	5820	2590	2835	11259	12190	14	2400	2400	2000	2000	455.8	685.0	290.0
SF200	2000	1818	16V4000G81	2937	2669	6000	2590	2835	11939	12890	14	2400	2400	2000	2000	515.3	705.0	290.0
SF250	2500	2272	20V4000G42	3674	3339	7040	3256	2835	-	16000	16	3000	3000	2500	2500	635.2	-	390.0
SF280	2800	2549	20V4000G82	4036	3674	7240	3256	2835	-	17000	16	3000	3000	2500	2500	722.4	-	390.0



V. 중속 상용 발전기

General Data Sheet

6 POLE

(at 450V, 60Hz, Amb. Temperature : 40°C, p.f 0.8)

Type HG	No. of Pole	Output		Weight (kg)	Moment of Inertial (kg · m ²)	Rated Current (A)	Efficiency
		kVA	kW				
400S	6	450	563	2050	10.1	903	92.5
400M	6	500	625	2150	10.9	1003	92.5
400L	6	550	688	2250	11.7	1104	93.0
450S	6	700	875	2500	18.3	1404	93.5
450M	6	800	1000	2750	19.7	1604	93.6
450L	6	850	1063	3000	21.1	1705	93.4
500S	6	1200	1500	3250	29.2	2406	93.6
500M	6	1350	1688	3500	35.1	2708	94.0
500L	6	1500	1875	3700	42.1	3008	93.8
560S	6	1550	1938	4600	55.4	3109	93.8
560M	6	1750	2188	4900	62.1	3510	94.2
560L	6	1900	2375	5200	67.2	3809	94.5
630S	6	2100	2625	6600	117.0	4210	95.4
630M	6	2400	3000	6900	129.0	4812	95.8
630L	6	2700	3375	7200	138.0	5413	95.8
630G	6	2900	3625	7550	149.0	5814	95.7
710S	6	3300	4125	9000	198.0	6616	95.5
710M	6	3600	4500	9500	220.0	7217	95.8
710L	6	3900	4875	10000	243.0	7819	95.8
710G	6	4200	5250	10500	265.0	8420	95.9

8 POLE

(at 450V, 60Hz, Amb. Temperature : 40°C, p.f 0.8)

Type HG	No. of Pole	Output		Weight (kg)	Moment of Inertial (kg · m ²)	Rated Current (A)	Efficiency
		kVA	kW				
500S	8	850	1063	3250	29.2	1705	93.5
500M	8	900	1125	3500	35.1	1805	94.0
500L	8	950	1188	3700	42.1	1906	94.0
560S	8	1100	1375	4600	55.4	2206	94.0
560M	8	1250	1563	4900	62.1	2507	94.2
560L	8	1400	1750	5200	67.2	2807	94.3
630S	8	1500	1875	6600	117.0	3008	95.1
630M	8	1800	2250	6900	129.0	3609	95.3
630L	8	2100	2625	7200	138.0	4210	95.6
630G	8	2400	3000	7550	149.0	4812	95.6
710S	8	2800	3500	9000	198.0	5614	95.7
710M	8	3000	3750	9500	220.0	6015	95.8
710L	8	3200	4000	10000	243.0	6416	95.8
710G	8	3500	4375	10500	280.0	7017	95.9
800S	8	4000	5000	11000	400.0	8019	95.7
800M	8	4300	5375	11900	420.0	8621	95.9
800L	8	4700	5875	12800	450.0	9423	95.9
800G	8	4900	6125	13500	490.0	9823	95.8



10 POLE

(at 450V, 60Hz, Amb. Temperature : 40°C, p.f 0.8)

Type HG	No. of Pole	Output		Weight (kg)	Moment of Inertial (kg · m ²)	Rated Current (A)	Efficiency
		kVA	kW				
500S	10	550	688	3250	29.2	1104	93.5
500M	10	680	850	3500	35.1	1364	93.6
500L	10	825	1032	3700	42.1	1656	93.6
560S	10	950	1188	4600	55.4	1906	93.5
560M	10	1150	1438	4900	62.1	2307	94.0
560L	10	1400	1750	5200	67.2	2807	93.8
630S	10	1500	1875	6600	117.0	3008	94.1
630M	10	1660	2075	6900	129.0	3328	94.3
630L	10	1820	2275	7700	138.0	3649	94.9
630G	10	2000	2500	8400	149.0	4010	94.8
710S	10	2200	2750	9000	198.0	4411	95.2
710M	10	2450	3063	9500	220.0	4913	95.4
710L	10	2650	3313	10000	243.0	5314	95.4
710G	10	2900	3625	10500	280.0	5814	95.4
800S	10	3000	3750	11000	400.0	6015	95.2
800M	10	3500	4375	11900	420.0	7017	95.3
800L	10	4000	5000	12800	450.0	8019	95.5
800G	10	4500	5625	13500	490.0	9022	95.5

중속 상용 GENERATOR



▲중속용 8 POLE 1000kW



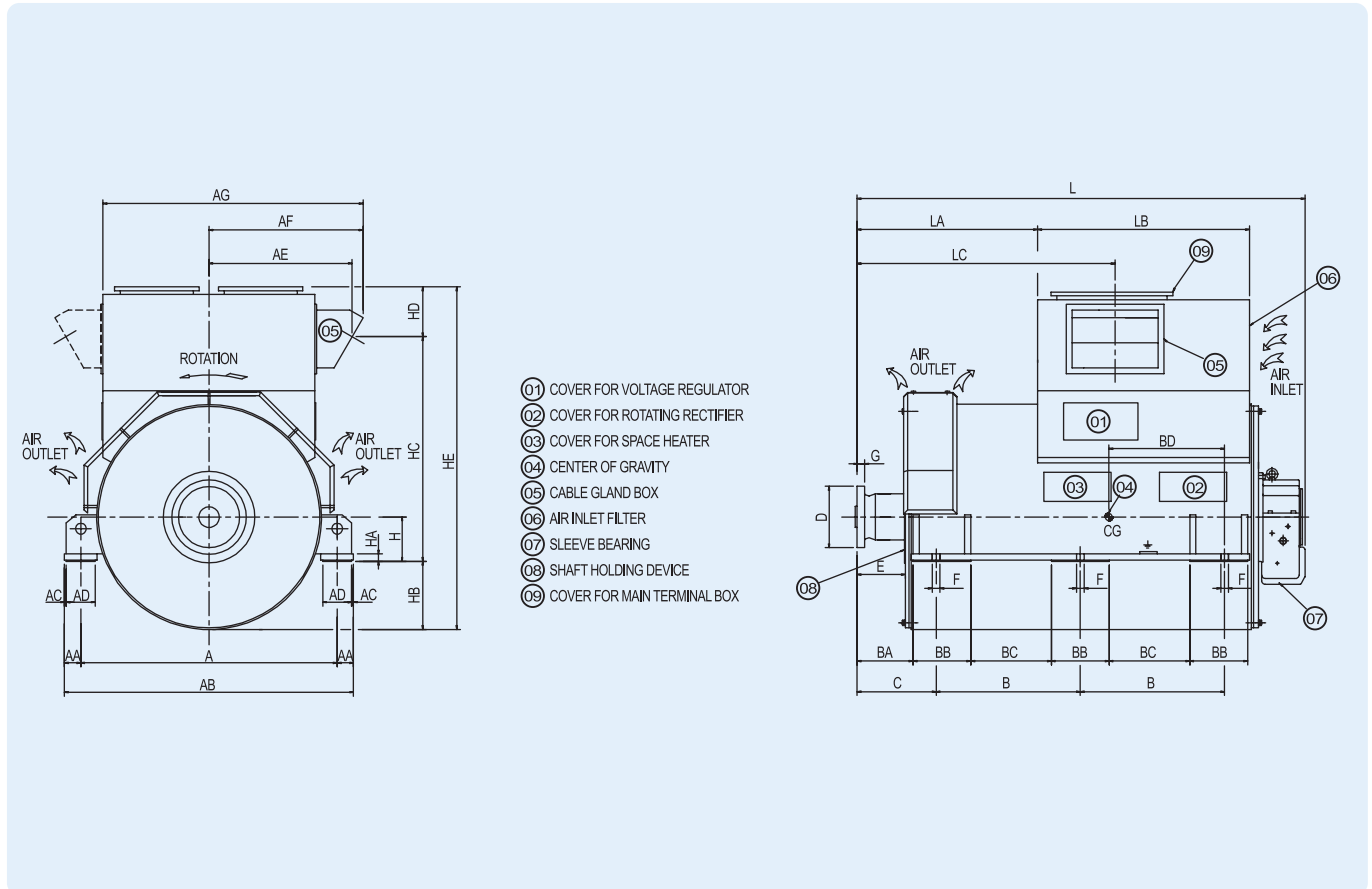
▲중속용 10 POLE 1500kW



V. 중속 상용 발전기

외형 치수도 (Outline Dimension Drawing)

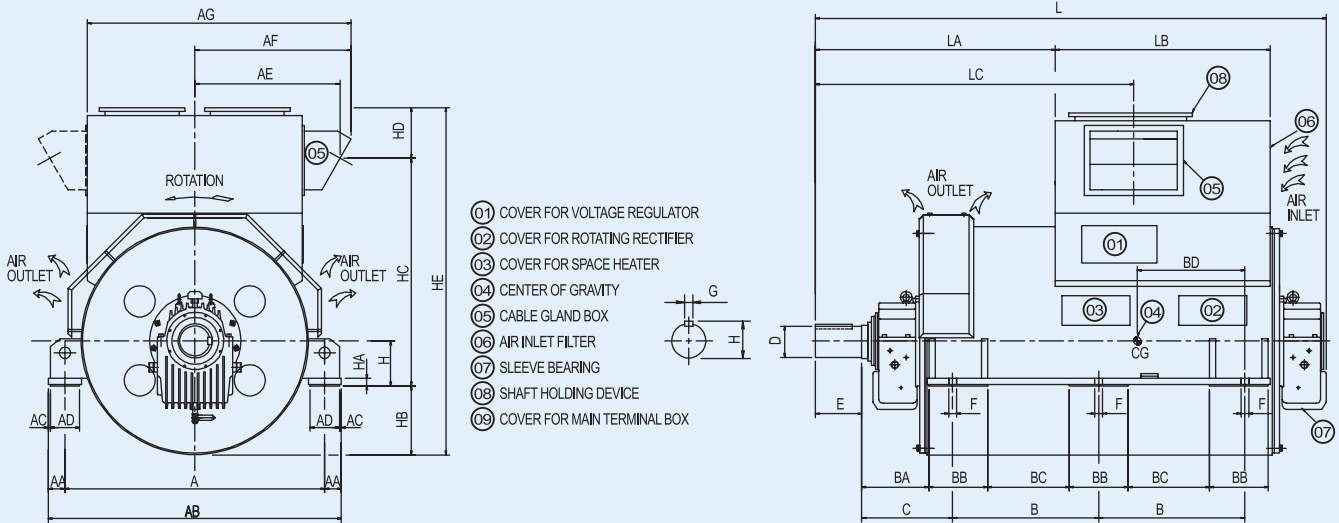
Single Bearing Type



(Dimension in mm)

Type HG	No. of poles	A	AA	AB	AC	AD	AE	AF	AG	B	BA	BB	BC	BD	C	H	HA	HB	HC	HD	HE	L	LA	LB	LC	F	Shaft End		
		D	E	G																									
40DS	6~10	1020	85	1190	10	150	604	660	1080	571	200	300	241	550	320	230	38	199	921	228	1348	1775	682	900	974	36	260	160	32
40DM	6~10									671			291	600								1875	782		1074				
40DL	6~10									771			341	650								1975	882		1174				
45DS	6~10	1120	85	1290	10	150	640	696	1150	571	280	300	241	550	400	230	38	254	966	228	1448	1855	762	900	1054	36	319	240	40
45DM	6~10									671			291	600								1955	862		1154				
45DL	6~10									771			341	650								2055	962		1254				
50DS	6~10	1280	85	1450	10	150	675	750	1250	580	280	300	245	545	395	230	38	309	1069	280	1658	1985	870	900	1045	42	319	240	40
50DM	6~10									630			295	595								2035	970		1145				
50DL	6~10									680			345	645								2135	1070		1245				
56DS	6~10	1330	85	1500	10	150	743	800	1350	623	290	300	293	542	410	230	38	354	1165	259	1778	2090	786	1100	1038	42	319	250	40
56DM	6~10									673			343	592								2180	886		1138				
56DL	6~10									723			393	642								2280	986		1238				

Double Bearing Type



(Dimension in mm)

Type HG	No of poles	A	AA	AB	AC	AD	AE	AF	AG	B	BA	BB	BC	BD	C	H	HA	HB	HC	HD	HE	L	LA	LB	LC	F	Shaft End			
																											D	DA	DB	E
630S	6~10	1470	150	1640	10	150	820	876	1500	673	400	300	343	550	520	230	38	424	1235	259	1918	2523	1136	1100	1538	42	180	195	45	240
630M	6~10									723			393	600								2623	1236		1638					
630L	6~10									773			443	650								2723	1336		1738					
630G	6~10									823			493	700								2823	1446		1838					
710S	6~10	1550	150	1720	10	150	867	924	1600	723	400	300	393	600	520	230	38	464	1345	259	1958	2624	1237	1100	1639	42	200	215	45	240
710M	6~10									773			443	650								2724	1337		1739					
710L	6~10									823			493	700								2824	1437		1839					
710G	6~10									873			543	750								2924	1537		1939					
800S	6~10	1750	150	1920	10	150	977	1034	1815	773	450	300	443	650	570	230	44	564	1445	259	2058	2834	1396	1100	1798	47	220	237	50	250
800M	6~10									823			493	700								2934	1496		1898					
800L	6~10									873			543	750								3034	1596		1998					
800G	6~10									923			593	800								3134	1696		2098					



VI. MG SET

MG SET (전동 발전기)

전동 발전기는 보다 다양한 전기적인 특성을 발휘하여 고객의 시스템에 최적화된 전력을 생산합니다.



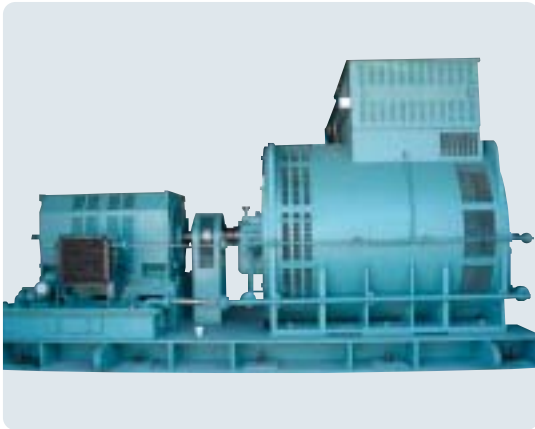
▲원자력 발전소용 200kW급 MG SET

주요특성

- 다양한 전압 및 주파수 생산
- 관성효과에 의한 무정전 전원생산
- 시험설비의 전원 공급용으로 활용
- 병렬운전 시스템 제공

용도

- 50Hz 전용 전원설비
- 전력기기 시험설비
- 무정전 전원설비



▲전력기기 시험용 10MVA급 MG SET

표준출력 생산범위

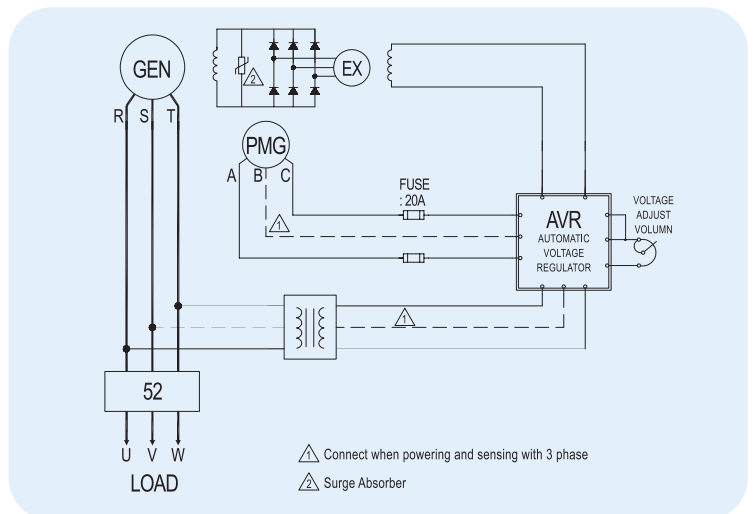
- 출력 : 300kW ~ 10,000kW
- 전압 : 380V ~ 13,200V
- 극수 : 4P ~ 12P

구동기 종류

- 유도 전동기
- 동기 전동기
- 직류 전동기

PMG (영구자석 발전기)

PMG에서 발전된 전력을 직접 AVR 입력전원(Power Input)에 공급함으로써 전동기와 같은 순간입력이 큰 부하에 대하여 속응성전압변동을 감소, 전압회복시간 짧음)이 매우 좋습니다. 그리고 부하에 의한 외란으로부터 영향을 받지 않아 고품질의 전력을 생산합니다.



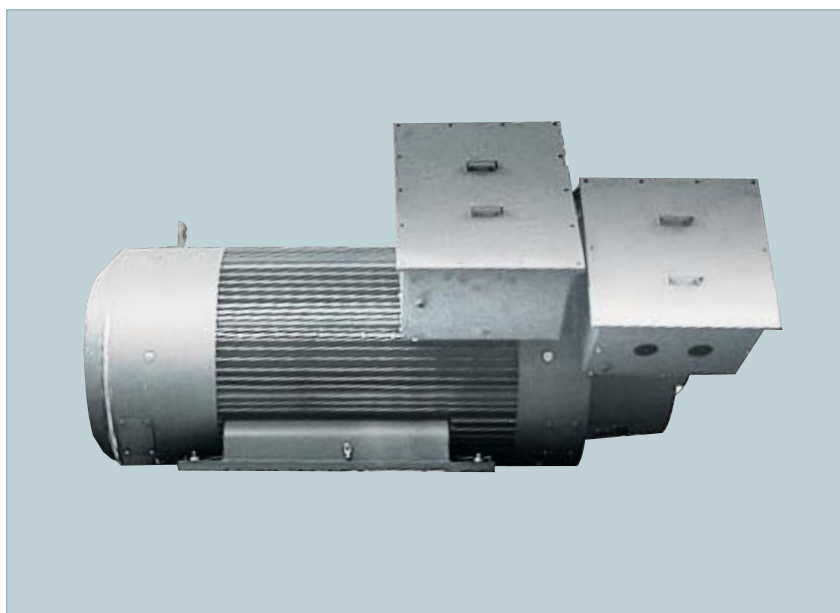
▲PMG 3-Line



Ⅶ. 풍력발전 시스템

Line-up & Specification

Item	Model	HS48-750kW	HS90-1.8MW	HS80-2.0MW	HS90-2.0MW	HS100-3.0MW
IEC Wind Class		1A	3A	1A	S (1A+2A)	1A, 2A
Blade	Rotor diameter	48m	90.2m	80m	90.2m	100m
	Swept area	1,810m ²	6,390m ²	5,027m ²	6,390m ²	7,854m ²
	Rated rotor speed	28rpm	15.9rpm	15.9rpm	15.9rpm	14rpm
	No. of blades	3	3	3	3	3
	Control method	Pitch	Pitch	Pitch	Pitch	Pitch
	Brake	Feathered, Hydraulic	Feathered, Hydraulic	Feathered, Hydraulic	Feathered, Hydraulic	Feathered, Hydraulic
Operating Data	Cut-in wind speed	4m/s	4m/s	4m/s	4m/s	4m/s
	Rated wind speed	12.5m/s	11m/s	11m/s	11m/s	11m/s
	Cut-out wind speed	25m/s	25m/s	25m/s	25m/s	25m/s
Generator	Type	Async. generator	Async. generator	Async. generator	Async. generator	Permanent magnetic generator
	Rated power	750kW	1,800kW	2,000kW	2,000kW	3,000kW
	Voltage / Frequency	690V / 60Hz	690V / 60Hz	690V / 60Hz	690V / 60Hz	690V / 60Hz
	Speed	1,350 ~ 2,250rpm	1,350 ~ 2,250rpm	1,350 ~ 2,250rpm	1,350 ~ 2,250rpm	320 ~ 650rpm
Gear box and Tower	Gear box	3 Step Planetary / Helical	3 Step Planetary / Helical	3 Step Planetary / Helical	3 Step Planetary / Helical	2 Step Planetary
	Tower height	48.89m	73.8 / 80 / 90m	73.8 / 80 / 90m	73.8 / 80 / 90m	80 / 90 / 100m
Weight	Nacelle	25ton	80ton	80ton	82ton	100ton
	Rotor	12.7ton	53ton	51ton	53ton	67ton





(주)효성 중공업 퍼포먼스 그룹

2007.02

- 본 사 : 서울시 마포구 공덕동 450 TEL.02-707-7000
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- 창원공장 : 경남 창원시 내동 454-2 TEL.055-268-9114
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수신자 부담의 A/S 단일번호를 통해 전국을 6개 지역으로 나누어 고객의 위치에 따라 가장 가까운 A/S센터로 자동 연결 됩니다.

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