



**maranello**  
**alternator**

**M40**

CONT 38 kVA



### THREE-PHASE SYNCHRONOUS GENERATOR

Datasheet for 4 poles -50Hz @ 1500rpm/ 60Hz @ 1800rpm

Ambient Temperature	40 °C	Method of Cooling	Air cooling
Temperature Rise	125 °C	Direction of Rotation	Clockwise
Insulation Class	H	Maximum Over-speed	2250r/min
Power Factor	0.8	Degree of Protection / Enclosure	IP22
Excitation	Brushless	Altitude	1000m
Winding Pitch	2/3	Stator winding	DLL
Pole	4	Number of Terminal	12
Duty	S1- Continuous	Rotor	With damping cage
Waveform	TIF<50		THF<2%
Waveform distortion	BS EN 61000-6-2&BS EN 61000-6-4,VDE 0875G,VDE0874N		
Radio interference	Noload<1.5%,Non-distorting balanced linear load<5%		
AVR MODEL AVR	Standard	Selection	
	KR620	AS440	KRS440
Voltage Regulation - in steady state condition	±1.0	±1.0	±1.0
Short Circuit Current Capacity	Control does not sustain a short circuit current		

#### Electrical Characteristic

Frequency	Hz	50				60			
		380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
Voltage ( series star ) <b>Y</b>	V	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
Voltage ( parallel star ) <b>YY</b>	V	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
Voltage ( series delta ) <b>Δ</b>	V	220	230	240	254	240	254	266	277
Rated power at Class H (125 °C) temperature rise	kVA	37.5	37.5	37.5	32.5	44.3	46.9	46.9	46.9
	kW	30.0	30.0	30.0	26.0	35.4	37.5	37.5	37.5
Efficiency at Class H (P.F.=0.8)	4/4%	86.1	86.6	87	87.1	86.1	86.2	86.8	87
	3/4%	88	88.1	88.1	88.1	87.9	88	88	88.1
	2/4%	88.2	88.2	88.1	88	88	88.1	88	88
Efficiency at Class H (P.F.=1.0)	4/4%	89	89.4	89.9	90	89	89	89.3	89.9
	3/4%	90.5	90.8	90.9	91	90.1	90.4	90.7	90.8
	2/4%	91	90.9	90.9	90.8	90.5	90.7	90.7	90.5

#### Reactances (%) at Class H

		2.216	2	1.858	1.907	2.515	2.38	2.178	2
Direct axis synchronous reactance unsaturated	Xd	2.216	2	1.858	1.907	2.515	2.38	2.178	2
Direct axis transient reactance saturated	X'd	0.168	0.152	0.141	0.145	0.191	0.181	0.166	0.152
Direct axis subtransient reactance saturated	X''d	0.092	0.083	0.077	0.08	0.104	0.099	0.09	0.083
Quadrature axis synchronous reactance unsaturated	Xq	1.071	0.967	0.898	0.922	1.216	1.151	1.053	0.967
Quadrature axis subtransient reactance saturated	X''q	0.187	0.169	0.157	0.162	0.213	0.201	0.184	0.169
Leakage reactance	X1	0.069	0.062	0.058	0.059	0.078	0.074	0.068	0.062
Negative sequence reactance saturated	X2	0.141	0.127	0.118	0.121	0.16	0.151	0.138	0.127
Zero sequence reactance unsaturated	X0	0.033	0.03	0.028	0.029	0.038	0.036	0.033	0.03
Short-circuit ratio	Kcc	0.4513	0.5000	0.5382	0.5244	0.3976	0.4202	0.4591	0.5000

Short-circuit transient time constant (sec.)	T'd	0.24							
Subtransient time constant (sec.)	T''d	0.015							
Open circuit time constant (sec.)	T'do	0.57							
Armature time constant (sec.)	Ta	0.01							
Stator Winding Resistance (20°C)	ohm	0.171							
Rotor Winding Resistance (20°C)	ohm	0.87							
Exciter Stator Resistance (20°C)	ohm	24							
Exciter Rotor Phase resistance	ohm	0.12							
No load excitation current	io (A)	0.6	0.62	0.64	0.62	0.55	0.57	0.63	0.65
Full load excitation current	ic(A)	2	2.2	2.3	2	2	2.2	2.3	2.3
Cooling air requirement	m <sup>3</sup> /sec	0.095m <sup>3</sup> /s 200cfm				0.119m <sup>3</sup> /s 250cfm			

#### Mechanical Characteristic

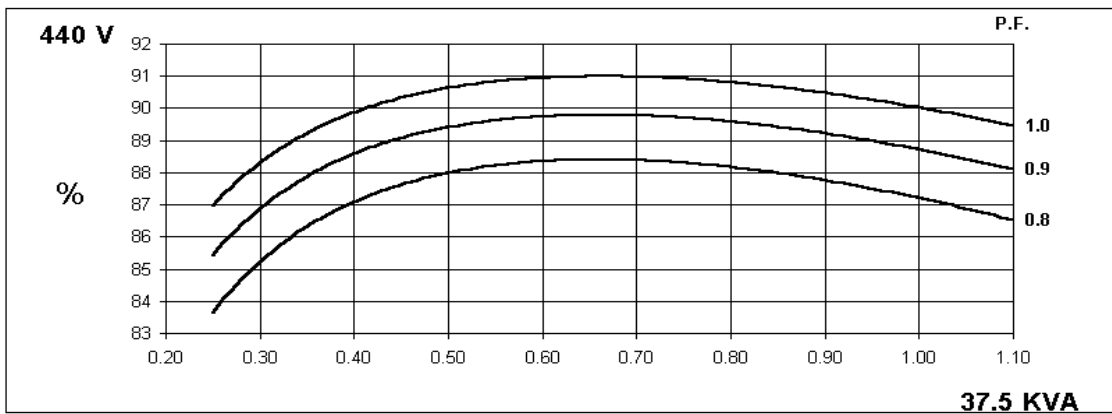
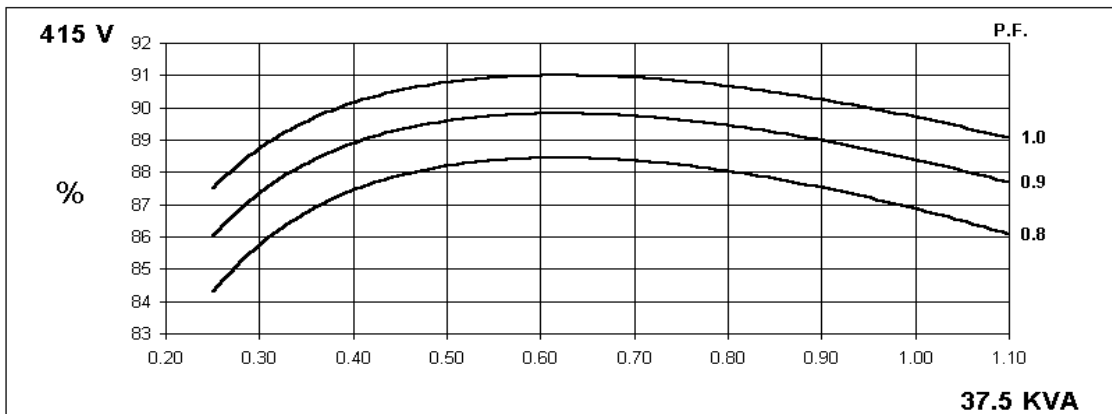
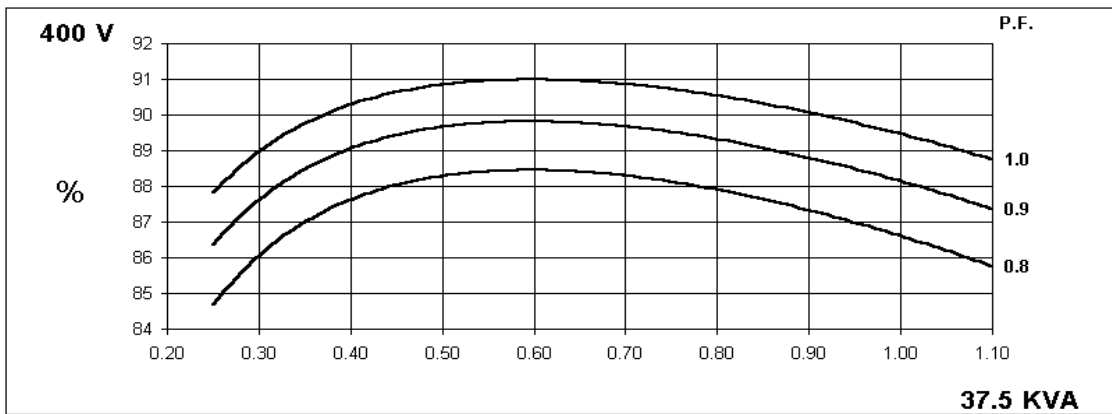
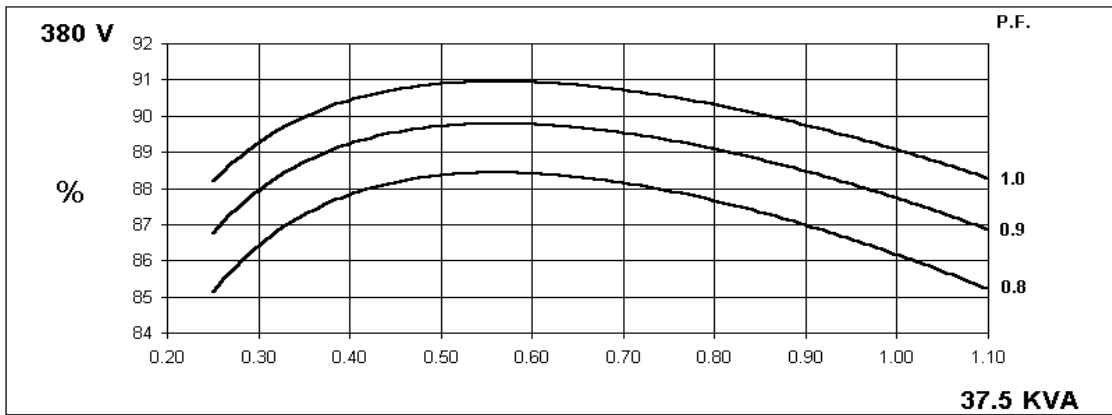
Configuration	Single Bearing	Double Bearing
Type of Construction	B2-SAE	IM B34
Total Weight - kgs	188	192
Weight wound stator - kgs	70	70
Weight wound rotor - kgs	72.33	69.12
Inertia (J) [kgm <sup>2</sup> ]	0.2763kgm <sup>2</sup>	0.2706kgm <sup>3</sup>
Drive end bearing / Lubrication		BALL.6309-2RS(ISO)
Non-drive end bearing / Lubrication	BALL.6306-2RS(ISO)	BALL.6306-3RS(ISO)
Packing crate size (cm)	70X49X70	80X50X70



**50  
Hz**

**Winding 311**

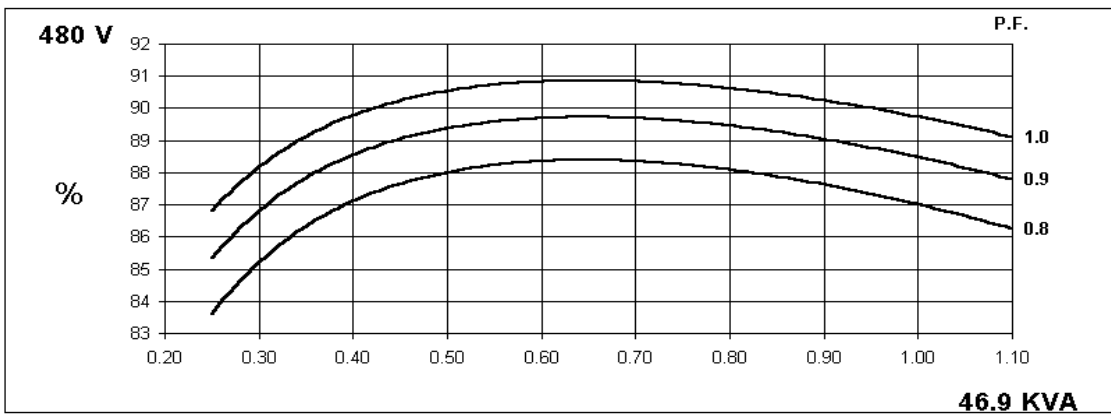
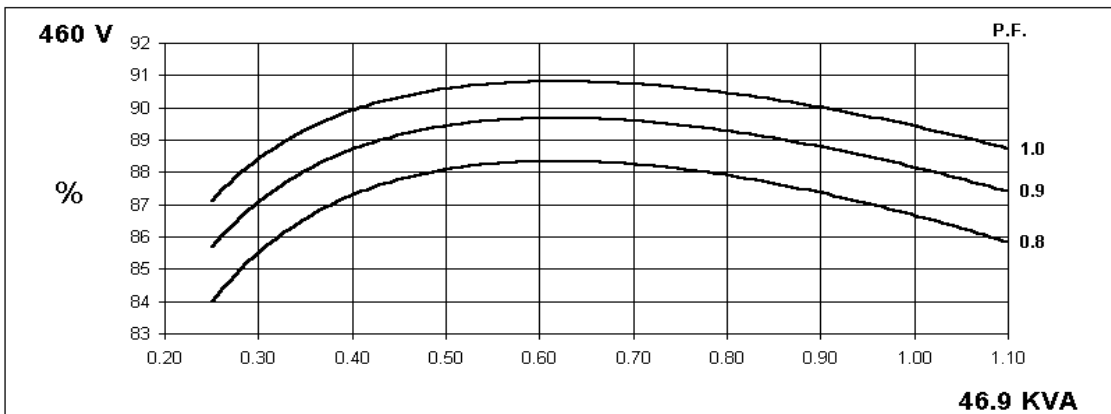
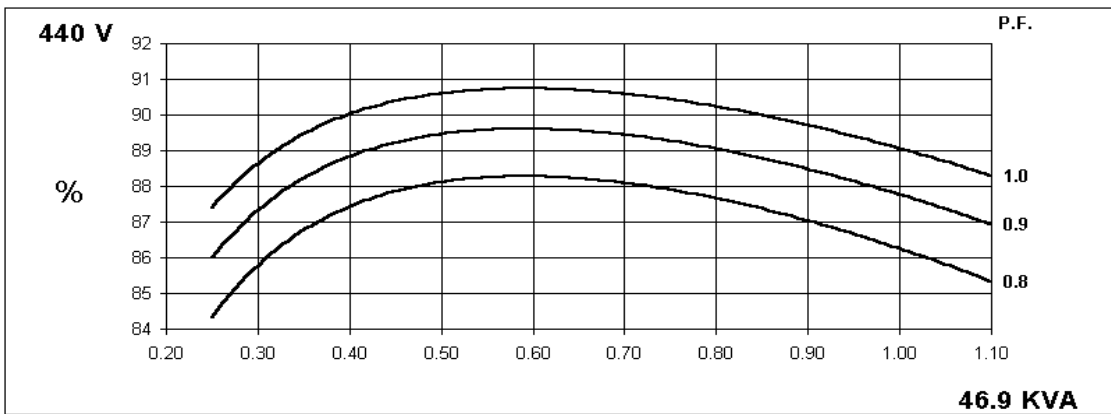
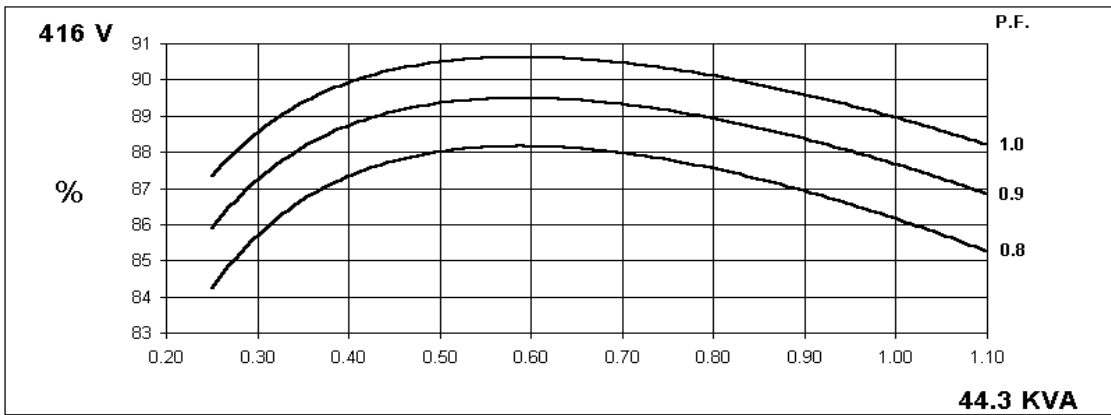
**THREE PHASE EFFICIENCY CURVES**

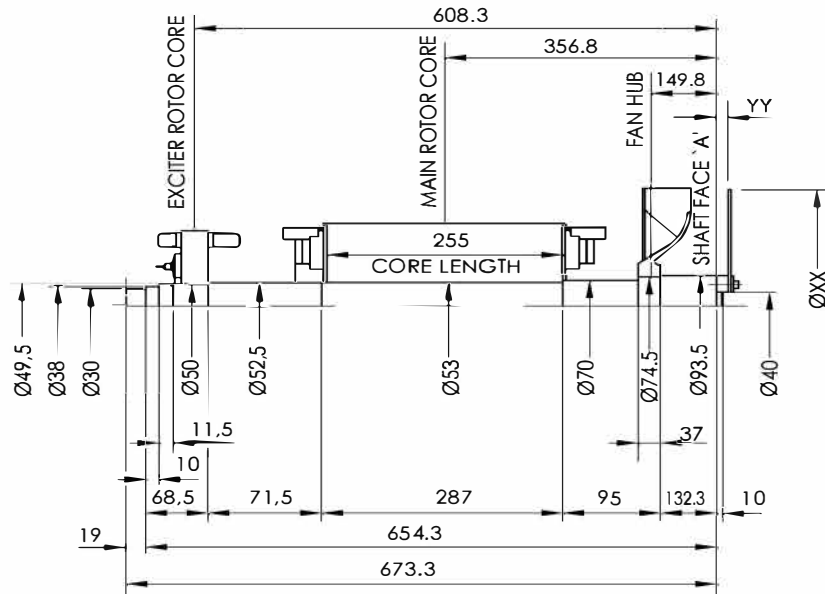


# Winding 311

## THREE PHASE EFFICIENCY CURVES

**60  
Hz**

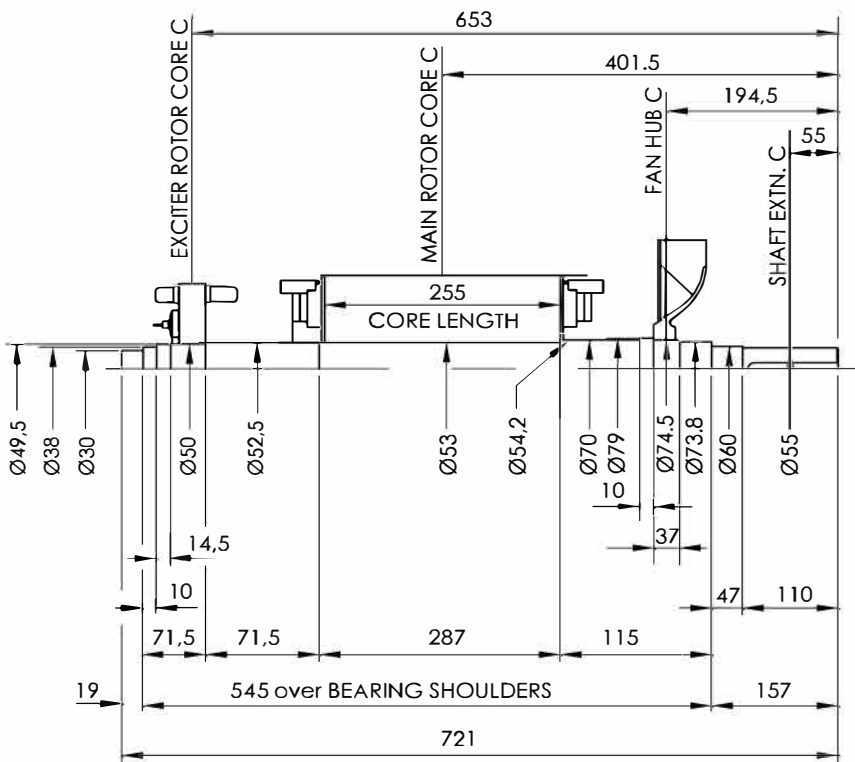




COMPONENT	Wt kg	J kgm <sup>2</sup>
EX. ROTOR	7.425	0,0287
MAIN ROTOR	45.608	0,2092
FAN	1.920	0,0265
SHAFT	17.376	0,0119
TOTAL	72.329	0,2763

ADAPTOR	COUPLING	COUPLING DIMENSIONS		COUPLING ASSEMBLY WEIGHT	COUPLING DISC J
SAE No.	SAE No.	XX	YY	kg	kgm <sup>2</sup>
4	10	314	14.3	1.43	0,0180
3	1½	352	0	1.86	0,0284

VER	MOD	DRW	Date	1:1
Design	APP			mm
CHK	Date	2018.01		



COMPONENT	Wt kg	J kgm <sup>2</sup>
EX. ROTOR	7.425	0,0287
MAIN ROTOR	45.608	0,2092
FAN	1.920	0,0265
SHAFT	14.170	0,0062
TOTAL	69.123	0,2706

VER	MOD	DRW	Date	1:1
Design	APP			mm
CHK	Date	2018.01		

