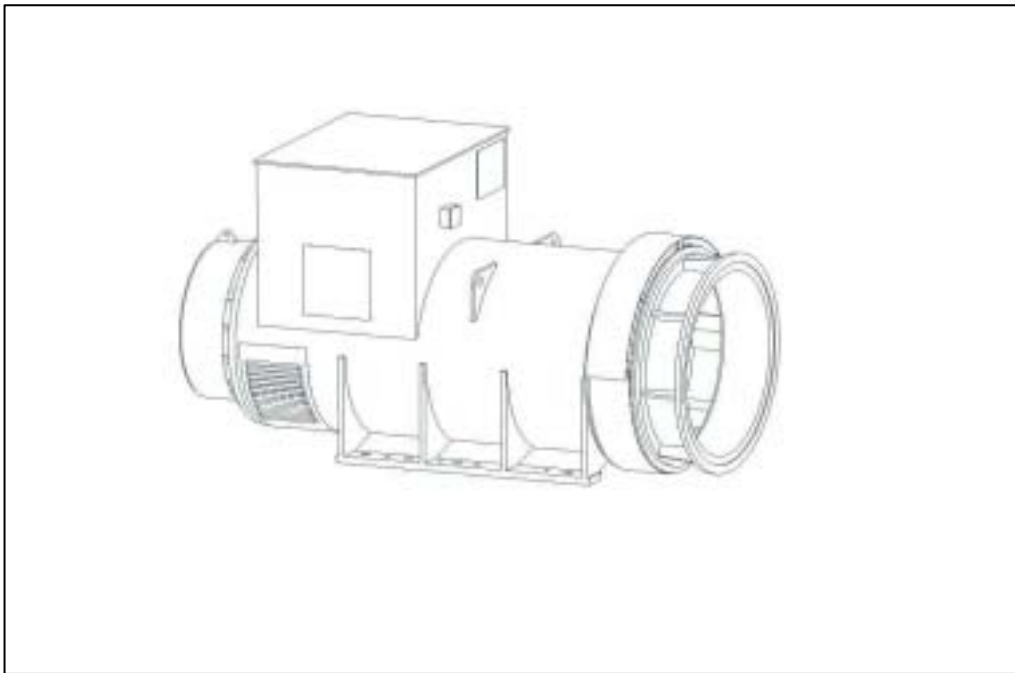


XN7J - Technical Data Sheet



XN7J

SPECIFICATIONS & OPTIONS

STANDARDS

Xingnuo industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359. Other standards and certifications can be considered on request.

VOLTAGE REGULATORS

MX321 AVR - STANDARD

This sophisticated Automatic Voltage Regulator (AVR) is incorporated into the Stamford Permanent Magnet Generator (PMG) system and is fitted as standard to generators of this type.

The PMG provides power via the AVR to the main exciter, giving a source of constant excitation power independent of generator output. The main exciter output is then fed to the main rotor, through a full wave bridge, protected by a surge suppressor. The AVR has in-built protection against sustained over-excitation, caused by internal or external faults. This de-excites the machine after a minimum of 5 seconds.

Over voltage protection is built-in and short circuit current level adjustments is an optional facility.

WINDINGS & ELECTRICAL PERFORMANCE

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

TERMINALS & TERMINAL BOX

Standard generators feature a main stator with 6 ends brought out to the terminals, which are mounted on the frame at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

SHAFT & KEYS

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.

INSULATION/IMPREGNATION

The insulation system is class 'H'. All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

Front cover drawing typical of product range.

XN7J WINDING 312

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX321		
VOLTAGE REGULATION	± 0.5 %	With 4% ENGINE GOVERNING	
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)		

INSULATION SYSTEM	CLASS H		
PROTECTION	IP21		
RATED POWER FACTOR	0.8		
STATOR WINDING	DOUBLE LAYER LAP		
WINDING PITCH	TWO THIRDS		
WINDING LEADS	6		
STATOR WDG. RESISTANCE	0.00082 Ohms PER PHASE AT 22°C STAR CONNECTED		
ROTOR WDG. RESISTANCE	1.87 Ohms at 22°C		
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others		
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%		
MAXIMUM OVERSPEED	2250 Rev/Min		
BEARING DRIVE END	BALL. 6232 (ISO)		
BEARING NON-DRIVE END	BALL. 6319 (ISO)		

	1 BEARING	2 BEARING
WEIGHT COMP. GENERATOR	4010 kg	4100 kg
WEIGHT WOUND STATOR	2100 kg	2100 kg
WEIGHT WOUND ROTOR	1679 kg	1635 kg
WR ² INERTIA	52.8436 kgm ²	51.9266 kgm ²
SHIPPING WEIGHTS in a crate	Gross weight - 4085 kg	Gross weight - 4168 kg
PACKING CRATE SIZE	Packing case size (cm) - 216 x 105 x 154	Packing case size (cm) - 216 x 105 x 154

	50 Hz	60 Hz
TELEPHONE INTERFERENCE	THF < 2%	TIF < 50
COOLING AIR	2.75 m ³ /sec 5827 cfm	3.5 m ³ /sec 7417 cfm

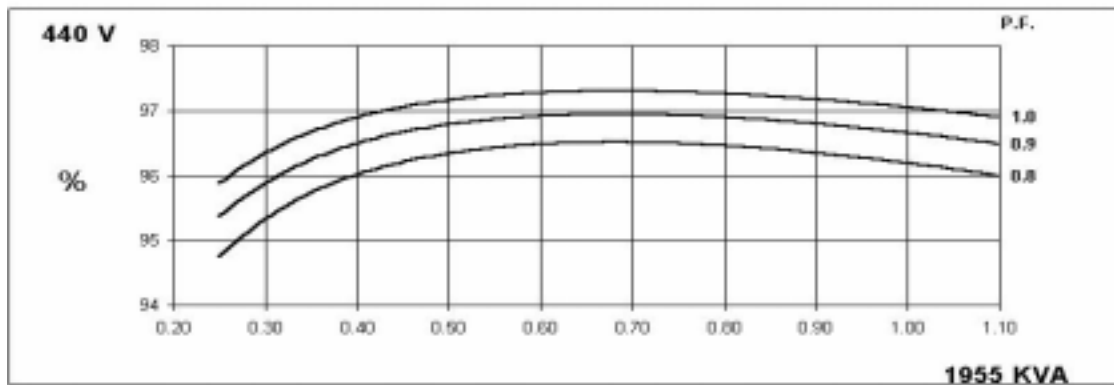
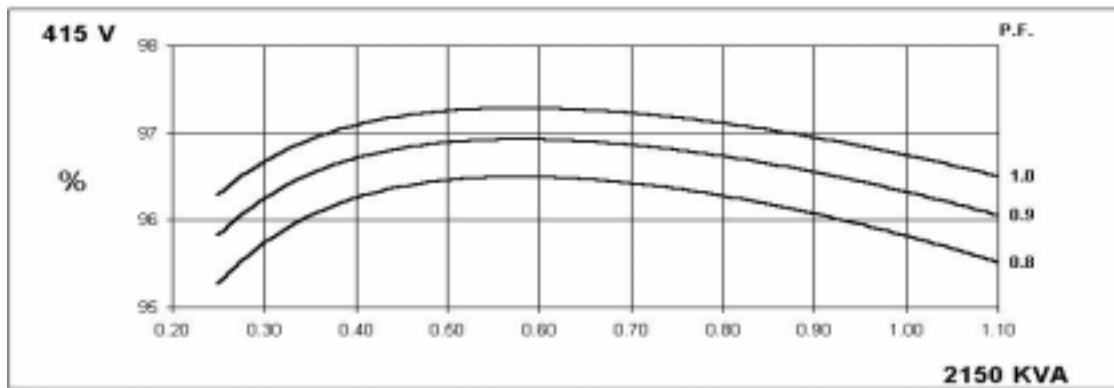
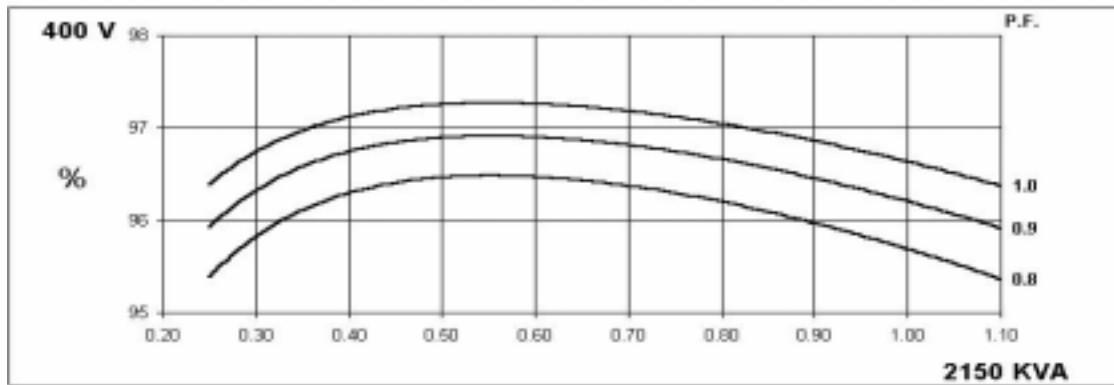
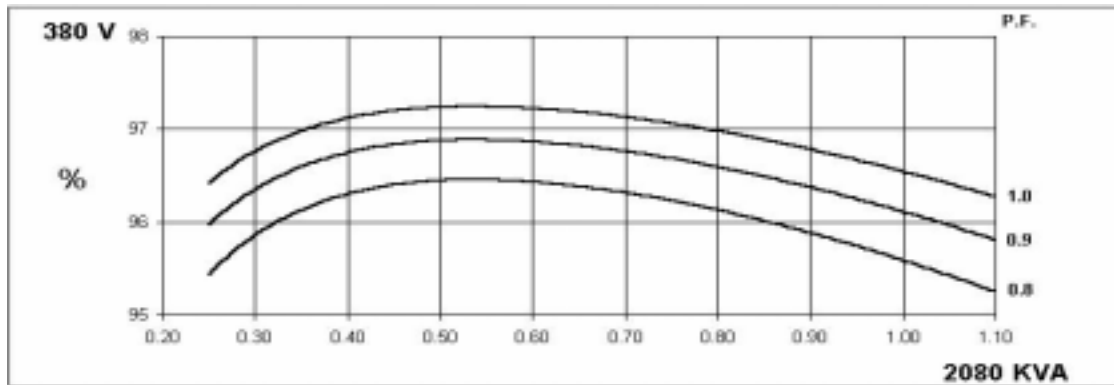
VOLTAGE STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
kVA BASE RATING FOR REACTANCE VALUES	2080	2150	2150	1955	2275	2406	2515	2625
X _d DIR. AXIS SYNCHRONOUS	3.60	3.36	3.12	2.53	3.95	3.73	3.57	3.42
X' _d DIR. AXIS TRANSIENT	0.20	0.19	0.18	0.14	0.22	0.21	0.20	0.19
X'' _d DIR. AXIS SUBTRANSIENT	0.14	0.13	0.12	0.10	0.16	0.15	0.15	0.14
X _q QUAD. AXIS REACTANCE	2.33	2.17	2.02	1.63	2.55	2.41	2.31	2.21
X'' _q QUAD. AXIS SUBTRANSIENT	0.26	0.24	0.22	0.18	0.28	0.26	0.25	0.24
X _L LEAKAGE REACTANCE	0.08	0.07	0.07	0.05	0.09	0.09	0.08	0.08
X ₂ NEGATIVE SEQUENCE	0.21	0.20	0.19	0.15	0.23	0.22	0.21	0.20
X ₀ ZERO SEQUENCE	0.03	0.03	0.03	0.02	0.05	0.04	0.04	0.04

REACTANCES ARE SATURATED	VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED
T' _d TRANSIENT TIME CONST.	0.18s
T'' _d SUB-TRANSTIME CONST.	0.014s
T' _{do} O.C. FIELD TIME CONST.	3.4s
T _a ARMATURE TIME CONST.	0.063s
SHORT CIRCUIT RATIO	1/X _d

**50
Hz**

**XN7J
Winding 312**

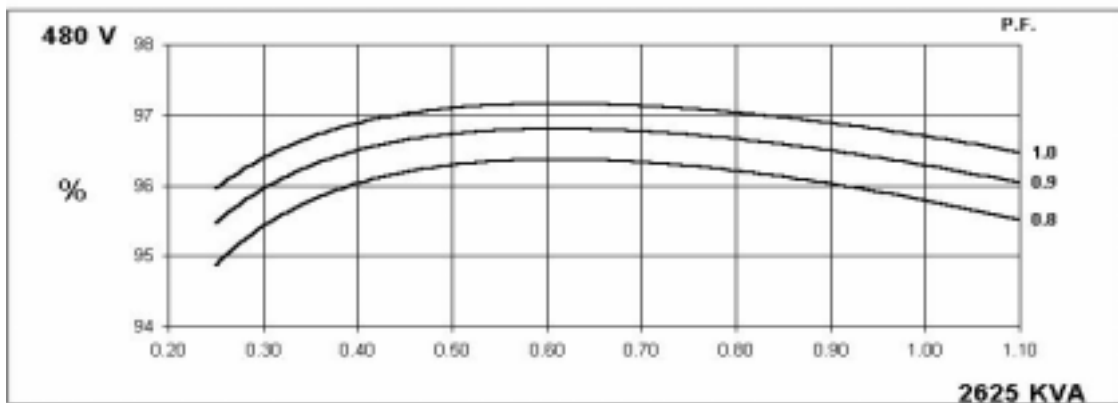
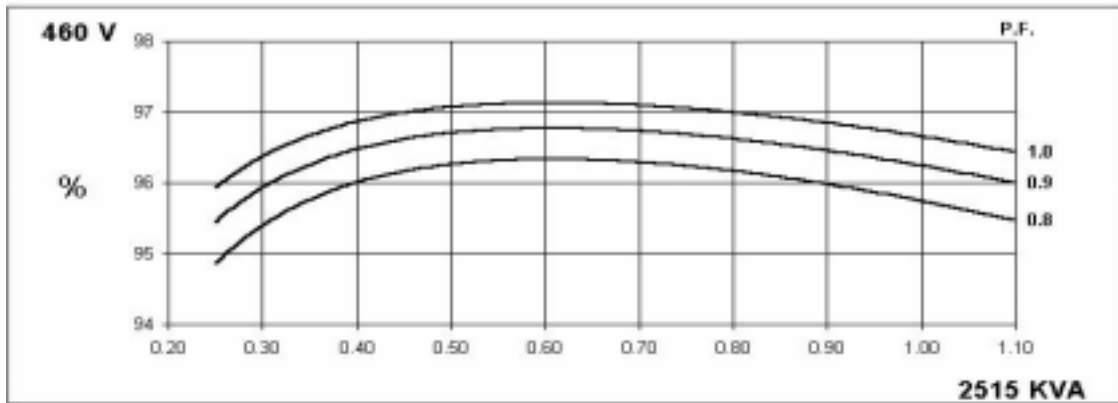
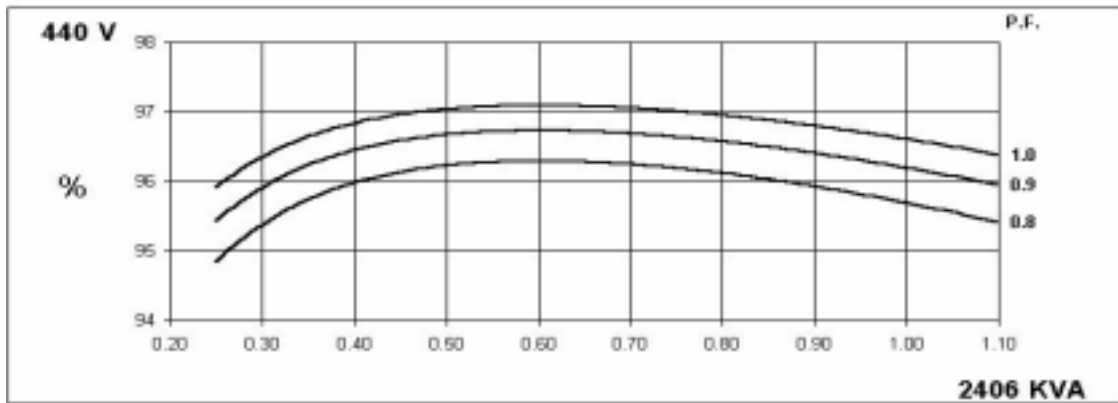
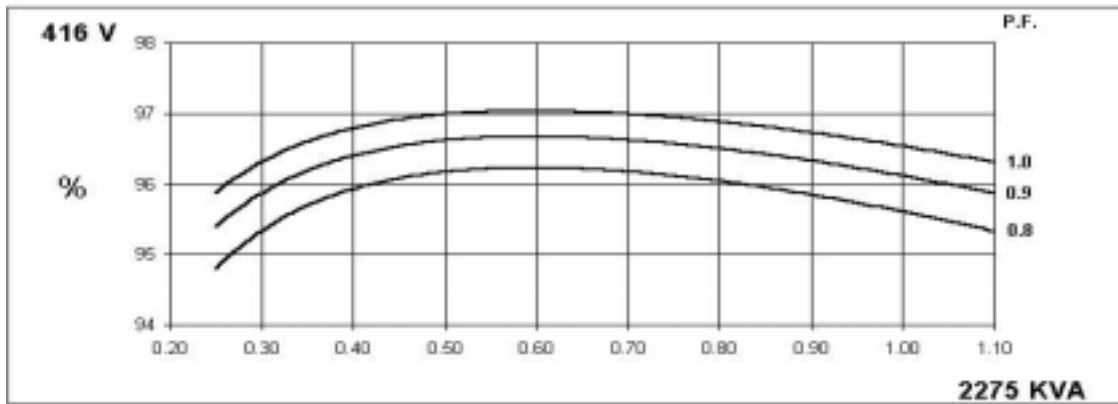
THREE PHASE EFFICIENCY CURVES



XN7J
Winding 312

60
Hz

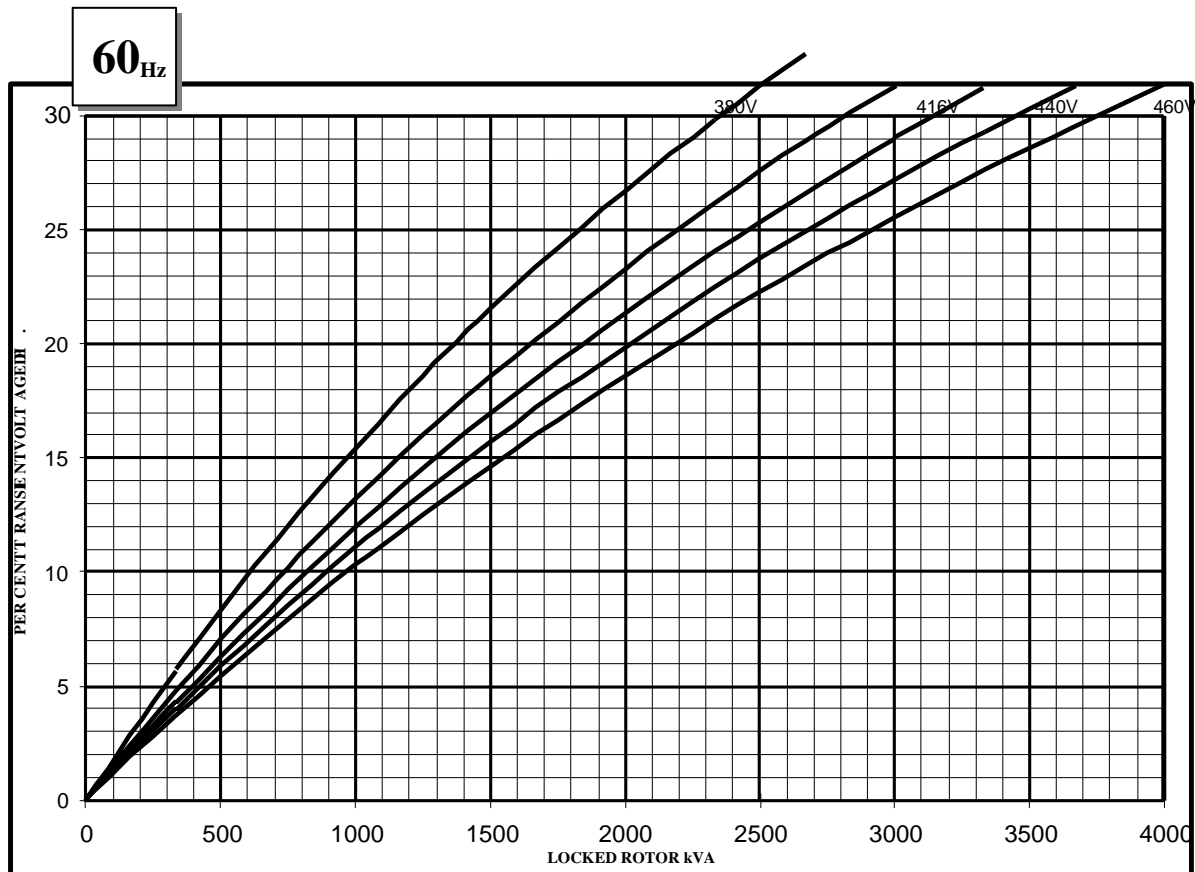
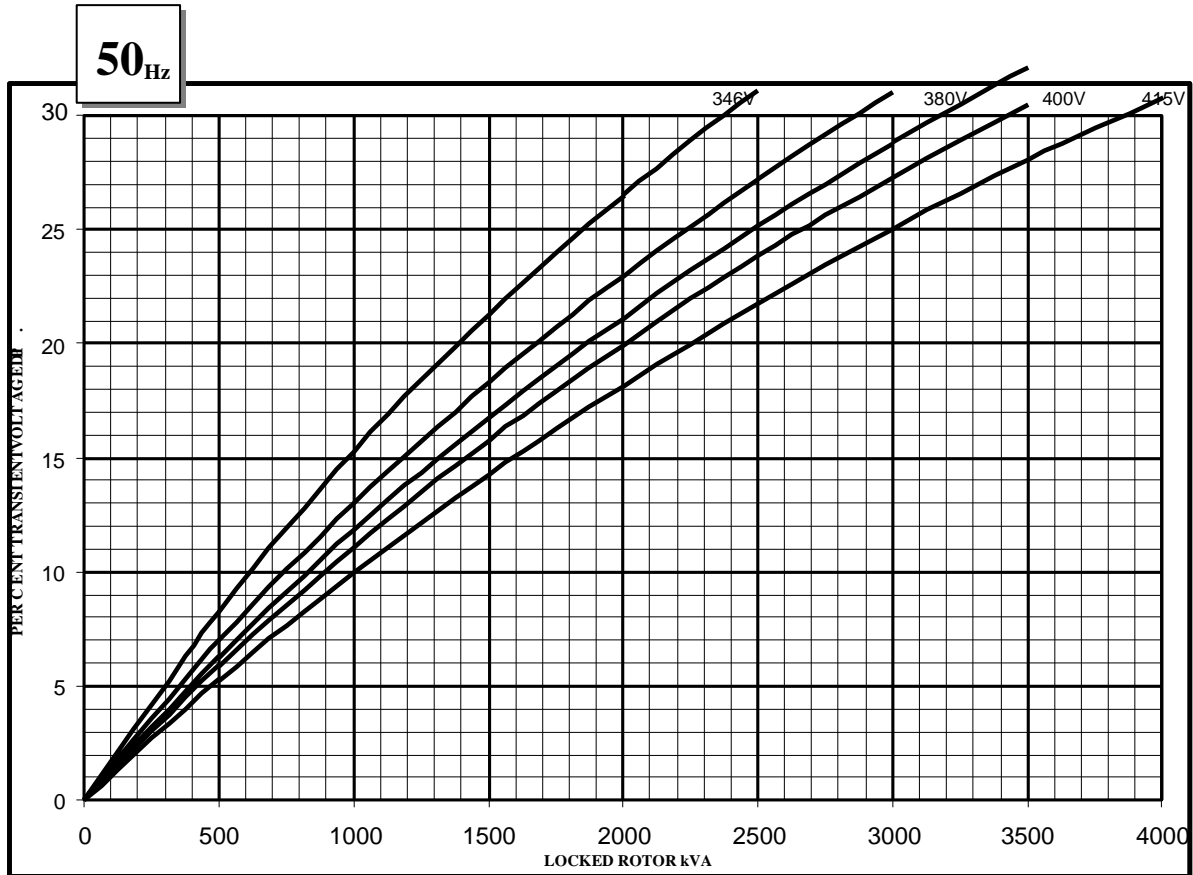
THREE PHASE EFFICIENCY CURVES



XN7J

Winding 312

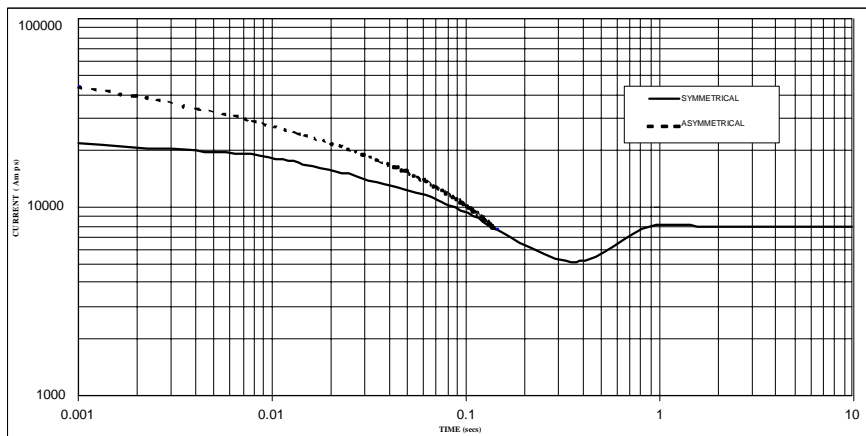
Locked Rotor Motor Starting Curve



XN7J

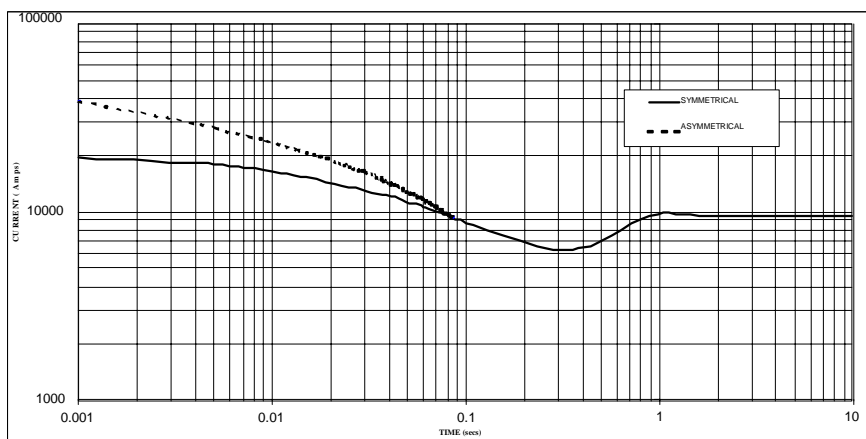
Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on star (wye) connection.

**50
Hz**



Sustained Short Circuit = 7,900 Amps

**60
Hz**



Sustained Short Circuit = 9,471 Amps

Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380	X 1.00	416v	X 1.00
400	X 1.06	440v	X 1.06
415	X 1.10	460v	X 1.10
440	X 1.15	480v	X 1.15

The sustained current value is constant irrespective of voltage level

Note 2

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

Note 3

Curves are drawn for Star (Wye) connected machines.

