FKI Energy Technology

THREE-PHASE SYNCHRONOUS GENERATOR

MJB 200 MB 4

4 POLES

CONTINUOUS DUTY

50 Hz-1500 min^{-1} / 60 Hz-1800 min^{-1}

AMBIENT TEMPERATURE	**40°C**	**WINDING DATA**	
TEMPERATURE RISE	**H**	Winding code	**M0**
INSULATION CLASS	**H**	Number of leads	**12**
POWER FACTOR	**0,8**	Winding pitch	**2/3**

FREQUENCY		**Hz**	**50**				**60**				
VOLTAGE	Star series	**V**	**380**	**400**	**415**	**440**	**380**	**416**	**440**	**460**	**480**
	Star parallel		**190**	**200**	**208**	**220**	**190**	**208**	**220**	**230**	**240**
RATING		**kVA**	**68,5**	**72,0**	**72,0**	**72,0**	**77,5**	**83,5**	**87,0**	**87,0**	**87,0**
		kW	***54,8***	***57,6***	***57,6***	***57,6***	***62,0***	***66,8***	***69,6***	***69,6***	***69,6***
EFFICIENCY (%) @ 0,8 p.f.		4/4	89,9	90,5	90,4	89,8	89,3	90,0	90,5	90,8	90,9
		3/4	91,1	91,4	91,1	90,6	90,6	91,0	91,3	91,5	91,6
		2/4	91,7	91,7	91,4	90,9	91,2	91,4	91,7	91,8	91,7
EFFICIENCY (%) @ 1,0 p.f.		4/4	91,9	92,4	92,3	91,8	91,5	92,0	92,4	92,6	92,8
		3/4	92,9	93,2	92,9	92,5	92,5	92,8	93,1	93,2	93,3
		2/4	93,4	93,4	93,1	92,7	93,0	93,2	93,4	93,5	93,4
SHORT CIRCUIT RATIO			0,40	0,42	0,45	0,51	0,29	0,33	0,35	0,38	0,42
REACTANCES (%)											
Direct axis synchronous		xd	280	265	245	220	380	340	320	290	265
Quadrature axis synchronous		xq	155	145	135	120	210	185	175	160	145
Direct axis transient		x'd	22,5	21,3	19,8	17,6	30,5	27,4	25,5	23,4	21,4
Direct axis subtransient		x"d	11,1	10,5	9,8	8,7	15,0	13,5	12,6	11,5	10,6
Quadrature axis subtransient		x"q	13,3	12,6	11,7	10,4	18,0	16,2	15,1	13,8	12,7
Negative sequence		x_2	12,1	11,5	10,7	9,5	16,5	14,8	13,8	12,6	11,6
Zero sequence		x_0	2,3	2,2	2,0	1,8	3,1	2,8	2,6	2,4	2,2

TIME CONSTANTS [s]

Open circuit (T'do)	0,76	Subtransient (T"d)	0,01
Transient (T'd)	0,062	Armature (Ta)	0,012

MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	6313 2RS C3 / Prelubricated
N-end bearing/Lubrication	6309 2RS C3 / Prelubricated
Weight (IM B34) [kg]	300
Inertia (J) (IM B34) [kgm^2]	0,426
Overspeed [min^{-1}]	2250
Method of cooling	IC 01
Cooling air required [m^3/s] @ 50/60 Hz	0,21 / 0,25
Degree of protection	IP 23
Type of construction available	B2 - SAE / IM B34
Direction of rotation	CW

OTHER DATA

Phase resistance [Ω] @ 20 °C - Star series	0,1
Overloads	10% for 1 hour
3-phase short circuit current	>= 300% (3 I_n)
Voltage regulation accuracy	+/- 0,5 % (in steady state condition, speed from -2% to +5%, p.f. from 0,8 to 1)
Radio interference	EN 55011 Class B Group 1
Wave form THF	< 2%
Total harmonic content	< 2% (at no load)

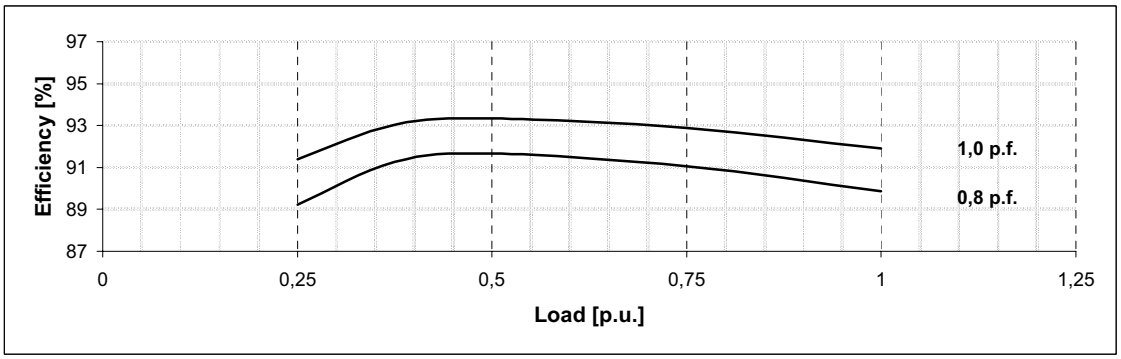
STANDARDS

IEC 60034-1; CEI 2-3; BS 4999-5000; VDE 0530; NF 51-100,111; OVE M-10, NEMA MG 1.22.

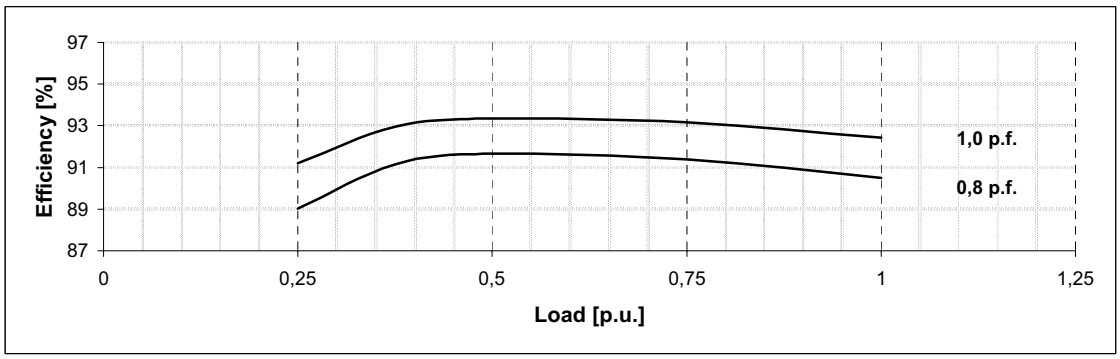
Typical efficiency curves

50 Hz - 1500 min^{-1}

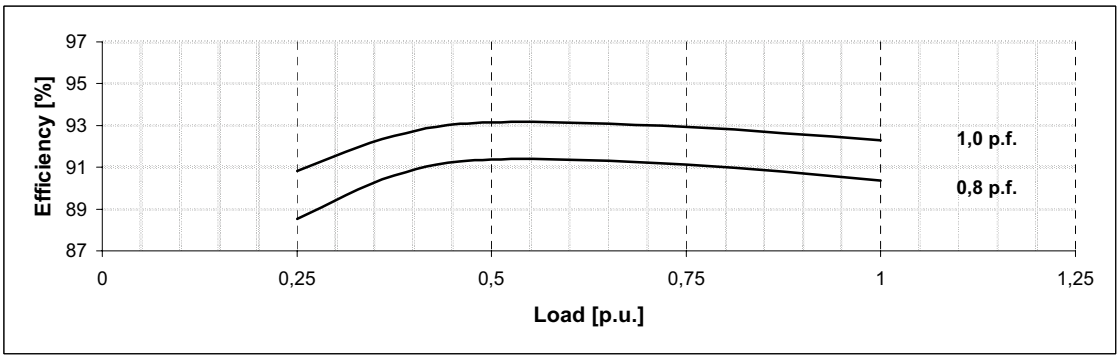
380 V



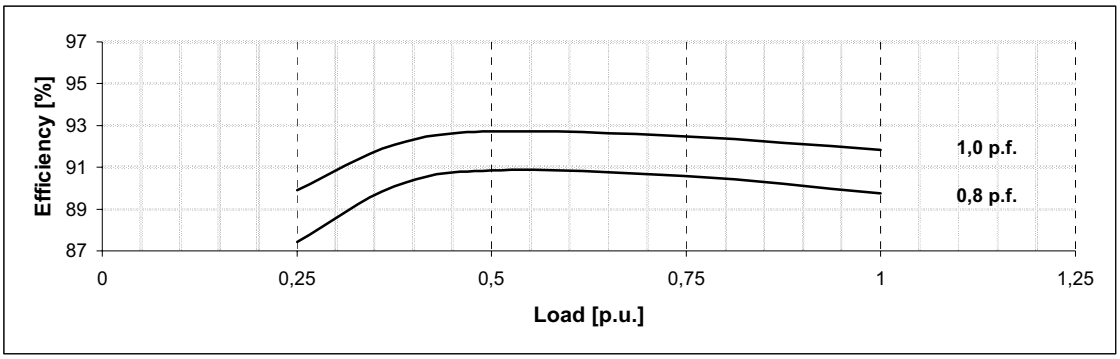
400 V



415 V



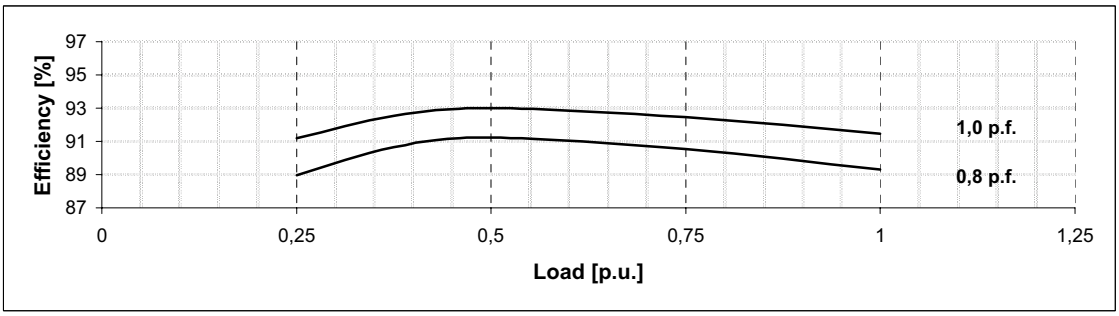
440 V



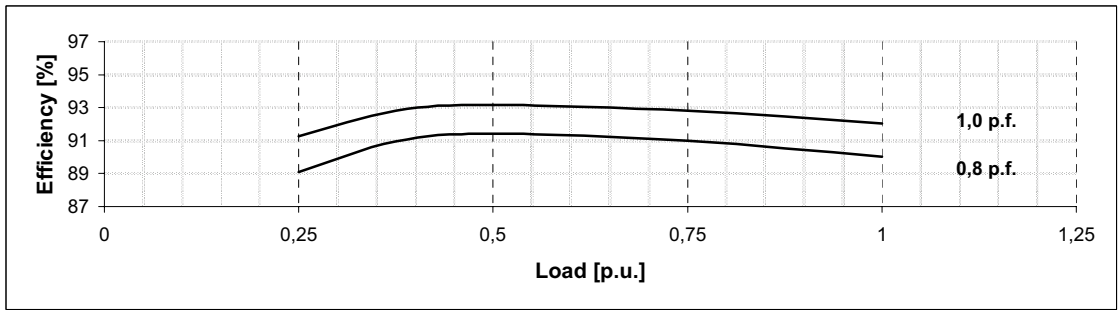
Typical efficiency curves

60 Hz - 1800 min^{-1}

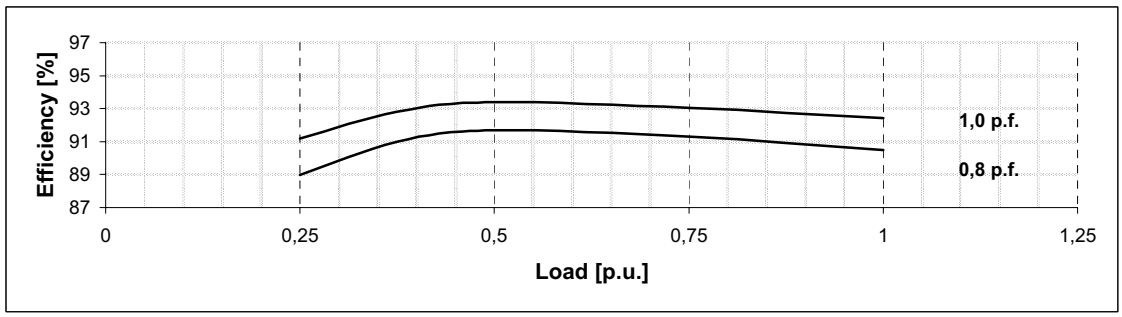
380 V



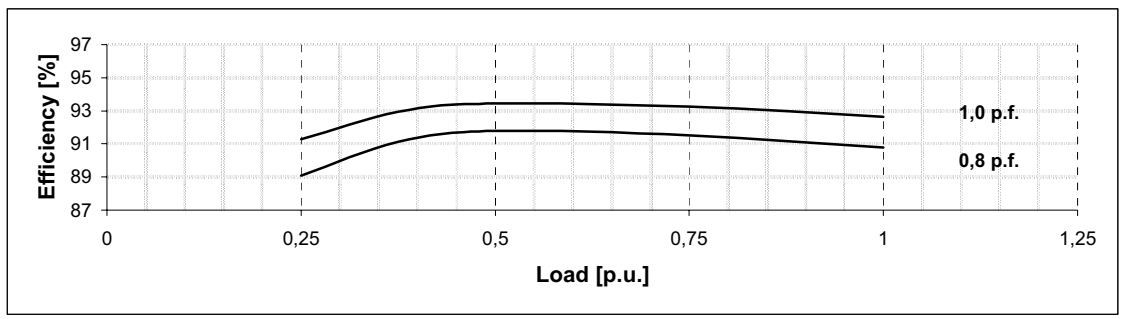
416 V



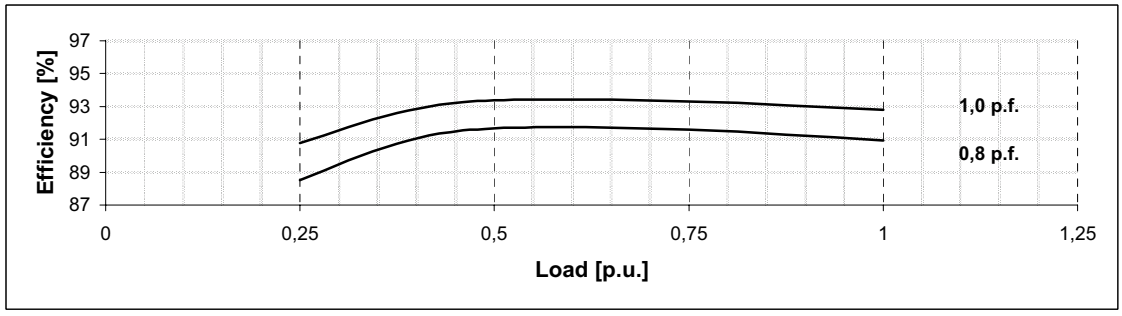
440 V



460 V

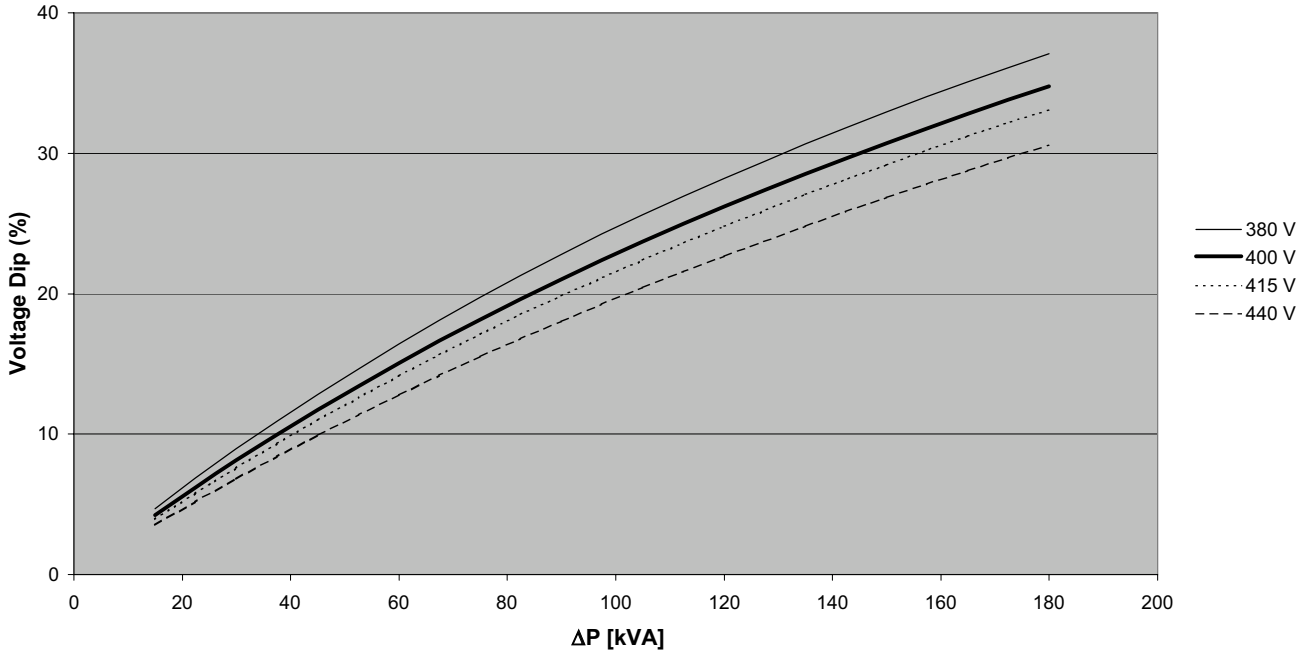


480 V

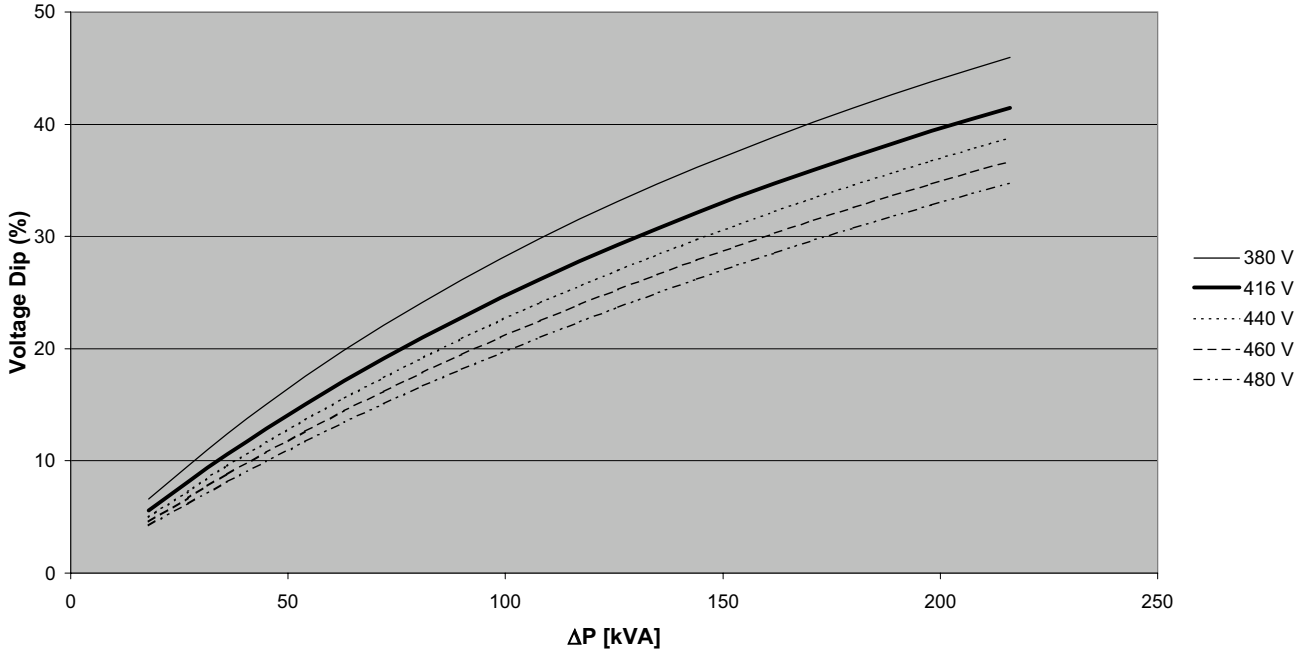


Locked rotor motor starting curves (*)

50 Hz - 1500 min^{-1}



60 Hz - 1800 min^{-1}



$\Delta P = P_n \times (I_s / I_n) / (\cos\varphi_n \times \eta_n)$

(*): A coefficient of 0,85 must be applied to the voltage dip if the load has a power factor equal or greater than 0,