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THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 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
VOLTAGE Star parallel	V	190	200	208	220	190	208	220	230	240
RATING	kVA	32,0	34,0	34,0	30,6	34,0	36,8	39,0	40,7	42,5
	kW	*25,6*	*27,2*	*27,2*	*24,5*	*27,2*	*29,4*	*31,2*	*32,6*	*34,0*
EFFICIENCY (%) @ 0,8 p.f.	4/4	86,9	87,0	87,3	87,7	86,8	87,5	87,9	88,1	88,3
	3/4	88,7	88,8	88,9	88,9	88,6	89,2	89,5	89,6	89,7
	2/4	90,0	90,1	90,0	89,4	90,0	90,4	90,6	90,7	90,7
EFFICIENCY (%) @ 1,0 p.f.	4/4	90,3	90,6	91,0	91,7	89,8	90,5	90,9	91,2	91,4
	3/4	91,9	92,1	92,3	92,5	91,4	92,0	92,3	92,5	92,6
	2/4	93,0	93,1	93,1	92,8	92,7	93,0	93,2	93,3	93,4
STAND-BY RATING (163/27)	kVA	35,2	37,4	37,4	33,7	37,4	40,5	42,9	44,8	46,8
STAND-BY EFFICIENCY (%) @ 0,8 p.f.		86,2	86,4	86,7	87,2	86,0	86,9	87,2	87,5	87,7
SHORT CIRCUIT RATIO (referred to class H rating)		0,38	0,40	0,43	0,54	0,30	0,33	0,35	0,37	0,38
REACTANCES (%) (referred to class H rating)										
Direct axis synchronous	xd	297	285	265	212	379	342	324	310	297
Quadrature axis synchronous	xq	136	130	121	97	173	156	148	141	135
Direct axis transient	x'd	15,3	14,7	13,7	10,9	19,5	17,7	16,7	16,0	15,3
Direct axis subtransient	x"d	12,0	11,5	10,7	8,6	15,3	13,8	13,1	12,5	12,0
Quadrature axis subtransient	x"q	14,7	14,1	13,1	10,5	18,7	16,9	16,0	15,3	14,7
Negative sequence	x_2	14,0	13,4	12,5	10,0	17,9	16,1	15,3	14,6	14,0
Zero sequence	x_0	10,7	10,3	9,6	7,7	13,7	12,4	11,7	11,2	10,7

TIME CONSTANTS [s]

Open circuit (T'do)	0,534	Subtransient (T''d)	0,010
Transient (T'd)	0,055	Armature (Ta)	0,010

MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	Available on double bearing configuration (on request)
N-end bearing/Lubrication	6207 2RS C3 / Prelubricated
Weight [kg]	145
Inertia (J) [kgm^2]	0,23
Overspeed [min^{-1}]	2250
Method of cooling	IC 01
Cooling air required [m^3/s] @ 50/60 Hz	0,11 / 0,13
Degree of protection	IP 23
Type of construction available	B2 (B34 on request)
Direction of rotation	CW

OTHER DATA

Phase resistance [Ω] @ 20 °C - Star series	0,204
Overloads	10% for 1 hour
3-phase short circuit current	>= 300% (3 In) with aux. winding or PMG
Voltage regulation accuracy	+/- 0,5 % (@ rated load, balanced and non-distorting, p.f. 0,8)
Radio interference	EN 55011 Class B Group 1
Wave form THF	< 2%
Total harmonic content	< 2% (at no load)

STANDARDS

IEC 60034-1; BS 4999-5000; NEMA MG 1.32.

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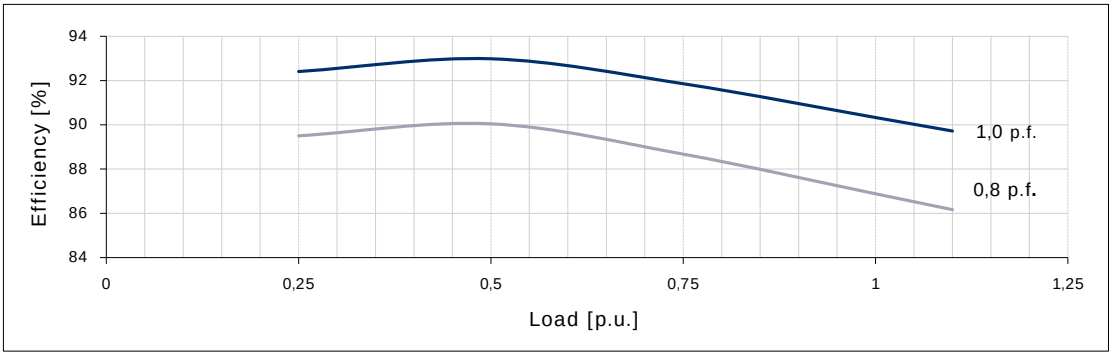
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

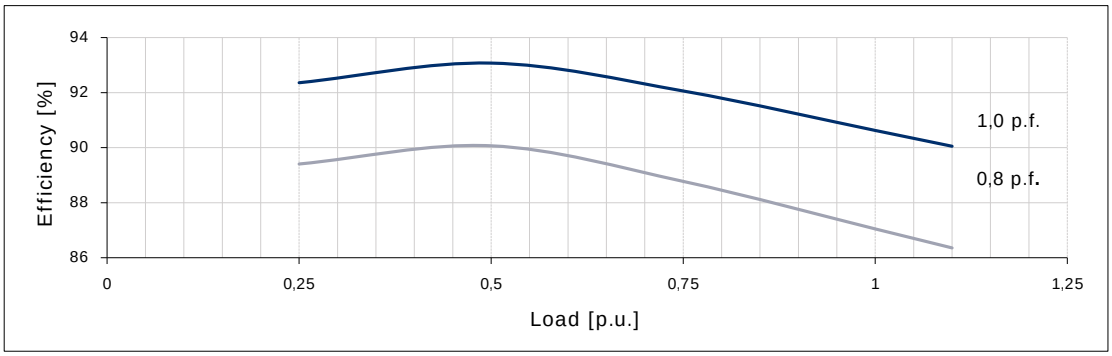
Typical efficiency curves

50 Hz - 1500 min^{-1}

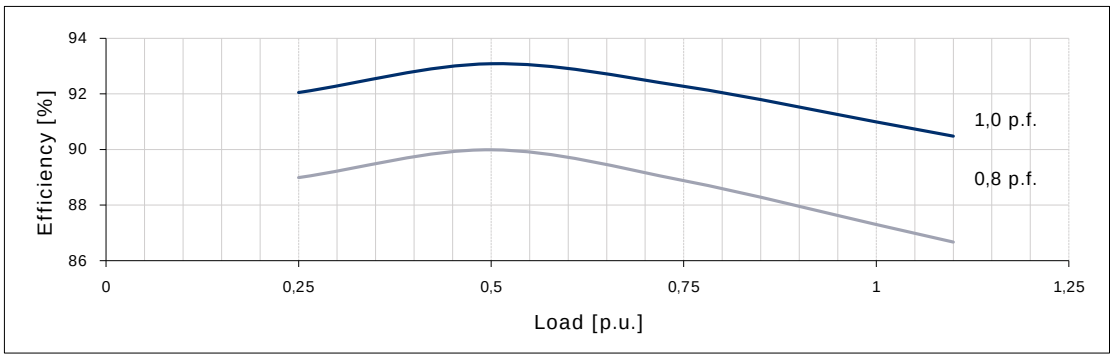
380 V



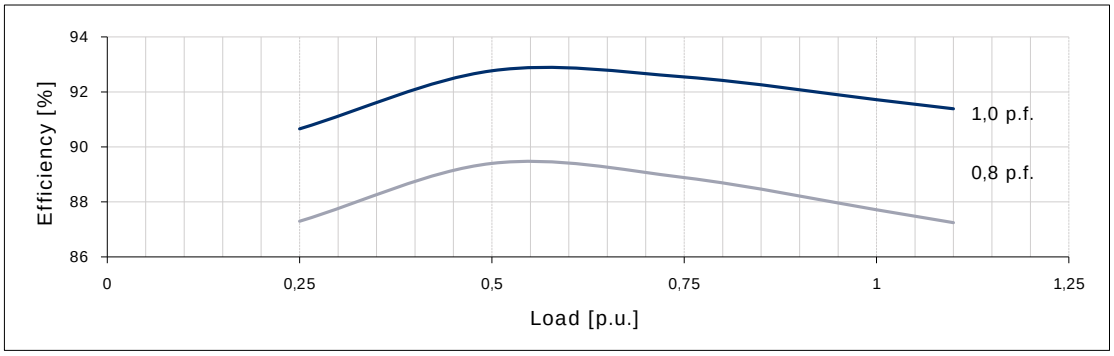
400 V



415 V



440 V



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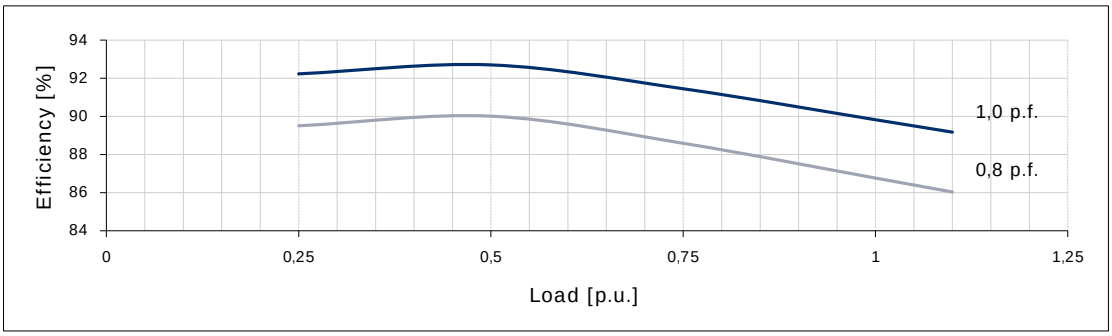
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

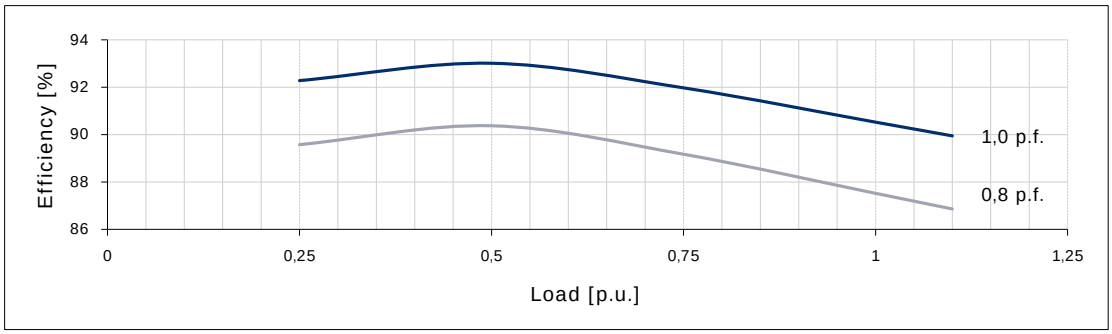
Typical efficiency curves

60 Hz - 1800 min^{-1}

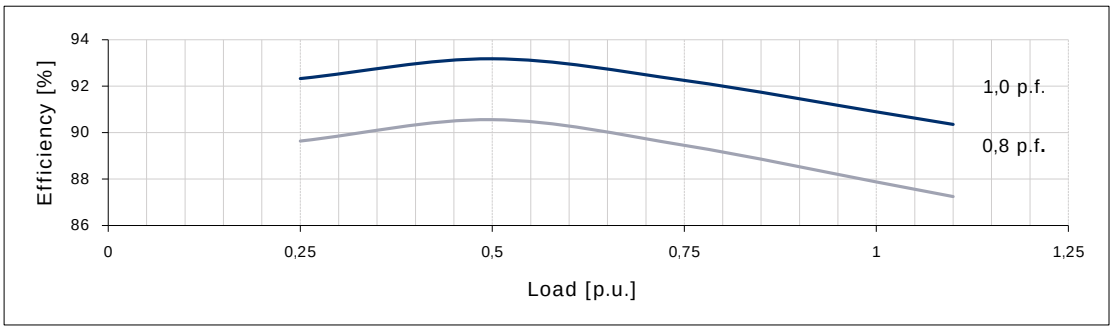
380 V



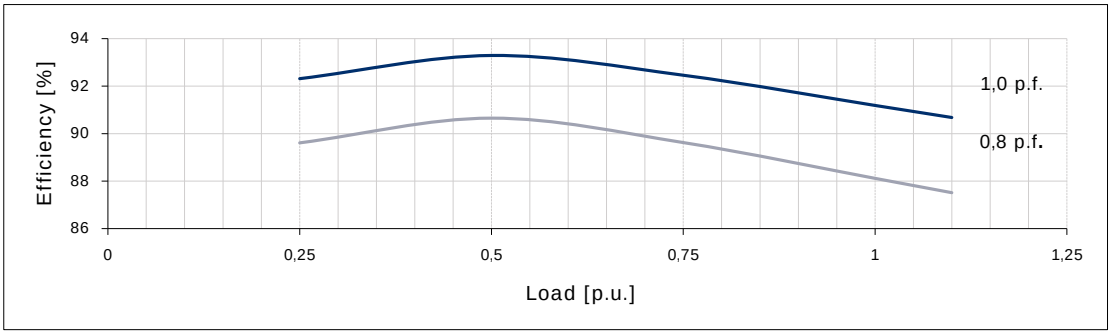
416 V



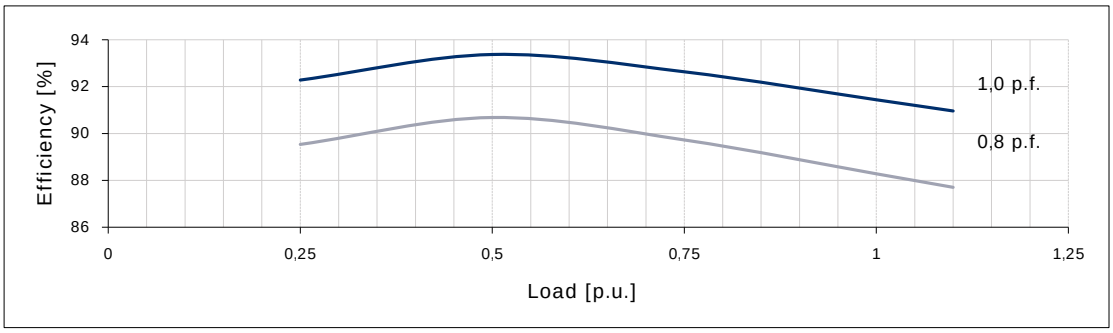
440 V



460 V



480 V



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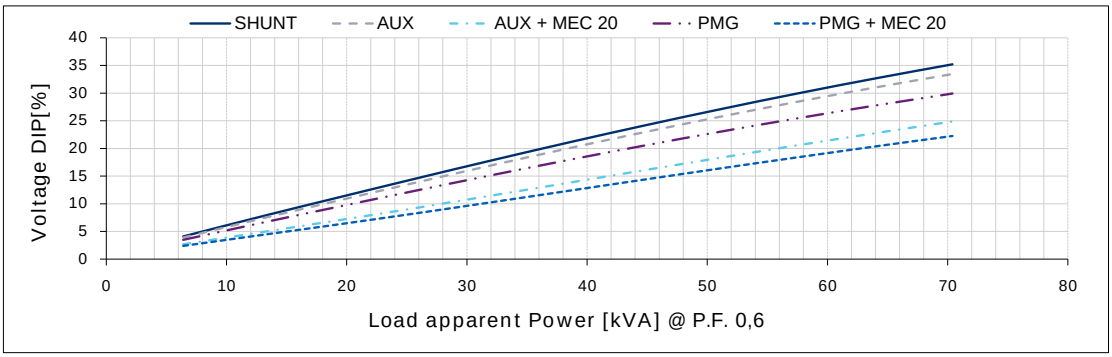
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

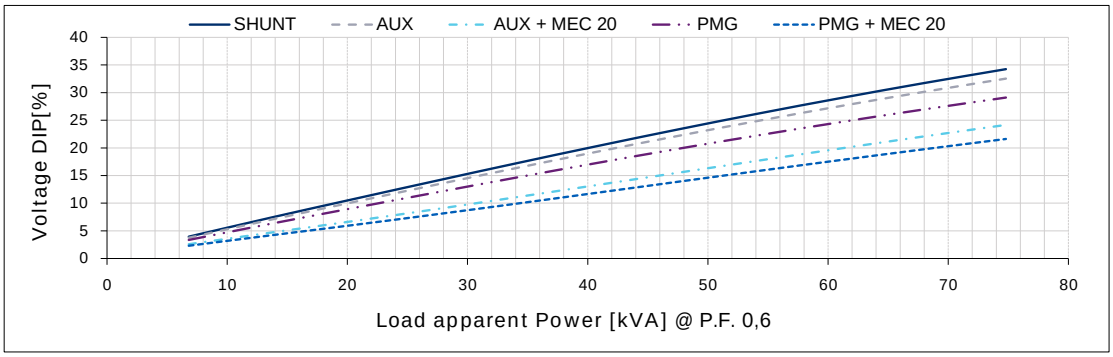
Typical voltage DIP curves

50 Hz - 1500 min^{-1}

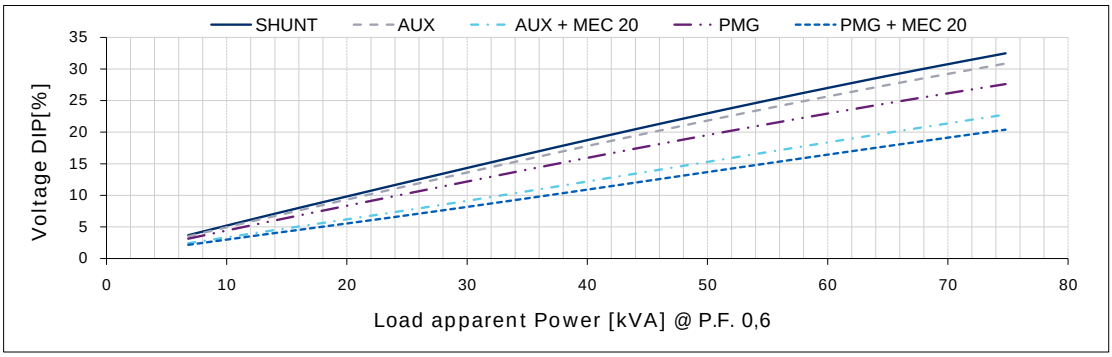
380 V



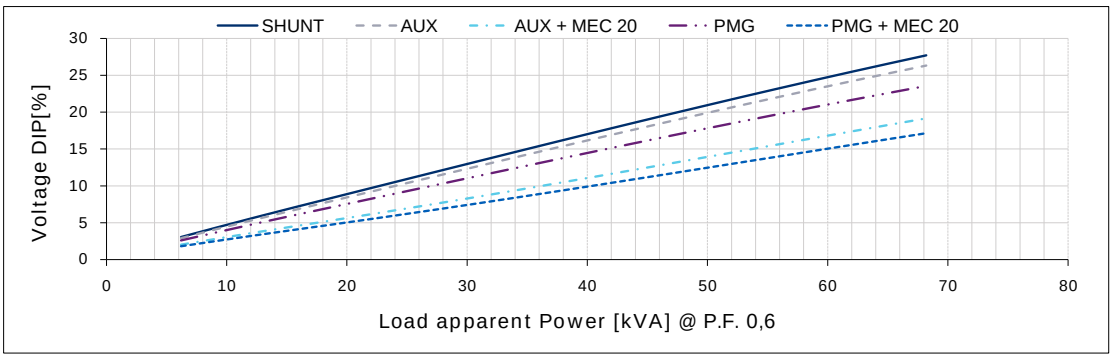
400 V



415 V



440 V



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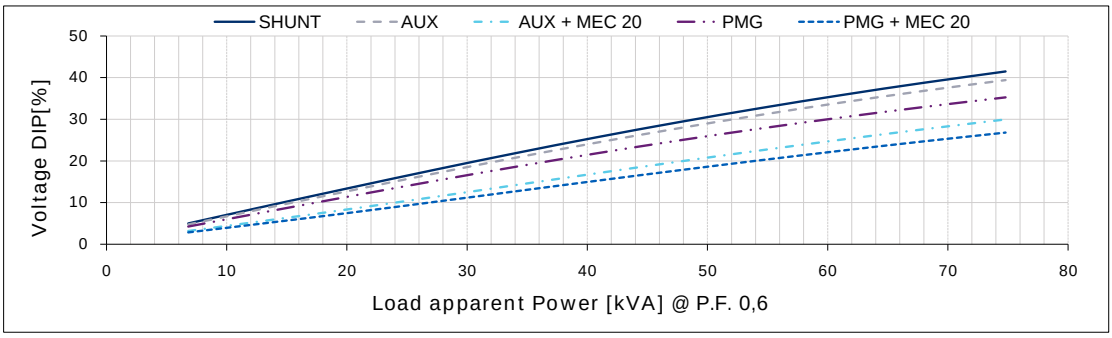
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

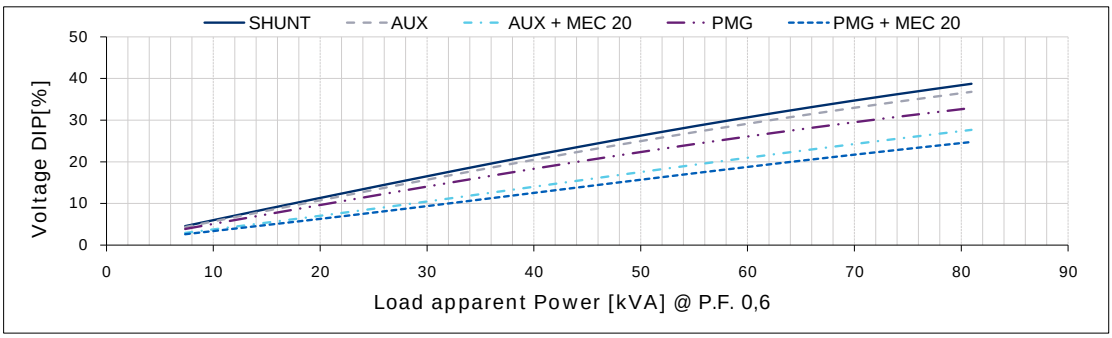
Typical voltage DIP curves

60 Hz - 1800 min^{-1}

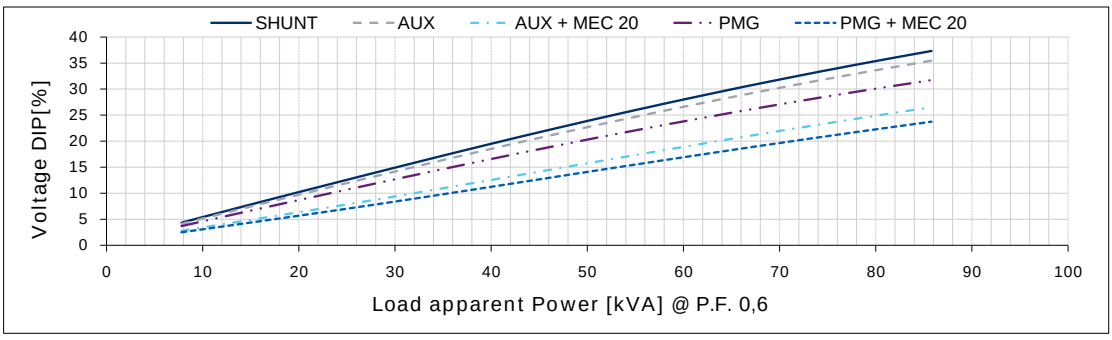
380 V



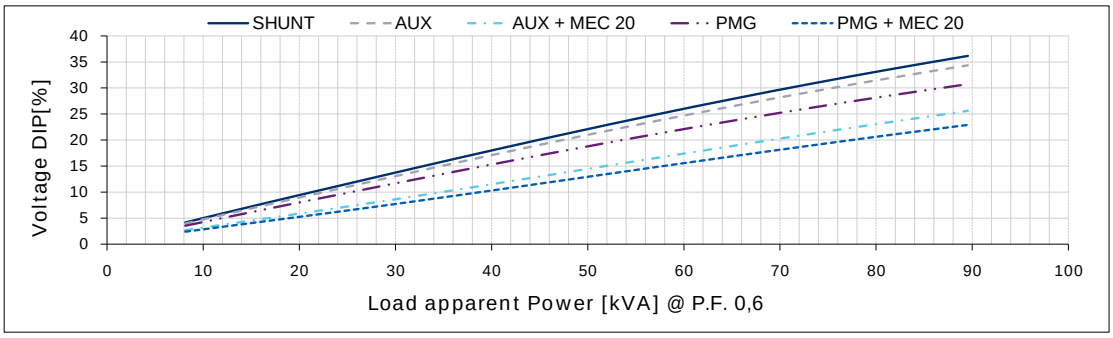
416 V



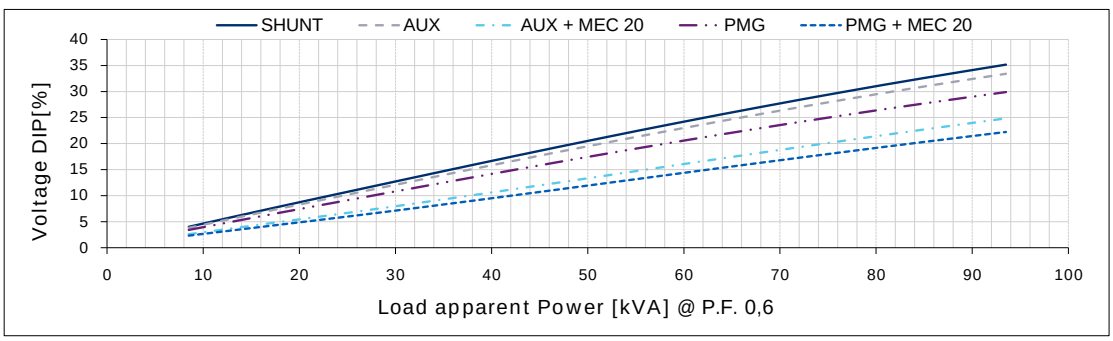
440 V



460 V



480 V



For P.F. different from 0,6 the following simplified formula can be used: ΔV (@ P.F.) = ΔV (@ 0,6)*sin(arcos(P.F.))/0,8

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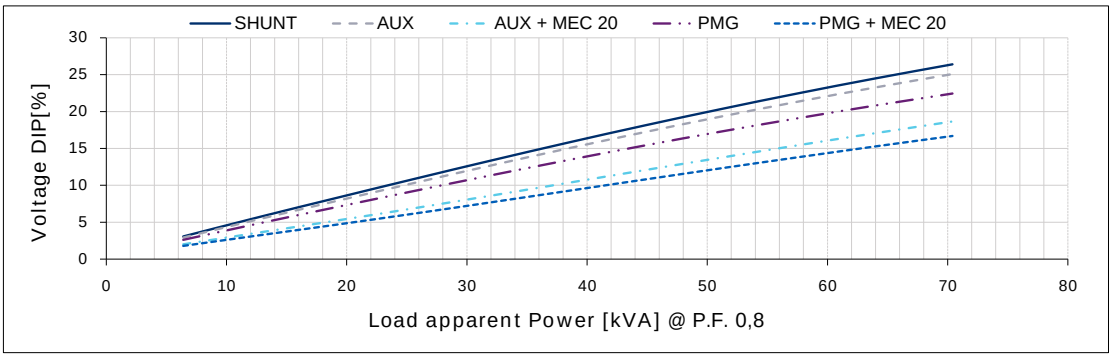
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

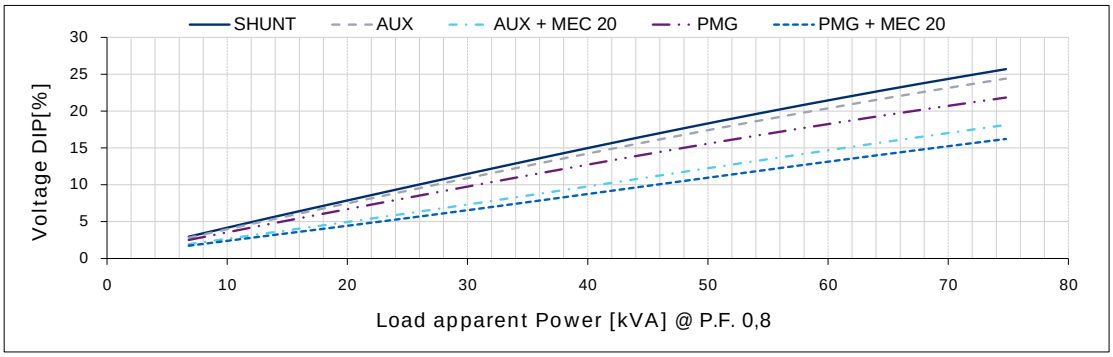
Typical voltage DIP curves

50 Hz - 1500 min^{-1}

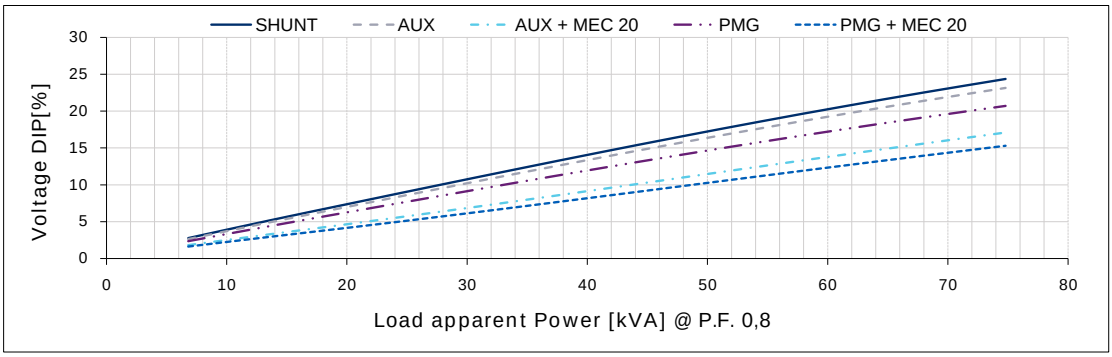
380 V



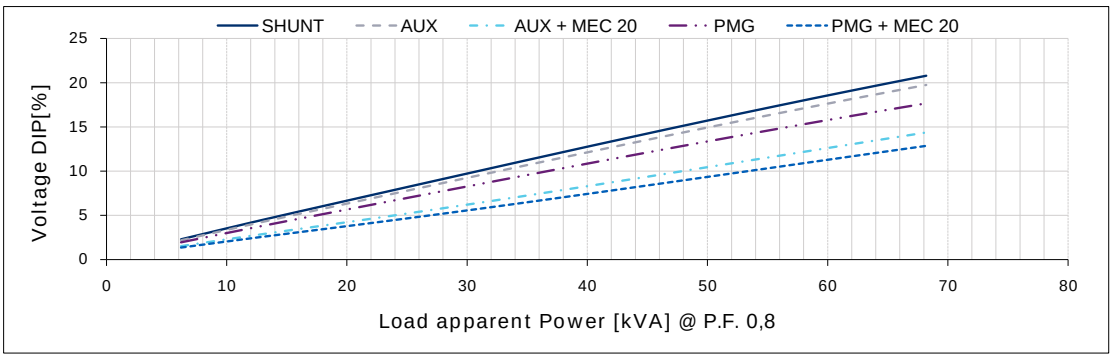
400 V



415 V



440 V



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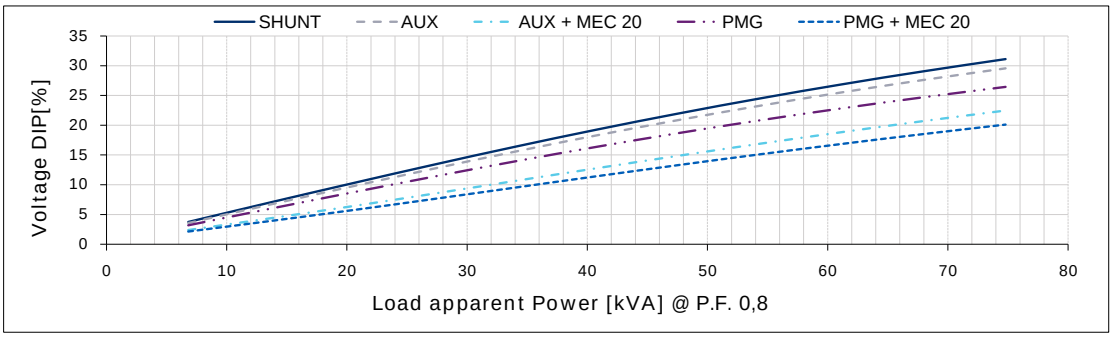
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

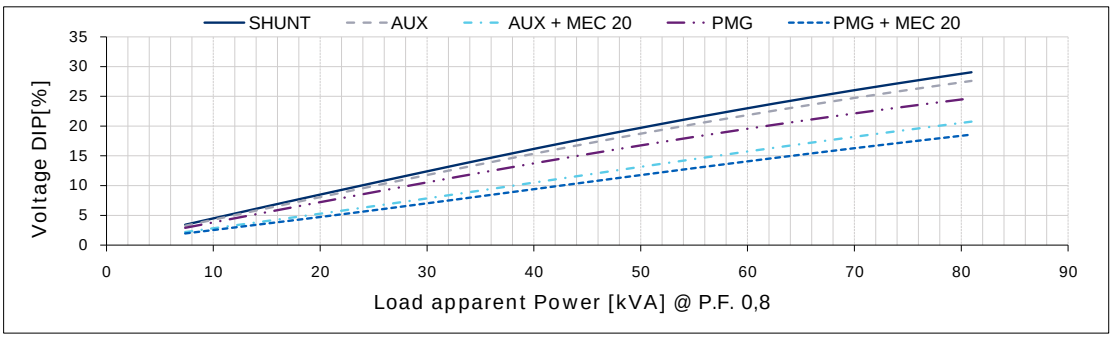
Typical voltage DIP curves

60 Hz - 1800 min^{-1}

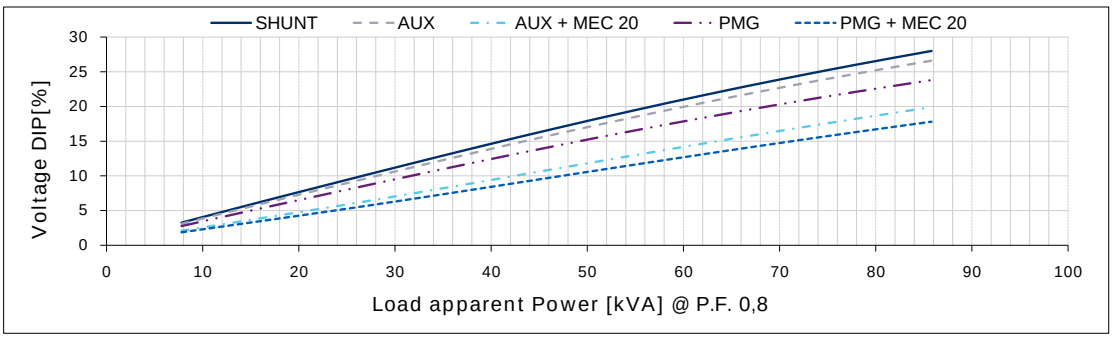
380 V



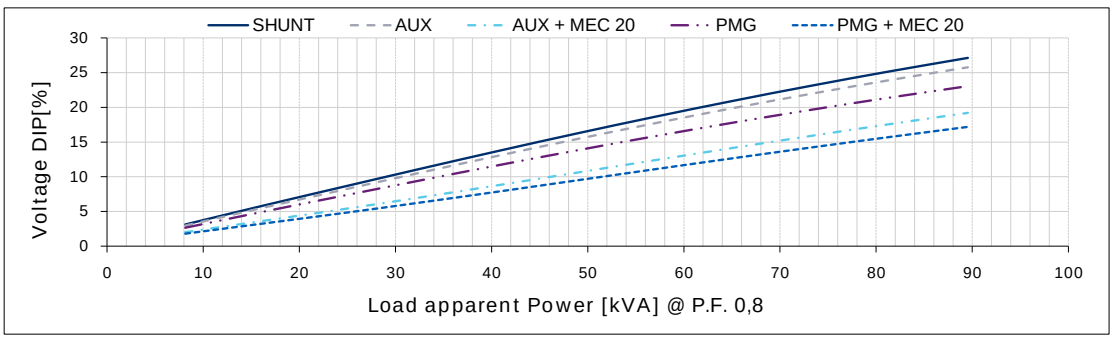
416 V



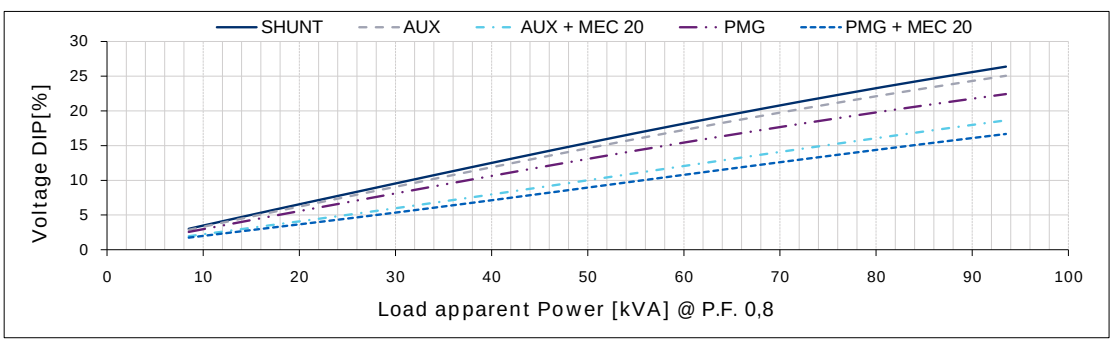
440 V



460 V



480 V



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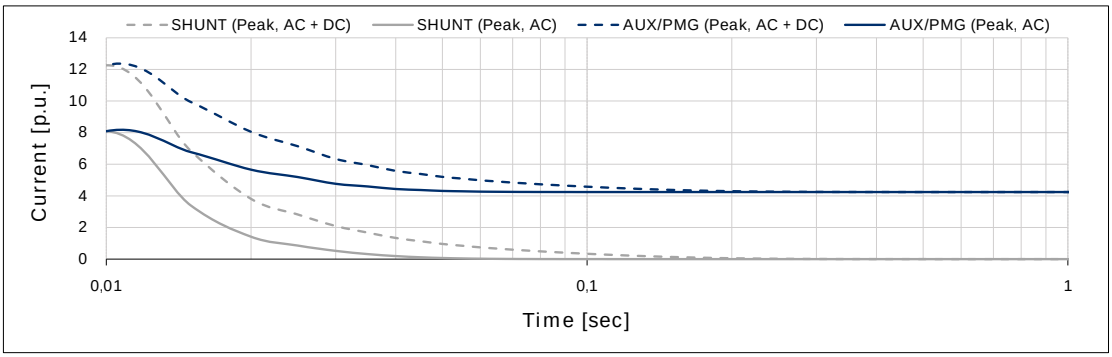
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

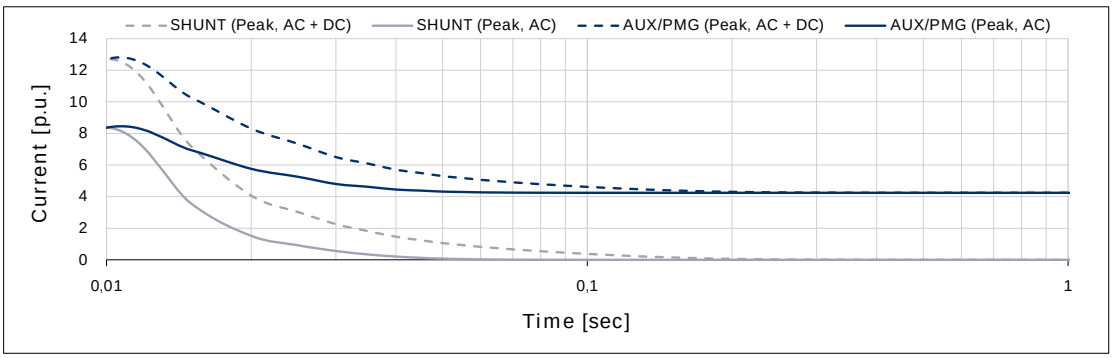
Typical 3-phase short circuit decrement curves

50 Hz - 1500 min^{-1}

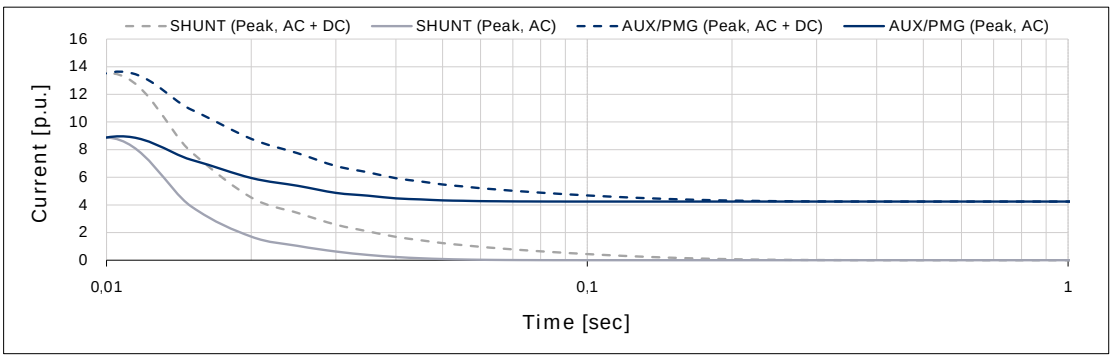
380 V



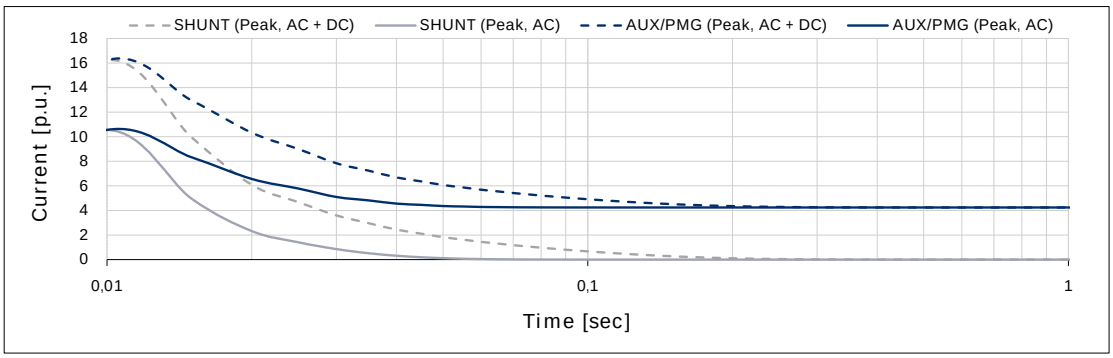
400 V



415 V



440 V



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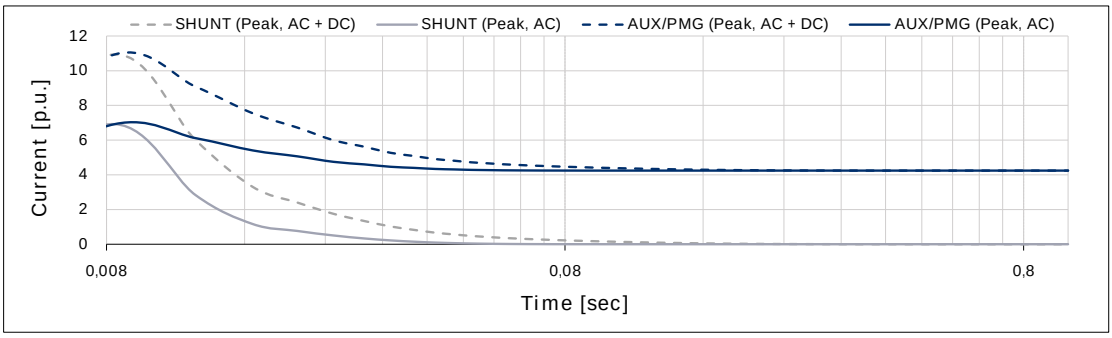
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 SB 4

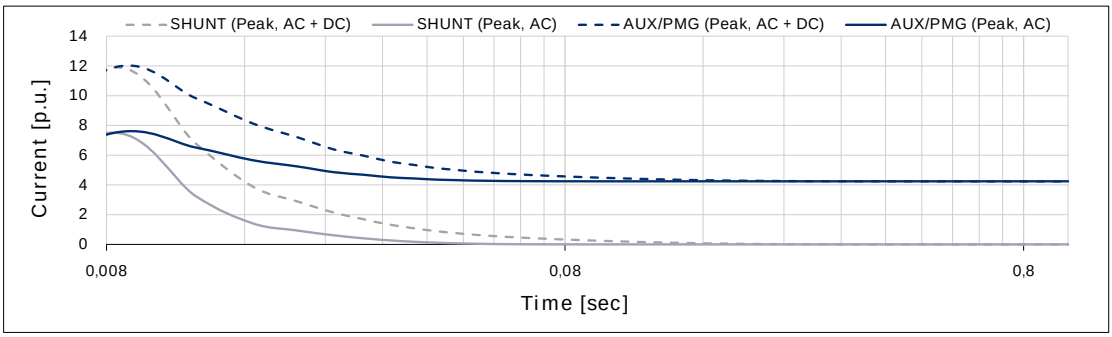
Typical 3-phase short circuit decrement curves

60 Hz - 1800 min^{-1}

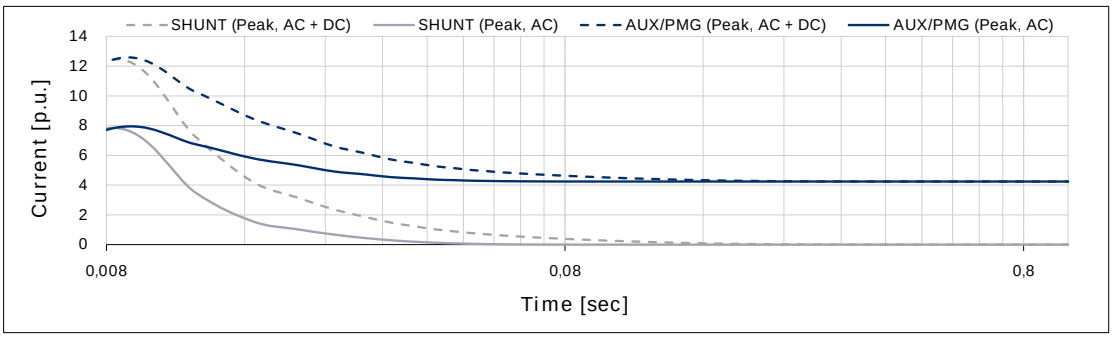
380 V



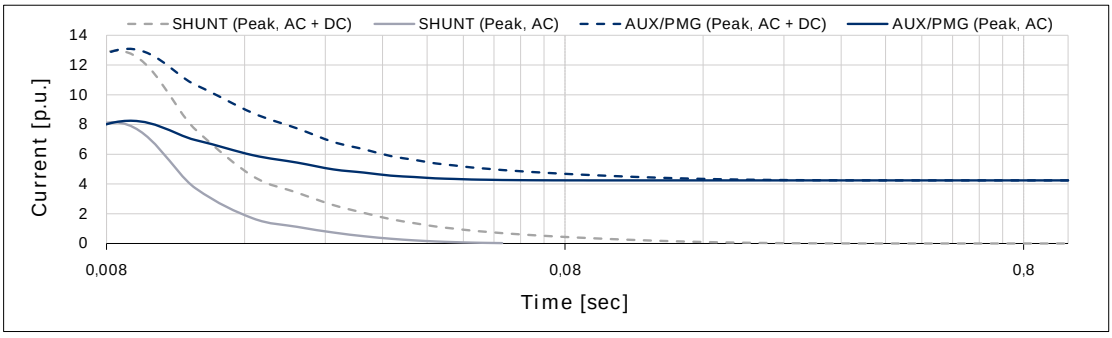
416 V



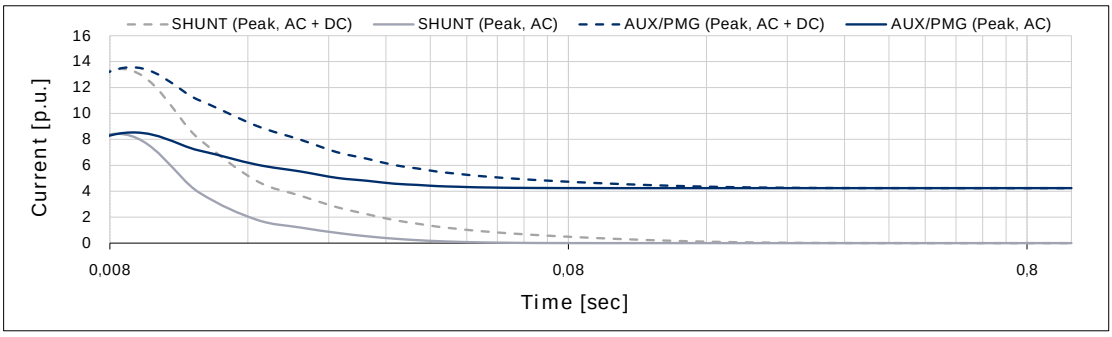
440 V



460 V



480 V

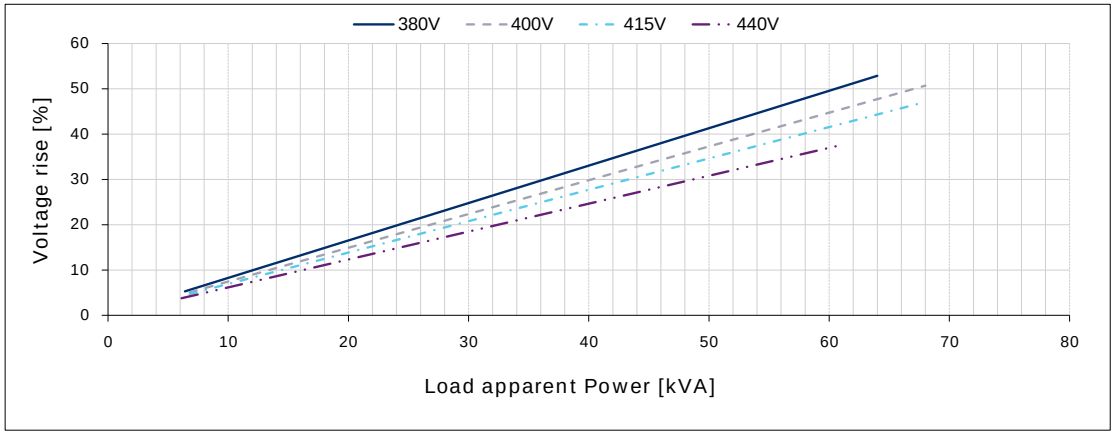


Above curves are based on a three-phase short circuit
For other type of short circuit use the following moltiplication factors

	2 phase	1 phase
Instantaneous (max)	0,95	1,14
Continuous	1,50	1,83

Typical load rejection curves

50 Hz - 1500 min-1



60 Hz - 1800 min-1