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THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 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	76	80	80	72	80	87	92	96	100
		kW	*61*	*64*	*64*	*58*	*64*	*69*	*73*	*77*	*80*
EFFICIENCY (%) @ 0,8 p.f.		4/4	89,1	89,5	89,7	90,5	88,8	89,5	89,9	90,2	90,4
		3/4	90,7	91,0	91,1	91,5	90,4	91,0	91,3	91,5	91,7
		2/4	91,9	92,1	92,1	91,9	91,6	92,0	92,3	92,4	92,5
EFFICIENCY (%) @ 1,0 p.f.		4/4	91,7	92,0	92,4	93,2	91,2	91,8	92,2	92,5	92,7
		3/4	93,0	93,3	93,5	94,0	92,6	93,1	93,4	93,6	93,8
		2/4	94,0	94,2	94,3	94,3	93,6	94,0	94,2	94,3	94,4
STAND-BY RATING (163/27)		kVA	84	88	88	79	88	95	101	105	110
STAND-BY EFFICIENCY (%) @ 0,8 p.f.			88,5	88,8	89,2	90,1	88,2	89,0	89,4	89,6	89,9
SHORT CIRCUIT RATIO (referred to class H rating)			0,33	0,35	0,38	0,47	0,26	0,29	0,31	0,32	0,34
REACTANCES (%) (referred to class H rating)											
Direct axis synchronous		xd	402	381	354	284	507	459	434	414	397
Quadrature axis synchronous		xq	168	160	148	119	212	192	181	173	166
Direct axis transient		x'd	26,2	24,9	23,1	18,5	33,1	30,0	28,3	27,1	25,9
Direct axis subtransient		x"d	15,2	14,4	13,4	10,7	19,1	17,3	16,4	15,6	15,0
Quadrature axis subtransient		x"q	16,7	15,8	14,7	11,8	21,1	19,0	18,0	17,2	16,5
Negative sequence		x_2	15,9	15,1	14,0	11,2	20,1	18,2	17,2	16,4	15,8
Zero sequence		x_0	7,9	7,5	6,9	5,6	9,9	9,0	8,5	8,1	7,8

TIME CONSTANTS [s]

Open circuit (T'do)	0,924	Subtransient (T''d)	0,010
Transient (T'd)	0,090	Armature (Ta)	0,009

MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	Available on double bearing configuration (on request)
N-end bearing/Lubrication	6309 2RS1 C3 WT / Prelubricated
Weight [kg]	300
Inertia (J) [kgm^2]	0,79
Overspeed [min^{-1}]	2250
Method of cooling	IC 01
Cooling air required [m^3/s] @ 50/60 Hz	0,2 / 0,233
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	0,088
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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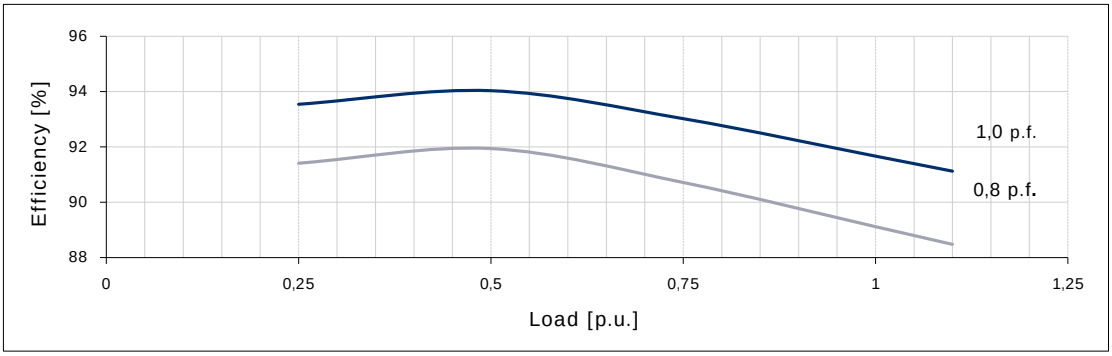
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

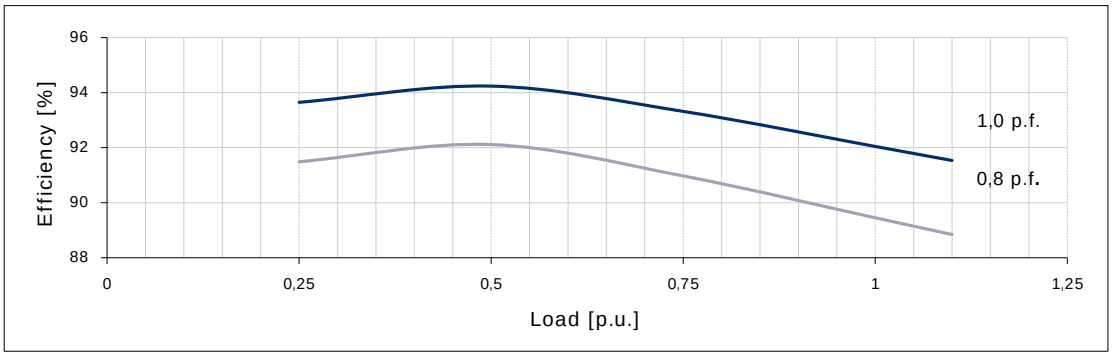
Typical efficiency curves

50 Hz - 1500 min^{-1}

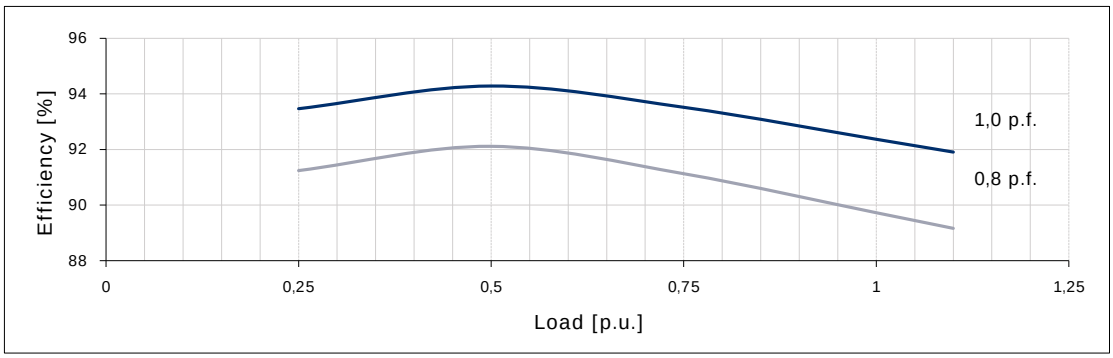
380 V



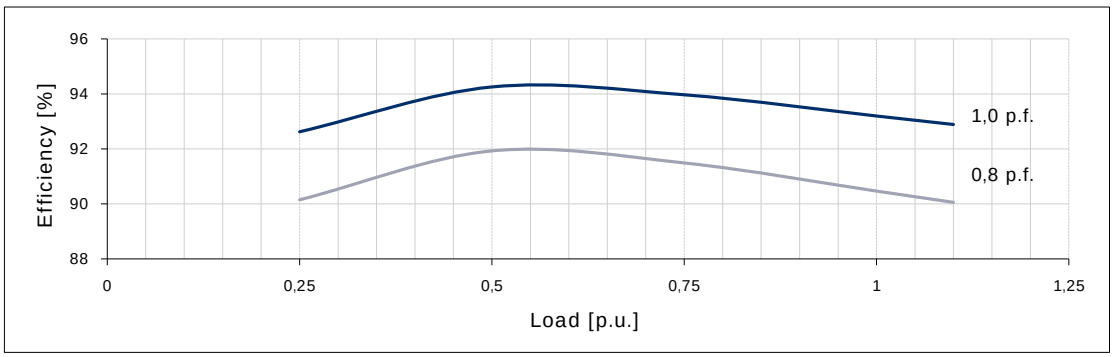
400 V



415 V



440 V



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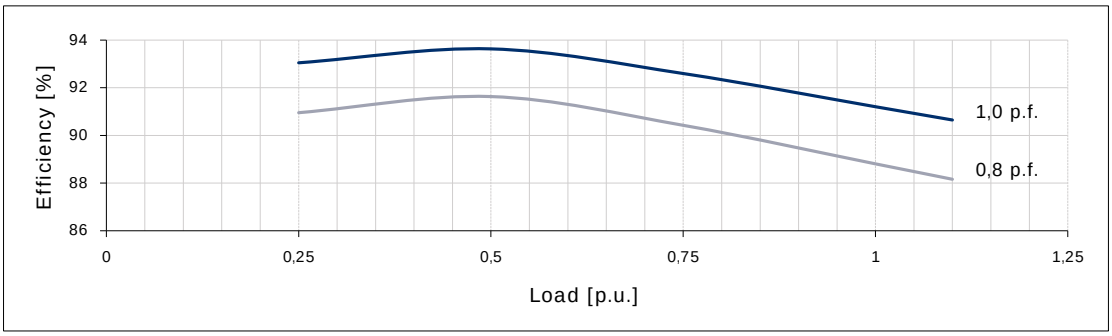
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

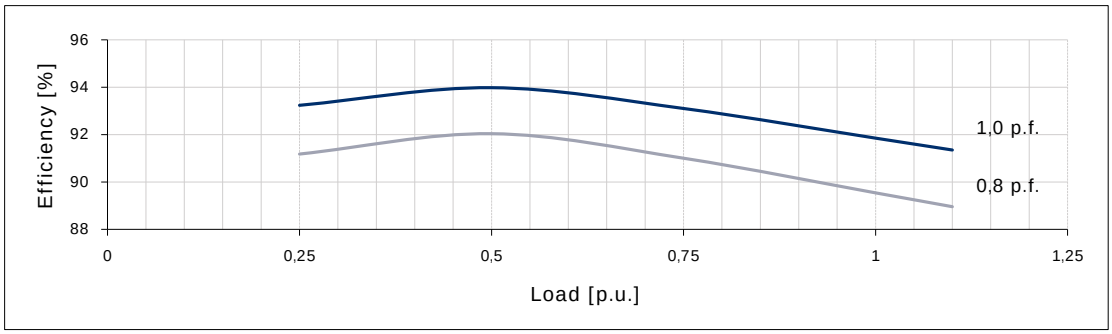
Typical efficiency curves

60 Hz - 1800 min^{-1}

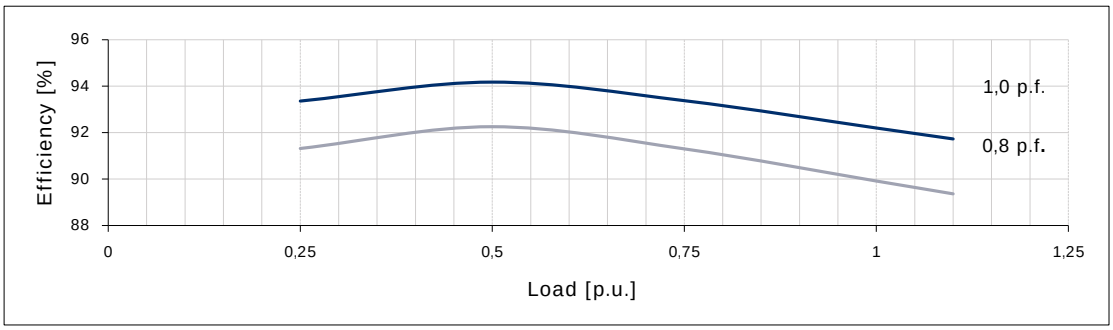
380 V



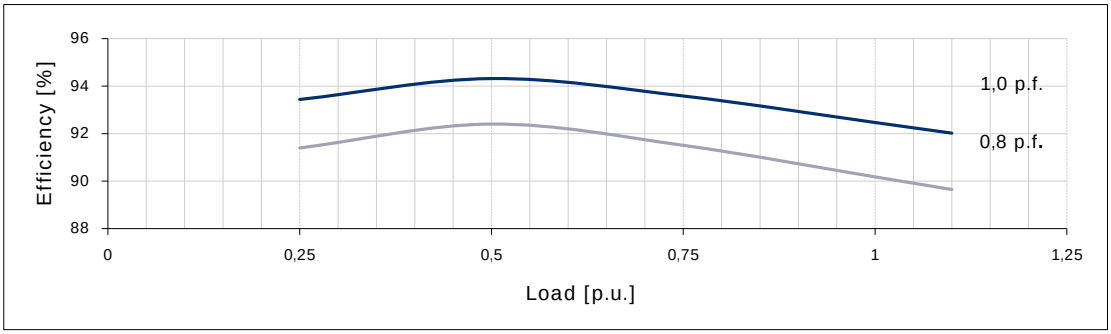
416 V



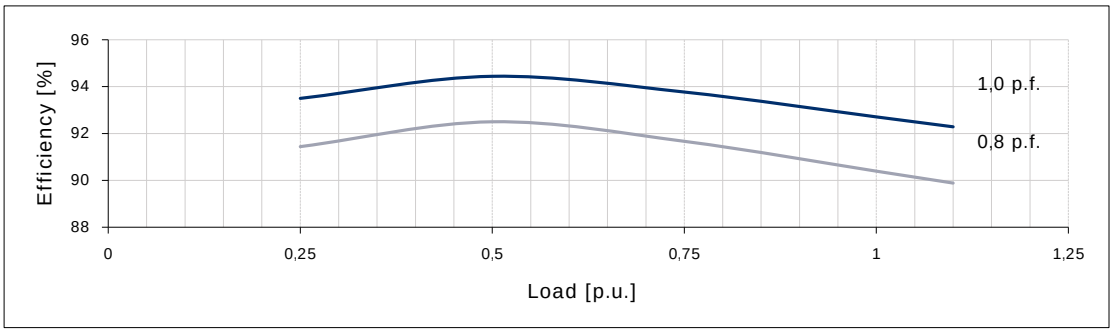
440 V



460 V



480 V



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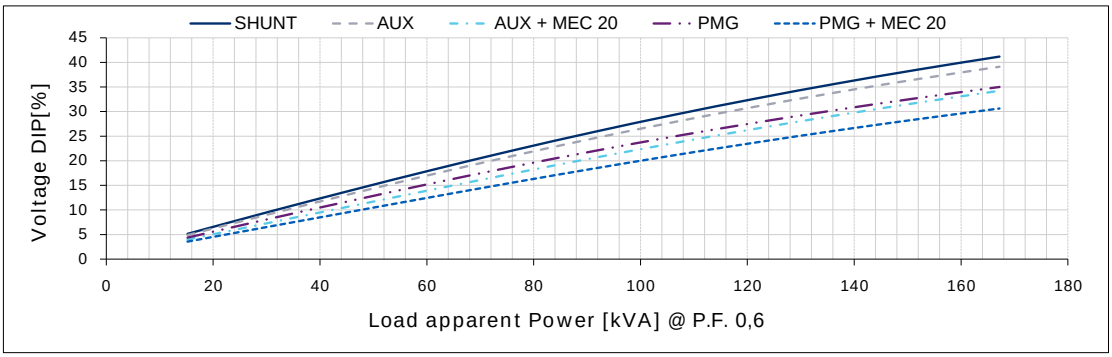
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

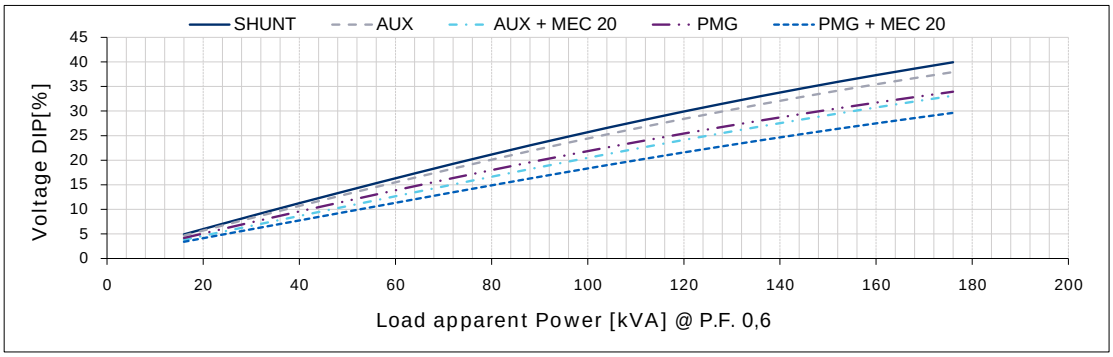
Typical voltage DIP curves

50 Hz - 1500 min^{-1}

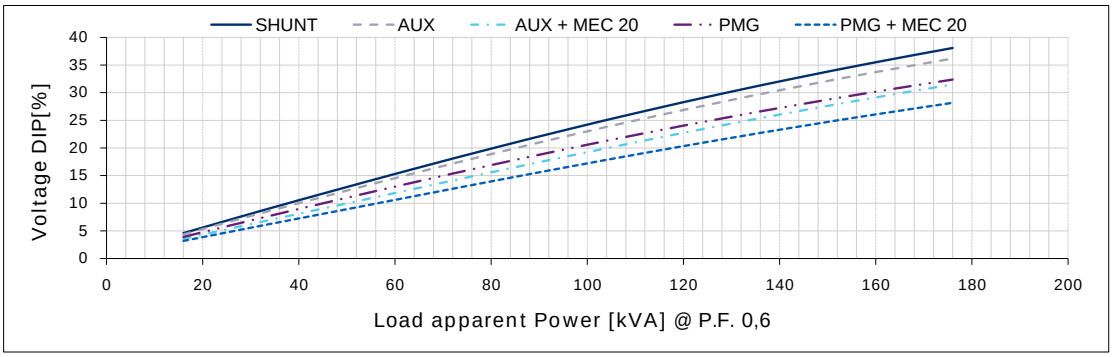
380 V



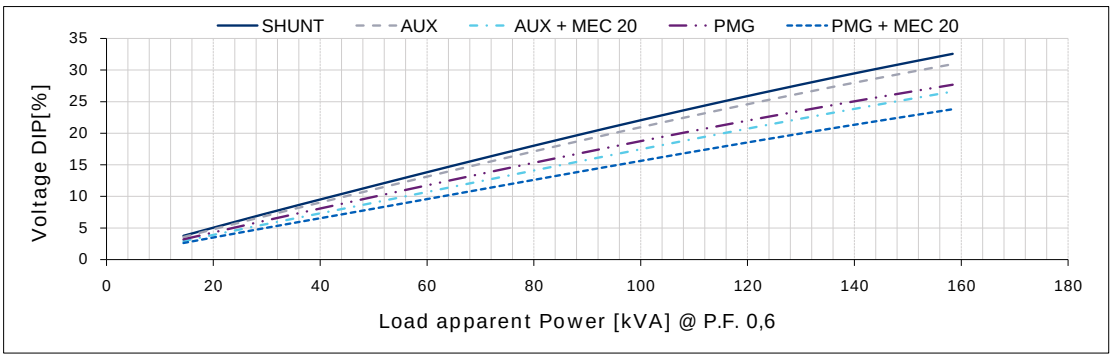
400 V



415 V



440 V



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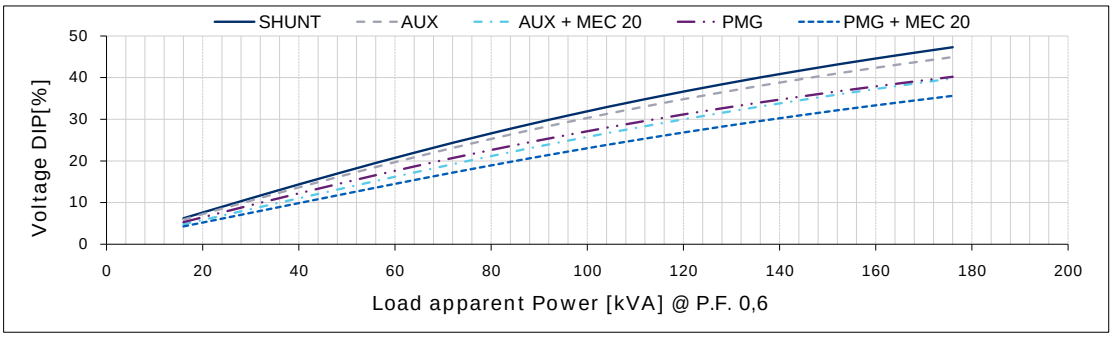
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

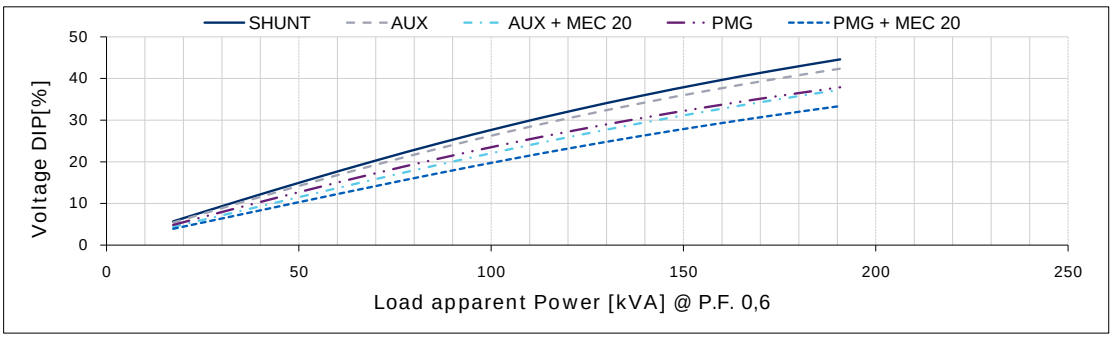
Typical voltage DIP curves

60 Hz - 1800 min^{-1}

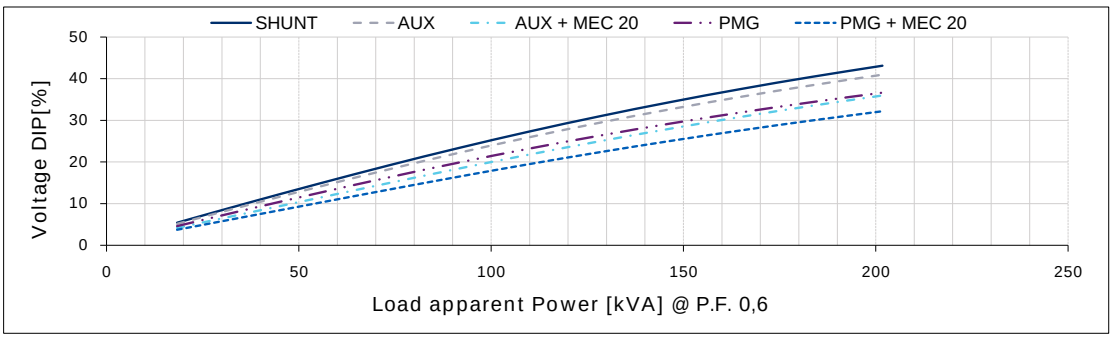
380 V



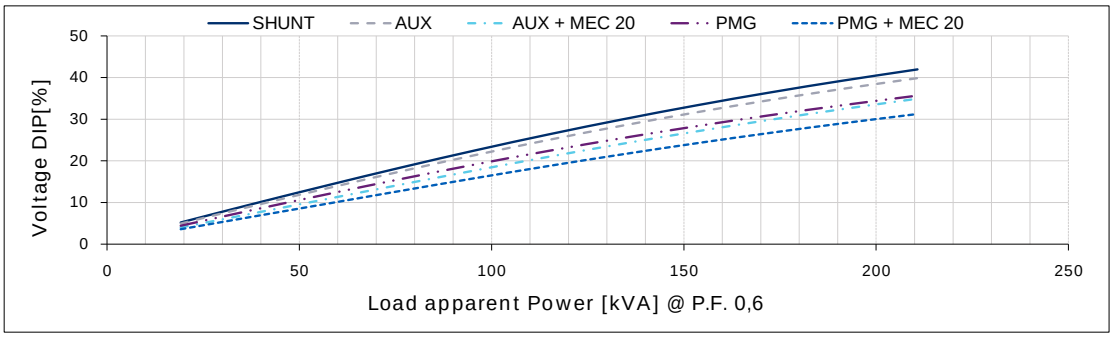
416 V



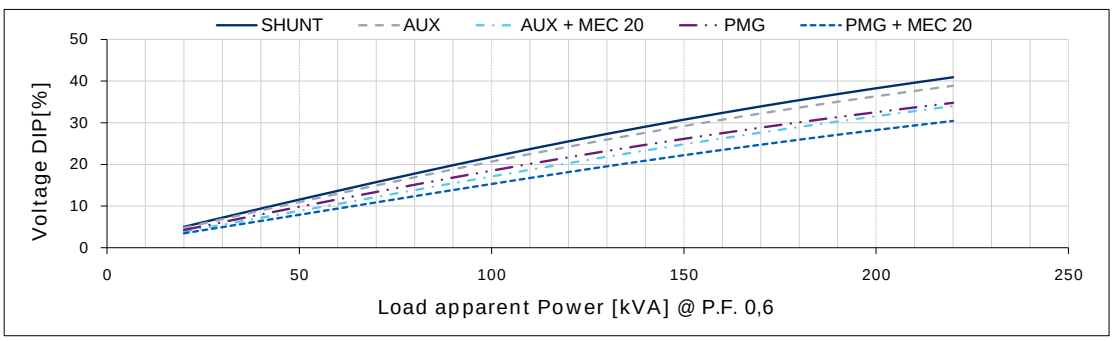
440 V



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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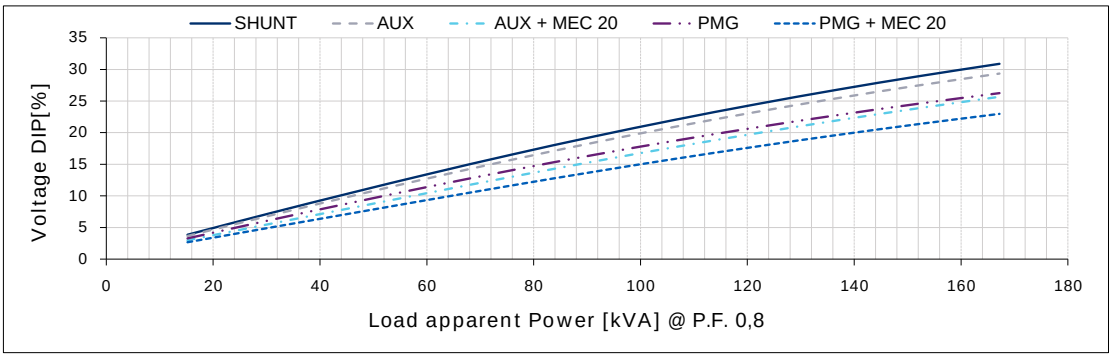
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

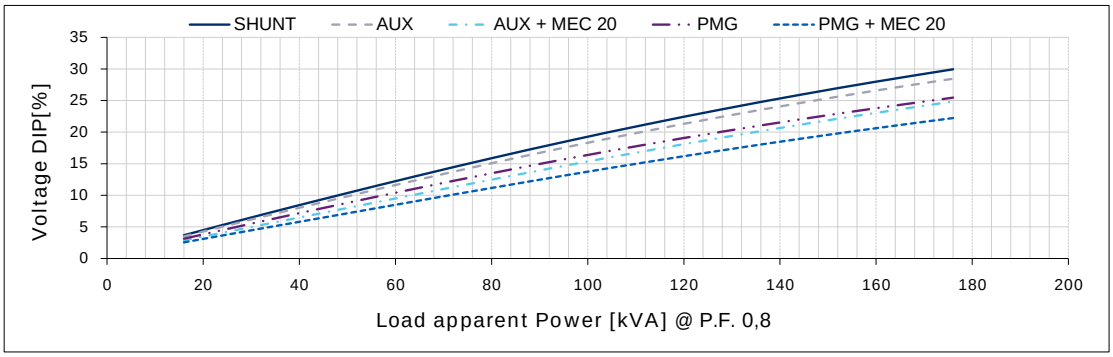
Typical voltage DIP curves

50 Hz - 1500 min^{-1}

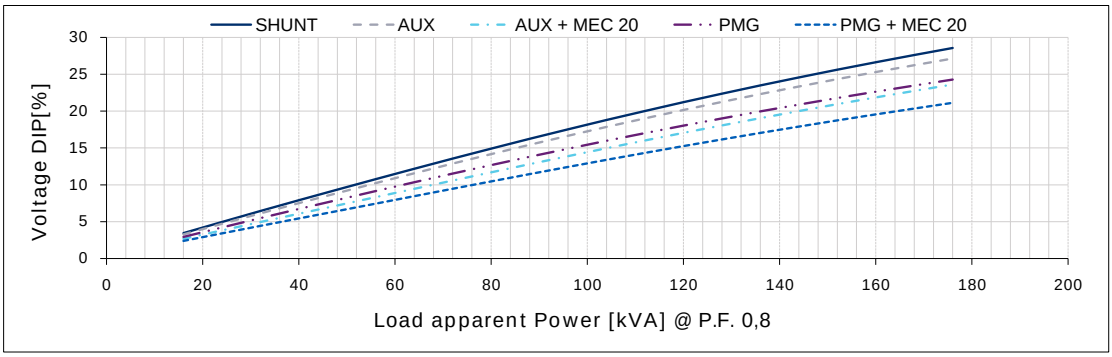
380 V



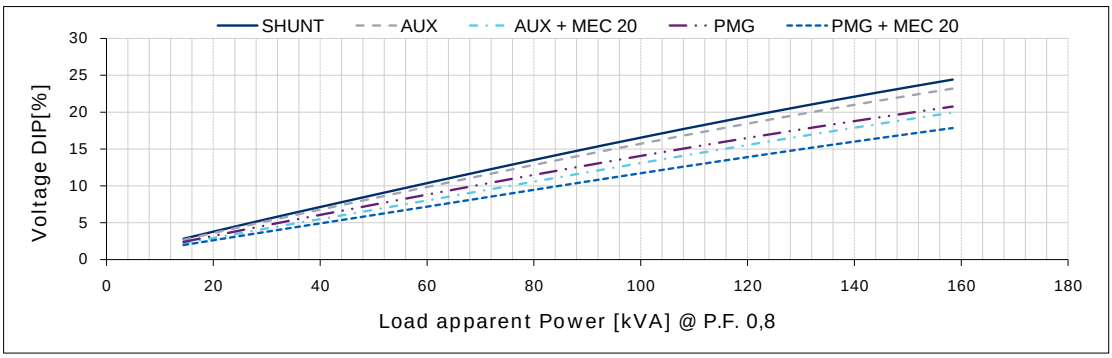
400 V



415 V



440 V



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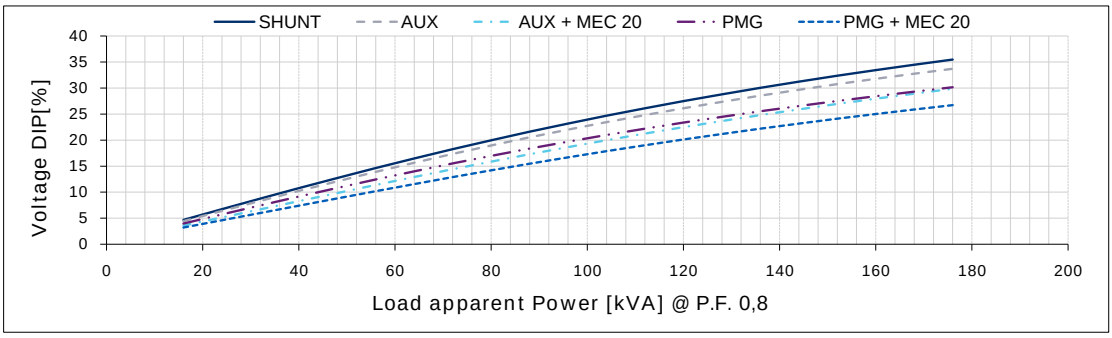
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

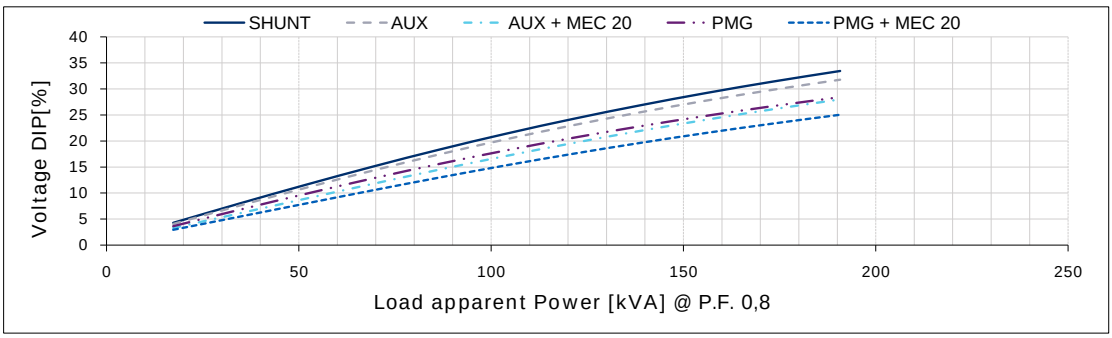
Typical voltage DIP curves

60 Hz - 1800 min^{-1}

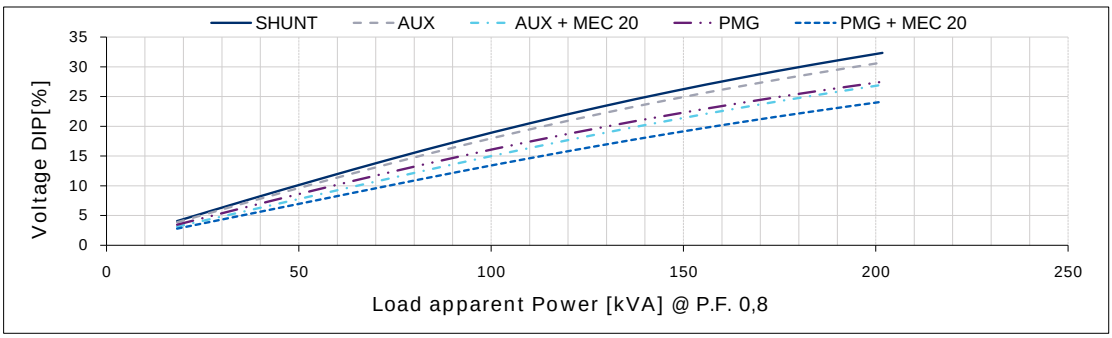
380 V



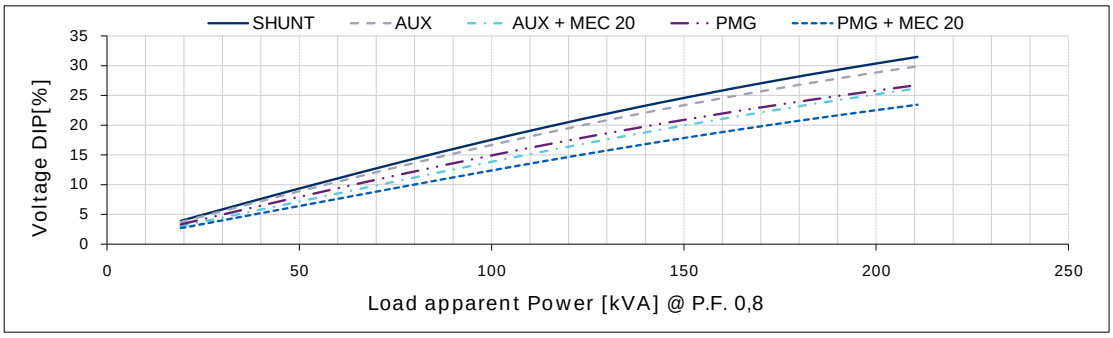
416 V



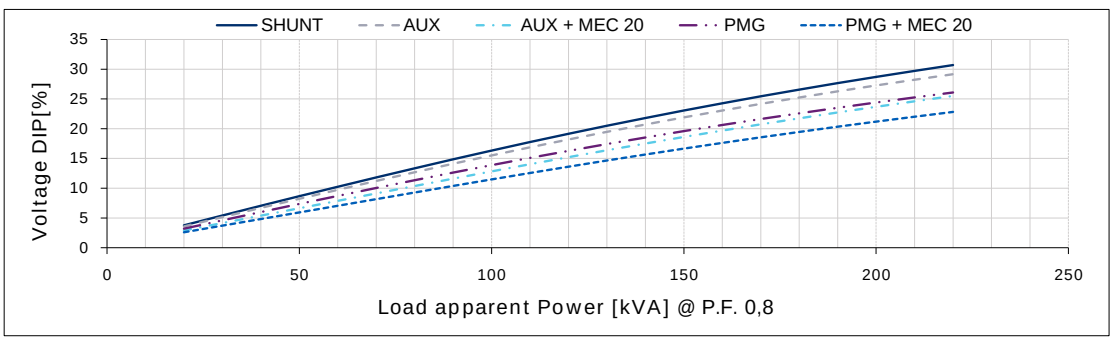
440 V



460 V



480 V



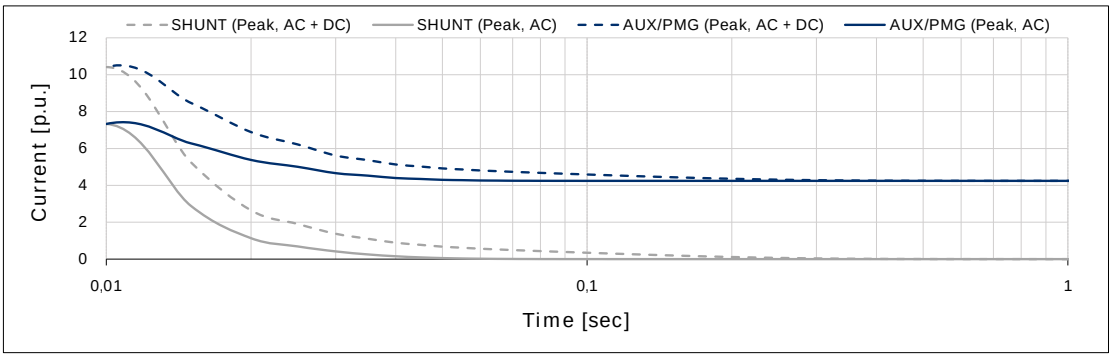
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

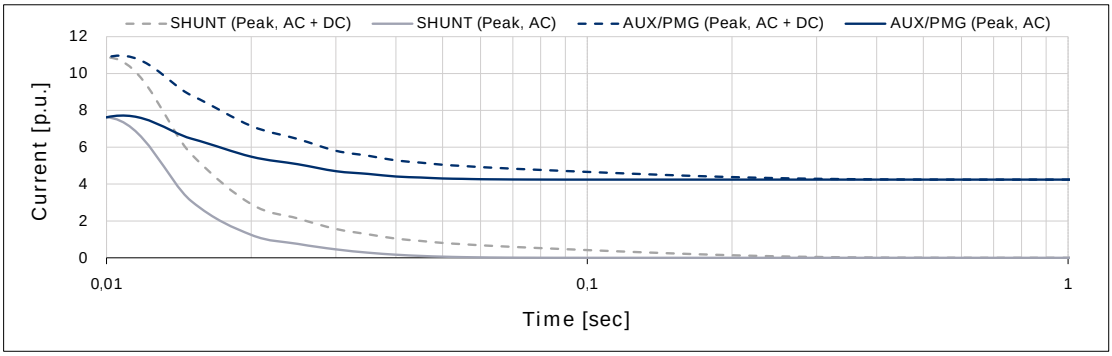
Typical 3-phase short circuit decrement curves

50 Hz - 1500 min^{-1}

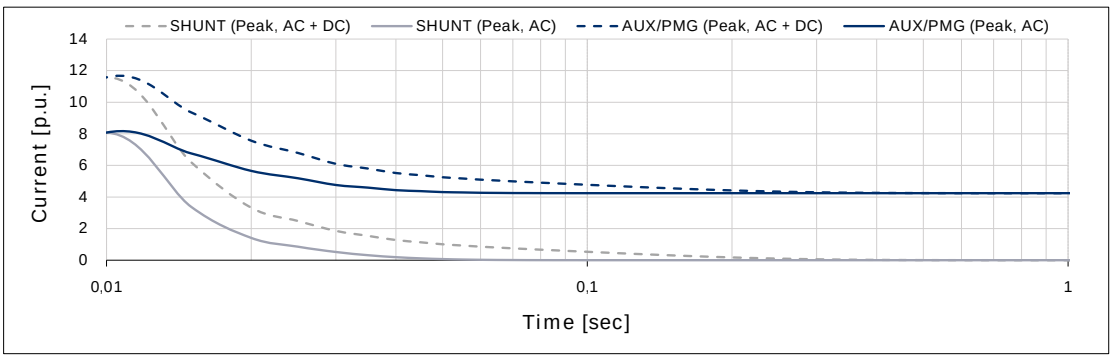
380 V



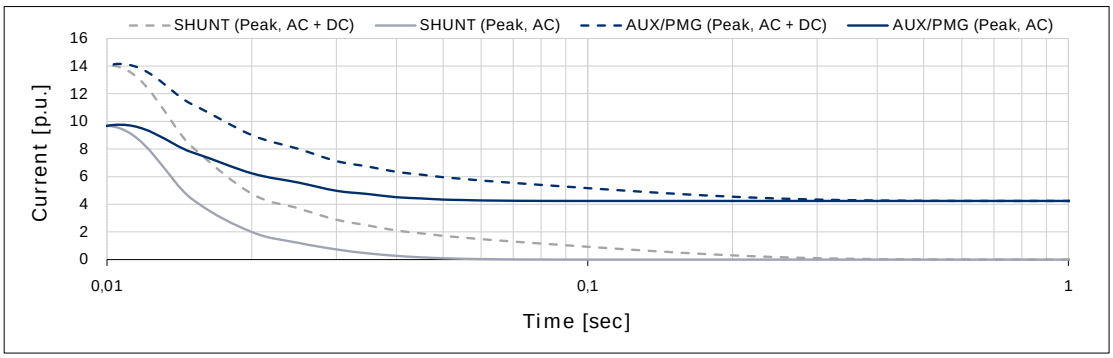
400 V



415 V



440 V



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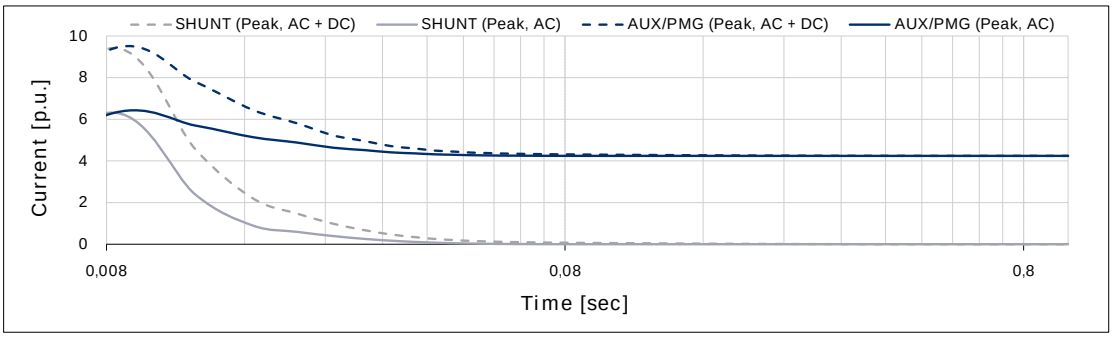
THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 225 XB 4

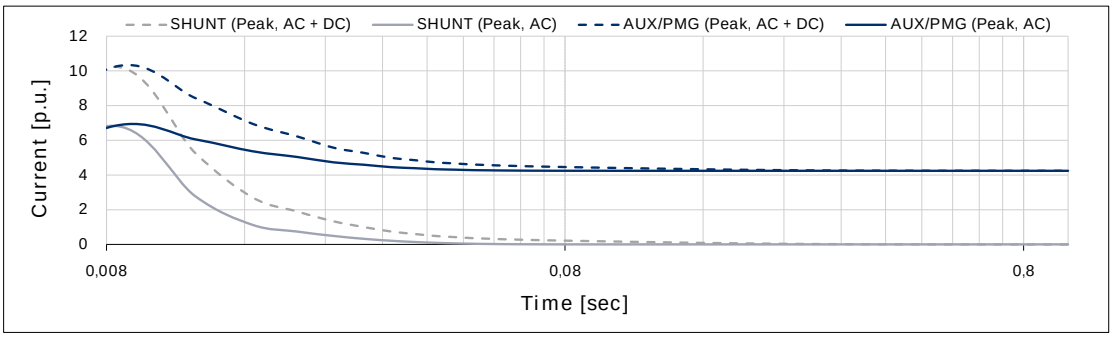
Typical 3-phase short circuit decrement curves

60 Hz - 1800 min^{-1}

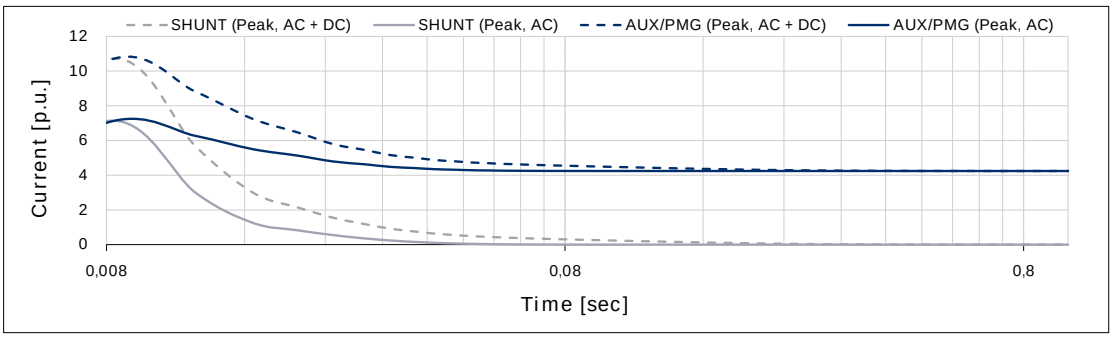
380 V



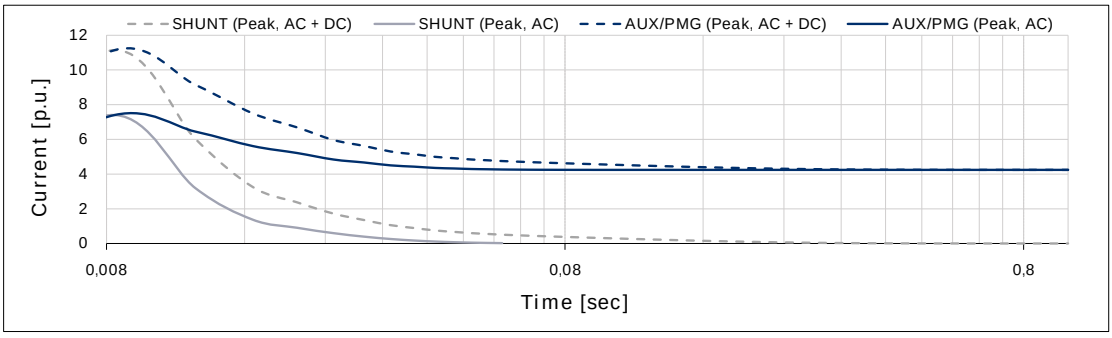
416 V



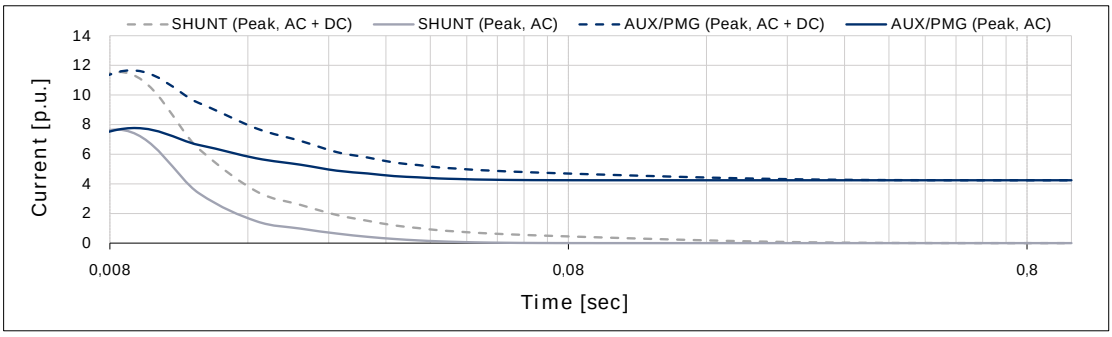
440 V



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)	0,99	1,23
Continuous	1,50	1,83

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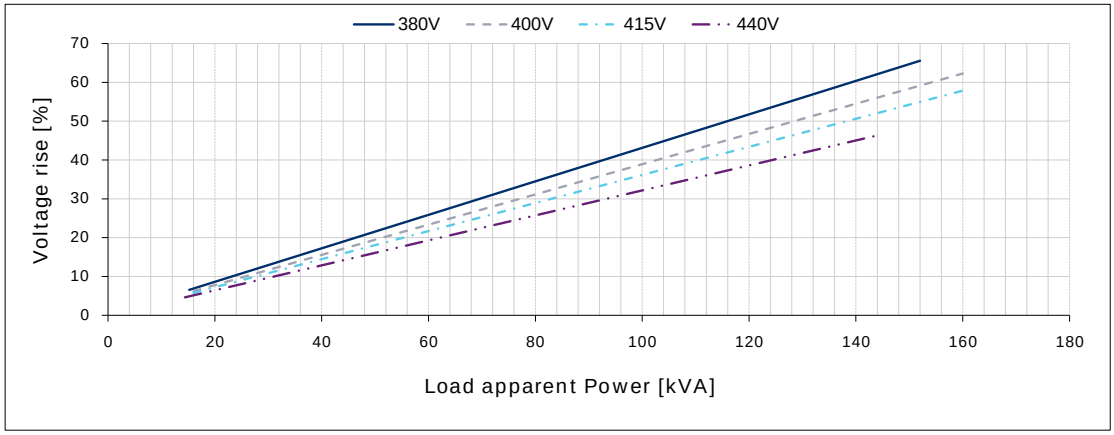
Typical load rejection curves

50 Hz - 1500 min-1



60 Hz - 1800 min-1