

THREE-PHASE SYNCHRONOUS GENERATOR  
**MXB-E 225 SB 4**

4 POLES

CONTINUOUS DUTY

50 Hz-1500 min<sup>-1</sup> / 60 Hz-1800 min<sup>-1</sup>

AMBIENT TEMPERATURE	40°C	WINDING DATA									
TEMPERATURE RISE	H	Winding code		MO							
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		95	100	100	95	100	108	115	120	125
	kW		76	80	80	76	80	86	92	96	100
EFFICIENCY (%) @ 0,8 p.f.	4/4		90,1	90,4	90,6	91,1	89,7	90,4	90,7	91,0	91,2
	3/4		91,6	91,7	91,9	92,1	91,2	91,7	92,0	92,2	92,3
	2/4		92,7	92,8	92,8	92,6	92,3	92,6	92,8	92,9	93,0
EFFICIENCY (%) @ 1,0 p.f.	4/4		92,5	92,7	93,1	93,7	92,0	92,6	92,9	93,1	93,3
	3/4		93,7	93,9	94,1	94,4	93,2	93,7	93,9	94,1	94,3
	2/4		94,6	94,7	94,8	94,8	94,1	94,4	94,6	94,7	94,8
STAND-BY RATING (163/27)	kVA		105	110	110	105	110	119	127	132	138
STAND-BY EFFICIENCY (%) @ 0,8 p.f.			89,5	89,8	90,1	90,7	89,2	89,9	90,2	90,5	90,7
SHORT CIRCUIT RATIO (referred to class H rating)			0,36	0,37	0,40	0,48	0,28	0,31	0,33	0,34	0,36
REACTANCES (%) (referred to class H rating)											
Direct axis synchronous	x <sub>d</sub>		392	373	346	292	495	446	425	406	388
Quadrature axis synchronous	x <sub>q</sub>		164	155	144	122	207	186	177	169	162
Direct axis transient	x' <sub>d</sub>		23,3	22,2	20,6	17,4	29,5	26,6	25,3	24,1	23,1
Direct axis subtransient	x'' <sub>d</sub>		13,7	13,1	12,1	10,3	17,4	15,6	14,9	14,2	13,6
Quadrature axis subtransient	x'' <sub>q</sub>		15,1	14,4	13,3	11,3	19,1	17,2	16,4	15,6	15,0
Negative sequence	x <sub>2</sub>		14,4	13,7	12,7	10,8	18,2	16,4	15,6	14,9	14,3
Zero sequence	x <sub>0</sub>		6,9	6,6	6,1	5,2	8,7	7,9	7,5	7,2	6,8

TIME CONSTANTS [s]

Open circuit (T' <sub>do</sub> )	1,039	Subtransient (T'' <sub>d</sub> )	0,010
Transient (T' <sub>d</sub> )	0,099	Armature (T <sub>a</sub> )	0,010

MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	Available on double bearing configuration (on request)
N-end bearing/Lubrication	6309 2RS1 C3 WT / Prelubricated
Weight [kg]	335
Inertia (J) [kgm <sup>2</sup> ]	0,92
Overspeed [min <sup>-1</sup> ]	2250
Method of cooling	IC 01
Cooling air required [m <sup>3</sup> /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	0,068
Overloads	10% for 1 hour
3-phase short circuit current	>= 300% (3 I <sub>n</sub> ) 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

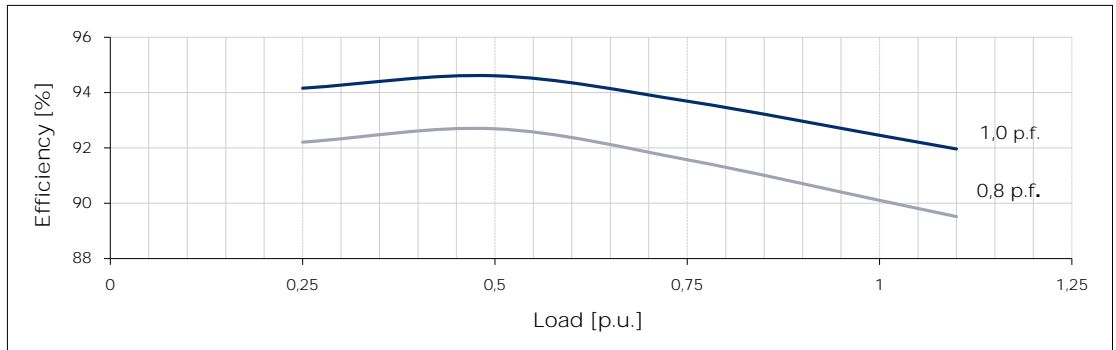
IEC 60034-1; BS 4999-5000; NEMA MG 1.32.
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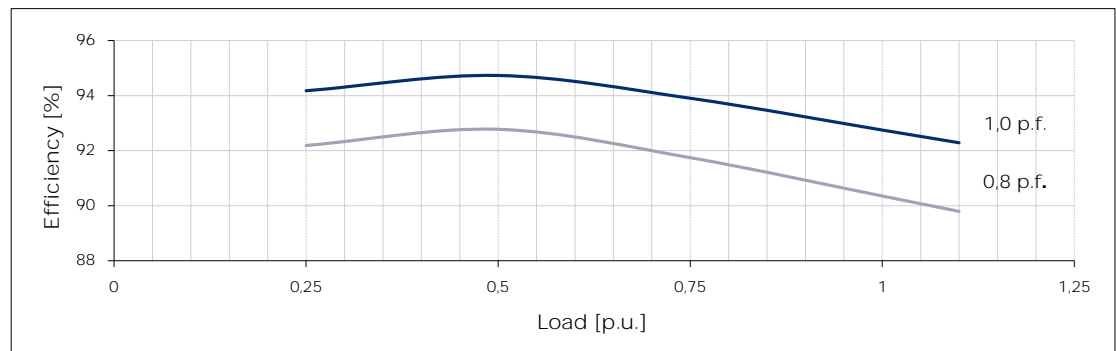
Typical efficiency curves

50 Hz - 1500 min<sup>-1</sup>

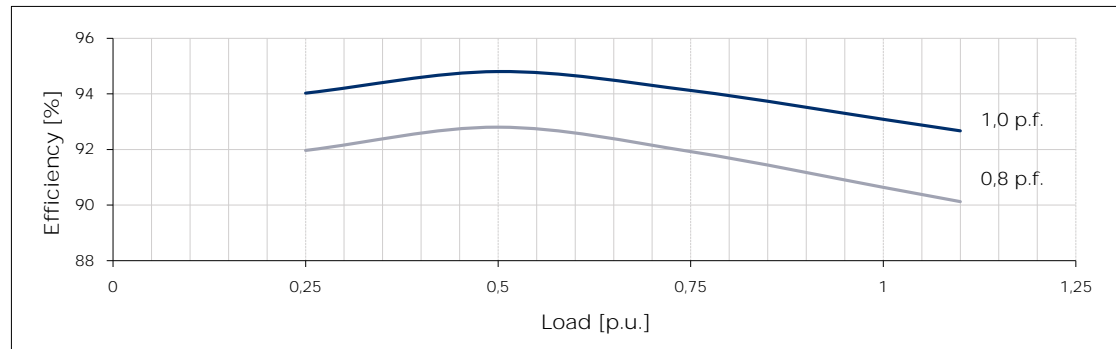
380 V



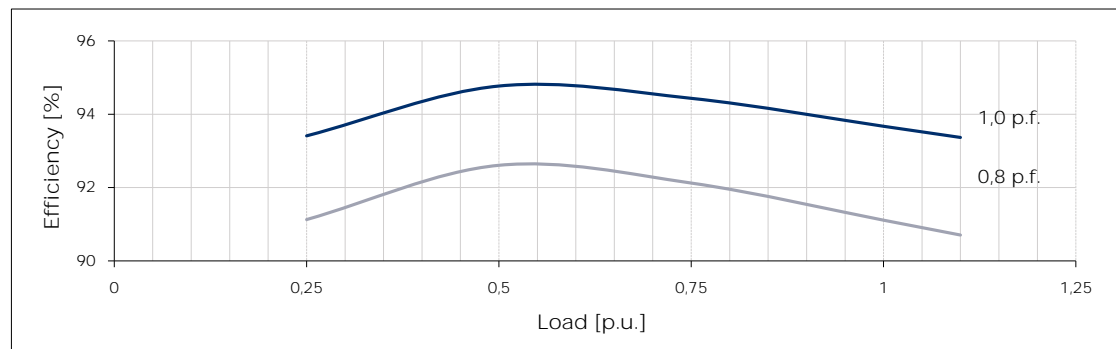
400 V



415 V



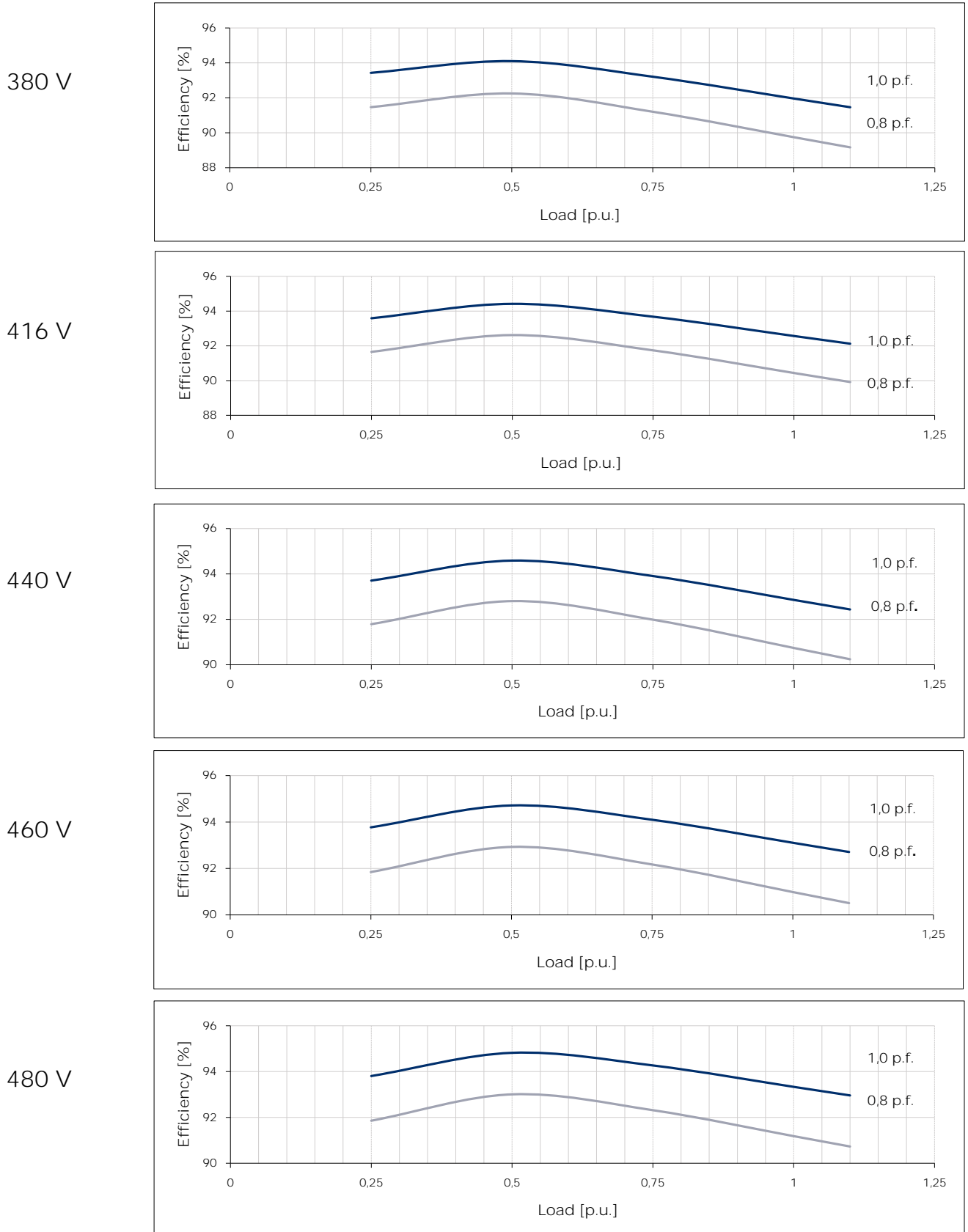
440 V



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Typical efficiency curves

60 Hz - 1800 min<sup>-1</sup>





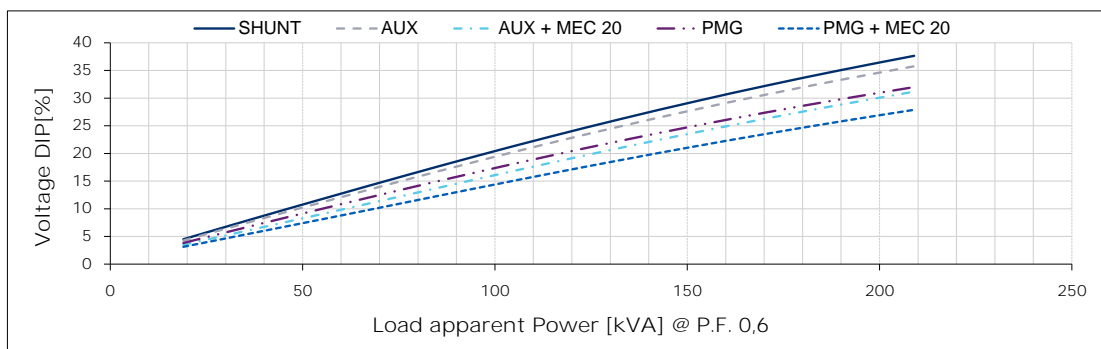
MarelliMotori  
Inspired solutions

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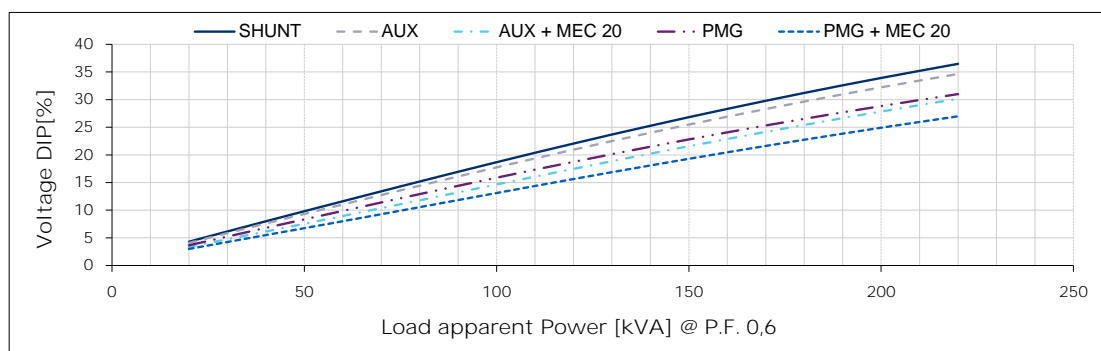
Typical voltage DIP curves

50 Hz - 1500 min<sup>-1</sup>

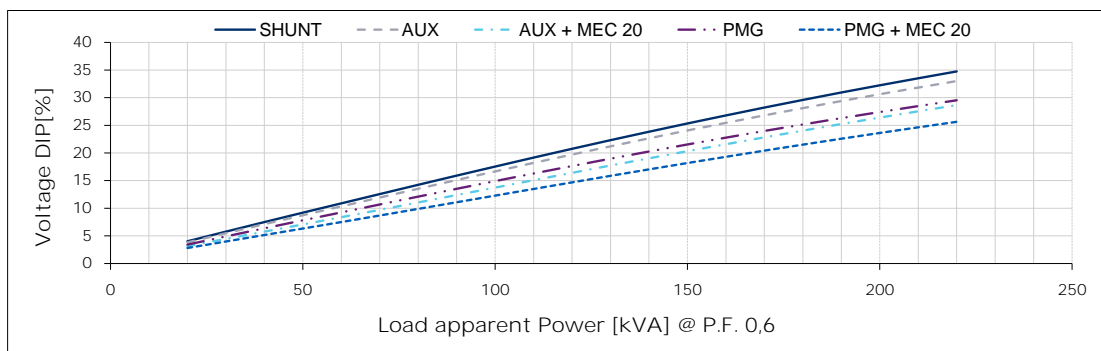
380 V



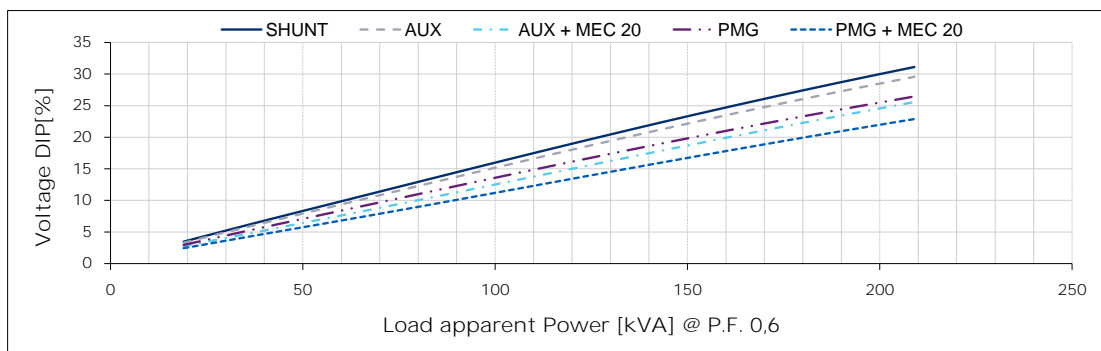
400 V



415 V



440 V





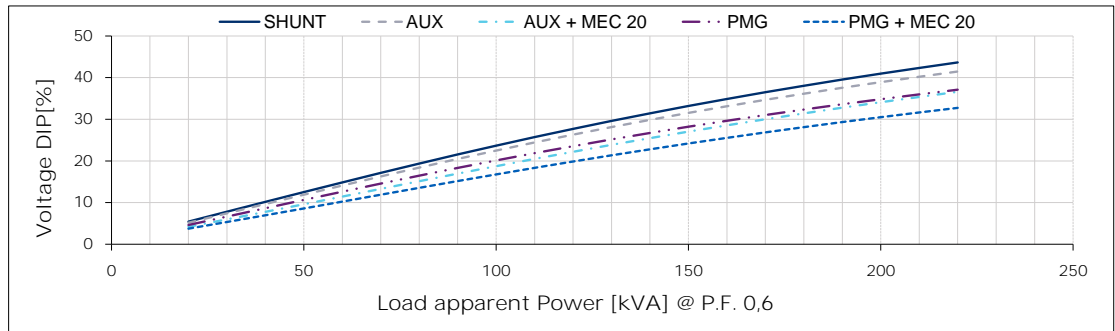
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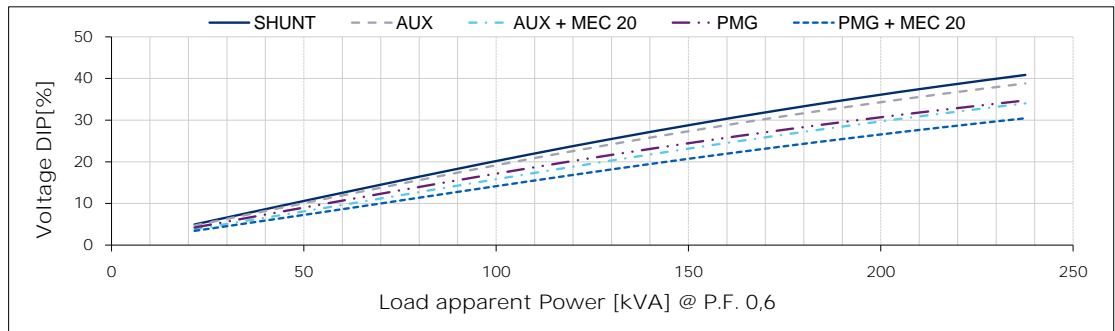
Typical voltage DIP curves

60 Hz - 1800 min<sup>-1</sup>

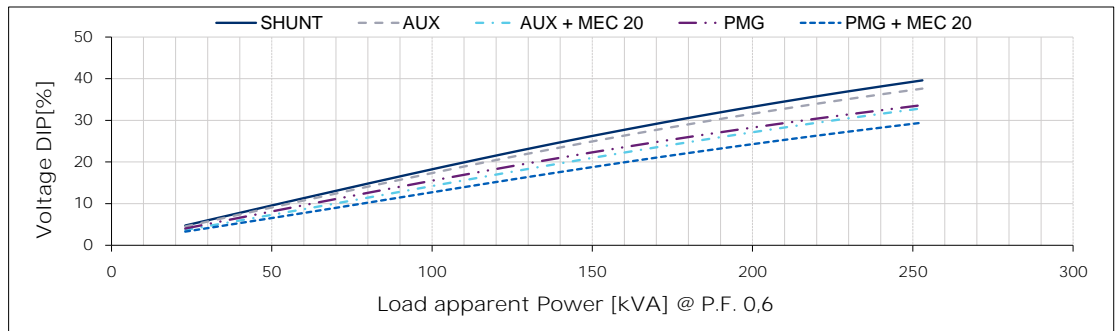
380 V



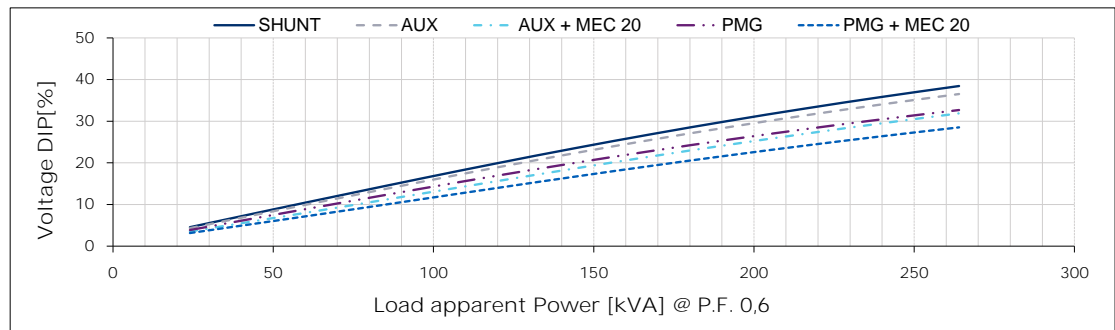
416 V



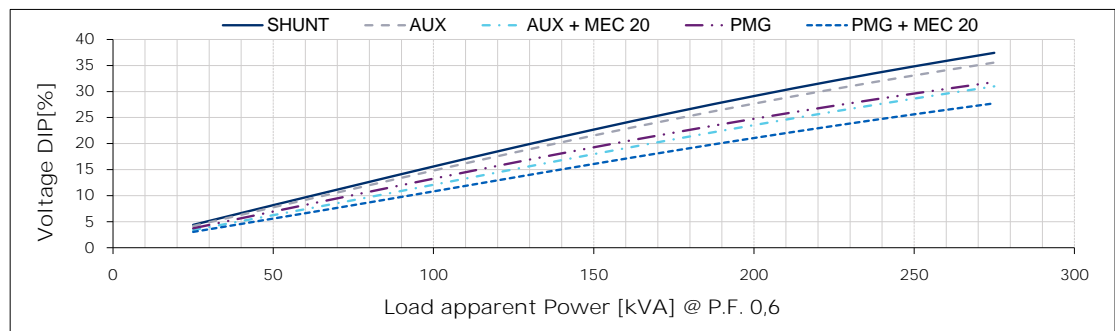
440 V



460 V



480 V



For P.F. different from 0,6 the following simplified formula can be used:  $\Delta V @ P.F. = \Delta V @ 0,6 \cdot \sin(\arccos(P.F.)) / 0,8$



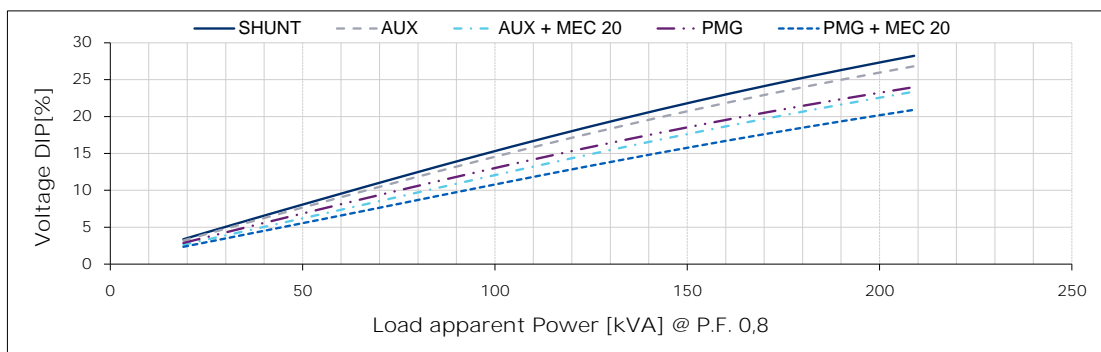
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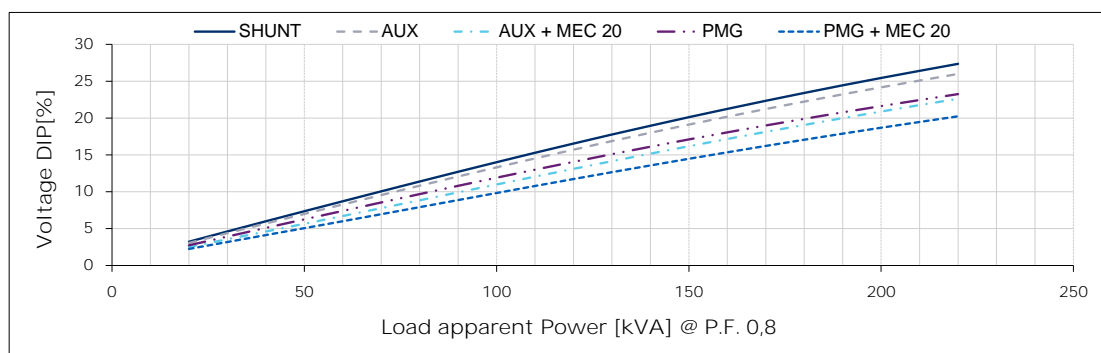
Typical voltage DIP curves

50 Hz - 1500 min<sup>-1</sup>

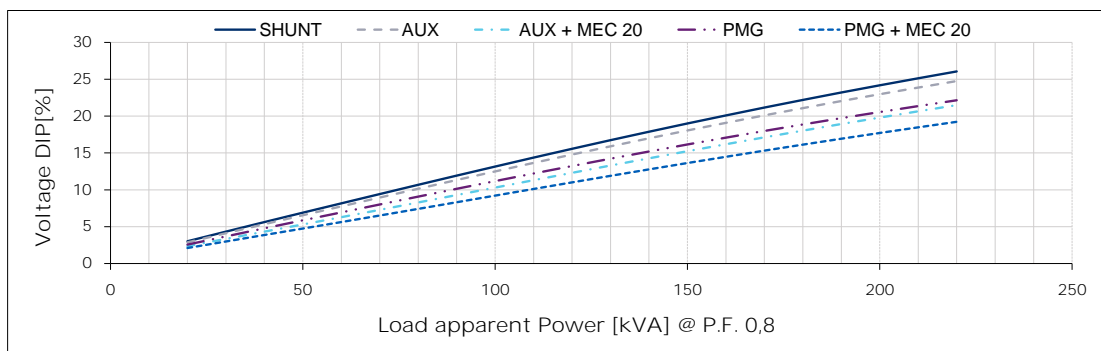
380 V



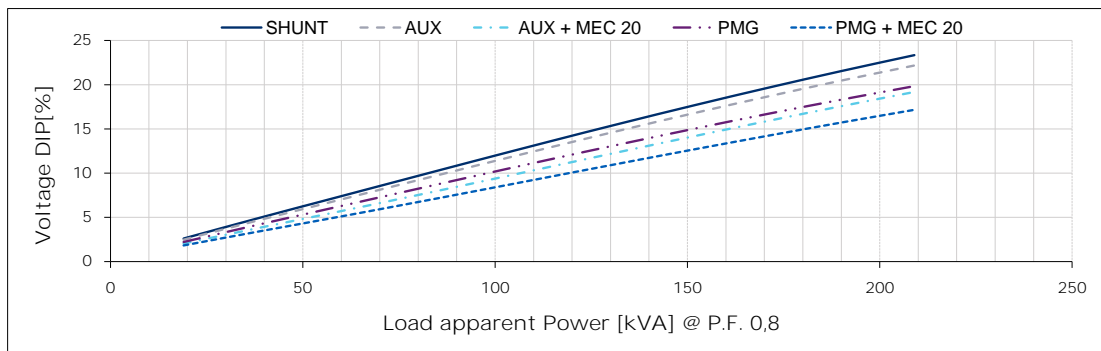
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440 V





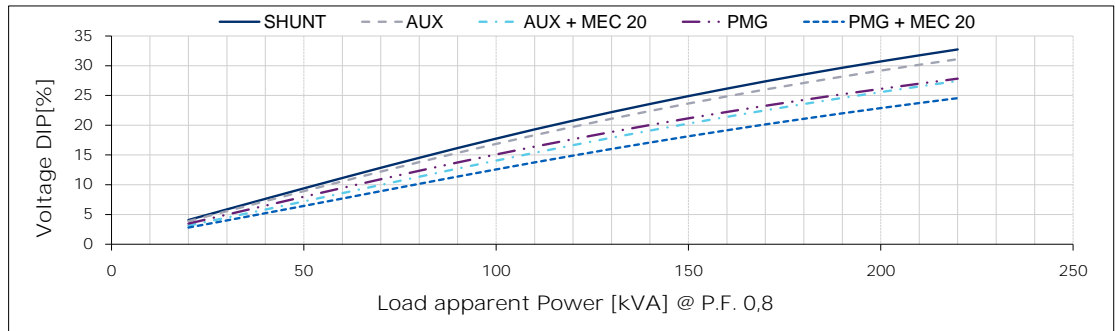
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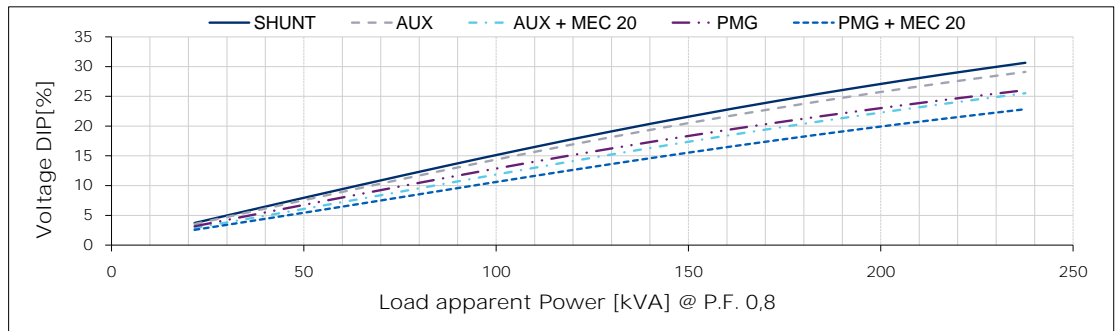
Typical voltage DIP curves

60 Hz - 1800 min<sup>-1</sup>

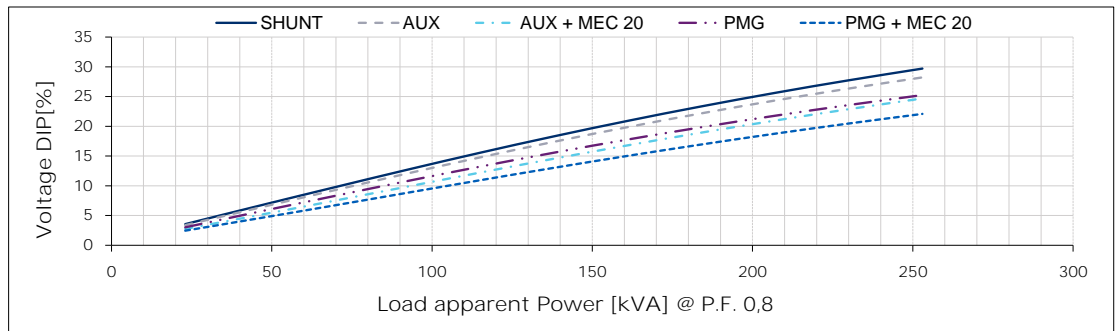
380 V



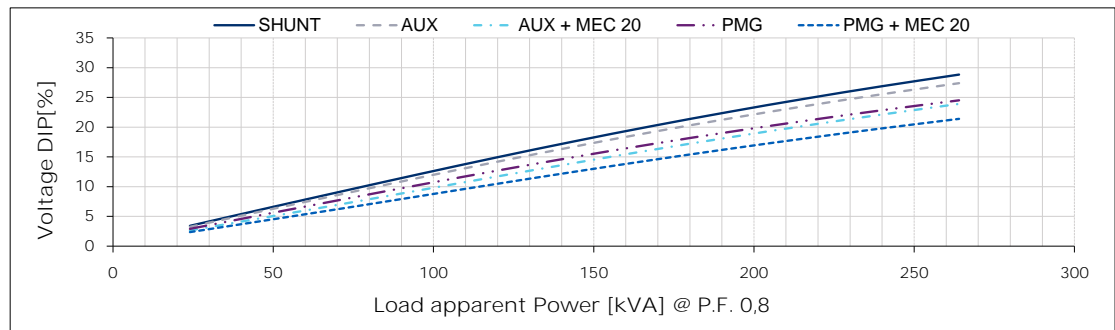
416 V



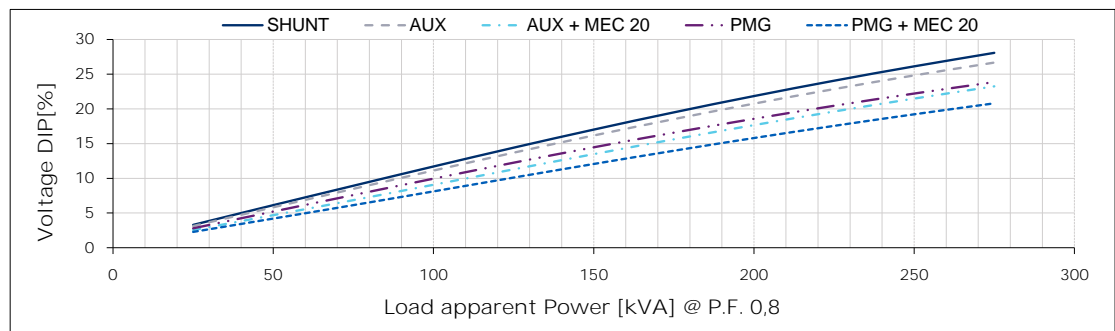
440 V



460 V



480 V

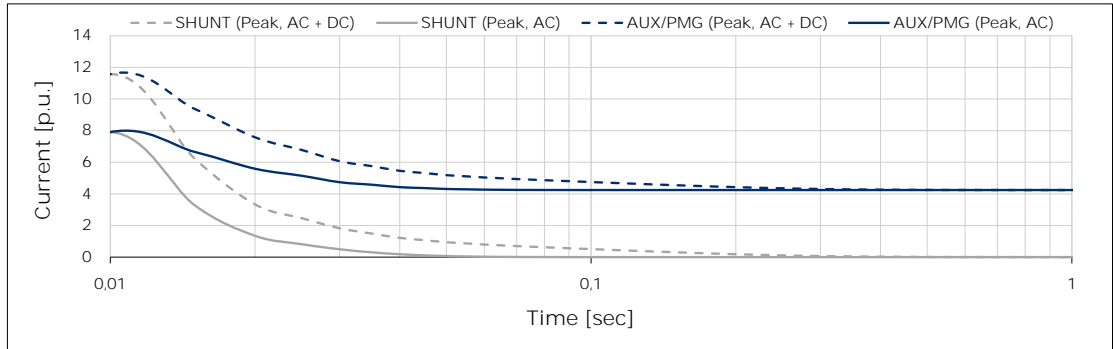


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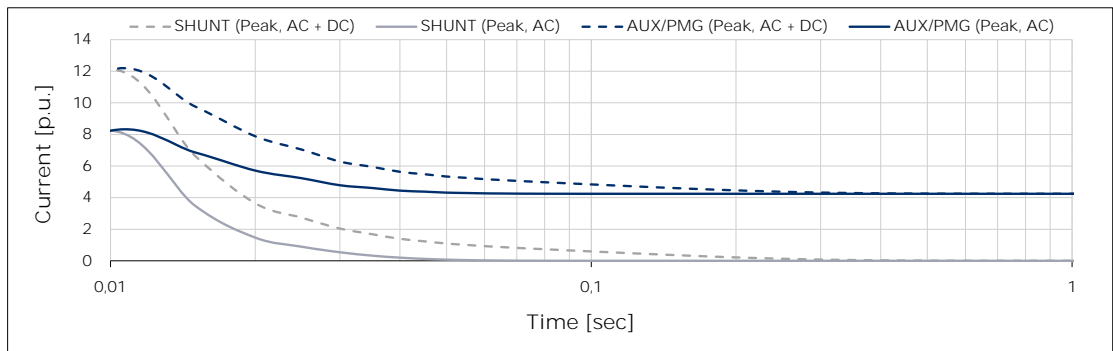
Typical 3-phase short circuit decrement curves

50 Hz - 1500 min<sup>-1</sup>

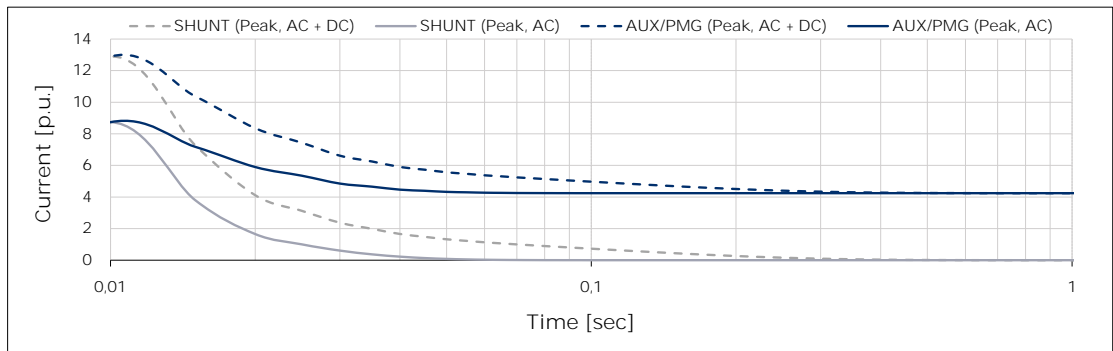
380 V



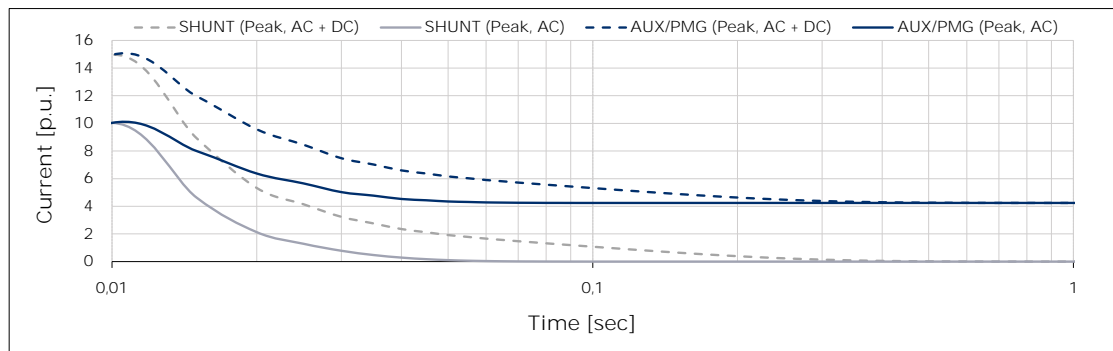
400 V



415 V



440 V

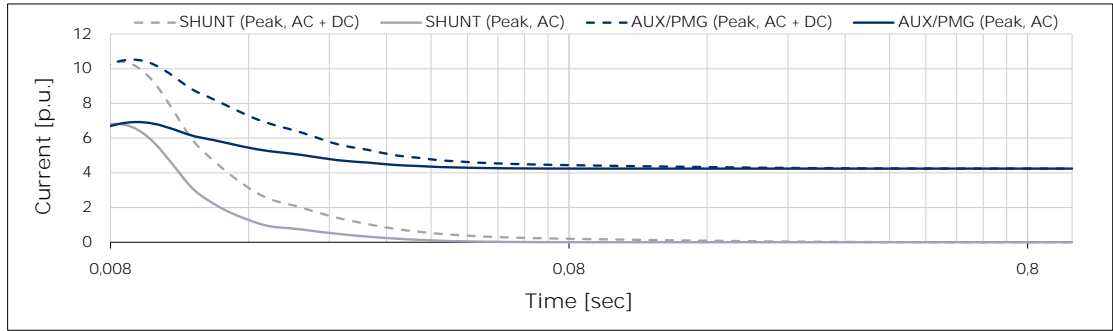




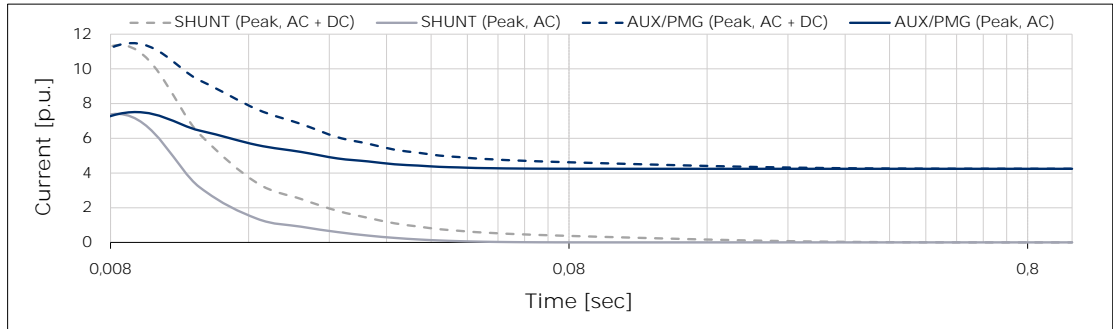
Typical 3-phase short circuit decrement curves

60 Hz - 1800 min<sup>-1</sup>

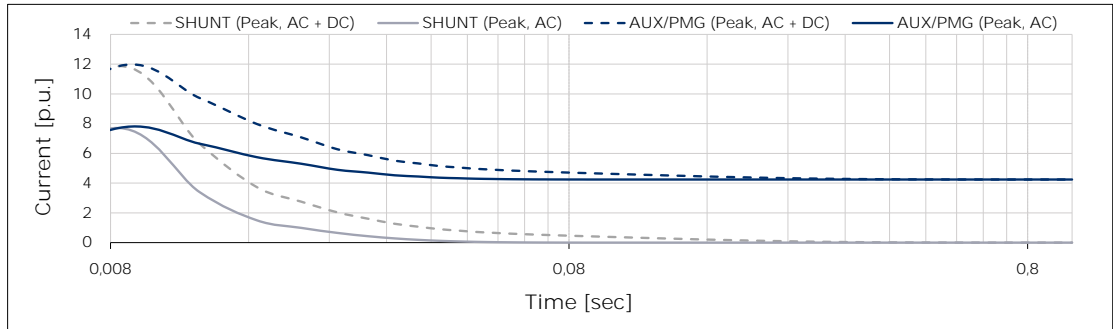
380 V



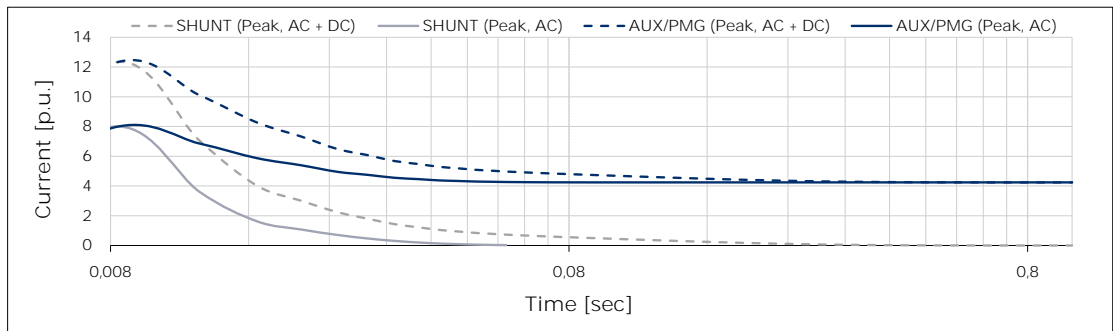
416 V



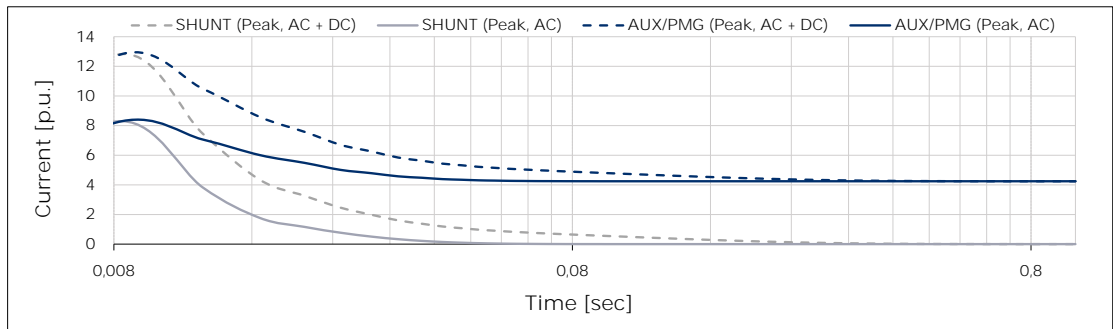
440 V



460 V



480 V



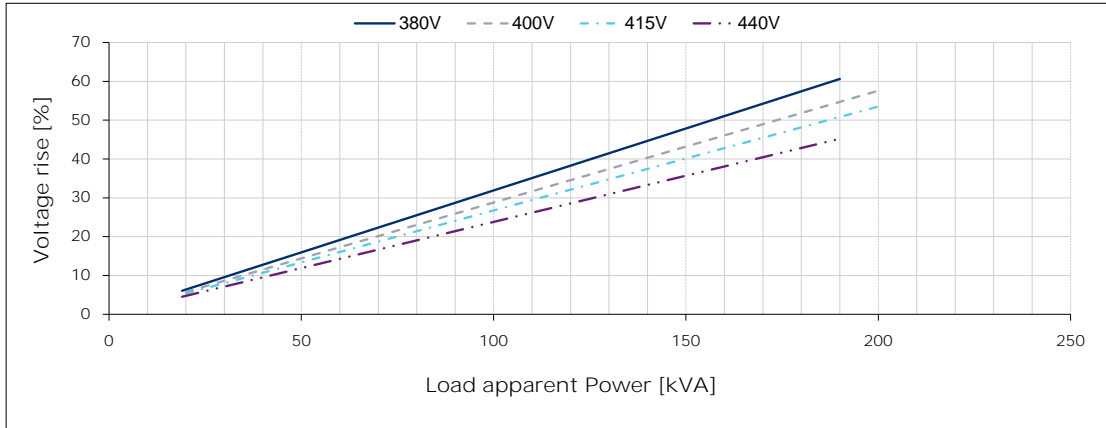
Above curves are based on a three-phase short circuit  
For other type of short circuit use the following multiplication factors

	2 phase	1 phase
Instantaneous (max)	0,97	1,22
Continuous	1,50	1,83

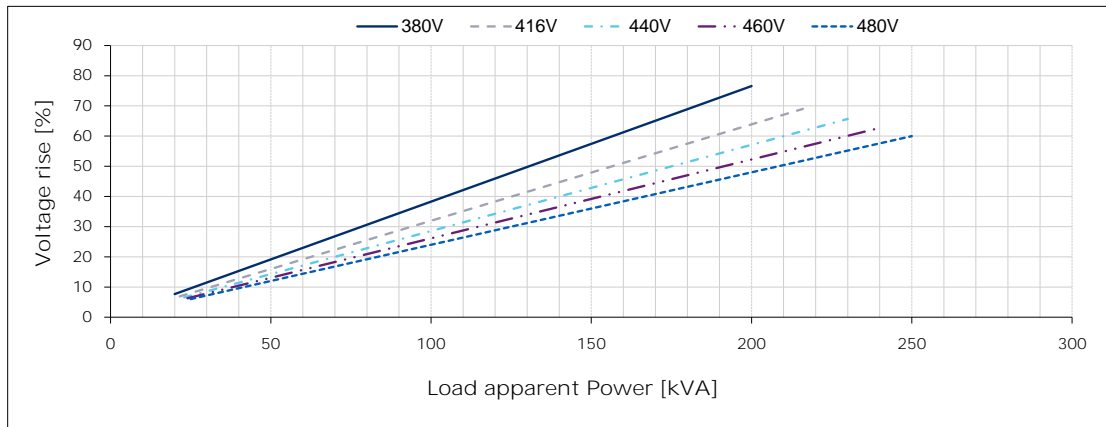
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Typical load rejection curves

50 Hz - 1500 min-1



60 Hz - 1800 min-1



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