

THREE-PHASE SYNCHRONOUS GENERATOR
MXB-E 250 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	MO	
INSULATION CLASS	H	Number of leads	12	
POWER FACTOR	0,8	Winding pitch	2/3	
FREQUENCY	Hz	50		60
VOLTAGE	Star series Star parallel	V	380 400 415 440 190 200 208 220	380 416 440 460 480 190 208 220 230 240
RATING	kVA kW		240 250 240 220 192 200 192 176	250 271 286 299 313 200 217 229 239 250
EFFICIENCY (%) @ 0,8 p.f.	4/4 3/4 2/4		92,7 92,8 93,0 92,9 93,6 93,6 93,6 93,3 94,1 94,0 93,8 93,1	92,6 93,0 93,2 93,3 93,4 93,5 93,8 93,9 94,0 94,0 93,9 94,1 94,2 94,2 94,2
EFFICIENCY (%) @ 1,0 p.f.	4/4 3/4 2/4		94,6 94,7 95,0 95,2 95,3 95,4 95,5 95,4 95,7 95,7 95,6 95,1	94,3 94,6 94,8 95,0 95,1 95,0 95,3 95,4 95,5 95,6 95,4 95,6 95,6 95,7 95,7
STAND-BY RATING (163/27)	kVA		264 275 264 242	275 298 315 329 344
STAND-BY EFFICIENCY (%) @ 0,8 p.f.			92,3 92,5 92,7 92,8	92,2 92,7 92,9 93,0 93,1
SHORT CIRCUIT RATIO (referred to class H rating)			0,47 0,50 0,56 0,68	0,37 0,41 0,44 0,46 0,48
REACTANCES (%) (referred to class H rating)				
Direct axis synchronous	x _d		304 286 255 208	380 344 324 310 298
Quadrature axis synchronous	x _q		126 118 105 86	157 142 134 128 123
Direct axis transient	x' _d		17,8 16,8 14,9 12,2	22,3 20,1 19,0 18,2 17,5
Direct axis subtransient	x'' _d		12,6 11,8 10,5 8,6	15,7 14,2 13,4 12,8 12,3
Quadrature axis subtransient	x'' _q		13,8 13,0 11,6 9,4	17,3 15,6 14,7 14,1 13,6
Negative sequence	x ₂		13,2 12,4 11,1 9,0	16,5 14,9 14,1 13,5 12,9
Zero sequence	x ₀		5,2 4,8 4,3 3,5	6,4 5,8 5,5 5,3 5,1

TIME CONSTANTS [s]

Open circuit (T' _{do})	1,078	Subtransient (T'' _d)	0,008
Transient (T' _d)	0,107	Armature (T _a)	0,012

MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	Available on double bearing configuration (on request)
N-end bearing/Lubrication	6313 2Z C3 / Prelubricated
Weight [kg]	652
Inertia (J) [kgm ²]	2,09
Overspeed [min ⁻¹]	2250
Method of cooling	IC 01
Cooling air required [m ³ /s] @ 50/60 Hz	1,7 / 2,1
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	0,014
Overloads	10% for 1 hour
3-phase short circuit current	>= 300% (3 I _n) 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

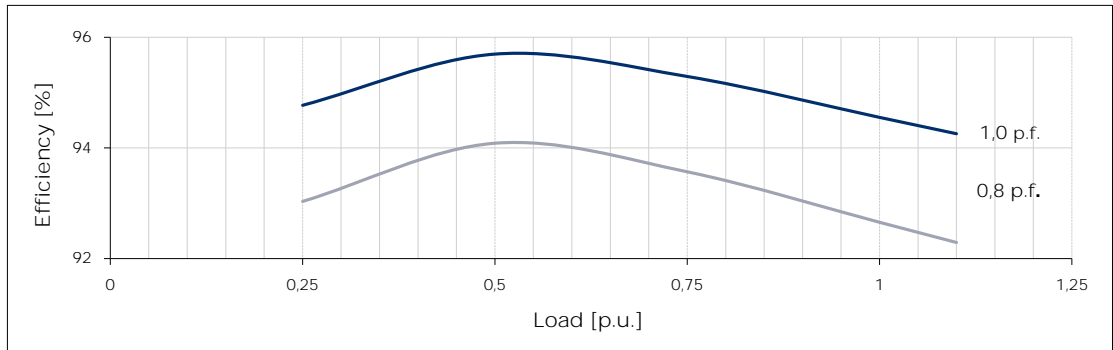
IEC 60034-1; BS 4999-5000; NEMA MG 1.32.
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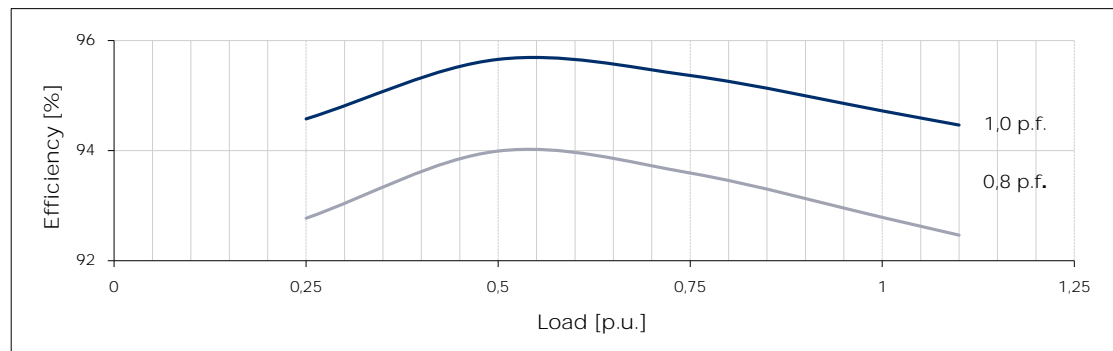
Typical efficiency curves

50 Hz - 1500 min⁻¹

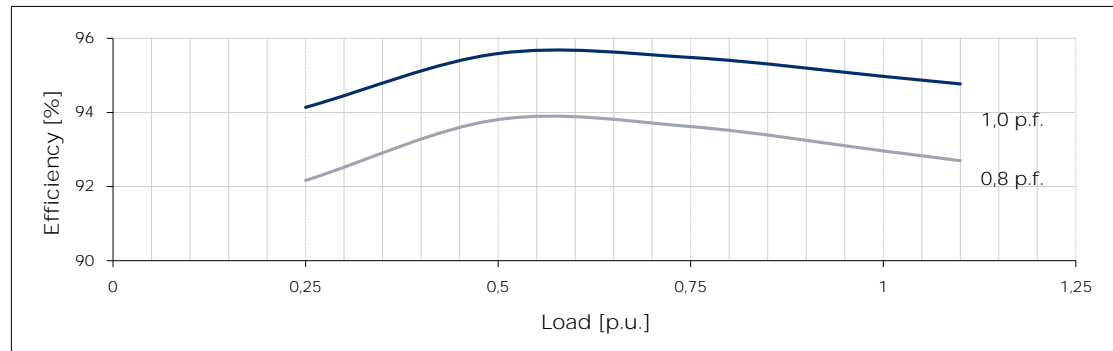
380 V



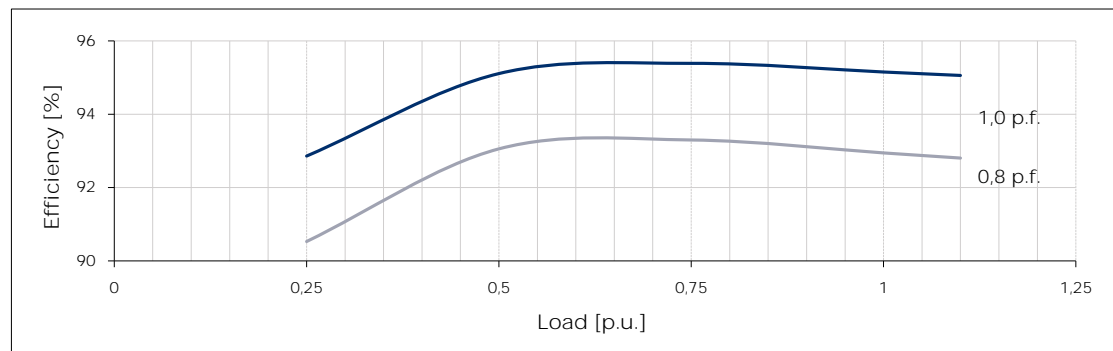
400 V



415 V



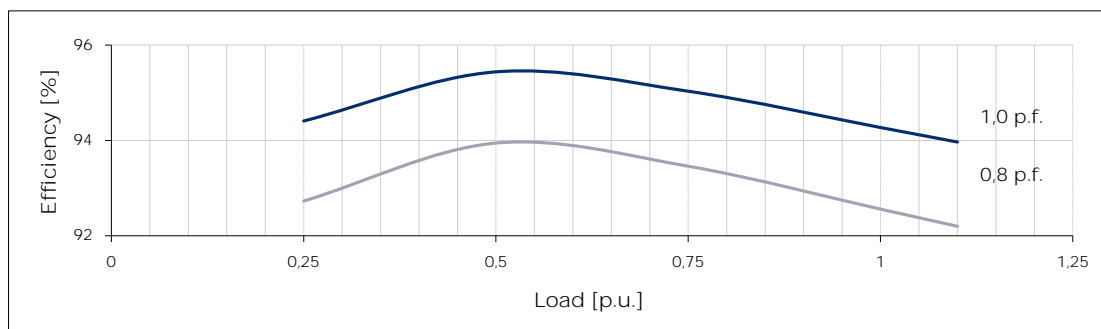
440 V



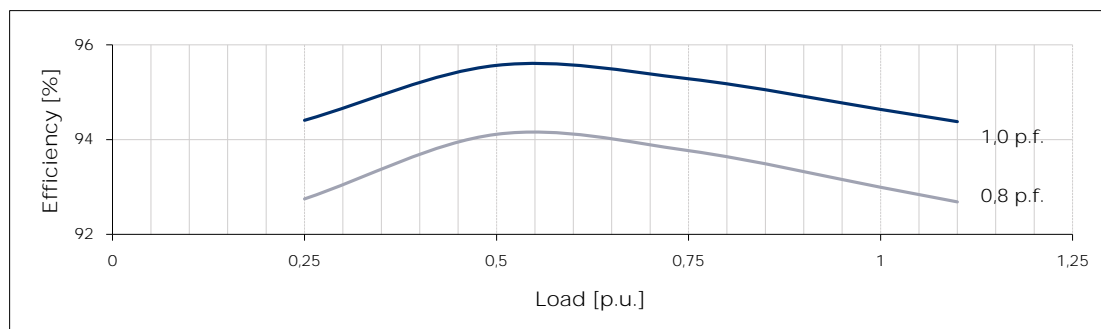
Typical efficiency curves

60 Hz - 1800 min⁻¹

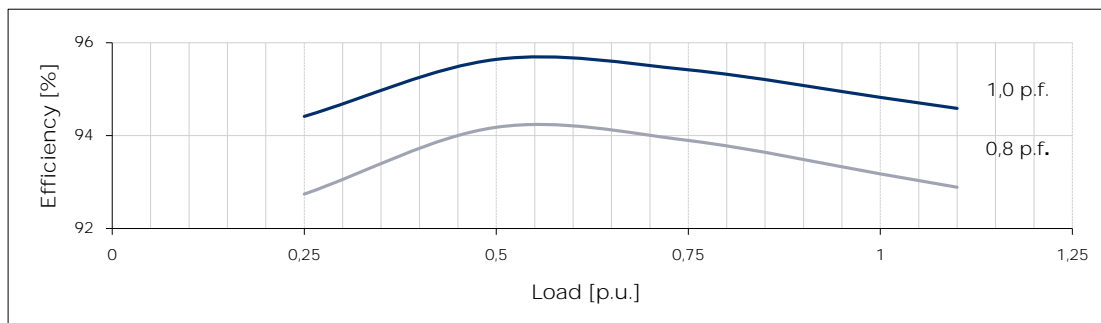
380 V



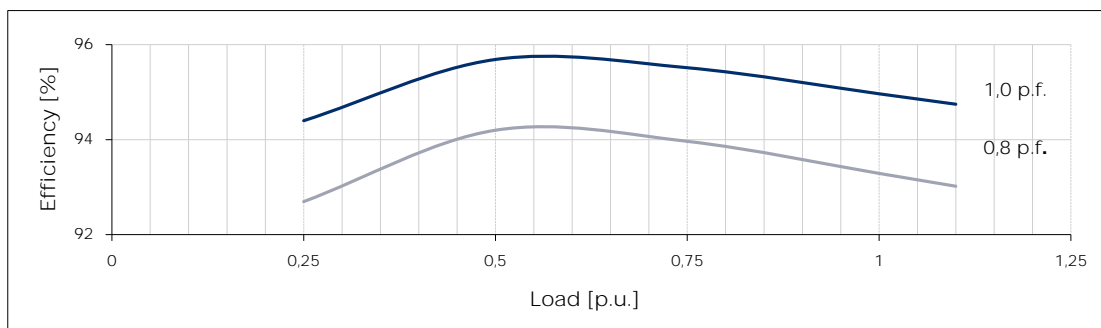
416 V



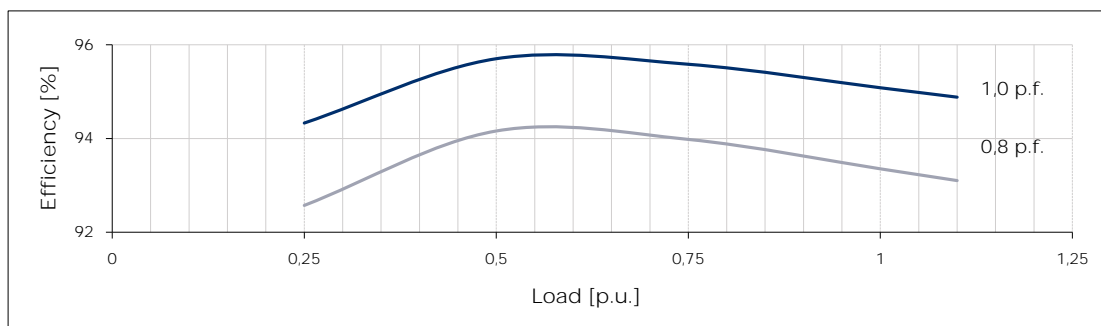
440 V



460 V



480 V





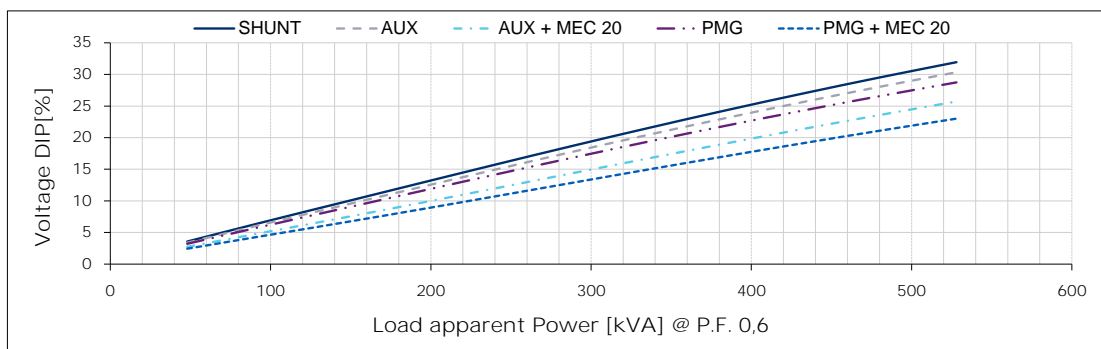
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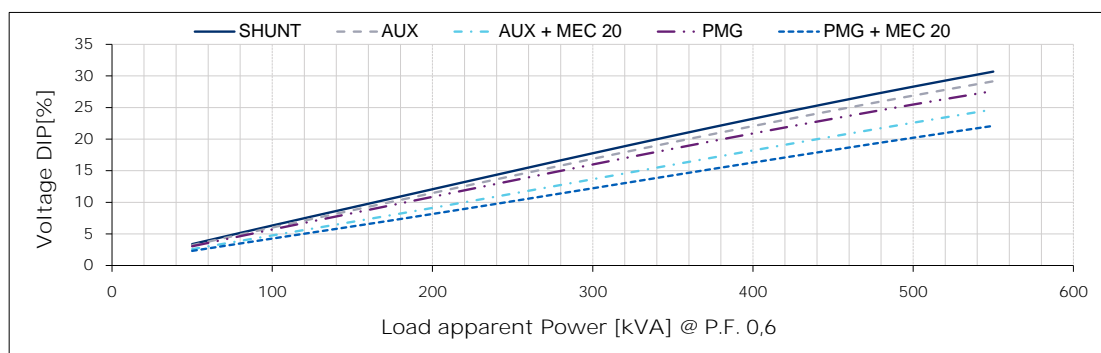
Typical voltage DIP curves

50 Hz - 1500 min⁻¹

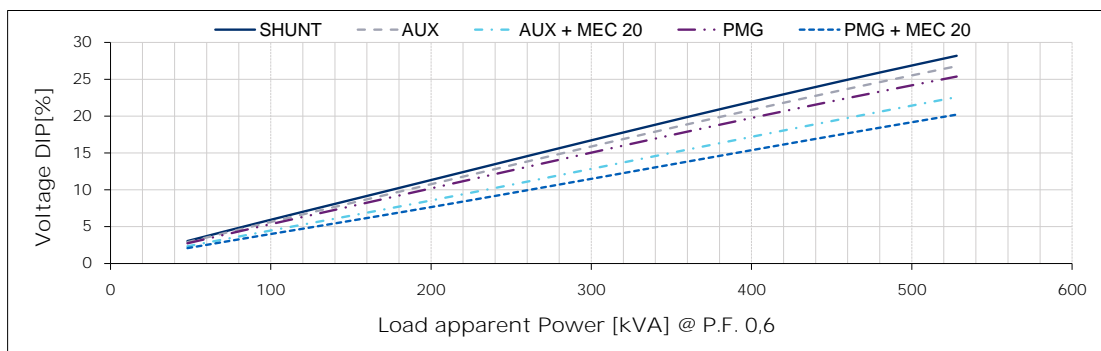
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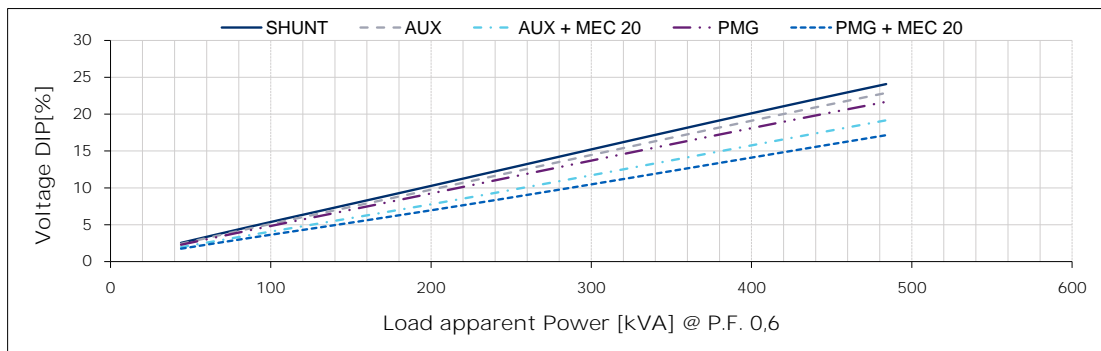
400 V



415 V



440 V





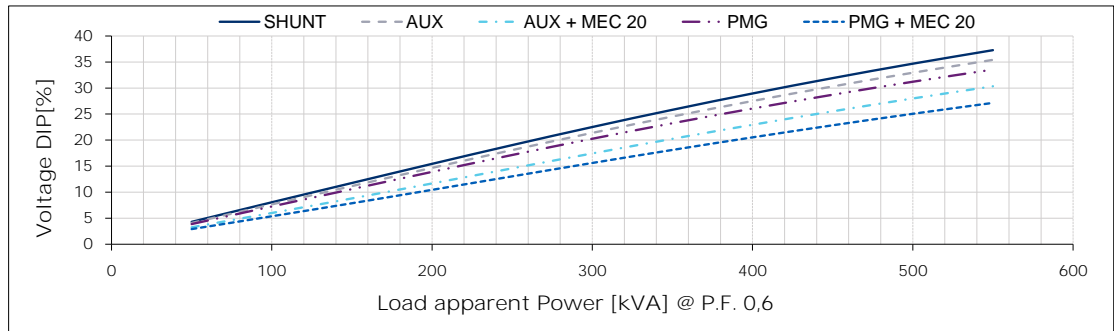
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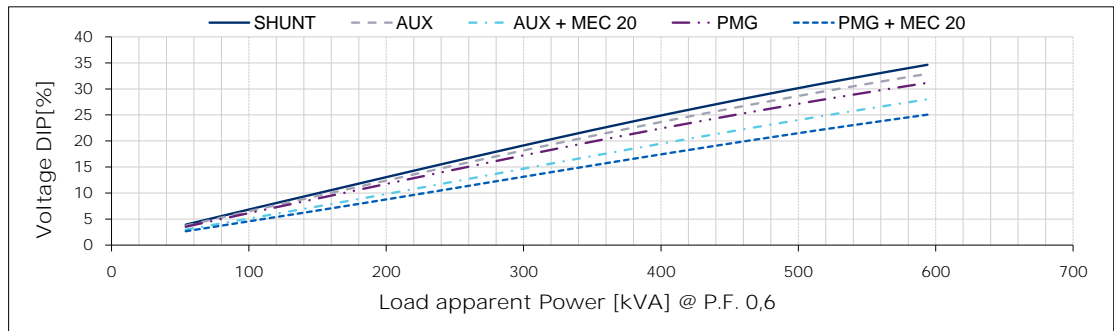
Typical voltage DIP curves

60 Hz - 1800 min⁻¹

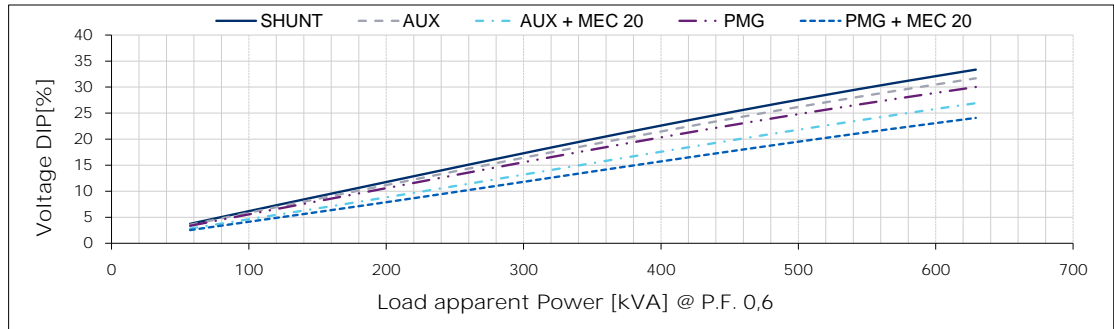
380 V



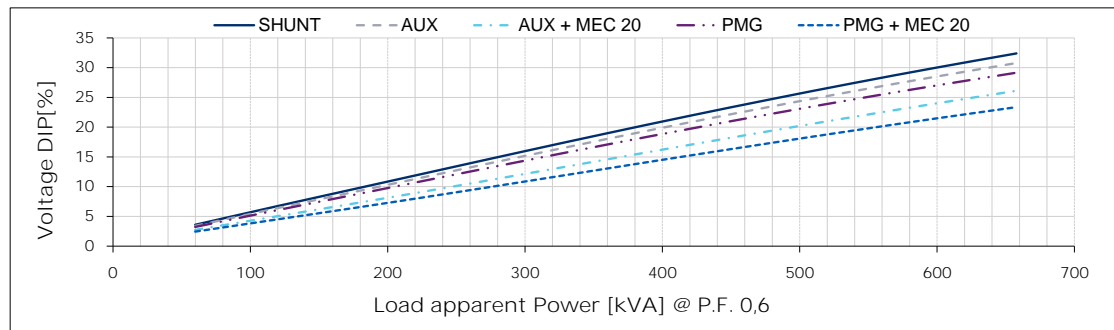
416 V



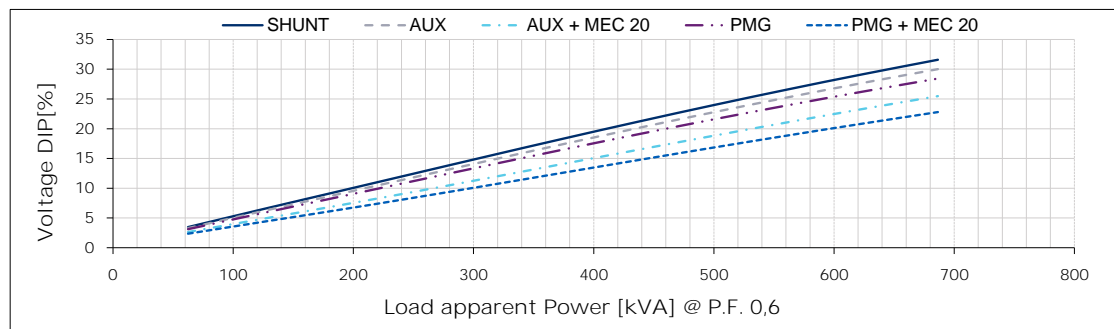
440 V



460 V



480 V



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

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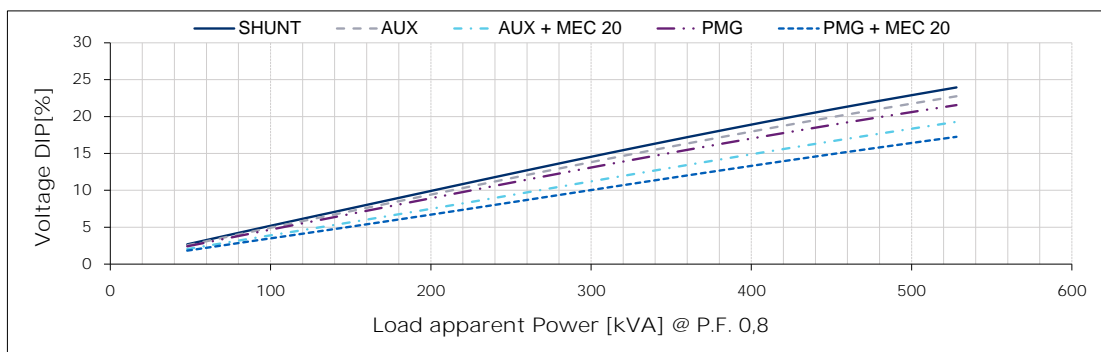
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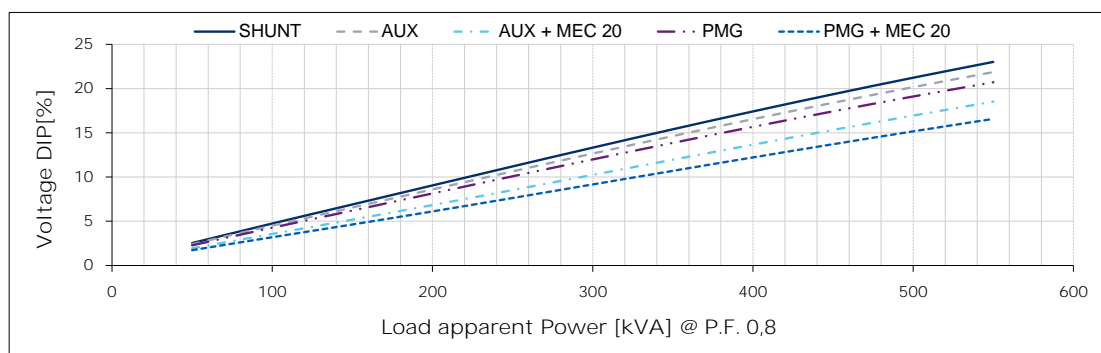
Typical voltage DIP curves

50 Hz - 1500 min⁻¹

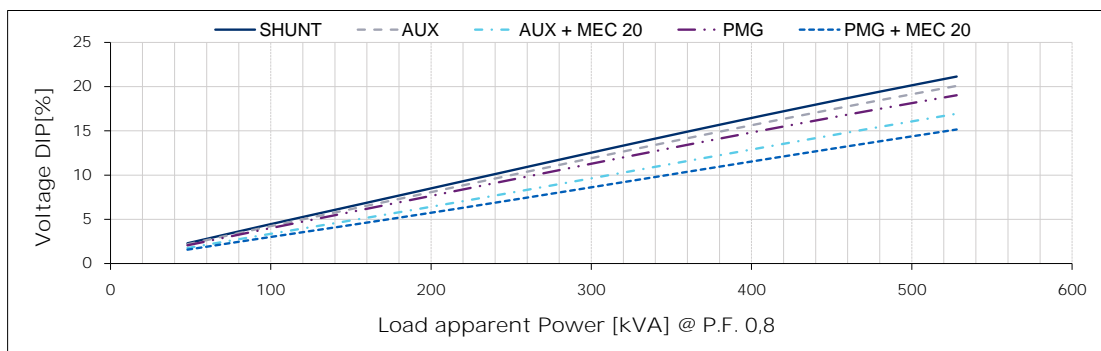
380 V



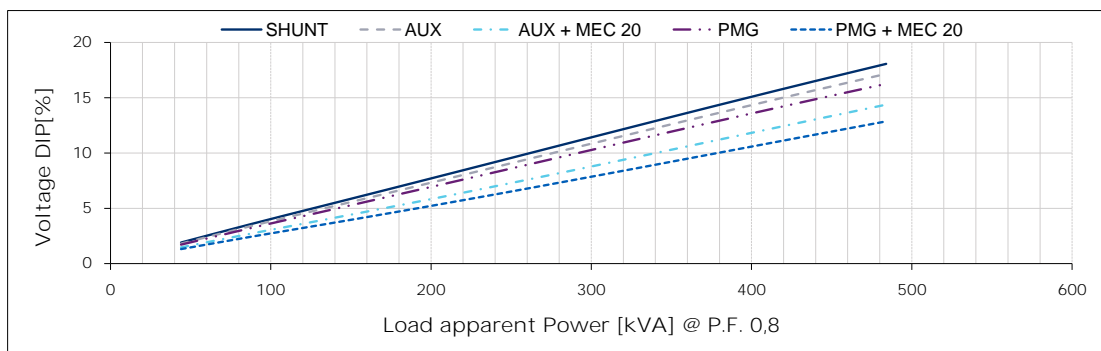
400 V



415 V



440 V





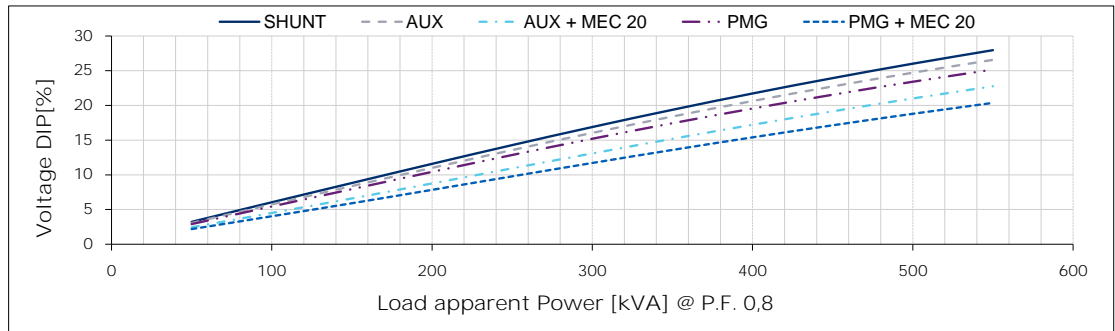
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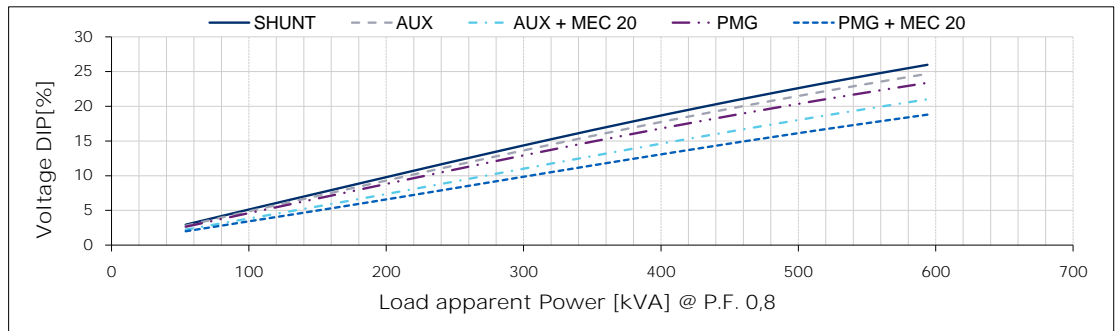
Typical voltage DIP curves

60 Hz - 1800 min⁻¹

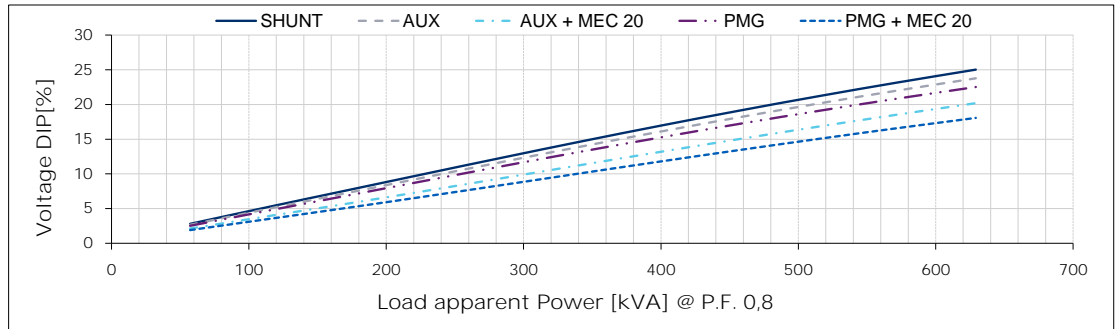
380 V



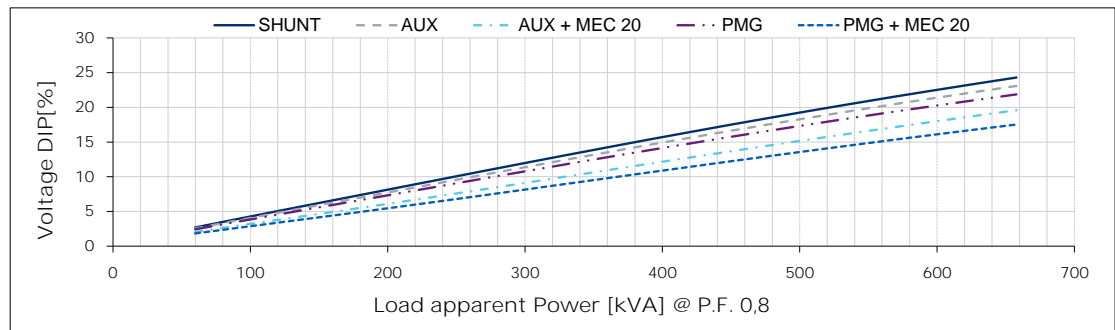
416 V



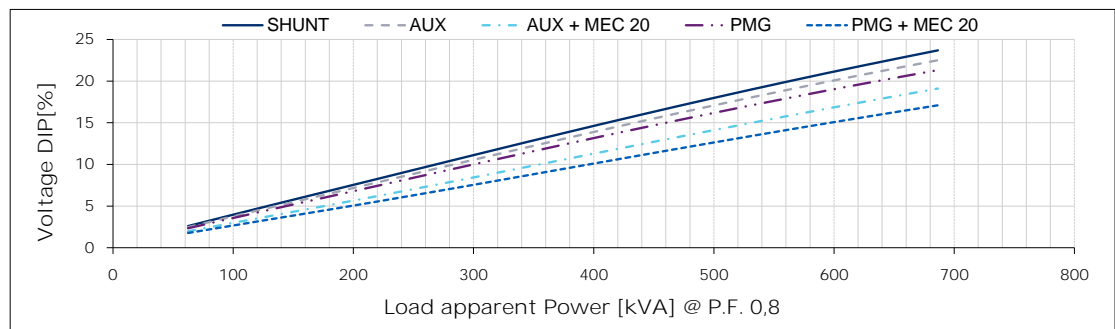
440 V



460 V



480 V

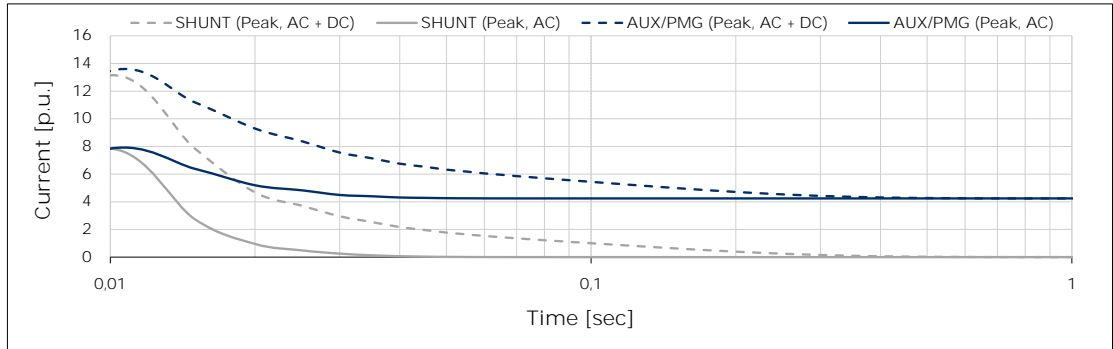


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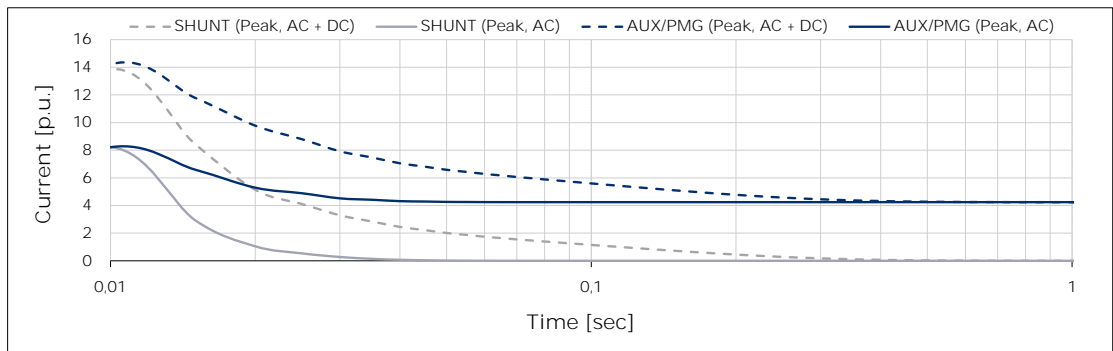
Typical 3-phase short circuit decrement curves

50 Hz - 1500 min⁻¹

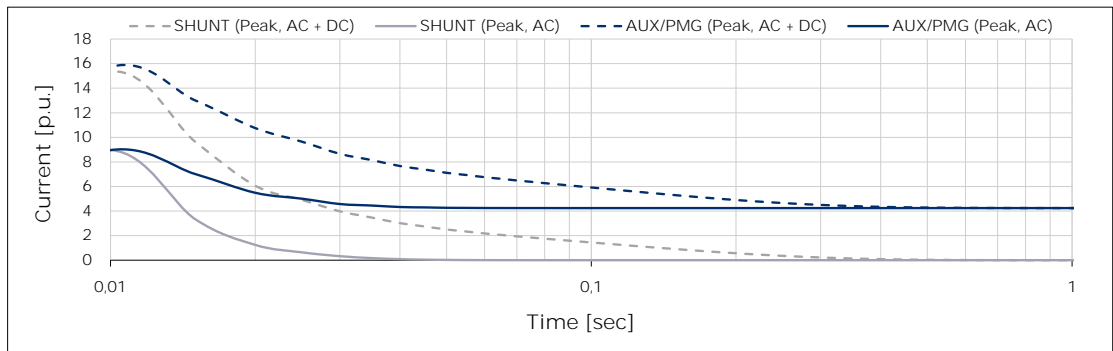
380 V



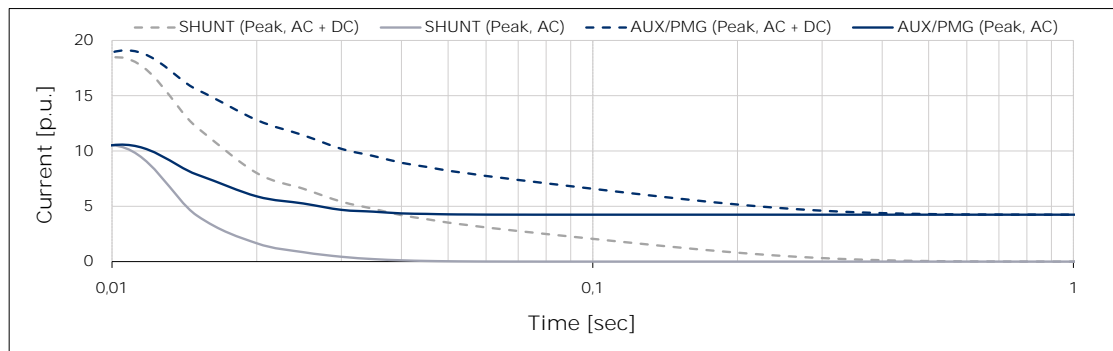
400 V



415 V



440 V





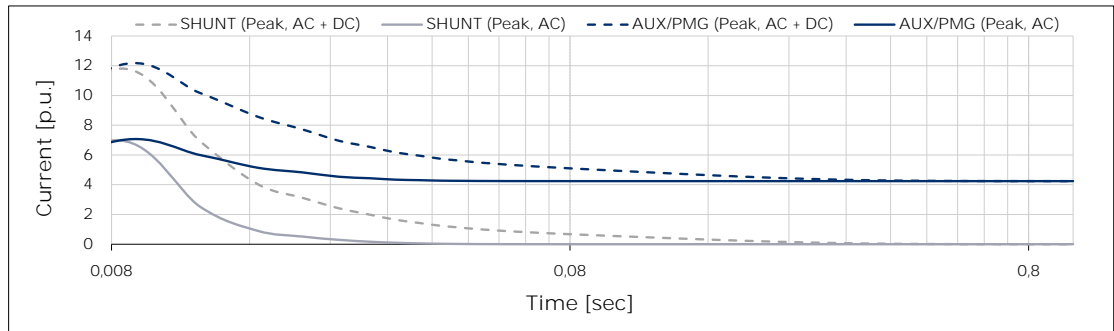
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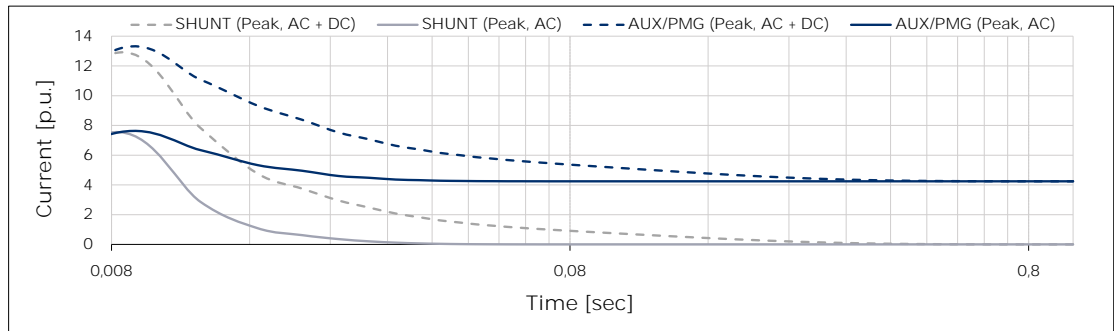
Typical 3-phase short circuit decrement curves

60 Hz - 1800 min⁻¹

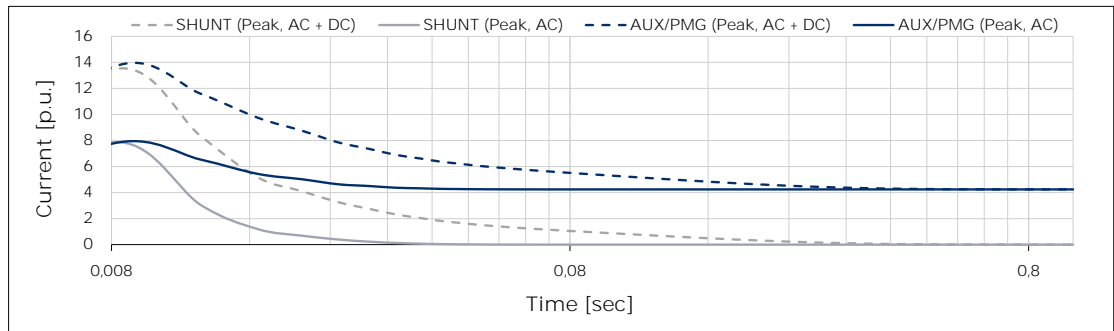
380 V



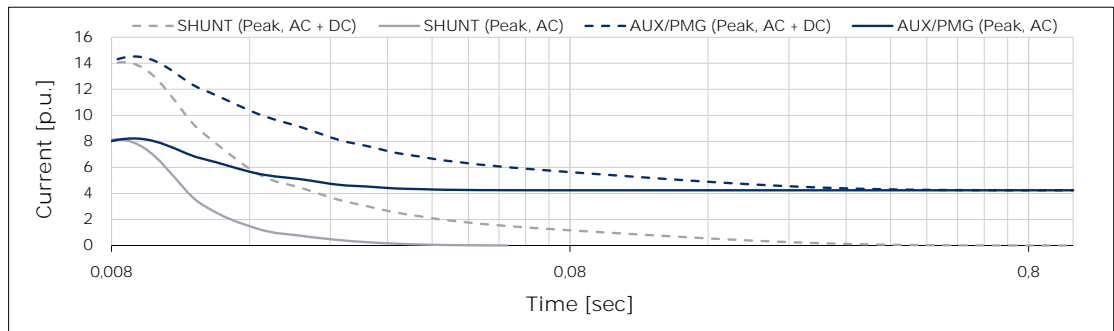
416 V



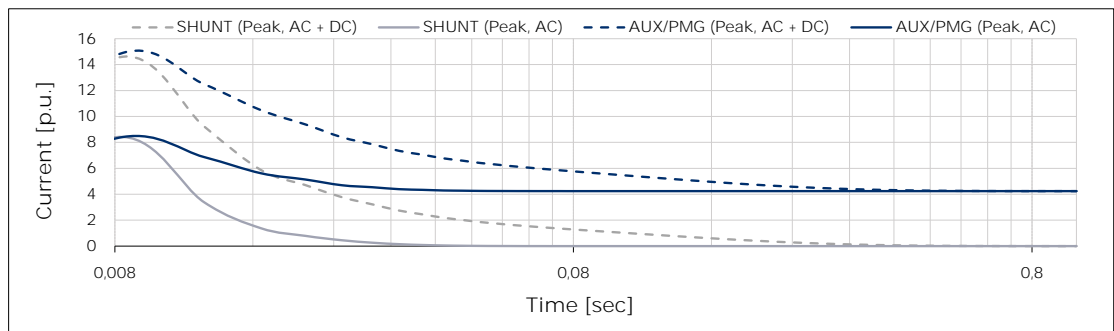
440 V



460 V



480 V



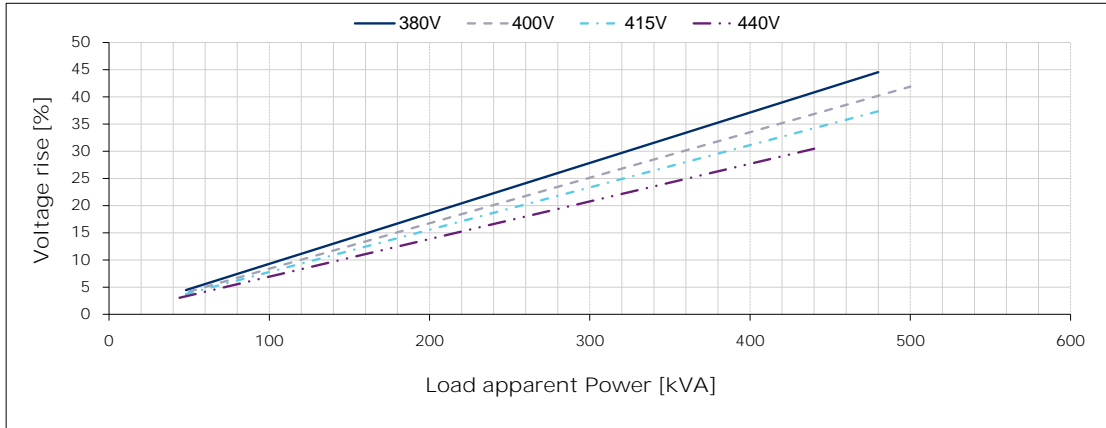
Above curves are based on a three-phase short circuit
For other type of short circuit use the following multiplication factors

	2 phase	1 phase
Instantaneous (max)	0,90	1,14
Continuous	1,50	1,83

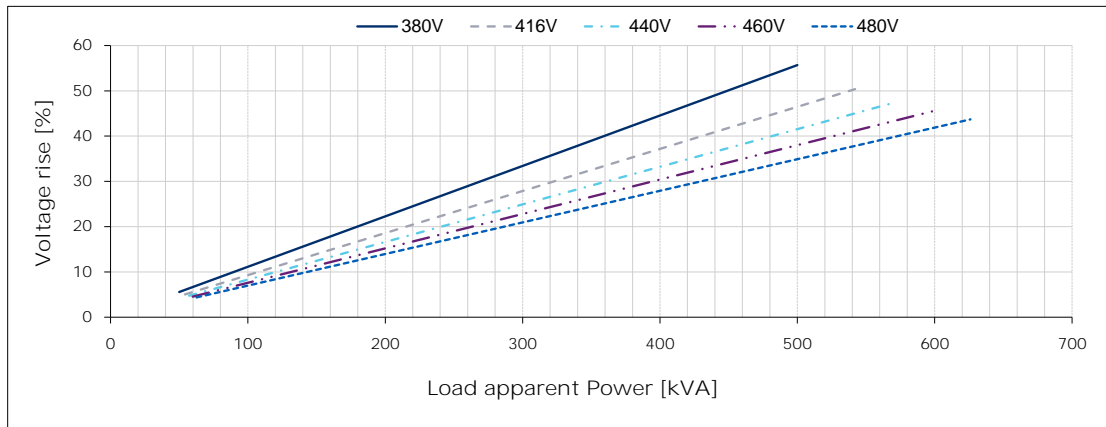
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Typical load rejection curves

50 Hz - 1500 min-1



60 Hz - 1800 min-1



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