

THREE-PHASE SYNCHRONOUS GENERATOR

MXB-E 180 XB 4

4 POLES

CONTINUOUS DUTY

50 Hz-1500 min⁻¹ / 60 Hz-1800 min⁻¹

AMBIENT TEMPERATURE TEMPERATURE RISE INSULATION CLASS POWER FACTOR	40°C H H 0,8	WINDING DATA								
		Winding code Number of leads Winding pitch								
										M0 12 2/3
FREQUENCY	Hz	50				60				
VOLTAGE	Star series	380	400	415	440	380	416	440	460	480
	Star parallel	190	200	208	220	190	208	220	230	240
RATING	kVA	29,1	30,0	30,0	28,5	30,0	32,5	34,4	35,9	37,5
	kW	23,3	24,0	24,0	22,8	24,0	26,0	27,5	28,7	30,0
EFFICIENCY (%) @ 0,8 p.f.	4/4	86,8	87,0	87,3	87,4	86,7	87,5	87,9	88,1	88,2
	3/4	88,5	88,7	88,8	88,6	88,4	89,0	89,3	89,5	89,6
	2/4	89,8	89,8	89,7	89,1	89,6	90,0	90,2	90,3	90,4
EFFICIENCY (%) @ 1,0 p.f.	4/4	90,3	90,8	91,1	91,6	89,9	90,6	91,0	91,3	91,5
	3/4	91,8	92,1	92,3	92,5	91,4	92,0	92,3	92,5	92,6
	2/4	92,9	93,0	93,0	92,6	92,5	92,8	93,0	93,1	93,2
STAND-BY RATING (163/27)	kVA	32,0	33,0	33,0	31,4	33,0	35,8	37,8	39,5	41,3
STAND-BY EFFICIENCY (%) @ 0,8 p.f.		86,0	86,4	86,7	86,9	86,0	86,9	87,3	87,5	87,7
SHORT CIRCUIT RATIO (referred to class H rating)		0,41	0,44	0,47	0,56	0,33	0,36	0,39	0,40	0,42
REACTANCES (%) (referred to class H rating)										
Direct axis synchronous	x _d	287	267	248	210	355	321	303	290	278
Quadrature axis synchronous	x _q	131	122	113	96	162	147	139	132	127
Direct axis transient	x' _d	20,6	19,2	17,8	15,1	25,5	23,1	21,8	20,9	20,0
Direct axis subtransient	x'' _d	13,8	12,9	12,0	10,1	17,1	15,5	14,6	14,0	13,4
Quadrature axis subtransient	x'' _q	15,2	14,2	13,2	11,1	18,8	17,0	16,1	15,4	14,7
Negative sequence	x ₂	14,5	13,5	12,6	10,6	18,0	16,2	15,4	14,7	14,1
Zero sequence	x ₀	10,7	9,9	9,2	7,8	13,2	11,9	11,3	10,8	10,3

TIME CONSTANTS [s]

Open circuit (T' _{do})	0,513	Subtransient (T'' _d)	0,010
Transient (T' _d)	0,054	Armature (T _a)	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]	137
Inertia (J) [kgm ²]	0,22
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	0,239
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)

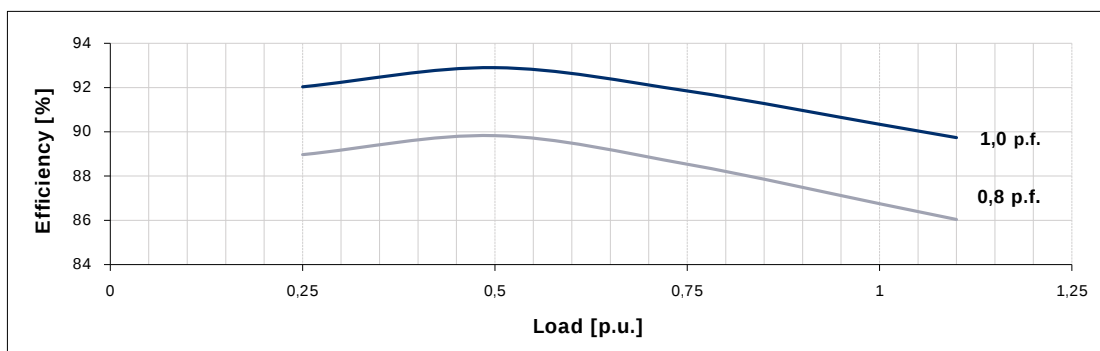
STANDARDS

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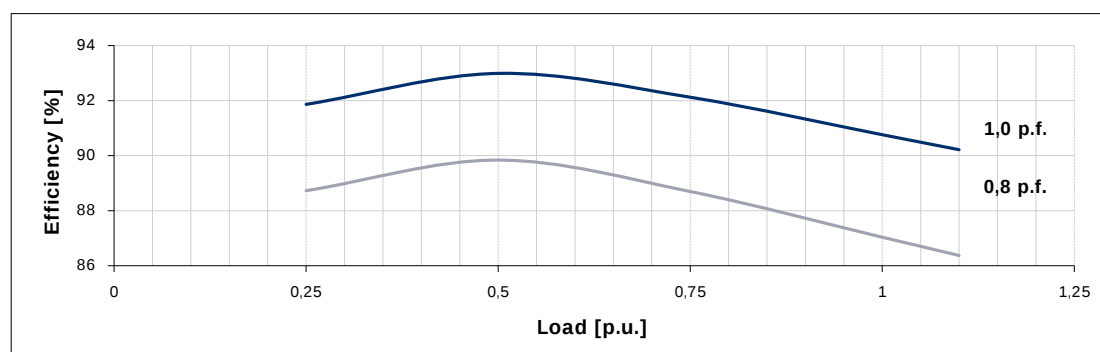
Typical efficiency curves

50 Hz - 1500 min⁻¹

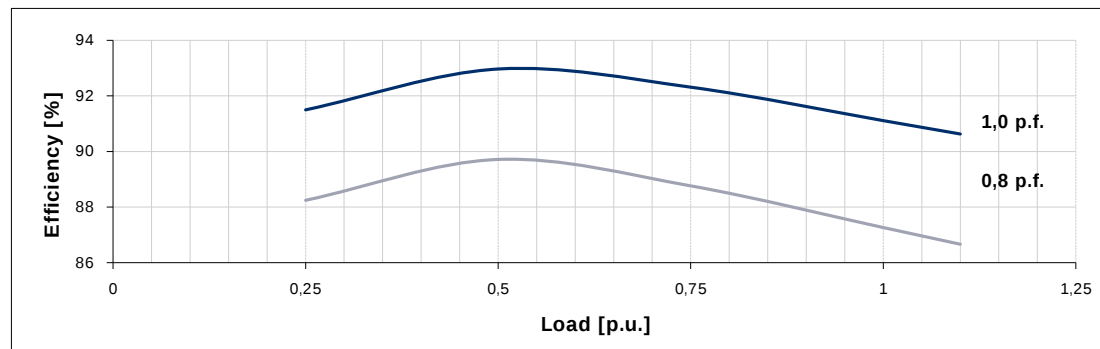
380 V



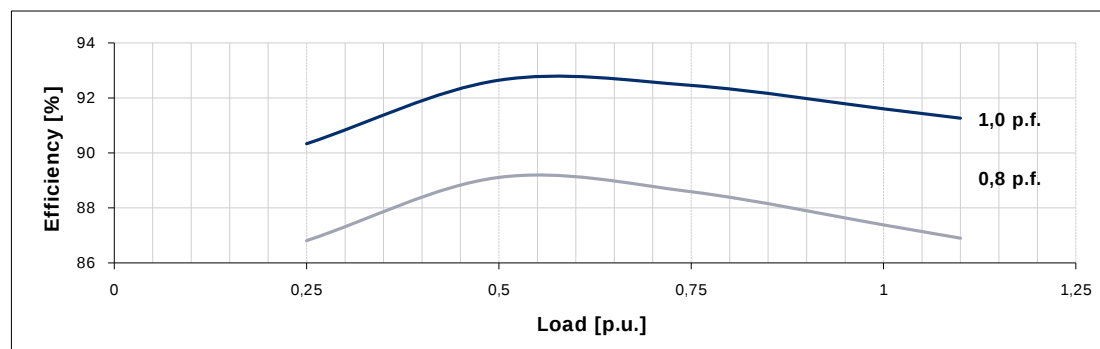
400 V



415 V



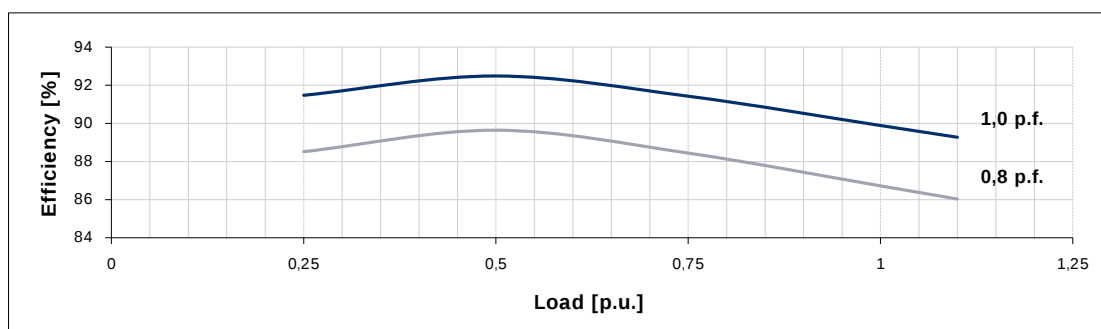
440 V



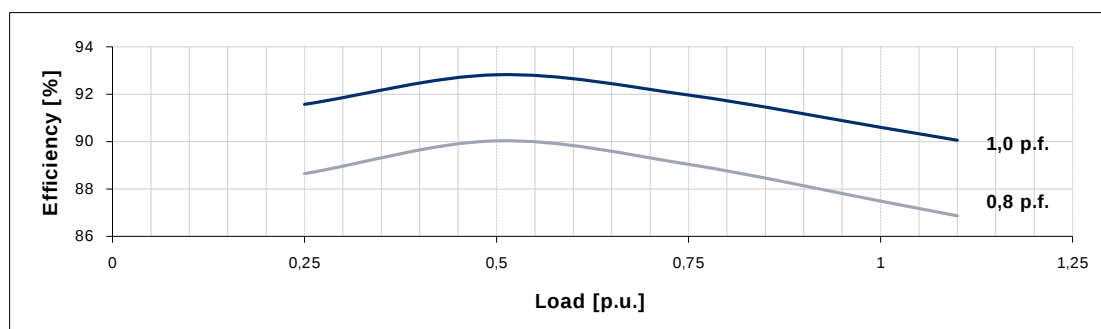
Typical efficiency curves

60 Hz - 1800 min⁻¹

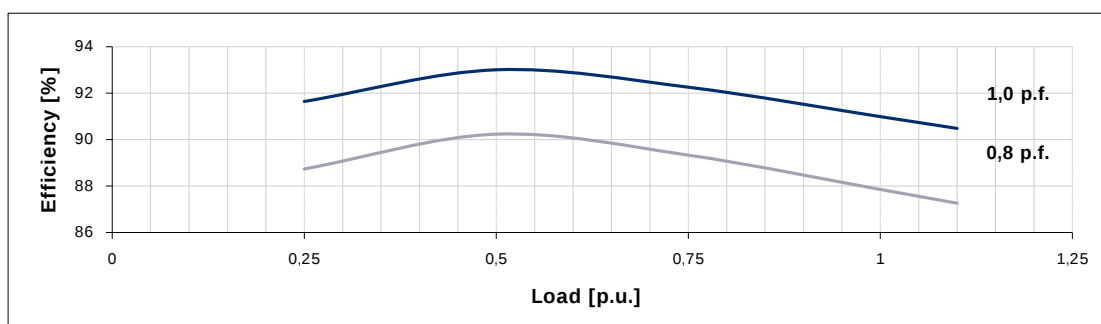
380 V



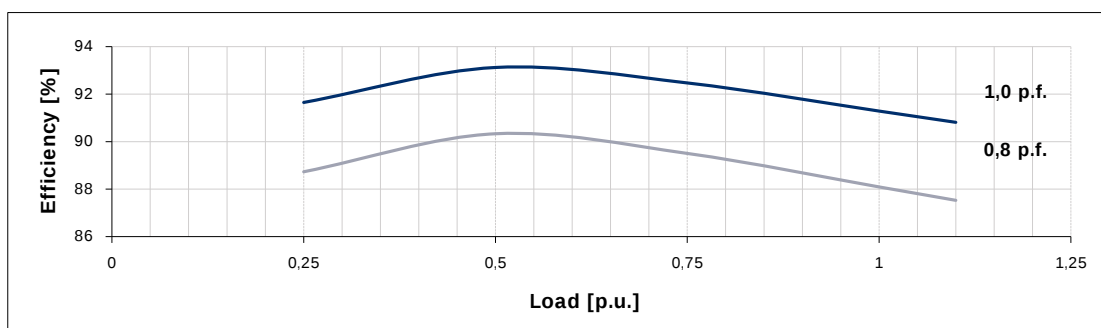
416 V



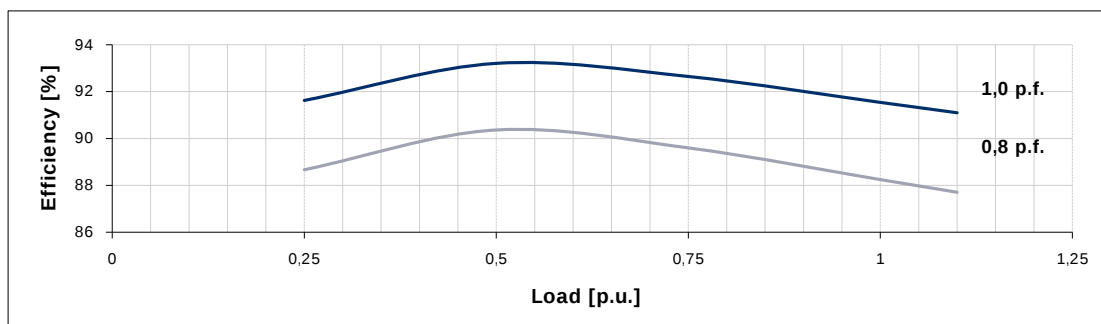
440 V



460 V



480 V

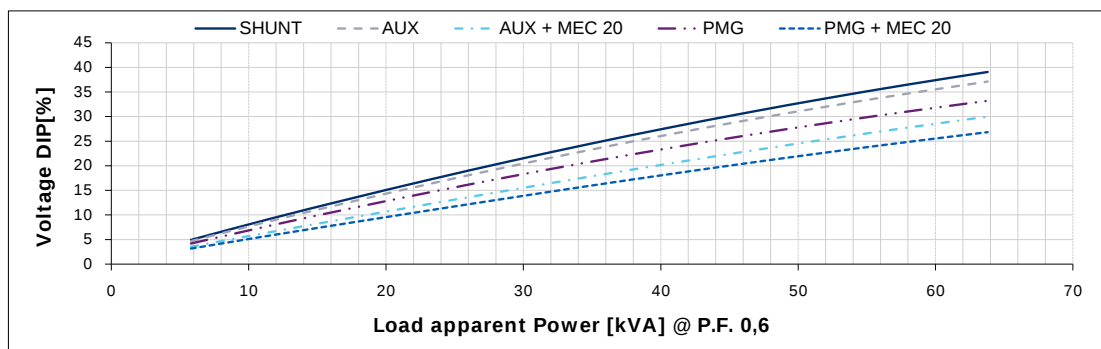


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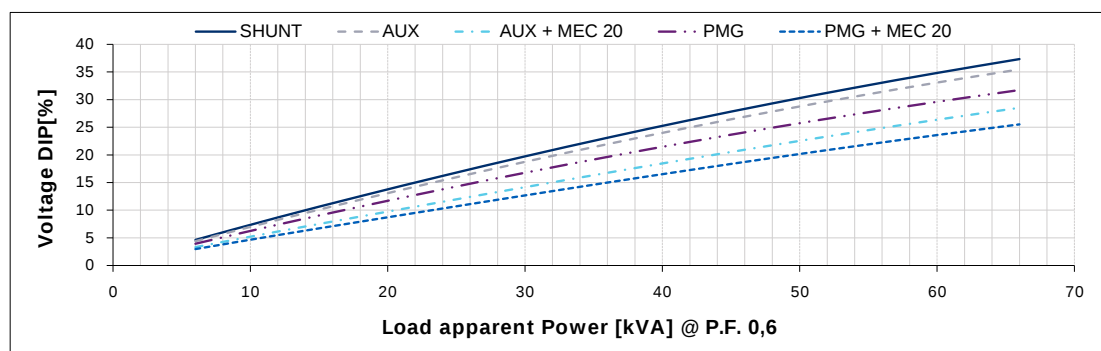
Typical voltage DIP curves

50 Hz - 1500 min⁻¹

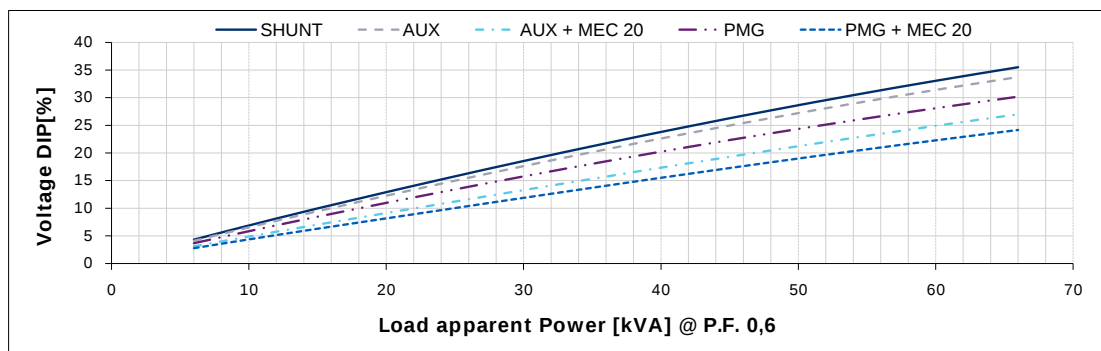
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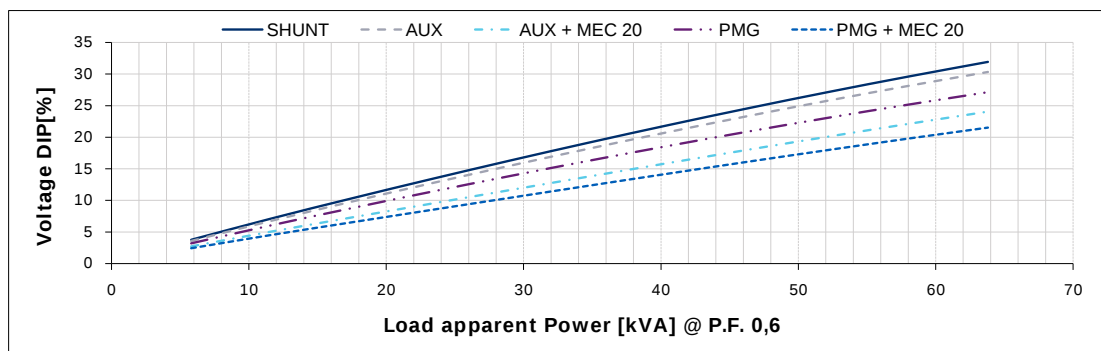
400 V



415 V



440 V

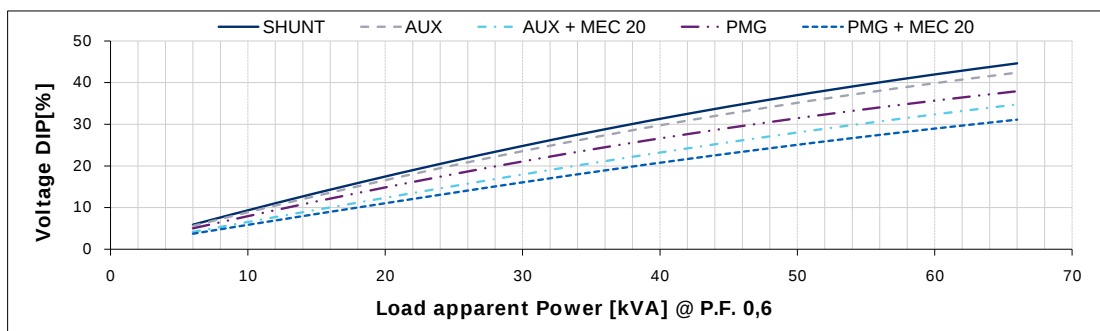


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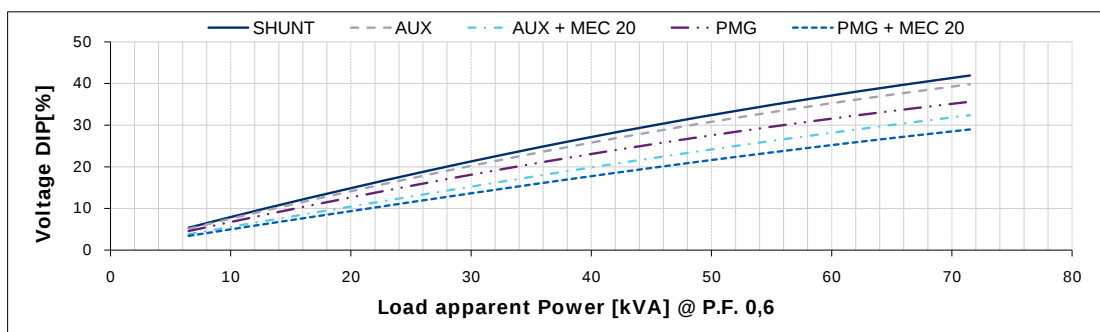
Typical voltage DIP curves

60 Hz - 1800 min⁻¹

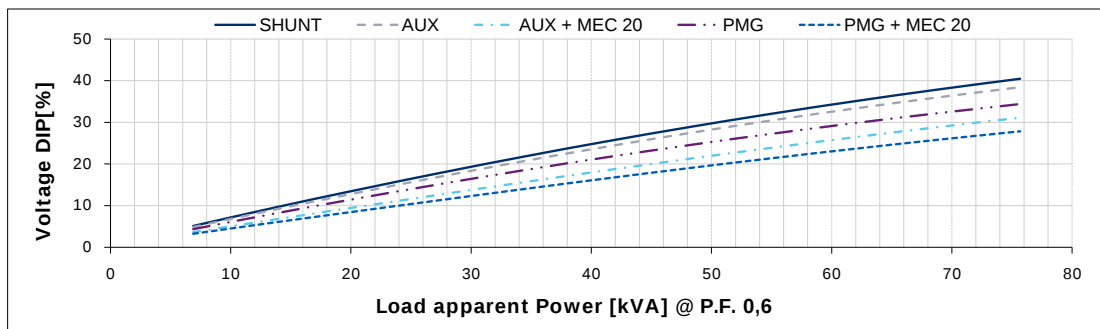
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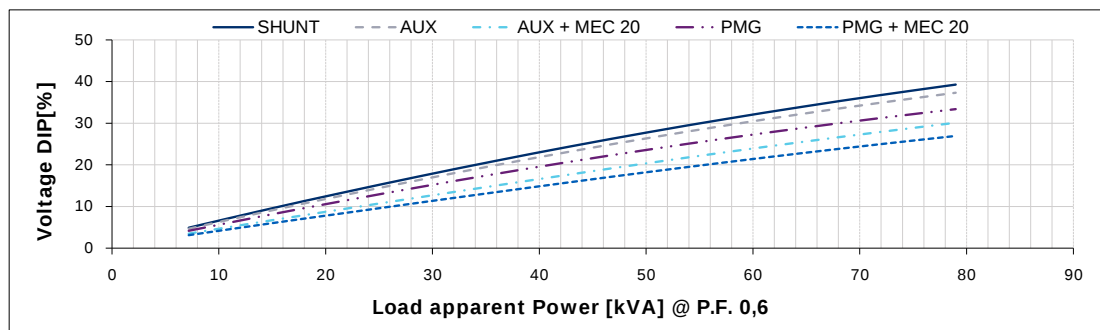
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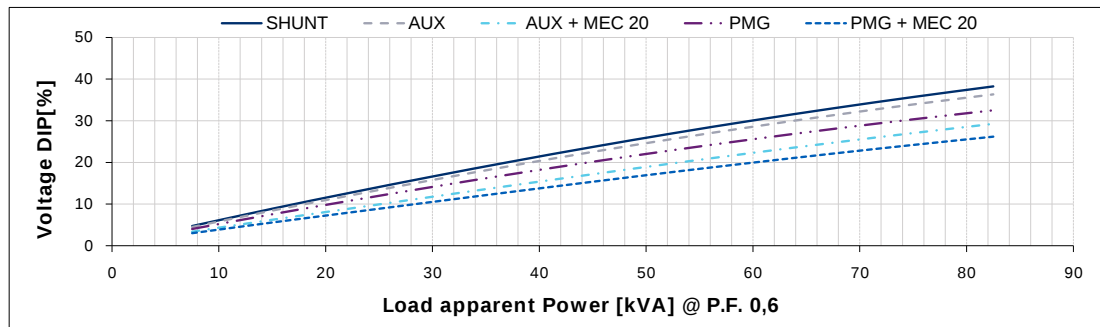
440 V



460 V



480 V



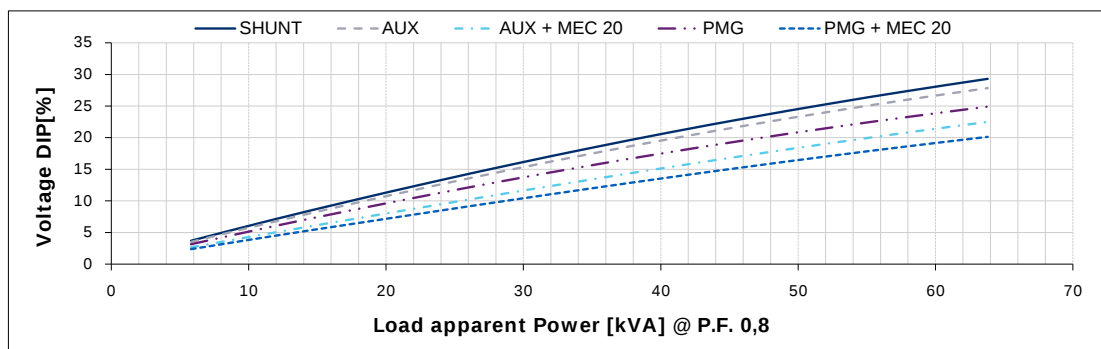
For P.F. different from 0,6 the following simplified formula can be used: $\Delta V (@ P.F.) = \Delta V (@ 0,6) \cdot \sin(\arccos(P.F.)) / 0,8$

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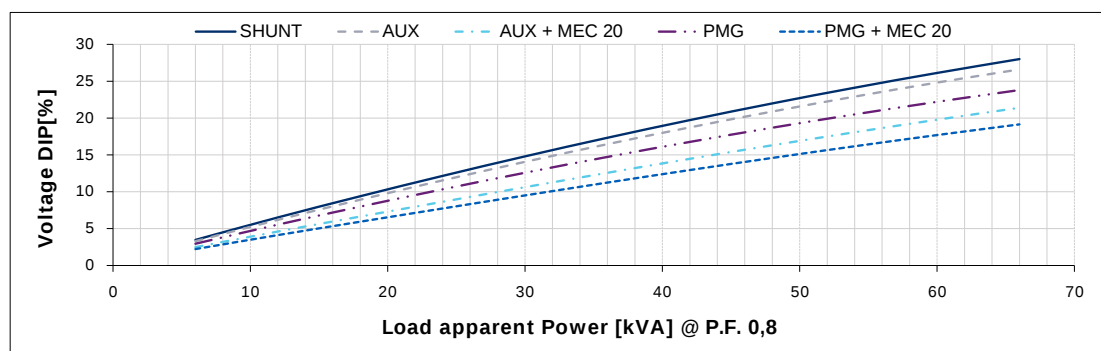
Typical voltage DIP curves

50 Hz - 1500 min⁻¹

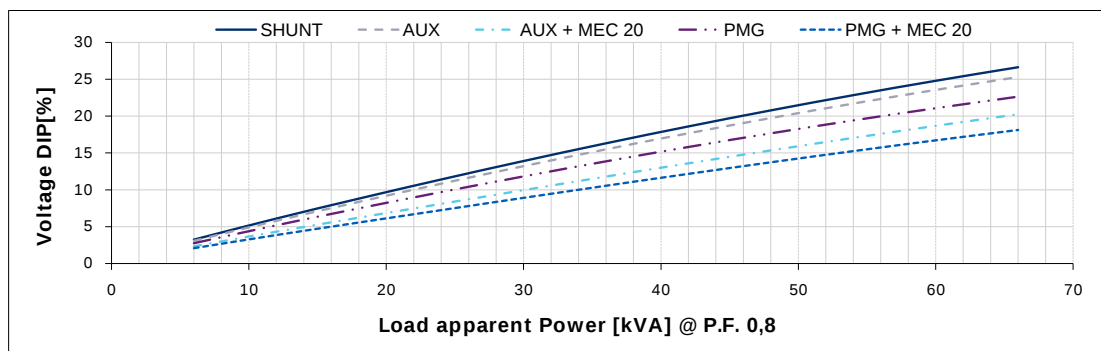
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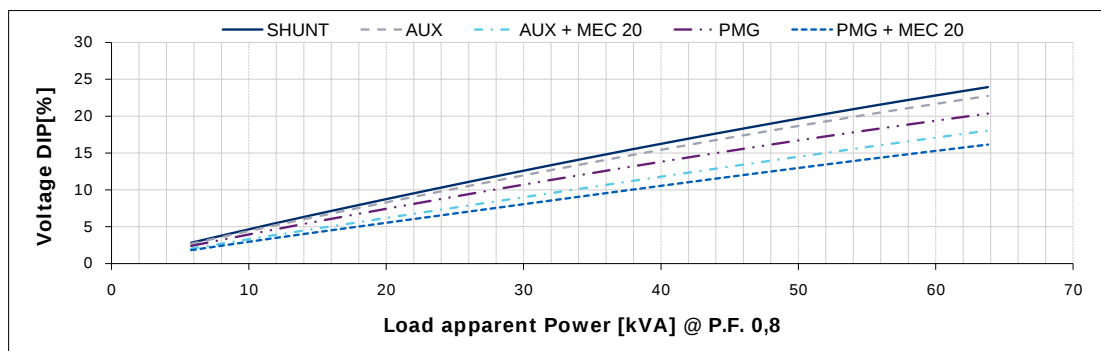
400 V



415 V



440 V

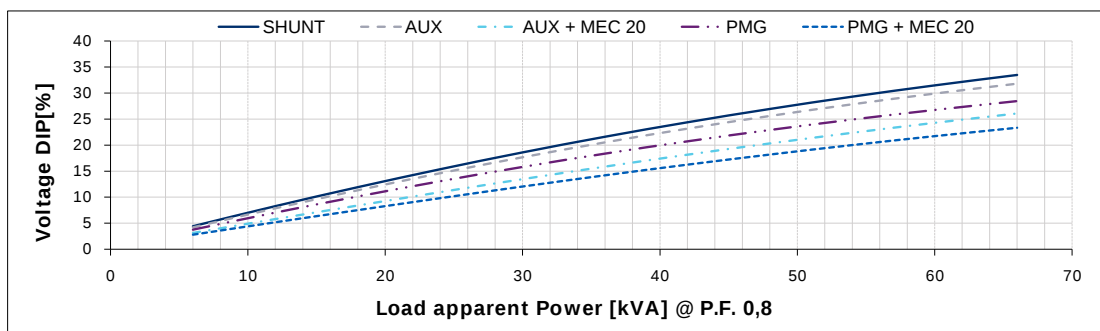


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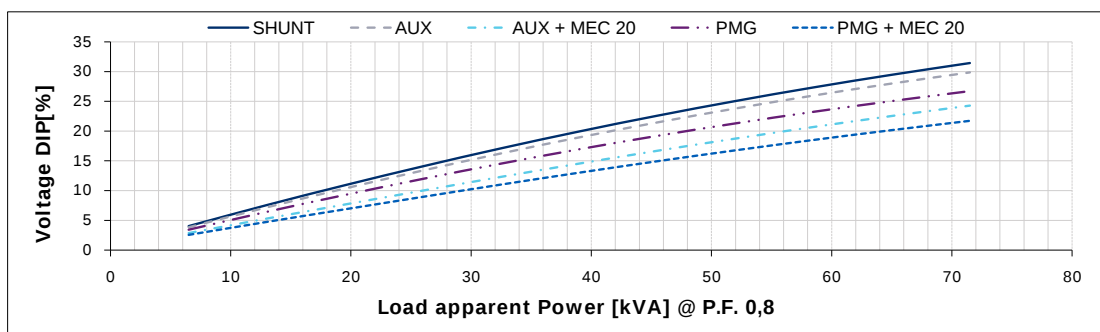
Typical voltage DIP curves

60 Hz - 1800 min⁻¹

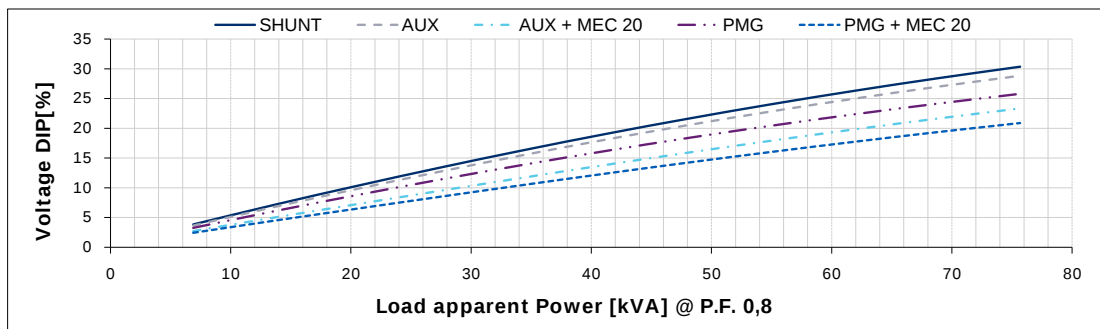
380 V



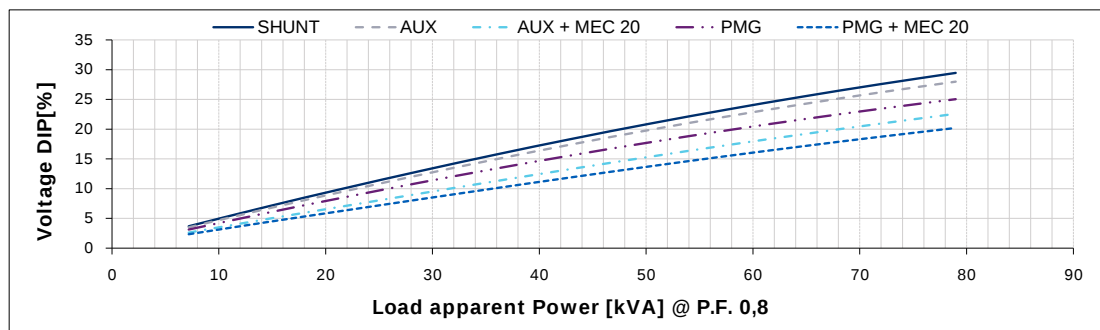
416 V



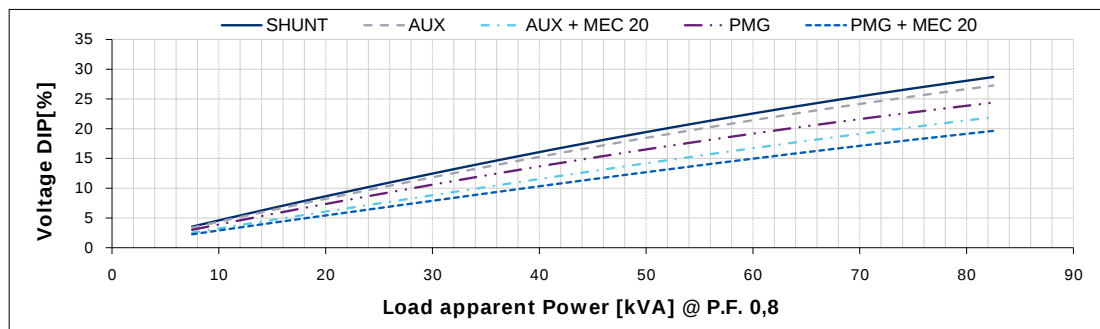
440 V



460 V



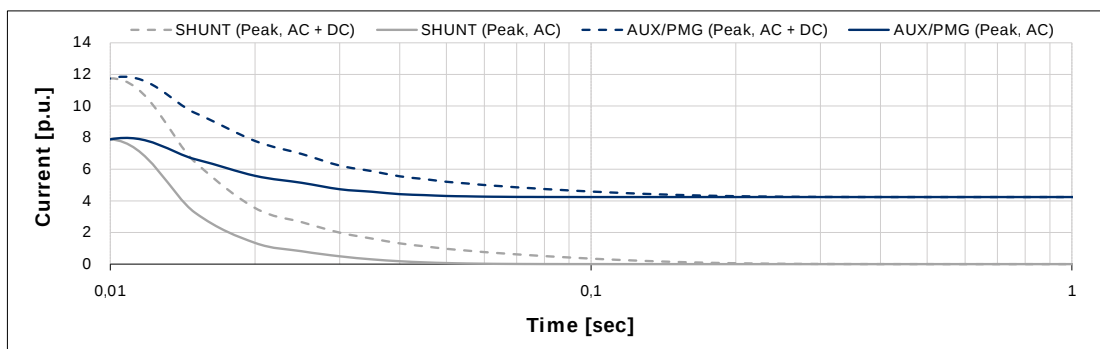
480 V



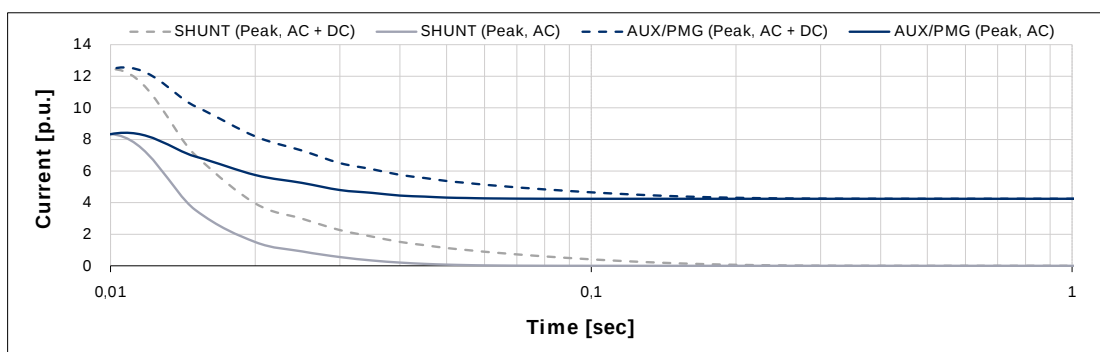
Typical 3-phase short circuit decrement curves

50 Hz - 1500 min⁻¹

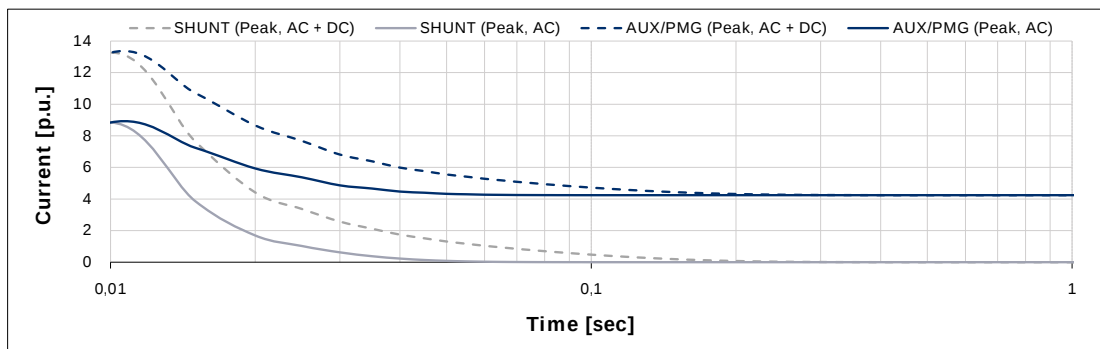
380 V



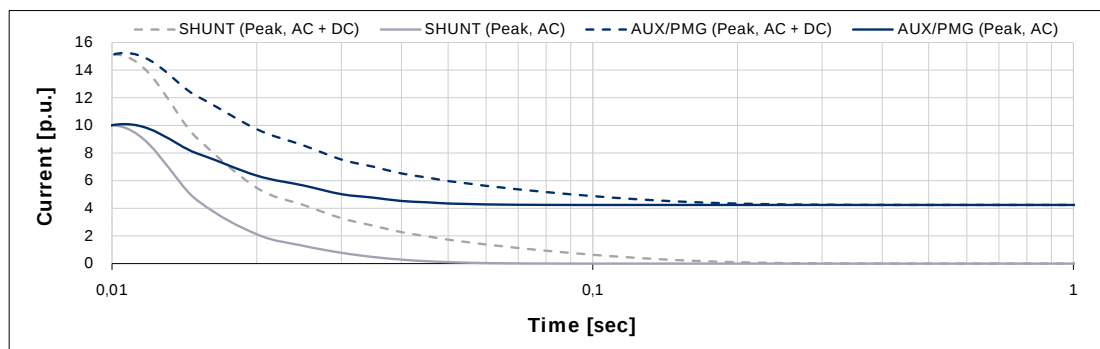
400 V



415 V



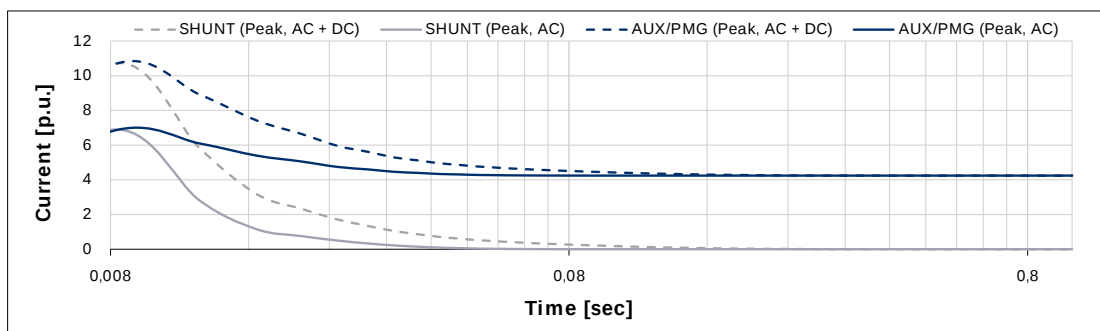
440 V



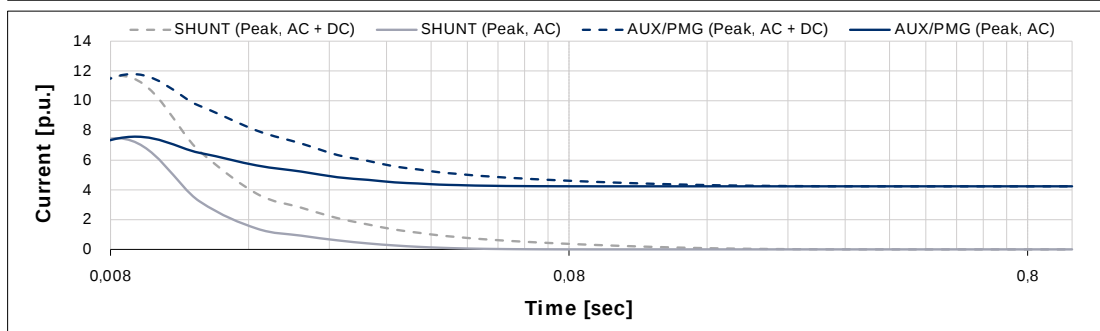
Typical 3-phase short circuit decrement curves

60 Hz - 1800 min⁻¹

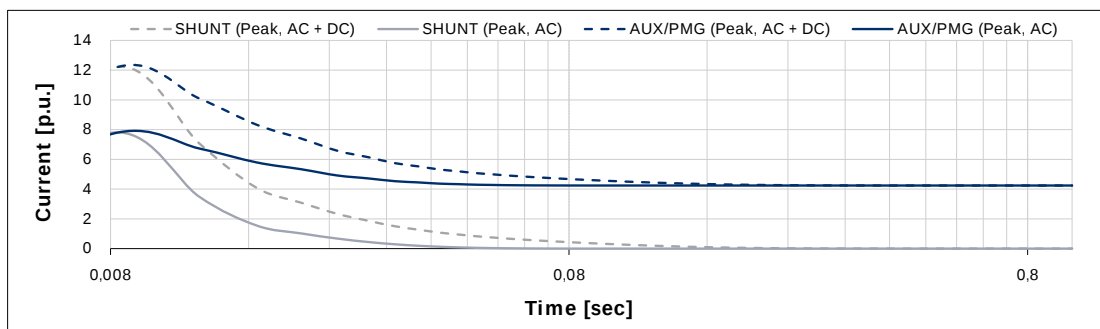
380 V



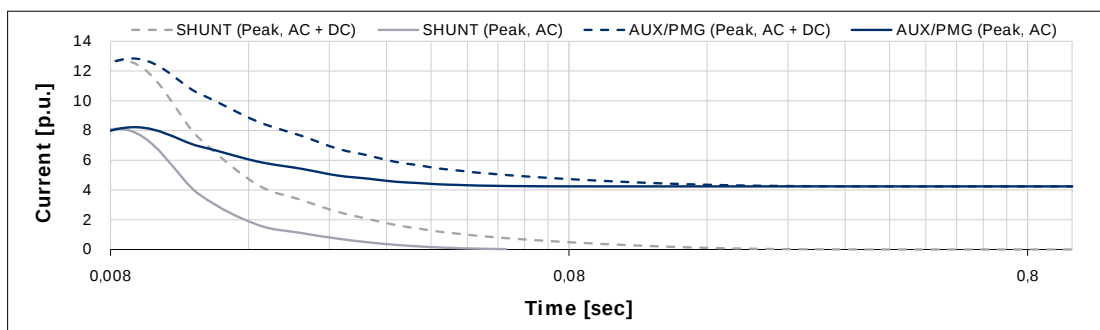
416 V



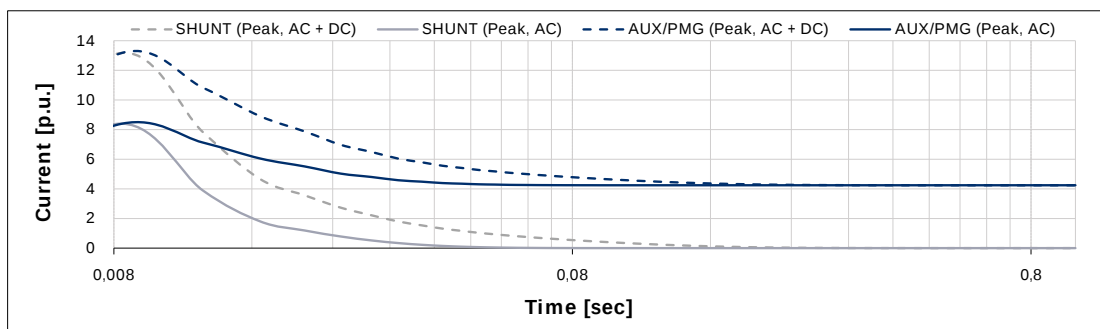
440 V



460 V



480 V



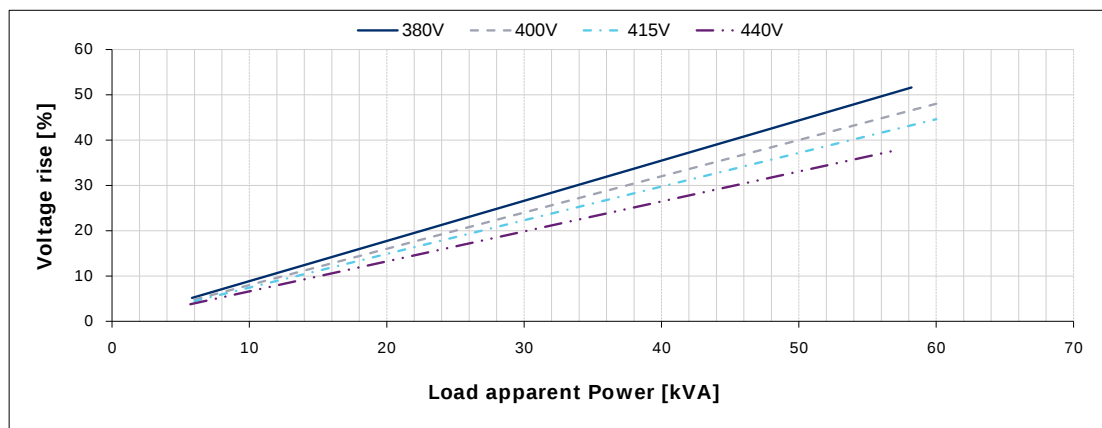
Above curves are based on a three-phase short circuit
For other type of short circuit use the following multiplication factors

	2 phase	1 phase
Instantaneous (max)	0,94	1,14
Continuous	1,50	1,83

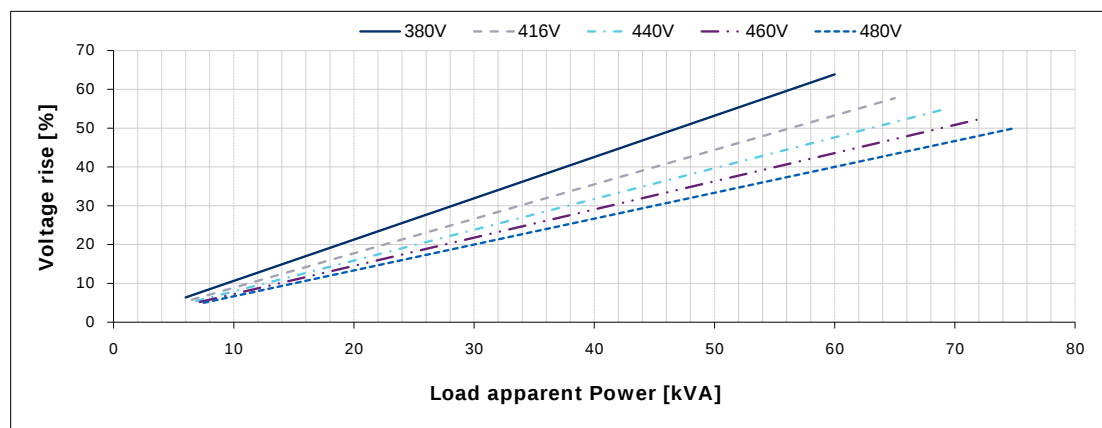
SYN.DS.0056_ =

Typical load rejection curves

50 Hz - 1500 min-1



60 Hz - 1800 min-1



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