

**ALTERNATOR TECHNICAL DESCRIPTION**  
**LSA 52.3 XL10 / 4p**

LS Reference: OF241039\_1845KVA 6.6KV 1

Date: 10-28-2024 V6.10 - 12/2023 1  
Project Manager : Aviva 1  
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**Main data** C 1

Generator type: **LSA 52.3 XL10 / 4p** 1  
Power: 1 845 kVA 1 476 kWe 1 540 kWm 1  
Voltage: 6 600 V Star serial 1  
Rated voltage range: +5/-5% 1  
Power factor - Lagging: 0.8 1  
Frequency: 50 Hz 1  
Speed: 1 500 rpm 1  
Nominal current: 161 A 1  
Winding type: p5/6 1  
Classes (Insulation / Temperature Rise): H / F 1  
Ambient temperature: 40 °C 1  
Altitude: 1 000 m 1

**Installation** IEC Quantity **1** 1

Client: Vertgroup 1  
Prime mover: Reciprocating engine 1  
Manufacturer: - 1  
Type: - 1  
Duty: Base Rating 1

**Mechanical construction** IM1201 1

Type of construction: Single bearing 1  
Mounting arrangement: Horizontal Axis 1  
Direction of rotation: Clockwise (seen when facing the drive end - DE) 1  
Bearing type: Anti-friction 1  
Bearing Lubrication: Regreasable 1  
Bearing insulation: Not insulated 1  
Flector type: SAE 21 1  
Balancing - Class (ISO 21940-11): Without key - G2,5 (std) 1  
Flange: SAE 00 1  
Shaft height: 500 mm 1  
Width: 750 mm 1

**Additional specificities** 1

Stabilized Runaway speed: 1 800 rpm - 2 min. 1

**Cooling Method** IC01 1

Degree of protection: IP23 1  
Coolant: Air / Temperature: 40 °C 1  
Air quality: Clean 1  
Ventilation (internal): Self-ventilated 1  
Filters: Without 1  
Ducting for air inlet: No 1  
Ducting for air outlet: No 1

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**Connection, Excitation & Regulation**

Parallel operation:	Between alternators (1F) - 1 x Droop CT	1
Excitation:	Self-excited - Brushless - Type: AREP + PMI	1
Sustained 3-phase Isc:	> 3 x FLC for 10s.	1
AVR type:	Leroy Somer - D550 - Digital	1
AVR location:	In terminal box	1
Alternator Voltage sensing:	Terminal box mounted voltage sensing VTs	1

**Terminal box**

Power connection:	4 connectors (brought out neutral)	1
Main terminal box location:	1 terminal box on the top	1
Line side outlet:	Left hand side (seen when facing the drive end - D)	1
Gland plate:	Non magnetic, Undrilled	1
Auxiliaries	In main terminal box	1

**Protection and measurement accessories**

**Temperature detection**

Stator windings:	6 x PT100 (3 wires)	1
Guide bearing - NDE:	1 x PT100 per bearing (3 wires)	1

**Anti-condensation heating**

Voltage: 230 V - 1Ph / Power: 500 W

**Various items**

Paint:	PE - Primary - ---	1
Documentation:	PDF manual	1
Documentation Language:	English	1
Nameplate	Sticker	1

**Controls**

Standards:	IEC	1
QUAL/INES/006 001 => 101	Measurement of winding resistance	1
QUAL/INES/006 021 => 128	Insulation check on sensors (when fitted)	1
QUAL/INES/006 002 => 102&103	Voltage balance and phase order check	1
QUAL/INES/006 007 => 109	Overspeed test (according to test bench limitation)	1
QUAL/INES/006 009 => 111	High potential test	1
QUAL/INES/006 010 => 112	Insulation resistance measurement	1

**ALTERNATOR ELECTRICAL DATA**  
**LSA 52.3 XL10 / 4P**

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Date: 10-28-2024

V6.10 - 12/2023

**Main data:** **C**

Power:	<b>1 845</b> kVA	<b>1 476</b> kW <sub>e</sub>	<b>1 540</b> kW <sub>m</sub>	1
Voltage:	<b>6600</b> V	Frequency:	<b>50</b> Hz	1
Rated voltage range:	+5% / -5%	Speed:	<b>1500</b> rpm	1
Power factor - Lagging:	0.8	Phases	<b>3</b>	1
Nominal current:	<b>161</b> A	Connexion	Star serial	1
Insulation / Temperature rise:	H / F	Winding type:	p5/6	1
Cooling:	<b>IC01</b>	Winding:	- 6 Wires	1
Ambient temperature:	<b>40</b> °C	Overspeed (rpm)	<b>1800</b>	1
Altitude:	<b>1000</b> m	Total Harmonic Distortion (THD)	< 1.5%	1
Duty: Base Rating				

**Efficiency ( Base 1476 kW<sub>e</sub> )** **IEC**

	25%	50%	75%	<b>100%</b>	110%	
<b>Power factor - Lagging: 0.8</b>	93.40	95.59	95.94	<b>95.85</b>	95.75	1
<b>Power factor - Lagging: 1</b>	93.92	96.32	96.89	<b>96.99</b>	96.97	1

**Reactances (%) - ( Base 1845 kVA )**

Unitary impedance ( 1 per unit ) = 23.609756 ohms

		Unsaturated		Saturated		
	Direct axis					Quadrature axis
Synchronous reactance	X <sub>d</sub>	191	170	X <sub>q</sub>	97	87
Transient reactance	X' <sub>d</sub>	21.6	18.4	X' <sub>q</sub>	97	87
Subtransient reactance	X'' <sub>d</sub>	10.7	9.1	X'' <sub>q</sub>	11.1	9.4
Negative sequence reactance	X <sub>2</sub>	10.9	9.3			
X <sub>0</sub>	6.6	Zero sequence reactance				
X <sub>l</sub>	5.4	Stator leakage reactance				
X <sub>r</sub>	17.8	Rotor leakage reactance				
<b>K<sub>c</sub></b>	<b>0.59</b>	Short-circuit ratio				

**Time constants (s)**

	Direct axis	Quadrature axis
Open circuit transient time constant	T' <sub>do</sub> 1.68	T' <sub>qo</sub> NA
Short-circuit transient time constant	T' <sub>d</sub> 0.190	T' <sub>q</sub> NA
Open circuit subtransient time constant	T'' <sub>do</sub> 0.024	T'' <sub>qo</sub> 0.095
Subtransient time constant	T'' <sub>d</sub> 0.012	T'' <sub>q</sub> 0.011
T <sub>a</sub> 0.025	Armature winding short circuit time constant	

**Resistances (%)**

R <sub>a</sub> 1.4	Armature resistance	R <sub>0</sub> 2.2	Zero sequence resistance
X/R 6.6	X/R ratio (without unit)	R <sub>2</sub> 2.2	Negative sequence resistance

Voltage accuracy: 0.25%

Maximum inrush current for a voltage dip of 15%: 1674 kVA

when starting an AC motor having a starting power factor between 0 and 0.4

Rating is provided for the specified temperature rise, by resistance measurement according to IEC60034-1

According to: I.E.C. 60034.1 - 60034.2 - NEMA MG 1-32

Products and materials shown in this catalogue may, at any time, be modified in order to follow the latest technological developments.

#REF!

**ALTERNATOR MAIN CURVES**  
**LSA 52.3 XL10 / 4P**

LS Reference: OF241039\_1845KVA 6.6KV

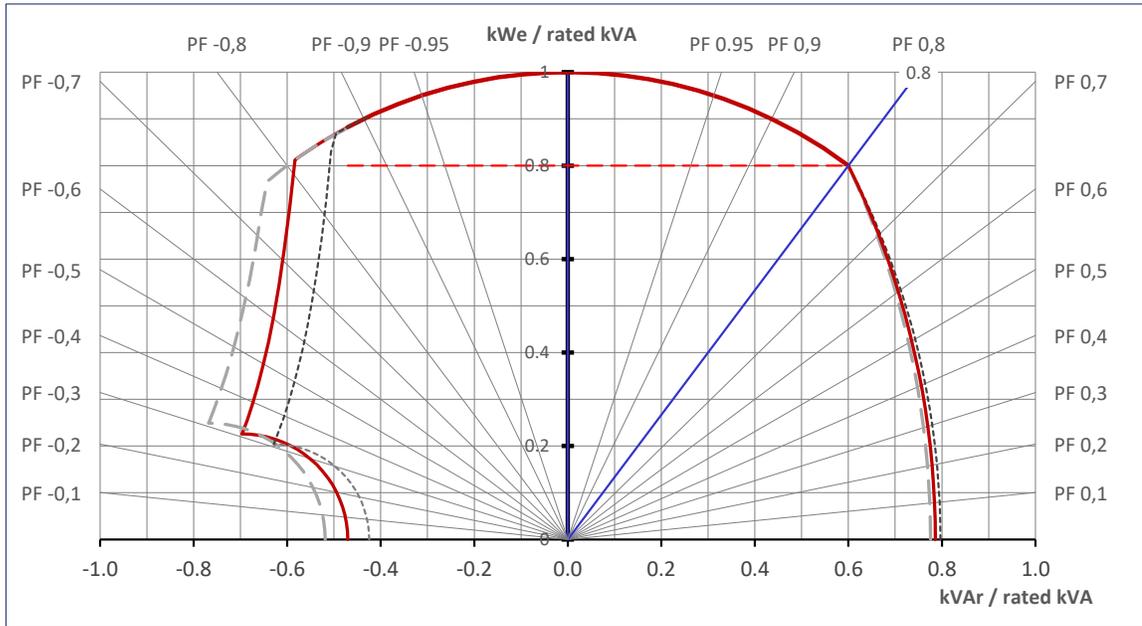
Date: 10-28-2024

**1845kVA - 6600V - 50 Hz**

V6.10 - 12/2023

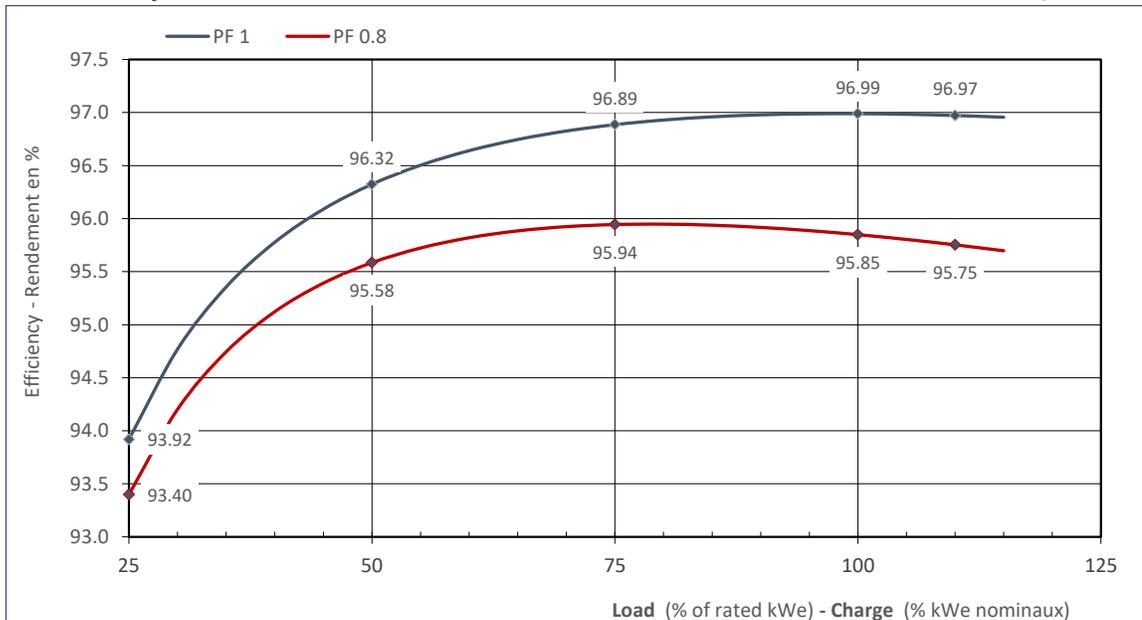
**Capability Curve**

---	Umax	+ 5%	6 930	V
---	Un		<b>6 600</b>	V
---	Umin	- 5%	6 270	V



**Efficiency Curves**

According to: IEC

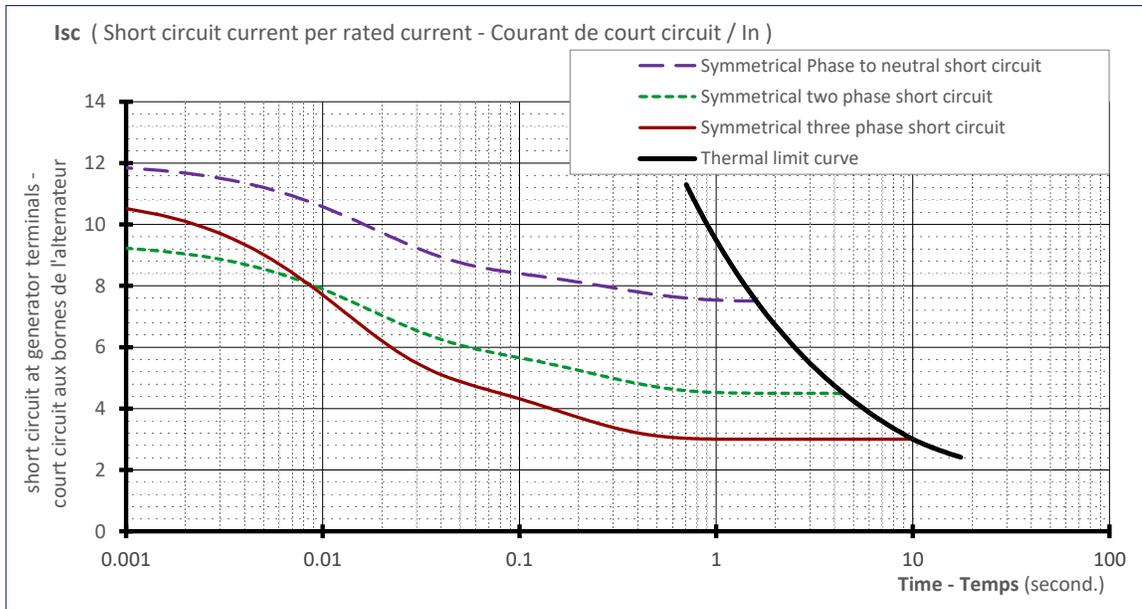


**ALTERNATOR MAIN CURVES**  
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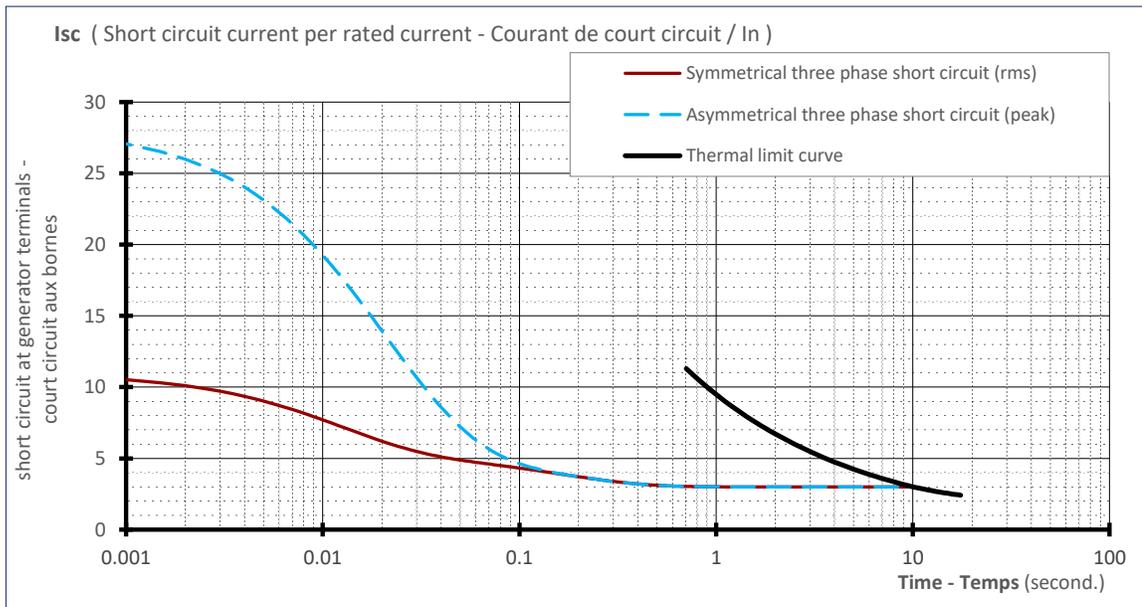
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**Stator Current decrement curves**

Symmetrical phase to neutral short-circuit	—	initial	1 908	A	11.8 x In	
Symmetrical two phase short-circuit	- - -	max	1 486	A	9.2 x In	In = 161 A
Symmetrical three phase short-circuit	—	value	1 694	A	10.5 x In	
Thermal Limit	—					



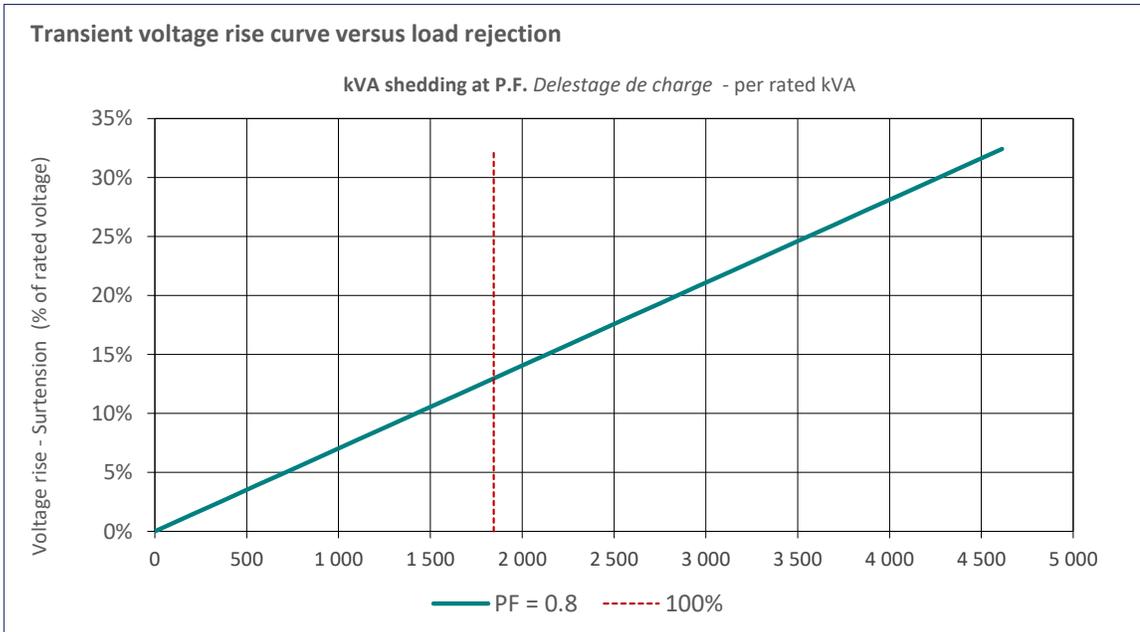
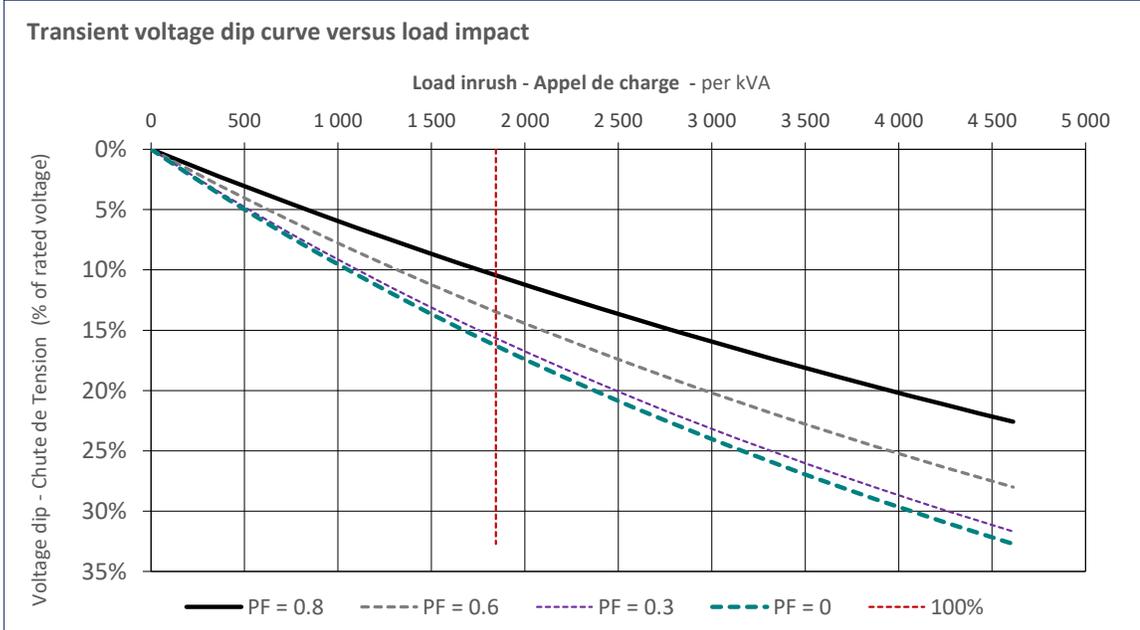
Asymmetrical three phase short-circuit — IP 4 333 A 26.9 x In



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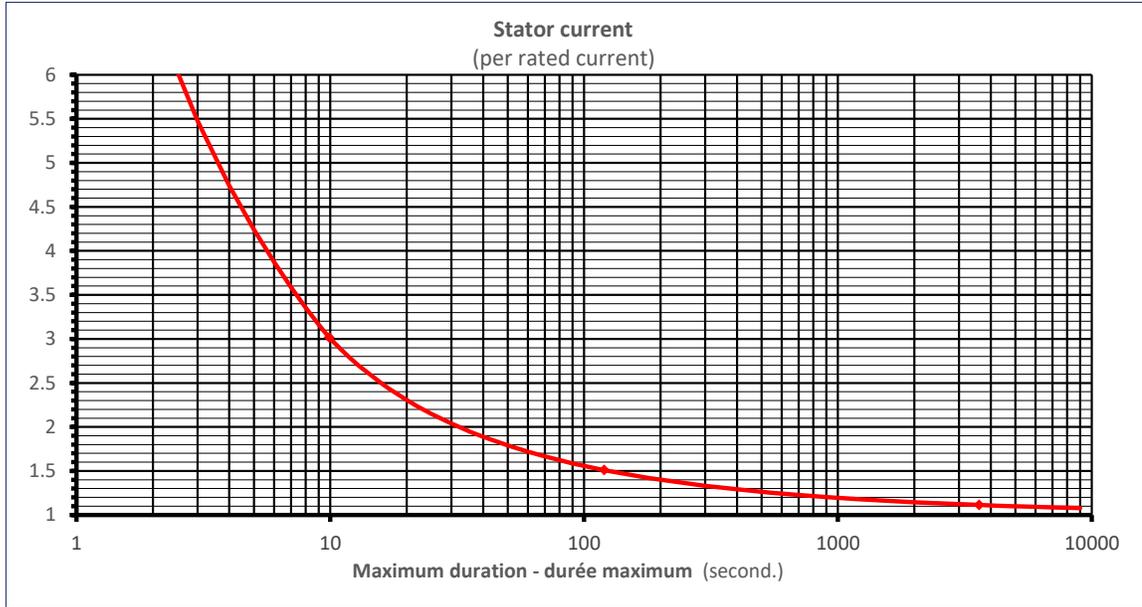
**Transient Voltage Variation**



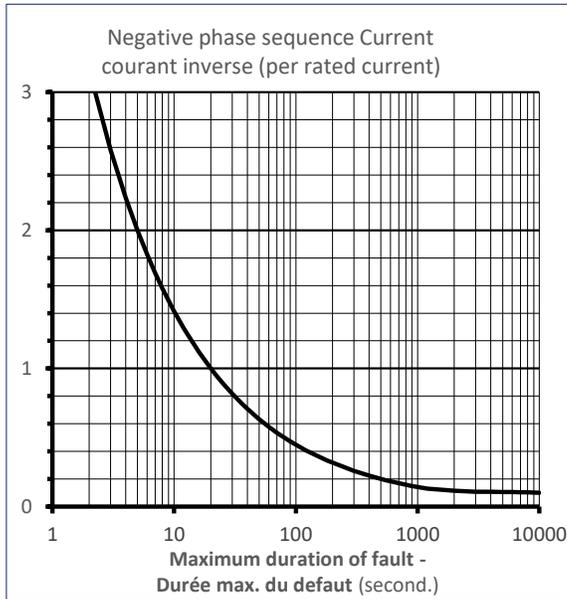
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**Thermal Damage Curve**



**Unbalance Load Curve**



**Stator Earth Fault Current**

