

ALTERNATOR TECHNICAL DESCRIPTION
LSA 52.3 UL8 / 4p

LS Reference: OF241039_3.3KV_1750KVA 1

Date: 10-28-2024 V6.10 - 12/2023 1
Project Manager : Aviva 1
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Electric Power Generation - Fuzhou +86 (591)88373034
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Main data C 1

Generator type: **LSA 52.3 UL8 / 4p** 1
Power: 1 750 kVA 1 400 kWe 1 455 kWm 1
Voltage: 3 300 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: 306 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

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Main data:				C
Power:	1 750 kVA	1 400 kW _e	1 455 kW _m	1
Voltage:	3300 V	Frequency:	50 Hz	1
Rated voltage range:	+5% / -5%	Speed:	1500 rpm	1
Power factor - Lagging:	0.8	Phases	3	1
Nominal current:	306 A	Connexion	Star serial	1
Insulation / Temperature rise:	H / F	Winding type:	p5/6	1
Cooling:	IC01	Winding:	- 6 Wires	1
Ambient temperature:	40 °C	Overspeed (rpm)	1800	1
Altitude:	1000 m	Total Harmonic Distortion (THD)	< 1.5%	1
Duty: Base Rating				

Efficiency (Base 1400 kW _e)		IEC				
		25%	50%	75%	100%	110%
Power factor - Lagging: 0.8		93.07	95.59	96.14	96.20	96.16
Power factor - Lagging: 1		93.61	96.29	96.99	97.21	97.23

Reactances (%) - (Base 1750 kVA)						
Unitary impedance (1 per unit) = 6.222857 ohms						
		Unsaturated		Saturated		
		Direct axis		Quadrature axis		
Synchronous reactance	X _d	200	177	X _q	102	90
Transient reactance	X' _d	23.0	19.6	X' _q	102	90
Subtransient reactance	X'' _d	11.6	9.9	X'' _q	12.0	10.2
Negative sequence reactance	X ₂	11.8	10.0			
X ₀	6.9	Zero sequence reactance				
X _l	5.8	Stator leakage reactance				
X _r	18.9	Rotor leakage reactance				
Kc	0.57	Short-circuit ratio				

Time constants (s)					
		Direct axis		Quadrature axis	
Open circuit transient time constant	T' _{do}	1.62		T' _{qo}	NA
Short-circuit transient time constant	T' _d	0.187		T' _q	NA
Open circuit subtransient time constant	T'' _{do}	0.024		T'' _{qo}	0.092
Subtransient time constant	T'' _d	0.012		T'' _q	0.011
T _a	0.033	Armature winding short circuit time constant			

Resistances (%)					
R _a	1.1	Armature resistance	R ₀	2.3	Zero sequence resistance
X/R	8.7	X/R ratio (without unit)	R ₂	2.4	Negative sequence resistance

Voltage accuracy: 0.25%

Maximum inrush current for a voltage dip of 15%: 1490 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 UL8 / 4P

LS Reference: OF241039_3.3KV_1750KVA

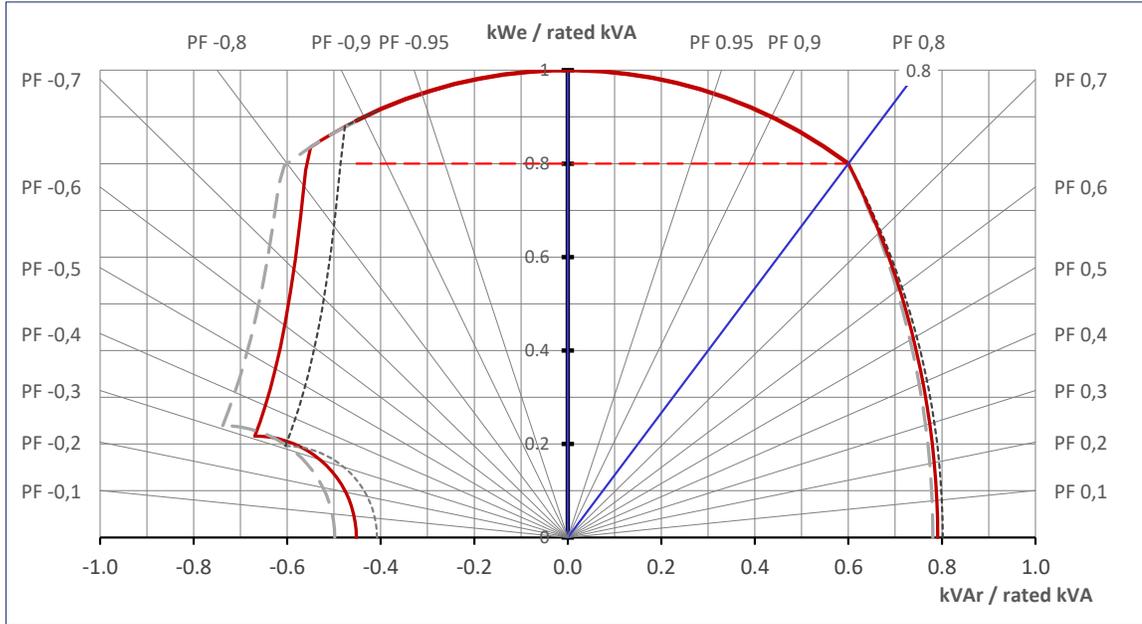
Date: 10-28-2024

1750kVA - 3300V - 50 Hz

V6.10 - 12/2023

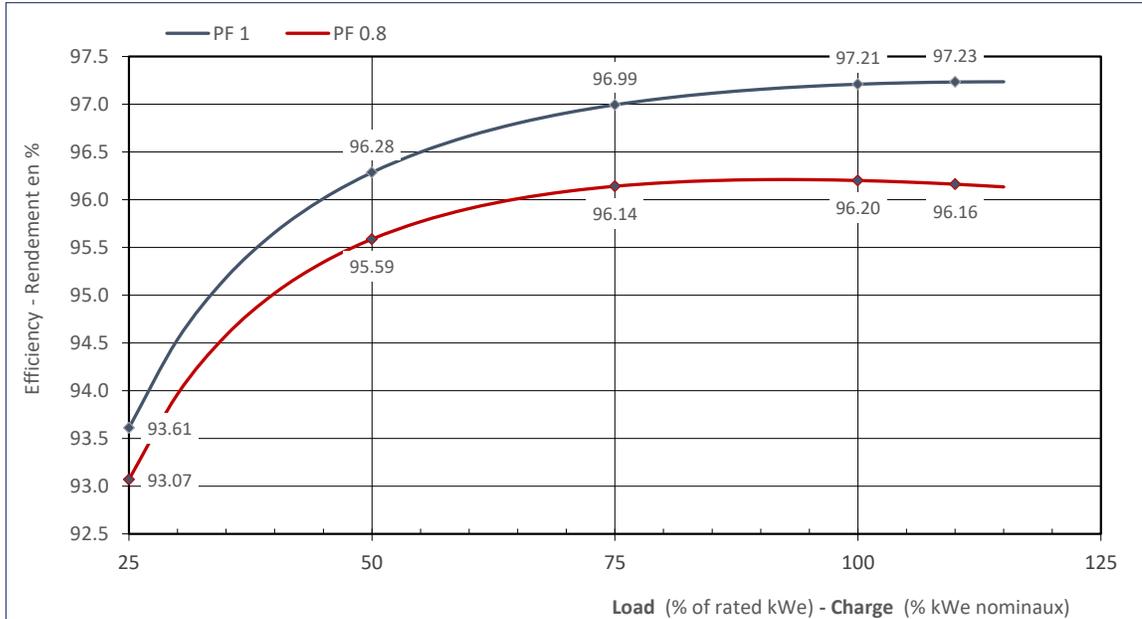
Capability Curve

---	Umax	+ 5%	3 465	V
---	Un		3 300	V
---	Umin	- 5%	3 135	V



Efficiency Curves

According to: IEC

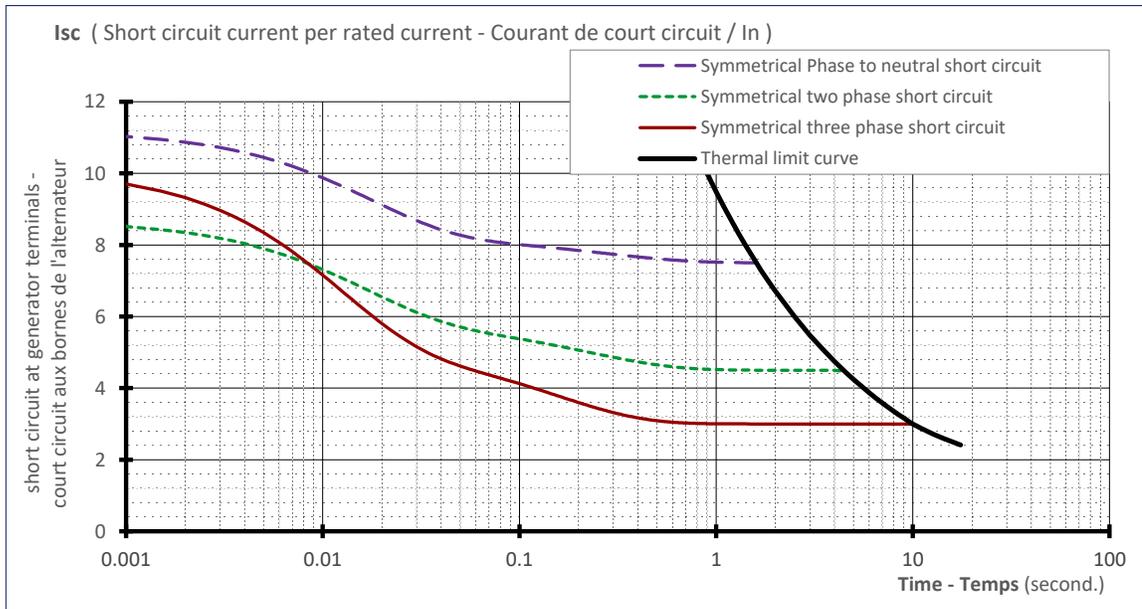


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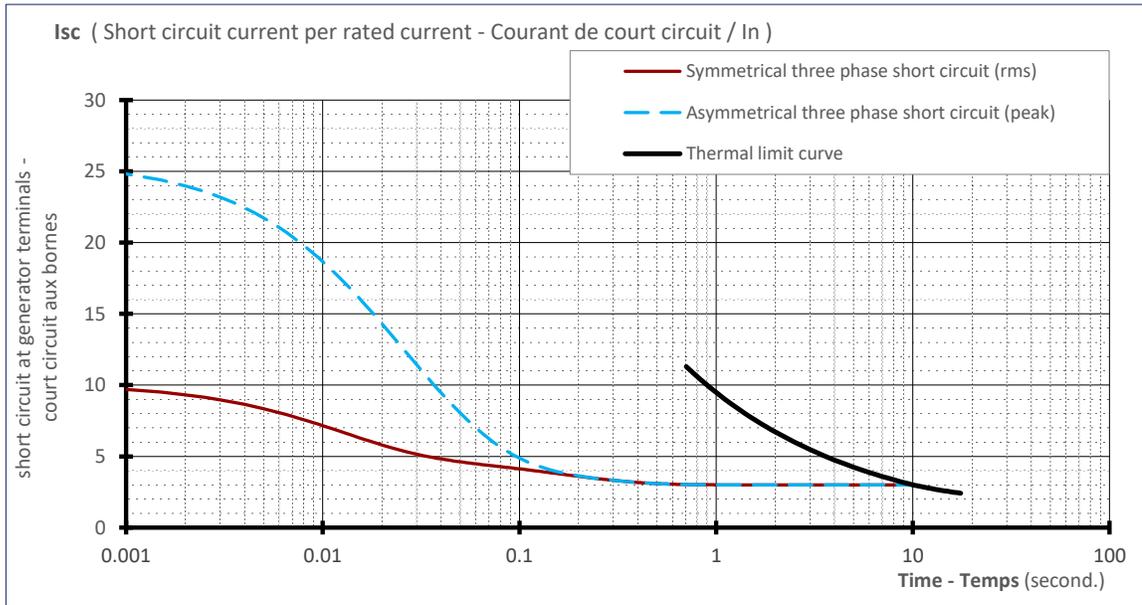
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Stator Current decrement curves

Symmetrical phase to neutral short-circuit	—	initial	3 375	A	11 x In	
Symmetrical two phase short-circuit	- - -	max	2 604	A	8.5 x In	In = 306 A
Symmetrical three phase short-circuit	—	value	2 969	A	9.7 x In	
Thermal Limit	—					



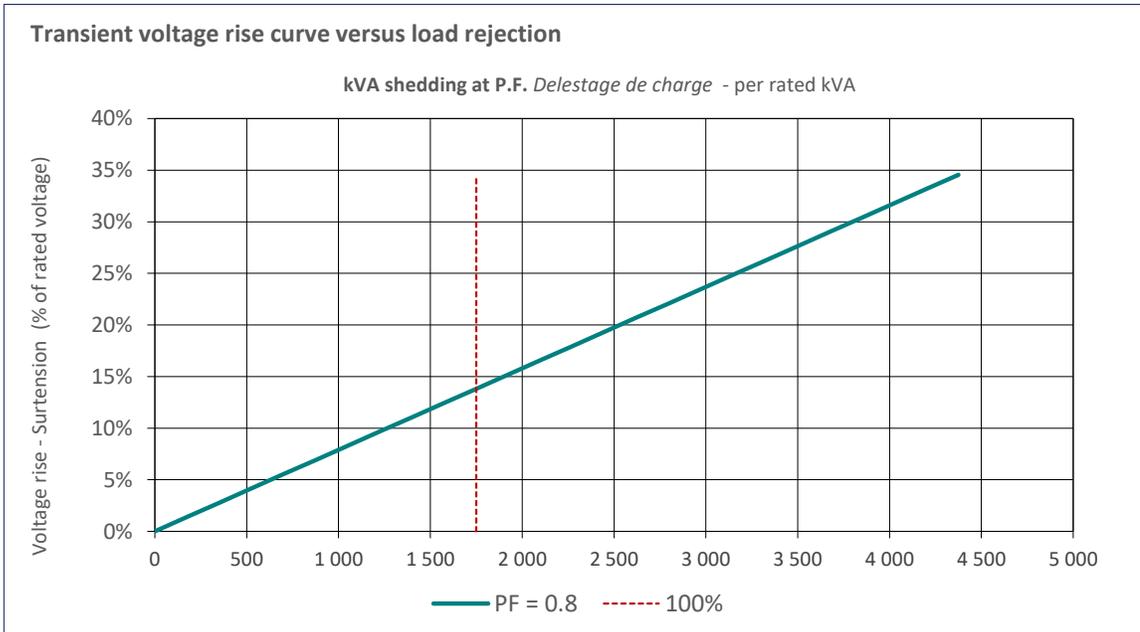
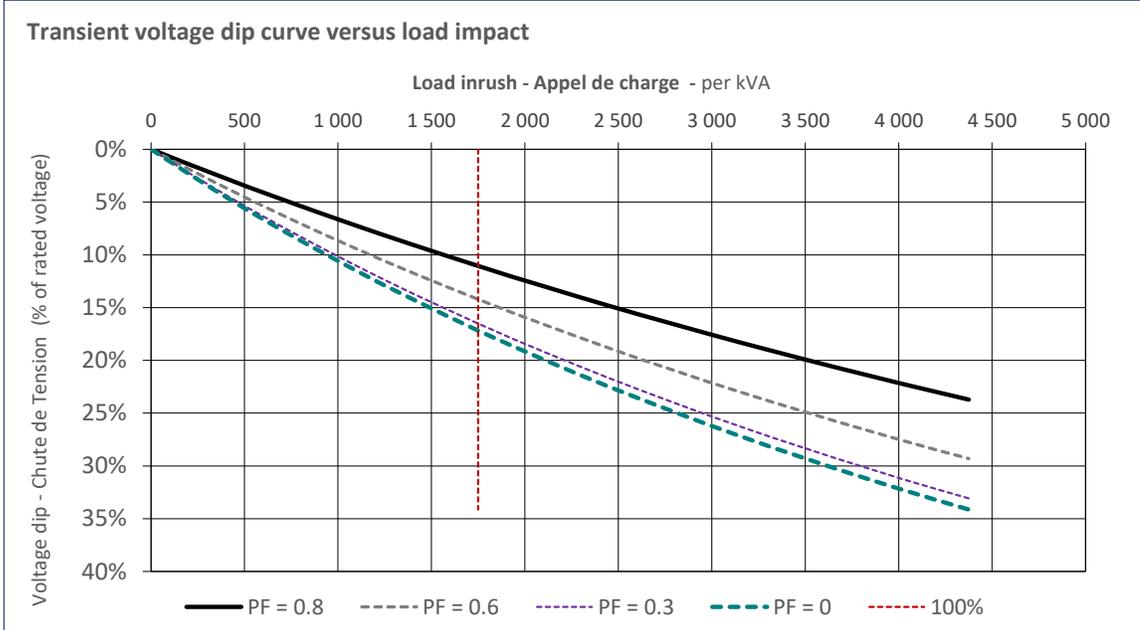
Asymmetrical three phase short-circuit — IP 7 532 A 24.6 x In



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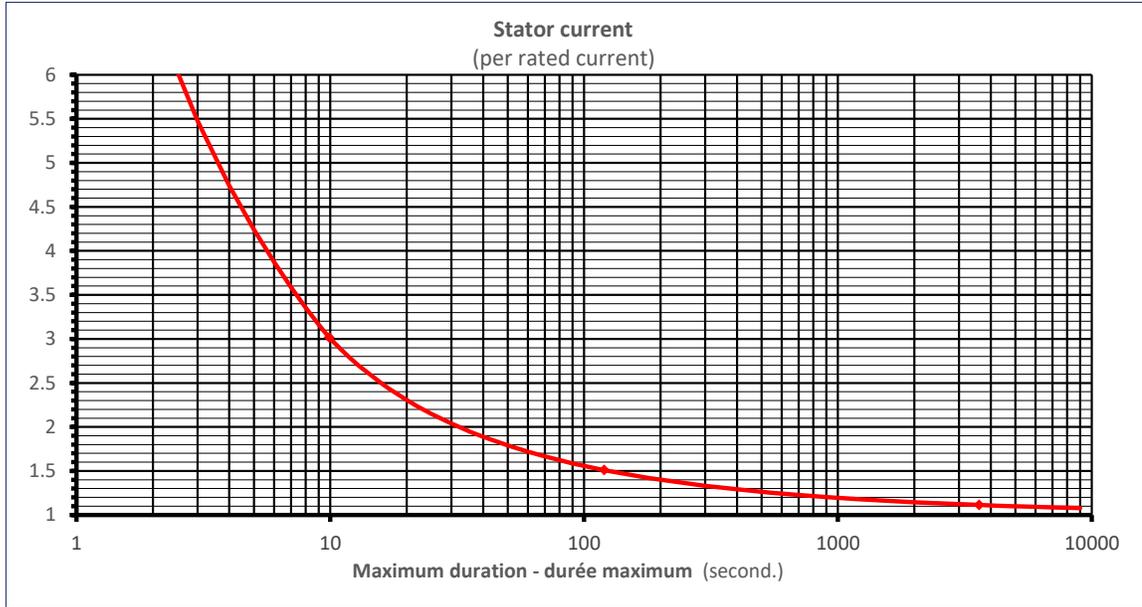
Transient Voltage Variation



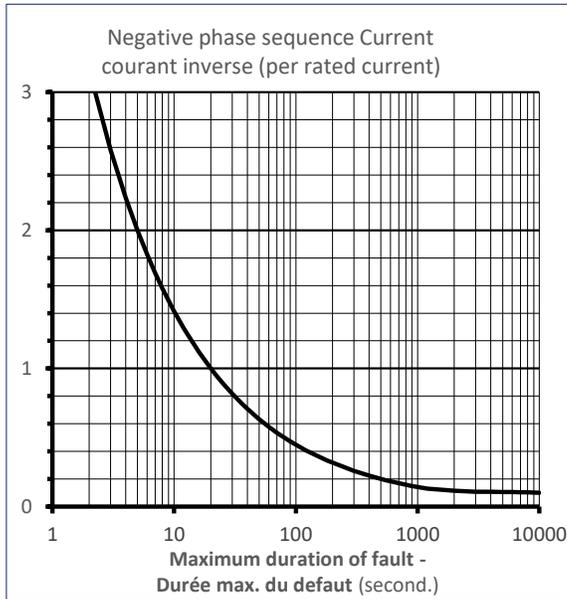
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Thermal Damage Curve



Unbalance Load Curve



Stator Earth Fault Current

