

ALTERNATOR TECHNICAL DESCRIPTION
LSA 52.3 UL8 / 4p

LS Reference: OF241039_1700KVA 6.6KV 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: 1 700 kVA 1 360 kWe 1 418 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: 149 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
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Date: 10-28-2024

V6.10 - 12/2023

Main data: **C**

Power:	1 700 kVA	1 360 kW _e	1 418 kW _m	1
Voltage:	6600 V	Frequency:	50 Hz	1
Rated voltage range:	+5% / -5%	Speed:	1500 rpm	1
Power factor - Lagging:	0.8	Phases	3	1
Nominal current:	149 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 1360 kW_e) **IEC**

	25%	50%	75%	100%	110%	
Power factor - Lagging: 0.8	93.45	95.62	95.99	95.90	95.80	1
Power factor - Lagging: 1	93.99	96.38	96.93	97.04	97.02	1

Reactances (%) - (Base 1700 kVA)

Unitary impedance (1 per unit) = 25.623529 ohms

		Unsaturated		Saturated		
	Direct axis					Quadrature axis
Synchronous reactance	X _d	194	172	X _q	99	88
Transient reactance	X' _d	22.4	19.0	X' _q	99	88
Subtransient reactance	X'' _d	11.3	9.6	X'' _q	11.7	9.9
Negative sequence reactance	X ₂	11.5	9.8			
X ₀	6.7	Zero sequence reactance				
X _l	5.6	Stator leakage reactance				
X _r	18.3	Rotor leakage reactance				
K_c	0.58	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	0.027	Armature winding short circuit time constant

Resistances (%)

R _a	1.4	Armature resistance	R ₀	2.2	Zero sequence resistance
X/R	7.1	X/R ratio (without unit)	R ₂	2.3	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_1700KVA 6.6KV

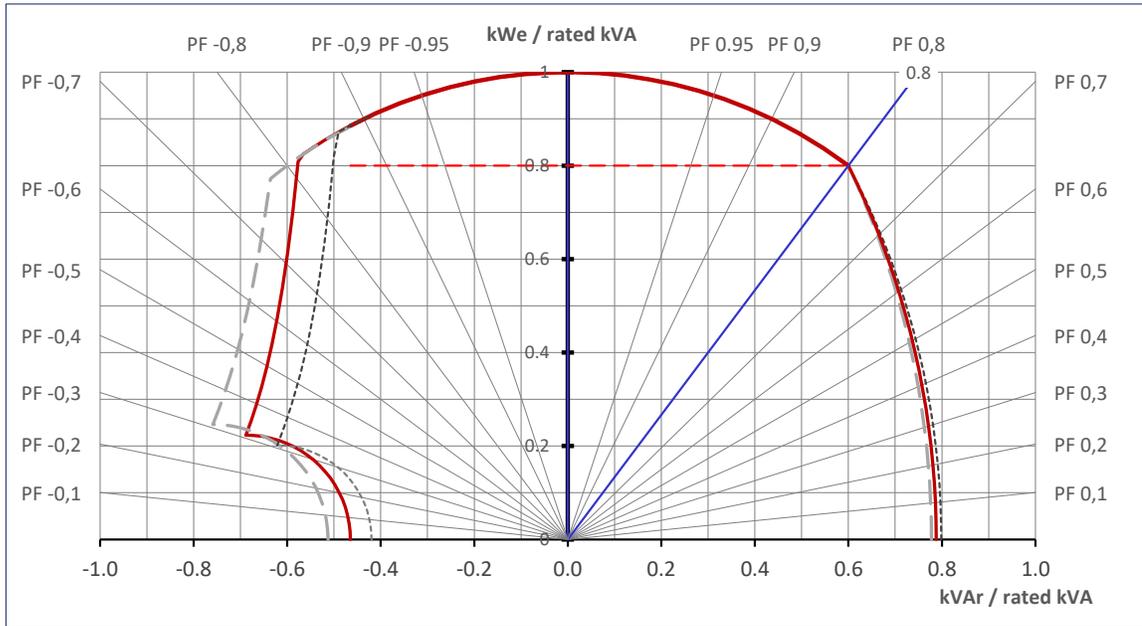
Date: 10-28-2024

1700kVA - 6600V - 50 Hz

V6.10 - 12/2023

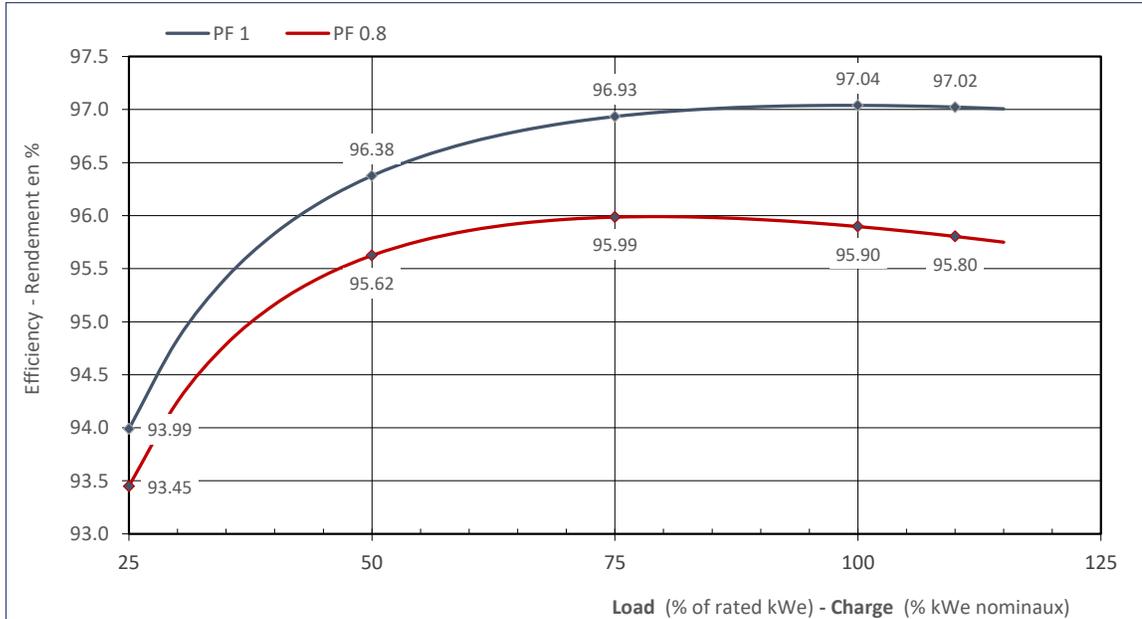
Capability Curve

---	Umax	+ 5%	6 930	V
---	Un		6 600	V
---	Umin	- 5%	6 270	V



Efficiency Curves

According to: IEC

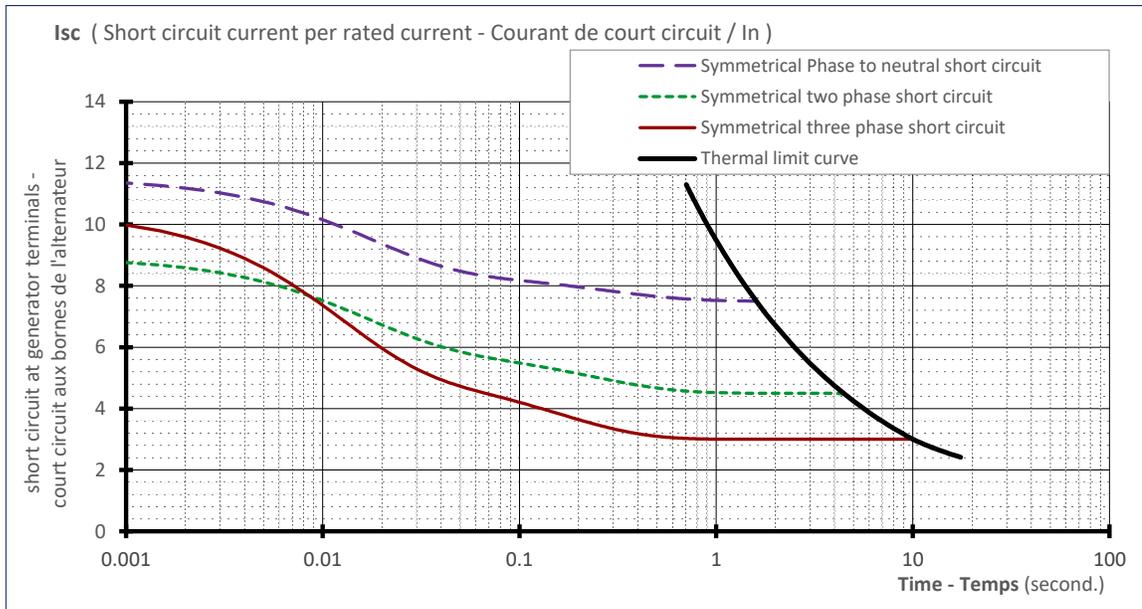


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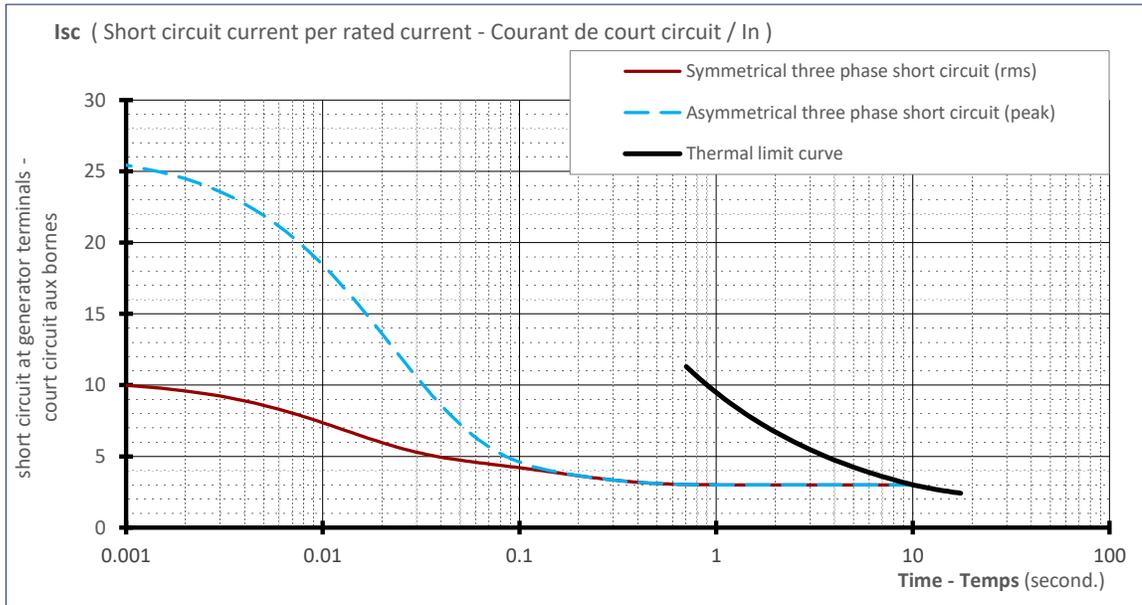
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Stator Current decrement curves

Symmetrical phase to neutral short-circuit	initial	1 691	A	11.4 x In	
Symmetrical two phase short-circuit	max	1 305	A	8.8 x In	In = 149 A
Symmetrical three phase short-circuit	value	1 488	A	10 x In	
Thermal Limit					



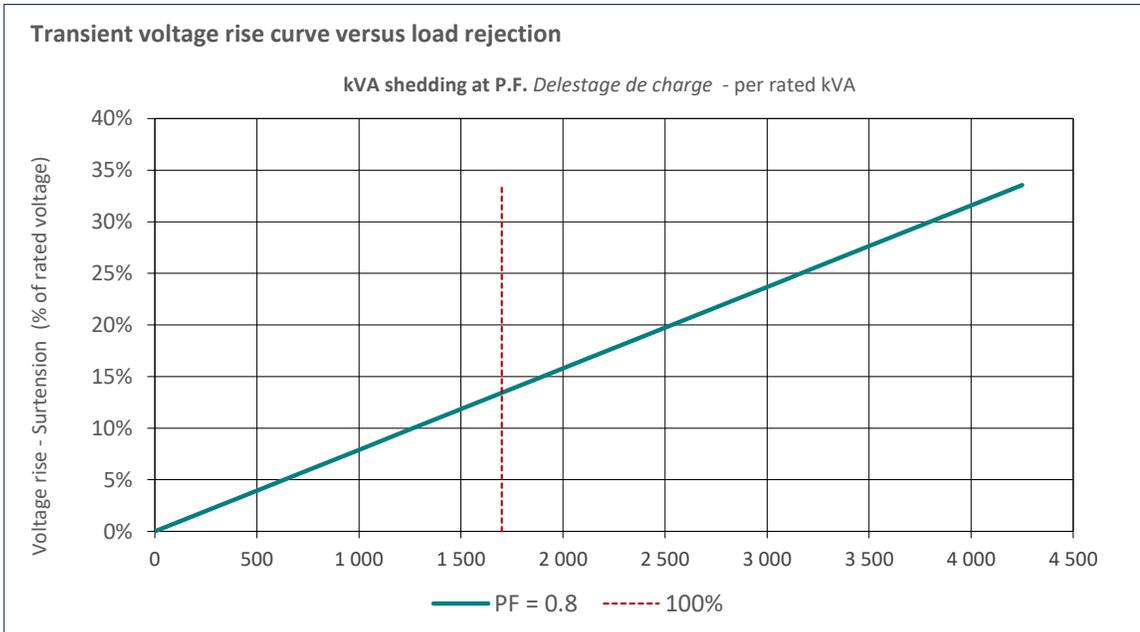
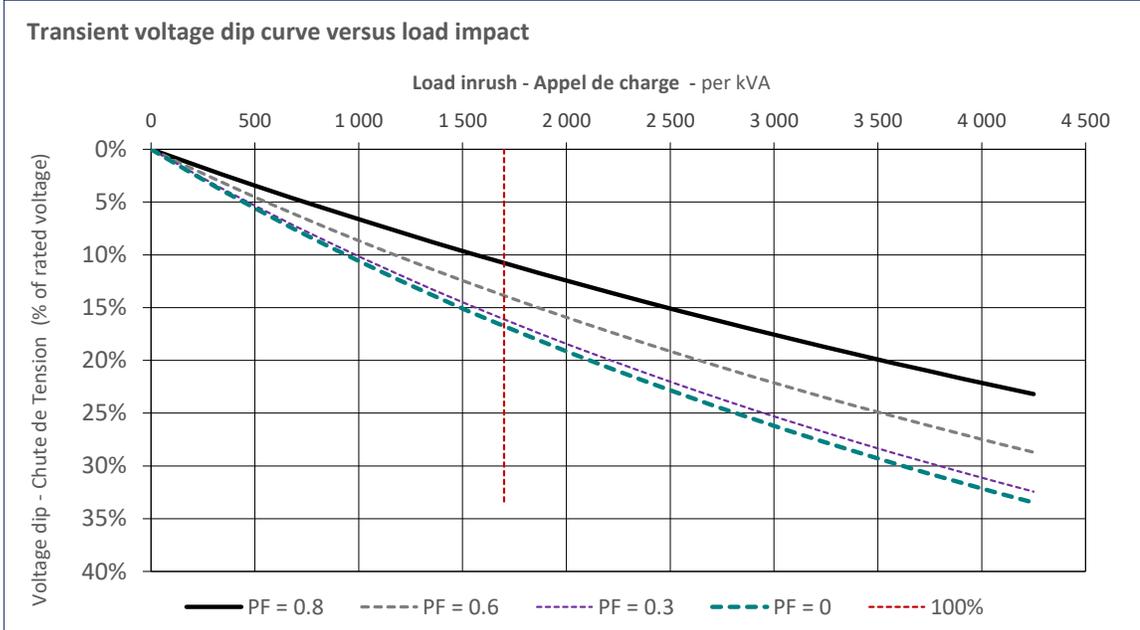
Asymmetrical three phase short-circuit IP 3 764 A 25.3 x In



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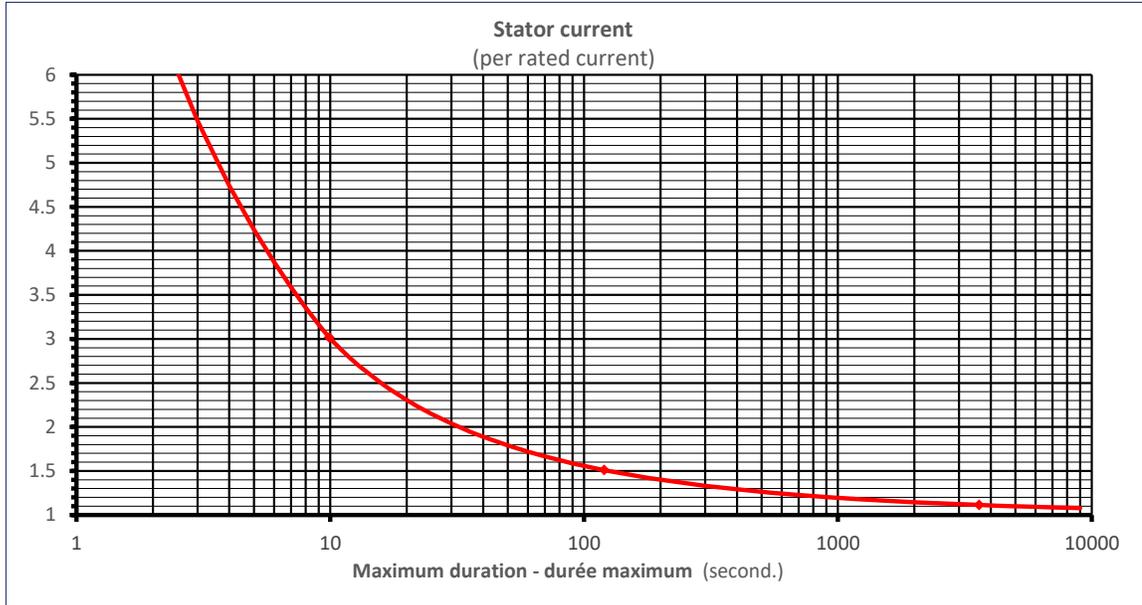
Transient Voltage Variation



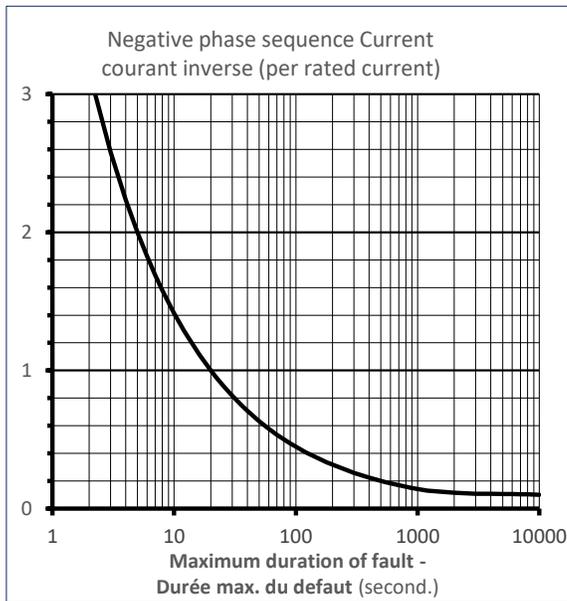
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Thermal Damage Curve



Unbalance Load Curve



Stator Earth Fault Current

