



Generator Design Report

E203*66597



Created by: Lori Miller On: Sep 16, 2015 12:44:58

PREDICTED GENERATOR PERFORMANCE VALUES

6P6-3300 Kato SN 36896								
KW	KVA	PF	TAMB	TRISE	POLES	RPM	SLOTS	HZ
1600	2000	0.8	50 °C	90 °C	6	1200	72	60
VOLTS-PH	VOLTS-LL	AMPS-PH	AMPS-LN	BASE Z	025	026	PHASE/CONNECTION	
346	600	1924.5	1924.5	0.180	60025	60011	3 PHASE WYE	

0.6667 PER UNIT PITCH

REACTANCES %		SAT	UNSAT	HI POT VALUES	VOLTS
SYNCHRONOUS				STATOR	2200
DIRECT AXIS	Xd	150.9	166.4	ROTOR	1500
QUADRATURE AXIS	Xq	95.1	101.6	EXCITER FIELD	1500
				EXCITER ARM	1500
TRANSIENT					
DIRECT AXIS	X'd	24.2	27.5		
QUADRATURE AXIS	X'q	95.1	101.6	MOTOR STARTING	0 P.F.
SUBTRANSIENT					
DIRECT AXIS	X''d	19.4	22.8	SKVA AT GENERATOR	SKVA
QUADRATURE AXIS	X''q	12.7	14.9	TERMINALS	807.6
					1282.7
					1817.2
NEGATIVE SEQUENCE	X2	16.0	18.8		20
ZERO SEQUENCE	X0	2.3	2.7		25
LEAKAGE REACTANCE	XL	9.255	10.518		30
					3115.1
RESISTANCES @ 25C -					
	RDCa	0.00128			
	RDCf	1.5180			

NL-FL VOLTAGE DIP AT RATED P.F. = 15.7%
USED XID = 27.5% FOR DIP CALCULATION.

TIME CONSTANTS (SECONDS)		
D-AXIS 3-PH S.C. TRANSIENT	T'd3	0.480
D-AXIS O.C. TRANSIENT	T'd0	3.117
D-AXIS 3-PH S.C. SUB-TRANS	T''d3	0.025
D-AXIS O.C. SUB-TRANS	T''d0	0.031
ARM CKT (ASYMMETRICAL S.C.)	TA	0.041

TRANSIENT TORQUES			KW				HEAT REJ	
CONDITION	TORQUE P.U.	MAX TORQUE FT-LBS		@1.0 P.F.	@0.8P.F.	1.0 P.F. %EFF	0.8P.F. %EFF	BTU/HR
3-PH S.C.	5.2	60499	FL	2000.0	1600.0	97.2	96.2	215700
L-L S.C.	7.3	86060	3/4 L	1500.0	1200.0	97.2	96.2	161606
			1/2 L	1000.0	800.0	96.8	95.7	122081
			1/4 L	500.0	400.0	94.8	93.4	96868

EFFICIENCY CALCULATED AT 105.0C

TYPE	SHORT CIRCUIT CURRENT P.U.	INSTANTANEOUS SYMMETRICAL FAULT CURRENT		INSTANTANEOUS ASYMMETRICAL FAULT CURRENT	
		AMPS	P.U.	AMPS	P.U.
3-PH		5.16	9930	8.94	17200
L-L		4.89	9417	8.48	16311
L-N		7.95	15308	13.78	26514

OVERSPEED: 1500.0 RPM FOR 1 MINUTE. MINIMUM 3 PHASE MOTORING POWER: 160.00 KW

SYNCH COEFF	FULL LOAD	NO LOAD
	3573KW/RAD	1862KW/RAD

DISPLACEMENT ANGLE: 27.6 DEGREES

BY:



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THIS DATA CAN BE TRANSFERRED TO CUSTOMER DATA SHEETS WHEN APPLICABLE

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VENTING: SEV

TIME CONSTANTS (SECONDS)			
D-AXIS L-N	S.C. TRANSIENT	T'd2	0.682
D-AXIS L-L	S.C. TRANSIENT	T'd1	0.712
O-AXIS 3-PH	S.C. TRANSIENT	T'q3	0.623
O-AXIS	O.C. TRANSIENT	T'q0	0.623
D-AXIS L-N	S.C. SUB-TRANS	T''d2	0.027
D-AXIS L-L	S.C. SUB-TRANS	T''d1	0.028
O-AXIS 3-PH	S.C. SUB-TRANS	T''q3	0.002
O-AXIS	O.C. SUB-TRANS	T''q0	0.016

MISCELLANEOUS CALCULATIONS			
3-PH CAPACITANCE-GRD	0.222	MICRO-FARAD	
BIL	3889	VOLTS	
SATURATION FACTOR	1.06		
H=0.000166 * WK**2	0.31	KW-SEC/KVA	
INERTIA WK**2	1860.56	LB-FT**2	78.40 Kg-m**2
X/R RATIO	21.7		
SHORT CIRCUIT RATIO	0.663		

RESISTANCES		OHMS	PERCENT
ZERO SEQUENCE	R0	0.0039	2.141
POSITIVE SEQUENCE	R1	0.0016	0.892

SEGREGATED LOSSES (KW)			
KW	1600.0	2000.0	NO LOAD
F&W	11.0	11.0	11.0
CORE	11.7	11.7	11.7
I**2R A	20.5	20.5	0.0
STRAY	6.1	6.1	0.0
I**2R F	12.0	7.3	2.1
EXCITER	1.8	1.1	0.3
TOTAL	63.2	57.7	25.1

TRANSIENT TORQUES		
CONDITION	TORQUE * P.U.	MAX TORQUE FT-LBS
3-PH OUT OF PH		
SYNCH W/INF BUS	13.4	157182.0
1-PH OUT OF PH		
SYNCH W/INF BUS	15.8	185434.5

* NOTE: PU torque based on rated kVA, not rated kw.

VOLTS	160.4	VOLTS	0.00
AMPS	73.2	AMPS	0.00

IF A NEUTRAL GROUNDING REACTOR (XR) IS REQUIRED TO LIMIT THE L-N CURRENT TO THE 3-PH FAULT CURRENT, THEN THE PROPER VALUE OF REACTANCE IS 0.01 OHMS (XR).

10 SECOND CURRENT RATING = 9168 AMPS
 60 SECOND CURRENT RATING = 2794 AMPS

PROPRIETARY DATA FOR ENGINEERING TECHNICAL INFORMATION