

Generator Data

Identification (Refer to Single Line Diagram)

Type of Generator:

- ☐ Turbo Generator
- ☐ Salient-Pole Generator

Rated Power

Rated Frequency

Rated Voltage

Minimum Service Voltage

Maximum Service Voltage

Rated Power Factor

Reactance Values (**Saturated**):

- Synchronuos Reactance, Direct Axis
- Transient Reactance, Direct Axis
- Subtransient Reactance, Direct Axis
- Synchronuos Reactance, Quadrature Axis
- Transient Reactance, Quadrature Axis
- Subtransient Reactance, Quadrature Axis
- Negative Sequence Reactance
- Zero Sequence Reactance
- Tolerance on Generator Reactances

Resistance Values:

- Stator Resistance

Time Constants (**Saturated**):

- Transient Short-Circuit Time Constant, Direct Axis
- Subtransient Short-Circuit Time Constant, Direct Axis
- Transient Short-Circuit Time Constant, Quadrature Axis
- Subtransient Short-Circuit Time Constant, Quadrature Axis
- Armature Time Constant

Exciter:

- Field Current which produces the Rated Voltage on the Air Gap Line

Mechanical Data:

- Speed
- Moment of Inertia of Turbine/Generator/Exciter

Method of Grounding of Generator Star Point:

- ☐ Generator Star Point Ungrounded
- ☐ Generator Star Point Grounded via Resistance
- ☐ Generator Star Point Grounded via Restistance Connected to Secondary of Transformer or Voltage Transformer
- Generator Star Point Grounding Resistance
- Grounding Transformer/Voltage Transformer:
 - Voltage on HV-Side
 - Voltage on LV-Side

Kothagudem

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mark as appropriate

Remarks

MVA

Sn

Hz

fn

kV

Un

kV

Umin

kV

Umax

--

Cos φ

%

Xd

%

Xd'

%

Xd''

%

Xq

%

Xq'

%

Xq''

Gen Negative seq. reactance

%

X0

%

0.001078

(per phase at 20 degree)

mOm

Ra

0.831

s

Td'

0.031

s

Td''

0.519

s

Tq'

0.08

s

Tq''

0.285

s

Ta

Field current at generator rated output and power factor

108A

A

If

3000

rpm

kgm2

J

mark as appropriate

Yes

0.67

NGR value

Ohm

Re

21

NGT primay kV

kV

0.5

NGT secondary kV

kV

Step-Up Transformer Data

Note that Generator transformer is 2 winding transformer. Bank of three single phase transformers.

	Generator Transformer		Remarks
Three-Winding Transformer			2 winding
Identification (Refer to Single Line Diagram)	 --		
Voltage Regulation:	mark as appropriate		
- ☐ No Voltage Regulation			
- ☐ Voltage Regulation on HV-Side			
- ☐ On-Load Tap Changer			
- ☐ Off-Load Tap Changer	Off Load tap changer		
Group Connection	--		
Rated Power of HV-Winding	3 x 330 MVA	MVA	
Rated Power of LV1-Winding (First LV-Winding)	3 x 330 MVA	MVA	
Rated Power of LV2-Winding (Second LV-Winding)	-	MVA	
Rated Frequency	50	Hz	
Rated Voltage on HV-Side	420	kV	No load voltage
Nominal Voltage on HV-Side (Nominal Tap)	420	kV	No load voltage
Maximum Voltage on HV-Side (Maximum Tap)	462	kV	
Minimum Voltage on HV-Side (Minimum Tap)	378	kV	
Rated Voltage on LV1-Side	27	kV	
Rated Voltage on LV2-Side	-	kV	
Losses:			
- Short-Circuit Losses HV-LV1		kW	GT X/R = 50
- Corresponding Reference Power		MVA	
- Short-Circuit Losses HV-LV2		kW	
- Corresponding Reference Power		MVA	
- Short-Circuit Losses LV1-LV2		kW	
- Corresponding Reference Power		MVA	
- No-Load Losses (Referred to the Rated Voltage)		kW	
Impedance Values:			
- Short-Circuit Impedance between HV- and LV1-Side:	0.20		GT is 2 winding
- Nominal Tap		pu	
- Corresponding Reference Power		MVA	
- Tolerance on Short-Circuit Impedance		%	
- Short-Circuit Impedance between HV- and LV2-Side:	-		
- Nominal Tap		pu	
- Corresponding Reference Power		MVA	
- Tolerance on Short-Circuit Impedance		%	
- Short-Circuit Impedance between LV1- and LV2-Side:	-		
- Nominal Tap		pu	
- Corresponding Reference Power		MVA	
- Tolerance on Short-Circuit Impedance		%	
Resistance Values:			
- Ohmic Voltage Drop between HV- and LV1-Side:			
- Nominal Tap		pu	
- Corresponding Reference Power		MVA	
- Ohmic Voltage Drop between HV- and LV2-Side:			
- Nominal Tap		pu	
- Corresponding Reference Power		MVA	
- Ohmic Voltage Drop between LV1- and LV2-Side:			
- Nominal Tap		pu	
- Corresponding Reference Power		MVA	

Unit Transformer Data

Three-Winding Transformer

Note that Unit transformer is two winding transformer.
Identification (Refer to Single Line Diagram)

Quantity = 2 Nos.
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- Voltage Regulation:
- [] No Voltage Regulation
 - [] Voltage Regulation on HV-Side
 - [] On-Load Tap Changer
 - [] Off-Load Tap Changer

mark as appropriate

On load tap changer
-

Group Connection

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Rated Power of HV-Winding	65	MVA
Rated Power of LV1-Winding (First LV-Winding)	65	MVA
Rated Power of LV2-Winding (Second LV-Winding)	-	MVA
Rated Frequency	50	Hz
Rated Voltage on HV-Side	27	kV
Nominal Voltage on HV-Side (Nominal Tap)	27	kV
Maximum Voltage on HV-Side (Maximum Tap)	29.7	kV
Minimum Voltage on HV-Side (Minimum Tap)	24.3	kV
Rated Voltage on LV1-Side	11.5	kV No load voltage
Rated Voltage on LV2-Side	-	kV

Losses:

- Short-Circuit Losses HV-LV1
..... kW X/R = 34.1
- Corresponding Reference Power
..... MVA
- Short-Circuit Losses HV-LV2
..... kW
- Corresponding Reference Power
..... MVA
- Short-Circuit Losses LV1-LV2
..... kW
- Corresponding Reference Power
..... MVA
- No-Load Losses (Referred to the Rated Voltage)
..... kW

Impedance Values:

- Short-Circuit Impedance between HV- and LV1-Side:
 - Nominal Tap
0.115 pu o.e.
- Corresponding Reference Power
65 MVA
- Short-Circuit Impedance between HV- and LV2-Side:
 - Nominal Tap
- pu o.e.
- Corresponding Reference Power
- MVA
- Short-Circuit Impedance between LV1- and LV2-Side:
 - Nominal Tap
- pu o.e.
- Corresponding Reference Power
- MVA

Resistance Values:

- Ohmic Voltage Drop between HV- and LV1-Side:
 - Nominal Tap
..... pu o.e.
- Ohmic Voltage Drop between HV- and LV2-Side:
 - Nominal Tap
..... pu o.e.
- Ohmic Voltage Drop between LV1- and LV2-Side:
 - Nominal Tap
..... pu o.e.

Motor Load Connected to LV1-Side:

- Rated Voltage of Motor Connected to Secondary Side
11 kV
- Total Motor Load
44.5 MVA
- Ratio of Starting Current to Rated Current
6 --
- X/R-Ratio
9 --

Motor Load Connected to LV2-Side:

- Rated Voltage of Motor Connected to Secondary Side
11 kV
- Total Motor Load
20.5 MVA
- Ratio of Starting Current to Rated Current
6 --
- X/R-Ratio
9 --

HV-System Data

Rated Voltage of HV-System	400	kV
Maximum Service Voltage of HV-System	420	kV
Minimum Service Voltage of HV-System	380	kV
Rated Frequency	50	Hz

Method of Neutral-Point Connection of HV-System:	mark as appropriate	
- ☐ Isolated Neutral-Point		
- ☐ Neutral-Point Grounded via Arc-Suppression Coil		
- ☐ Neutral-Point Grounded via Resistance		Ohm
- ☐ Neutral Point Grounded via Reactance		Ohm
- ☒ Solidly Grounded Neutral-Point		

Total Short-Circuit Current at HV-Substation (with Contribution of All Generators and All Outgoing Lines):		
- Maximum Three-Phase Short-Circuit Power		GVA
- X1/R1-Ratio	14	--
- X0/X1-Ratio		--
- R0/R1-Ratio		--

