



Presentation on

ON LINE TRANSFORMER OIL

REGENERATION PROCESS OF GT-8

GAS TURBINE POWER STATION, URAN

MAHARASHTRA STATE POWER GENERATION CO, LTD
GAS TURBINE POWER STATION, URAN.

UNIT NO-8 GENERATOR TRANSFORMER
ON LINE OIL REGENERATION WITH PURIFICATION, DECARBURIZING,
DE- SLUDGING

NAME OF THE AGENCY: -

M/S, CEE DEE VACUUM EQUIPMENT PVT LTD,
PLOT NO-81- B/16, GENERAL BLOCK,
MIDC, BHOSARI, PUNE-411026

ON LINE OIL REGENERATION WITH PURIFICATION, DECARBURIZING,
DE- SLUDGING
OILSAMPLE RESULTS COMPARATIVE STATEMENT & ANALYSIS
AND
TRANSFORMER TEST RESULTS

Unit # 8 Generator Transformer Testing

Date : 15/10/2008

X' mer winding insulation resistance measured by 1 KV hand operated megger

Oil Temp. 37°C

Winding Temp. 40°C

Tap No. 4

IR value	15 sec.
HV to Earth	100 Mohm
LV to Earth	70 Mohm
HV to LV	100 Mohm

X' mer winding resistance measured by Scope T & M Pvt. Ltd, make meter (Sr. no. 2304-08T-025) Model TRM 104

Winding	Meter measurement range selected		Measured value	
	Current	Resistance	Current	Resistance
R-N	10 Amp	2 ohm	9.0 Amp	520.1 mohm
Y-N	10 Amp	2 ohm	8.99 Amp	520.1 mohm
B-N	10 Amp	2 ohm	8.98 Amp	520.8 mohm
r-y	10 Amp	20 mohm	10.46 Amp	1.37 mohm
y-b	10 Amp	20 mohm	10.48 Amp	1.33 mohm
b-r	10 Amp	20 mohm	10.49 Amp	1..37 mohm

X' mer Voltage ratio & magnetic balance test

Voltage applied	HV voltage measured						LV voltage measured			Current measured		
	R-Y Volts	Y-B Volts	B-R Volts	R-N Volts	Y-N Volts	B-N Volts	r-y Volts	y-b Volts	b-r Volts	R mA	Y mA	B mA
R-Y	235	156	79	1.3	130	24	9.9	1.9	7.9	1.5	1.5	-
Y-B	158	236	78	27.7	131.7	105.1	9.98	7.97	2.04	-	1.6	1.4
B-R	145	91	236	127.3	20.4	109.2	1.42	8.26	9.64	2.3	-	2.2
R-Y-B	410	410	410	2236	236	236	17.8	17.7	17.8	3.08	2.07	3.09

Unit # 8 Generator Transformer Testing after completion of oil filtration (On Load)

Date : 19/01/2010

X' mer winding insulation resistance measured by 1 KV motorised megger

Oil Temp. 44°C

Winding Temp. 45°C

IR value	15 sec.	60 sec.
HV to Earth	600 Mohm	700 Mohm
LV to Earth	700 Mohm	800 Mohm
HV to LV	450 Mohm	475 Mohm

X' mer winding resistance measured by Scope T & M Pvt. Ltd, make meter (Sr. no. 2304-08T-025) Model TRM 104

Winding	Meter measurement range selected		Measured value	
	Current	Resistance	Current	Resistance
R-N	10 Amp	2 ohm	8.26 Amp	520 mohm
Y-N	10 Amp	2 ohm	8.27 Amp	520 mohm
B-N	10 Amp	2 ohm	8.21 Amp	523.5 mohm
r-y	10 Amp	20 mohm	9.51 Amp	1.388 mohm
y-b	10 Amp	20 mohm	9.56 Amp	1.36 mohm
b-r	10 Amp	20 mohm	9.52 Amp	1..38 mohm

X' mer Voltage ratio & magnetic balance test

Voltage applied	HV voltage measured						LV voltage measured			Current measured		
	R-Y Volts	Y-B Volts	B-R Volts	R-N Volts	Y-N Volts	B-N Volts	r-y Volts	y-b Volts	b-r Volts	R mA	Y mA	B mA
R-Y	428	275	155	192	233	41	17.6	3.1	14.5	1.87	1.75	-
Y-B	274	428	155	40	233	193	17.6	14.6	3	-	1.94	1.6
B-R	191	237	429	205	233	193	1.41	16.6	15.4	2.67	-	2.92
R-Y-B	428	429	430	247	246	247	18.75	18.78	18.78	2.69	1.66	2.78

**UNIT GENERATOR TRANSFORMER 146 MVA TRANSFORMER OIL TEST RESULTS BEFORE AND AFTER
ONLINE REGENERATION PROCESS**

TYPE OF TESTS	SAMPLE TESTED BY BR INDUSTRIES PANVEL		SAMPLE TESTED BY CPRI BANGLORE	
	BEFORE REGENERATION, DATE :- 20/04/09	AFTER REGENERATION, DATE :- 26/12/09	BEFORE REGENERATION, DATE :- 05/08/09	AFTER REGENERATION
1) APPEARANCE	Brown	Yellow		Clear
2) DENSITY				
3) KINEMATIC VISCOCITY		14		12.062
4) INTRAFACIAL TENSION		36	24	45
5) FLASH POINT (In degree centigrade)		> 140	162.5	
6) POUR POINT (In degree centigrade)		< 06		
7) NEUTRALISATION VALUE(TOTAL ACIDITY)	0.11	0.02	0.02	0.01
8) BREAK DOWN VOLTAGE (In KV)	67	65	43	79
9) DI ELE DISSIPATION FACTOR	0.086	0.003	0.094	0.00025
10) RESISTIVITY in (Ohmcm)	0.29 X 10 ¹²	48.9 X 10 ¹²	0.23 X 10 ¹²	0.250 X 10 ¹²
11) WATER CONTENT (In ppm)	28	10	31	14
DGA REPORT				
1) CARBON MONOXIDE (CO)	315	7	196	ND
2) METHANE(CH4)	26	BDL	33	2
3) CARBON DIOXIDE (CO2)	5614	207	6598	192
4) ETHYLENE (C2H4)	6	BDL	13	3
5) ETHANE (C2H6)	14	BDL	18	2
6) ACETELENE (C2H2)	BDL	BDL	Not detected	ND
7) HYDROGEN (H2)	19	BDL	11	ND
8) TOTAL GAS CONTENT	Not tested	Not tested	123240	90963
9) OXYGEN	Not tested	Not tested	20116	25812
10) NITROGEN	Not tested	Not tested	74226	54206