

3	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 012111	WARTSILA FINLAND OY LIMITED	06/2005
4	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 012112	WARTSILA FINLAND OY LIMITED	06/2005
5	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 012114	WARTSILA FINLAND OY LIMITED	06/2005
6	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 012115	WARTSILA FINLAND OY LIMITED	06/2005
7	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 012113	WARTSILA FINLAND OY LIMITED	06/2005
8	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 024055	WARTSILA FINLAND OY LIMITED	08/2005
9	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 029543	WARTSILA FINLAND OY LIMITED	09/2005
10	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 030190	WARTSILA FINLAND OY LIMITED	11/2005
11	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 202678	WARTSILA FINLAND OY LIMITED	08/2010

12	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 202677	WARTSILA FINLAND OY LIMITED	08/2010
13	Old and Used Gas Engine Generators with Standard Accessories	9.63	W20V34SG	PAAE 208371	WARTSILA FINLAND OY LIMITED	03/2016
14	Old and Used Gas Engine Generators with Standard Accessories	9.63	W20V34SG	PAAE 208377	WARTSILA FINLAND OY LIMITED	03/2012
15	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 197561	WARTSILA FINLAND OY LIMITED	02/2010
16	Old and Used Gas Engine Generators with Standard Accessories	8.73	W20V34SG	PAAE 197562	WARTSILA FINLAND OY LIMITED	02/2010



GEG#1



GEG#2



GEG#3



GEG#4



GEG#5



GEG#6



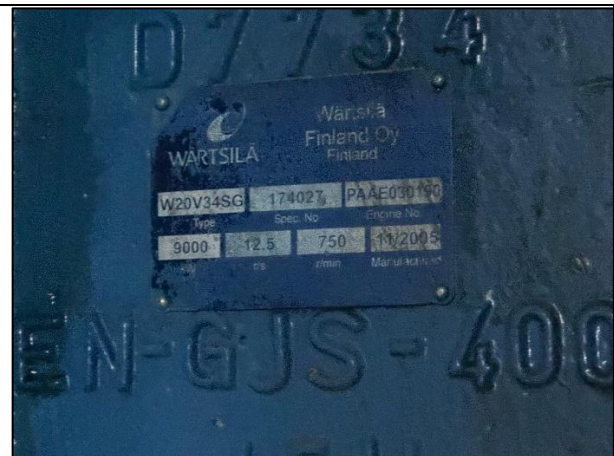
GEG#7



GEG#8



GEG#9



GEG#10



GEG#13



GEG#14

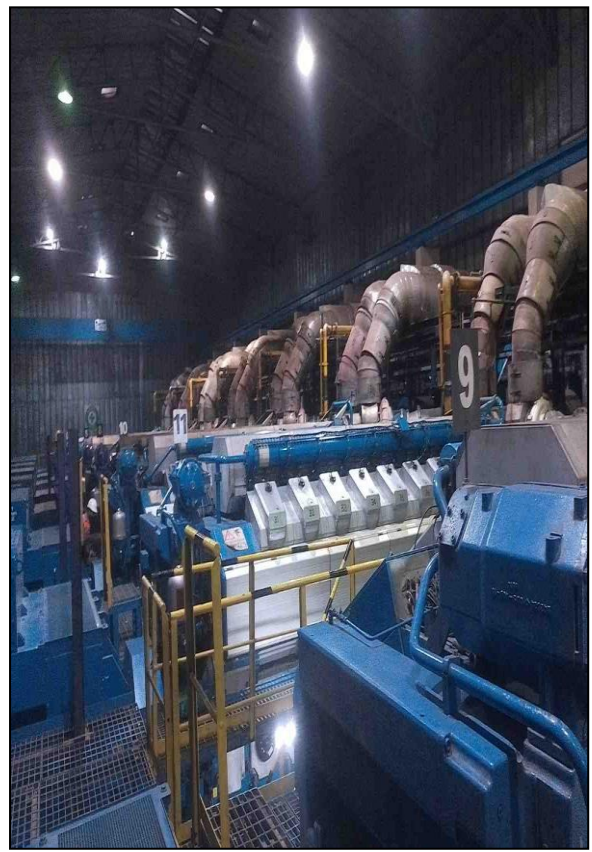


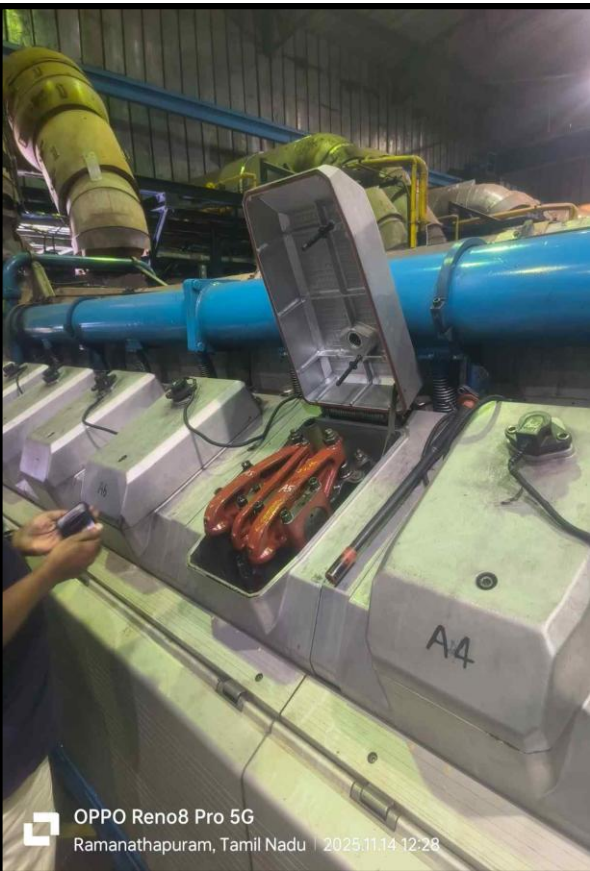
GEG#15



GEG#16

Note: Engine # 11 & 12 Nameplate was missing at the time of inspection and the details of the machine was collected from the company's database.







OPPO Reno8 Pro 5G
2025.11.14 12:19



OPPO Reno8 Pro 5G
2025.11.14 12:19



OPPO Reno8 Pro 5G
Ramanathapuram, Tamil Nadu | 2025.11.14 12:26



OPPO Reno8 Pro 5G
Ramanathapuram, Tamil Nadu | 2025.11.14 12:25



OPPO Reno8 Pro 5G
Ramanathapuram, Tamil Nadu | 2025.11.14 12:25



OPPO Reno8 Pro 5G
Ramanathapuram, Tamil Nadu | 2025.11.14 12:25

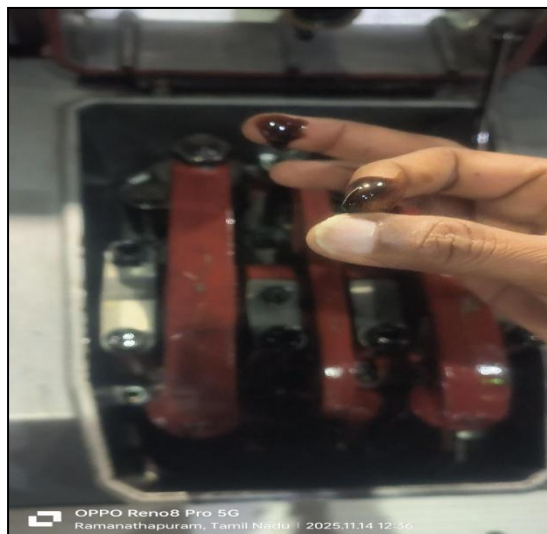
Visual Condition:

- We have visually inspected all the 16 Units of Gas Engine Generators with Standard Accessories are in Old and Used Condition.
- During Inspection we noted that no corrosion was occurred in the engine external parts and we observed no any leaks from these engines.
- The periodic maintenance and overhaul were done by the OEM (Wartsila India Limited). No Other parties entertained since Commissioning. Operations Contract also under Wartsila India Ltd. Owner Employees are Executing the production.
- All the parts are intact with engines for the operation.
- The paint condition sounds good, no repaint is required as far now. In future any repaint is required it can be done during the erection.

Lubrication System:

We noted that they are using different grades of lube oils for different components mentioned in the below table and lube analysis report was noted for selected engines say (Engine No.4, 6 and 14). The condition of the lube oil was also good and they were in measured levels. All the pipes are properly integrated.

Equipment	Lube Oil Brand
Engine Sump Oil (Engine No – 1,2,3,4,6,8,9,10,11,12,13,14,15,16)	Shell Mysella S3N 40
Engine Sump Oil (5,7)	Mobil Pegasus 805 Ultra
ACC Fan Gear Box	Shell Omia – 320
Charge Air Filter	Shell Merlina – S1-B100
Turbine Oil & CEP and Hot well Pump	MAK Turbol 46
Power Transformer	Power transformer oil
Starting air compressor	Serve System 220
Turning Gear	Mobil Spartan EP 460
Screw Compressor	Ultra Coolant
HP & LP Gassing Pump	Serve 460
Lube oil separator	Castrol 20WD-40
Alternator Bearing	Castrol Perfecto X 46 (SC)



Cooling System:

We inspected the header tanks no corrosion marks are occurred, the coolant was visible and mixed with **Nalcool 2001**. And observed no leaks. All the coolant pipes are intact in that we noted very few hoses. Ground Water analysis witness with good quality of water, However DM water is using in the Engine and Radiator Cooling System.



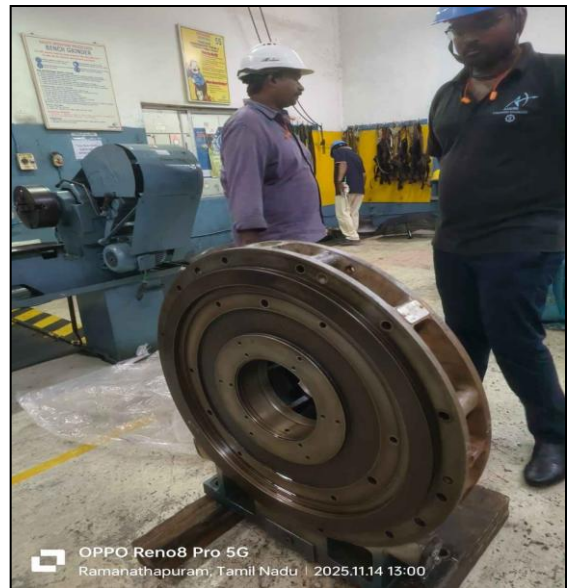
Fuel System:

All these engines are operated in **Natural Gas**. All the gas train modules (Gas Regulating Units) are placed with Particle filter, Pressure Control Valves, Safety shut down Valves and Vent Valves which is linked to PLC and Operating in good condition. Gas filters renewed as per Schedules. Gas leakages were controlled by PLC and local detection system is placed. Time to time MCC Valves and PCC Valves as well as Gas chamber valves are maintaining /Renewing as per Schedule recommended by Wartsila.



Turbochargers / Intake:

During inspection the entire turbo charger are in-line with their respective engines and 02 no's of turbo chargers were dismantled for maintenance purpose and in that both Rotors are sent to Wartsila workshop for balancing purpose. All the turbochargers were supplied by Napier NA357. The charge air filters are equipped with Turbochargers which are kept outside. These CA filters are rotating type and oil bath Filters. Customer is renewing the oil as per Schedule and Rotation of Filters checked ok. Fouling play of the Impeller are sounds good though some of the engines are working and some are in standby condition.



Exhaust:

Expansion joints and bellow joints are intact with them engines are the exhaust gases are thrown away through silencer and no leaks found in it. The exhaust system is insulated wherever needed.



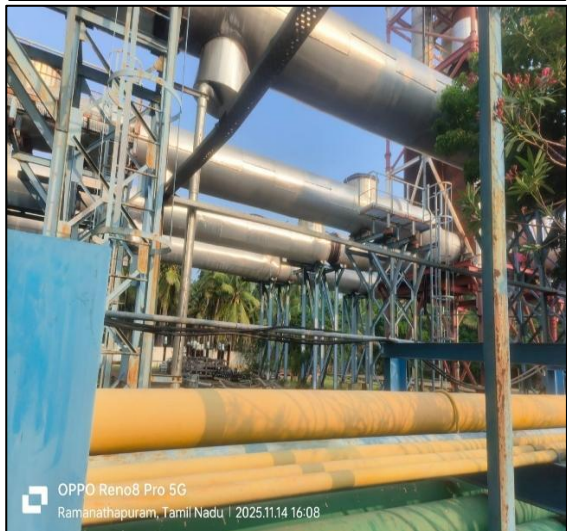
OPPO Reno8 Pro 5G
Ramanathapuram, Tamil Nadu | 2025.11.14 16:07



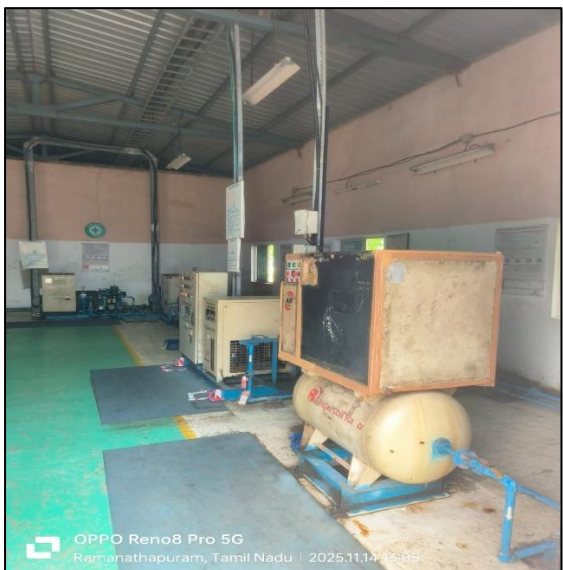
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Perungulam, Tamil Nadu | 2025.11.14 13:48



OPPO Reno8 Pro 5G
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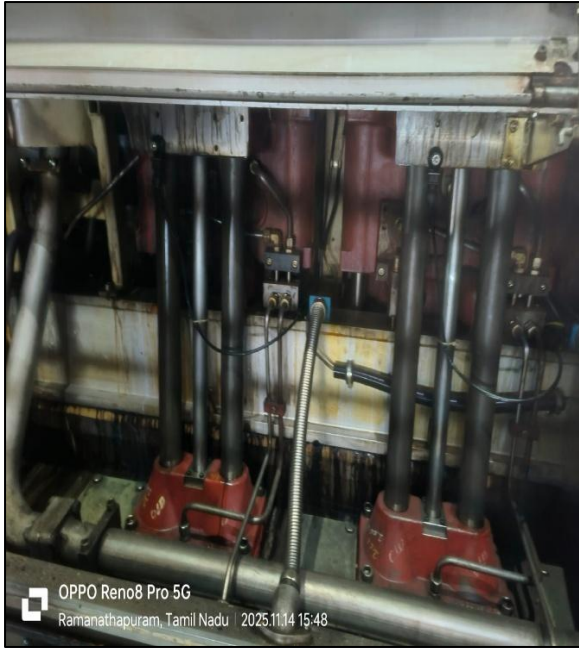
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Crank / Alignment:

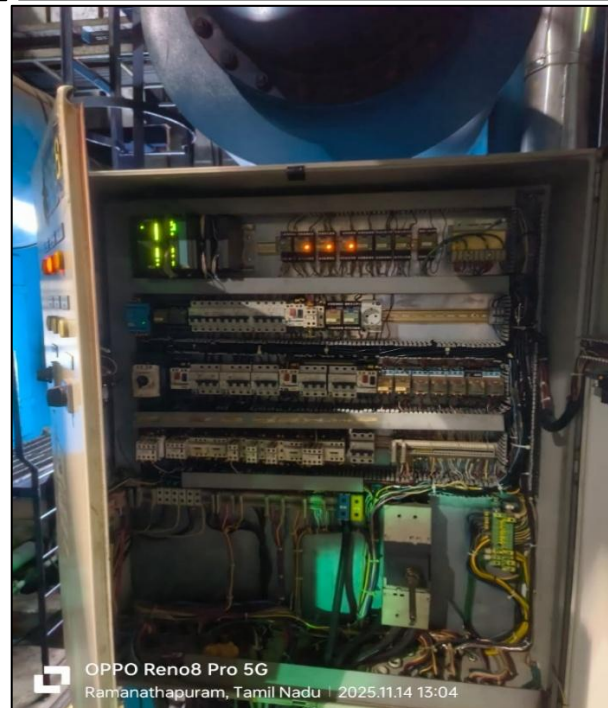
During visual inspection we manually rotated the engine and checked the play of the crank that seems to be good. However we have gone through the maintenance records of Wartsila, all those records are upto date. At the time of inspection 4 engines were in operational from that we have observed that no bearing noise, no metallic sound and vibrations are under the permissible limit.





Electrical Coupling:

All the electrical cables and the other couplings are aligned properly with the safety system to the engines. Earthing's are properly channelled in the ground in the safe manner.



Comments / Observation:

As per conditions and observation from the records all the 16 gas engines are properly maintained and overhaul is done periodically by the Wartsila. Operational of all the engines are monitored and controlled by systematically. The running hours of all the gas engines are observed from **WISE** and **WOIS** system and verified. In that some of the engines are **DUE** for overhaul process. All these observations are done on the date of inspection.

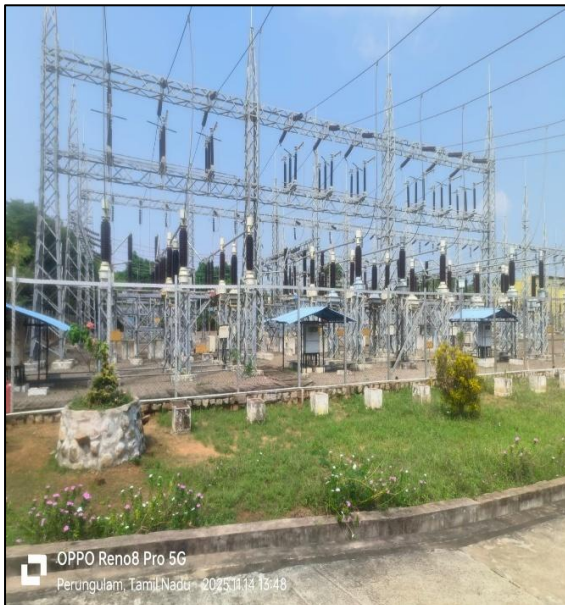
Generator and transformer checklist:

Generator:

All the 16 gas engines of the generators are visually inspected whichever the engines are crossing above 1 lakh running hours are decoupled for maintenance and overhauling is done like (windings, bearings, insulation) which is witnessed. Verified the IR/PI test reports is on date.

Transformer:

The oil level and the colour of the oil is visually inspected. Breather condition was not able to take since the plant is in running condition.

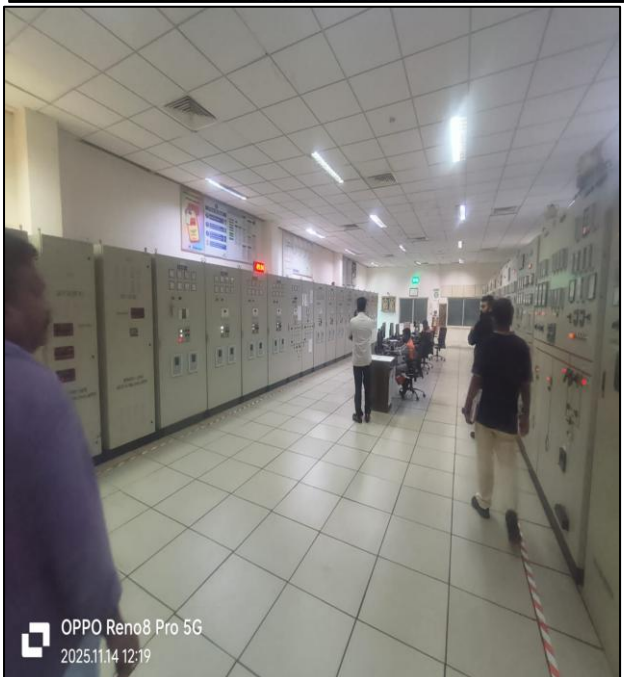


Switchgear:

The switchgear was controlled and monitored by the Wartsila. Engine switchgears are combined in the cluster of transformers. These switchgears are commonly connected with local bodies hence breaker status and relay settings cannot be noted unless the plant is in shut condition.

Control and relay panels:

We verified PLC and HMI of all the 16 engines are maintained in one control room. The wiring and labelling conditions are properly intact with the engine systems. Relay panels and safety systems were in place and Testing and Calibration was done as per Schedules with outside Agency under the Supervision of Wartsila.



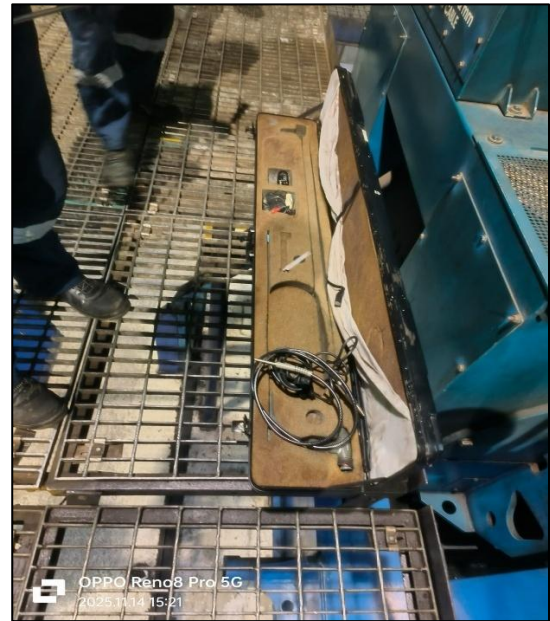
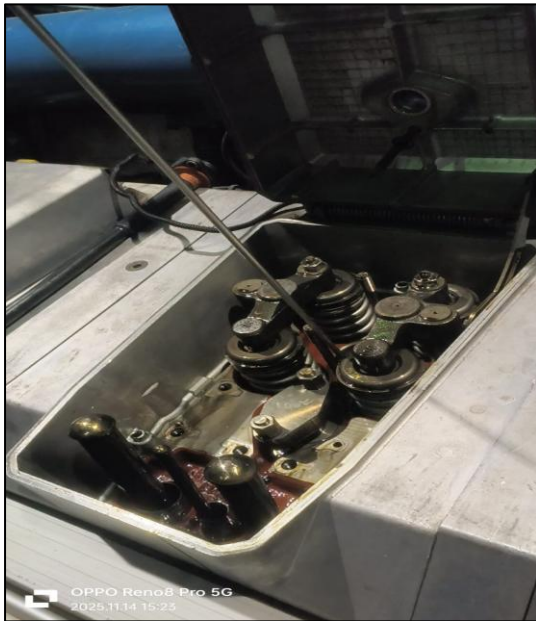
Technical Inspection (Borescope):

Out of 16 Gas Engines, we randomly chose 3 engines (GEG#4, GEG#6, GEG#14) and performed borescope inspection. We evaluated the valves, Flame Plate area, and hatches on the Liner which were found in good condition. Surprisingly All Honing Hatches are clearly visible and good condition.

Gas Gen set #4: B-6 and A-5 units

Gas gen set # 6: A-4 and B-6 units

Gas Gen set #14: B-4 and A-7 units.



Visual Inspection Carried out for Connecting Rods, Cam shafts, Rocker arms, Engine Sump, Main Bearings and Inside the sump which are in good condition. Painting and Cleanliness is awesome.

Gas Gen set #4: A-3, B-3, A-6, B-6 Units.

Gas gen set # 6: A-5, B-5, A-7, B-7 Units.

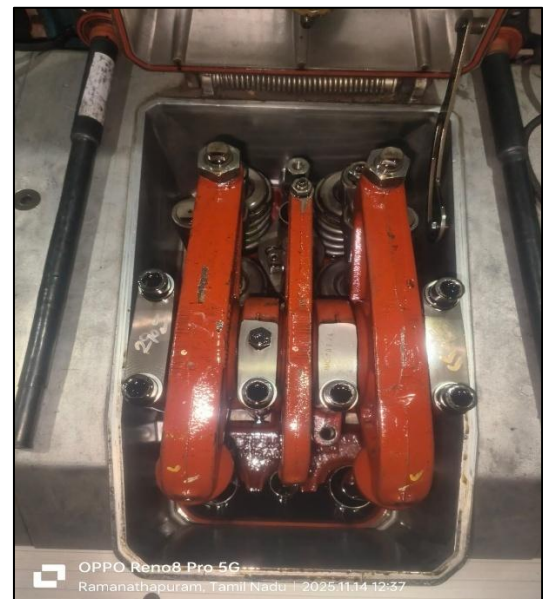
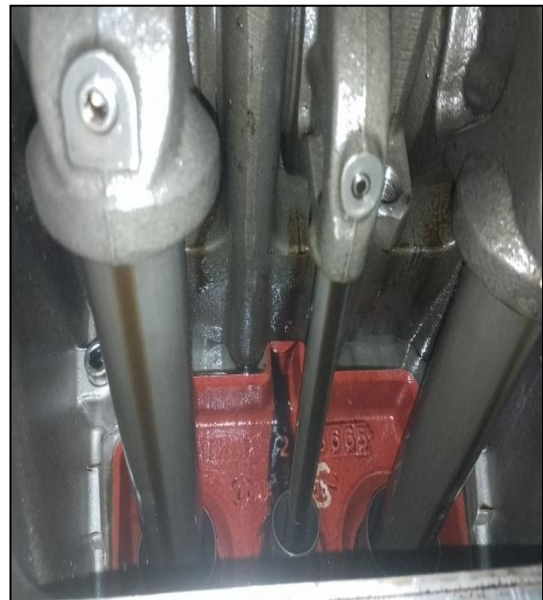
Gas Gen set #14: A-4, B-4, A-7, B-7 Units.

Rocker Arm Unit:

Gas Gen set #4: A-5, B-6 Units.

Gas gen set # 6: A-7, B-3 Units.

Gas Gen set #14: A-7, B-4 Units.



Maintenance Schedules & Running Hours:

GEG. No.	Engine No.	Present Running Hour As on	Last overhauling done in Hour	After Overhauling Running Hour
1	PAAE 012109	117667	95650	22017
2	PAAE 012110	126693	91733	18039
3	PAAE 012111	118478	108654	9824
4	PAAE 012112	130291	129035	1256
5	PAAE 012114	126787	97109	29678
6	PAAE 012115	114578	92703	21873
7	PAAE 012113	121268	99130	22138
8	PAAE 024055	133437	111194	22248
9	PAAE 029543	113488	110888	2630
10	PAAE 030190	107267	99507	7760
11	PAAE 202678	61111	49293	11818
12	PAAE 202677	79900	53280	26620
13	PAAE 208371	51195	30746	20449
14	PAAE 208377	49985	26501	23484
15	PAAE 197561	41023	27144	13879
16	PAAE 197562	42166	25237	16929

Recommendations:

According to the above table 08 Engines can be Operated Continuously further to get the Production. However other 08 Units are due for Overhaul which can be taken into consideration one by one.

Wear and tear on Gas Engines are lower side Comparatively than the Fuel Engines, hence Gas Engines can be operated for immediate production and same can be Recommended to take up the Overhauls one by one considering the more Running hours after last Major overhaul.

Conclusion:

The inspected Plant is very clean and tidy in condition. All the engines are well equipped for the operations.

Operations are going in Very smooth manner; Construction of the plant is very good and Electrical systems followed as per Standards and Government approvals are in place.

These 16 Sets of Gas Engine Generators are in good condition and last 06 sets have crossed hardly 50-60,000 Hours of Operations, the useful life has still not exhausted & can be used easily for another 30 Years subject to proper maintenance and overhaul done, even considering the ageing factor of the engines are capable for long life. The 1st Phase of 10 Engines has crossed more than 100,000 Hours, even though it is able to perform 100 % due to its time-to-time Maintenance which was maintained by its OEM -Wartsila.

The Plant is able to run and start to deliver power of all 16 Engines without any interruption. In other words, these engines when maintained in a good condition by adhering to the OEM recommendations give good service life & RAM characteristics for almost 30 years and by considering the band width of the Engines.

No Breakdowns occurred since Commissioning like Piston failure, Turbocharger failure etc.,