



HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA
AND KOLHAPUR GA



HPOIL GAS PVT LTD

(A JOINT VENTURE OF HPCL & OIL INDIA)

**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION
AND MAINTENANCE SERVICES FOR CNG COMPRESSORS AT
AMBALA-KURUKSHETRA AND KOLHAPUR GA**

TECHNICAL VOLUME

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SECTION 1: SCOPE OF WORK

1) INFORMATION:

The information given in the Bid Documents and in the plans and drawings forming part thereof is merely intended as general information without undertaking on the part of the Owner as to its accuracy and without obligation relative thereto upon the Owner. The Vendors are expected to conduct their own surveys and investigations prior to Bidding.

Before bidding, the vendor shall undertake and shall be deemed before bidding to have undertaken a thorough study of the proposed work, the job site(s) involved, the site conditions, the labor, power, water, material and equipment availability, transport and communication facilities and temporary offices and accommodation quarters, and all other factors, constraints and facilities necessary for the formulation of the Bid, supply of materials and the performance of the work.

The vendor shall inspect and examine the site and its surroundings and shall satisfy himself before submitting his tender as to the nature of the ground present, physical conditions and all roads, approaches and lands which may be used temporarily otherwise in connection with the works, means of access to the site accommodation he may require and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his tender.

2) SITE VISIT:

The Tenderers are advised to visit the locations and examine their surroundings and obtain all information that may be necessary for preparing their Offer / Bid and entering the contract. Non-familiarity with site conditions will not be considered a reason either for extra claims or for not carrying out the work conforming to the specifications.

The bidder shall be responsible for providing all required spares, consumables, lubricants, lubricating oil, coolant, sealant, and other materials necessary for the comprehensive maintenance of the complete compressor package throughout the contract period. This includes all activities related to periodic, preventive, and breakdown maintenance to ensure the continuous and uninterrupted operation of the compressor packages.

The bidder shall be responsible for the calibration of the entire instruments associated with the compressors and air compressors.

The Bidder shall be responsible for the thickness test of Air vessel, Volume cylinders, BDV and all other cylinders associated with the compressor that require thickness test.

The bidder shall provide all consumable items such as distilled water, compressor oil, engine oil, coolant, cotton, and other associated materials required for the operation and maintenance of the compressor and air compressor.

The bidder shall ensure that the compressor operator visits all stations within the cluster at least every two



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hours, or as & when required.

The bidder shall provide conveyance for the cluster-wise compressor operator to ensure their availability at the site every 2 hours at all cluster-wise provided stations.

The bidder shall be responsible for carrying out the hydrostatic testing of the CO₂ cylinder, BDV, Air Vessel, Volume cylinders and all other cylinders associated with the compressor that require hydrostatic testing.

The bidder shall be responsible for submitting the Daily Progress Report (DPR) of the compressor on a daily basis.

The bidder shall provide hard copies of all logbooks required for maintaining records of the compressor packages. If any additional logbooks are required in the future to maintain compressor-related data, the bidder shall also provide them.

The bidder shall be responsible for painting all equipment associated with the compressor.

Additionally, the bidder must maintain a minimum stock of essential spares. In case of any accidental or otherwise bidder-attributable damage to the equipment, the bidder shall repair or replace the damaged equipment at their own expense.

The bidder is required to provide comprehensive maintenance services with 100% availability of genuine spares to carry out Comprehensive maintenance contract of CNG Compressors (GED/ EMD/Variable/ online/ booster) including supply of spares during the entire contract period.

3) The details of compressors in GA are as follows:

- 1) KPCL - Kirloskar Pneumatic compressors Ltd,
- 2) Ideate - Ideate Informatics LLP,
- 3) I C L - Indian compressors Ltd,
- 4) Sopan- Sopan O&M company Pvt Ltd
- 5) Tulip- Tulip Compression Pvt. Ltd.

Details of type of compressors KOLHAPUR GA :

Sr. No.	Compressor Make	SCMH	GED	EMD	Booster Compressors
1	M/s Kirloskar Pneumatic Compressors Ltd	1200	2		
2	M/s Kirloskar Pneumatic Compressors Ltd	1200		1	
3	M/s Ideate Informatics LLP	400			10
4	M/s Indian Compressors Ltd	400			3
5	M/s Indian Compressors Ltd	250			3
6	Sopan O&M Company Pvt Ltd	450			1



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Details of Type of Compressor at A-K GA:

Sr. No	Compressor Make	SCMH	GED	EMD	Booster Compressor
1	M/s Kirloskar Pneumatic Compressors Ltd	1200	0	1	0
2	M/s Tulip Compression Pvt. Ltd.	1200	1	0	0
3	M/s Tulip Compression Pvt. Ltd.	650	0	5	0
4	M/s Ideate Informatics LLP	400	0	0	11
5	M/s Indian Compressors Ltd	250	0	0	3
6	Sopan O&M Company Pvt Ltd	450	0	0	1

4) The manpower details are as follows:

Designated operational services who will be taking care of the operations of the Compressors installed in Clusters/Site for which Qualification required is Mechanical / Instrumentation & Electrical has to be provided by the Vendor after receiving the contract for operations / comprehensive maintenance contract of the Compressors:

- a) All Operators/Technicians shall possess valid min.. ITI qualifications in Mechanical/Electrical/Instrumentation trades and minimum 02 years of relevant experience.
- b) The Contractor shall arrange initial induction training and periodic refresher training (every 06 months) through OEM or HOGPL-approved agency.
- c) Bidder shall ensure adequate numbers of expertise such as Tech/In charges /Engineers for the operations & maintenance.
- d) Records of training, certification, and skill competency shall be maintained and submitted to HOGPL Engineer-In-Charge (EIC) on a quarterly basis.

Cluster wise details: bidder has to provide all cluster wise t manpower along with proper plan for the reliver services accordingly, HOGPL shall not pay any additional cost in this respect. Clusters mentioned in the table below are tentative but not limited to the following:

The scope also includes the new compressors at other new stations/ upgradation of stations in the respective clusters. Also, the details mentioned are not limited to below:



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CLUSTER WISE MANPOWER REQUIREMENT

Cluster Name	Station Name	OLS/DBS	Proposed Manpower
KPCL	Online Kagal Mother Station GED	OLS	3
	Online Kagal Mother Station EMD		
KPCL	Online Disha Station Herle	OLS	3
ICL	Laxmi Petroleum Malkapur	DBS	3
ICL	N S Petroleum Sangwade	DBS	2
ICL	Vakratund Fuels Sarawade	DBS	2
Ideate	Konduskar Autocentre Rajarampuri	DBS	2
	Umiya Petrocenter Udyamnagar		
	Devkar Automobiles Rankala		
	Hajare Petroleum Washi		3
	Mangave Automobiles Jaysingpur		
	J B Petrolinks Ichalkaranji		
	Tare Fuels Shirol		
	Londhe & Company Gadhindlaj		
	Sushant Transport Ajara		
ICL	Warana Petroleum Warananagar	DBS	2
	Deepraj Petroleum Waghbil Panhala		
	Devgiri Autolines Peth Vadgaon		
Ideate, Sopan	Beherji Petroleum Murgud	DBS	2
	Kesarkar Petroleum Uttur		

EMD: Electric Motor driven CNG compressor package

GED: Gas engine driven CNG compressor Package

Note: Bidder to submit the quote accordingly and HOGPL shall not pay any additional cost in this



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respect. Bidders shall have to provide the services on 365 days or complete year. Accordingly, Bidder shall have to consider all in his scope and submit the quote to provide the requisite service

Cluster Name	No Of Cluster	No of Stations	Station Name (Ambala-Kurukshetra GA)	Proposed Manpower
Tulip	2	5	COCO, Ramgarh (Tulip)	3
			HP Dhillon Filling Station (Tulip)	
			Lachhmandass FS (Tulip)	
			Abhay Highways (Tulip)	3
			Premium HP Centre (Tulip)	
ICL	1	2	Devi oil Store (ICL)	3
			Khoshla FS (ICL)	
Ideate	4	9	Fateh Filling Station	3
			G-Line Filling station	
			Gautam Filling Station	3
			Naggal Filling Station	
			Shree Ganesha Filling Station	
			RJ Nalvi Filling Station	3
			Sidhu Filling Station	
			Navbharat Filling Station (Ideate)	3
			SNSK, Ladwa (Ideate)	
Sopan, ICL, Ideate	1	3	Sai Filling Station (sopan)	3
			Himway FS (ICL)	
			Rishi Markanda Filling Station (Ideate)	
KPCL	1	1	CGS Jalbera (KPCL)	3
Tulip	1	1	CGS (Tulip)	3
Ideate	1	1	Akshay Filling Station (Ideate)	3

5) Scope of cluster-based operations:

The scope/specification covers the minimum specified requirement for various activities to be carried out by the service provider towards Operational Services of various CNG Compressor packages installed at various CNG stations as per the location's list provided in the tender document.

The cluster based Operational Services scope includes but not limited to:

- 4.1. At all CNG Online/ Mother Stations / daughter booster stations the Contractor shall deploy competent Operator to visit all CNG stations on daily basis to carry out routine checks including top up of Oil, coolant, checking compressor process and performance parameters etc. The services are required on 365 days including Sundays and all holidays on round the clock basis as directed by HOGPL Engineer- In-Charge (EIC), for which the Contractor will deploy One Operator (minimum of ITI Technician level) in each shift



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to monitor a cluster of 2 to 5 CNG Stations. The list of stations covered under the cluster is given in this document. In addition to Operations, the Operator shall carry out daily inspection/checks as per the Inspection Check List recommended by the Compressor OEM and as approved by HOGPL.

- 4.2. The dedicated operators shall be considered at MS & Satellite MS for carrying out both operations of compressor & LCV Loading operations as per HOGPL standard operating procedures. There shall be one operator in each shift in each cluster of CNG Stations. Operator shall visit each CNG Station as per station requirement.
- 4.3. In case of cluster of CNG Stations, operated in night hours, then Operator is required during night shift/ hours as per manpower requirement. However, it is the responsibility of bidder to ensure the starting of the machine at any time.
- 4.4. It is the responsibility of the bidder to carry out both operations of compressor & LCV un- Loading operations at DBS stations including opening and closing of cylinder valves and unloading of LCV as per the HOGPL standard operating procedures.
- 4.5. For Gas Engine/Motor Driven compressors: Operation of CNG compressors 365 days including Sundays and all holidays on round the clock basis in 3 shifts (or in 2 shifts at stations with less CNG daily sales) as directed by HOGPL Engineer-In-Charge (EIC), for which the Contractor will deploy One Operator (minimum of ITI Technician level) in each shift. In addition to daily Operations, the Operator shall carry out daily inspection/checks before starting the compressor as per the Inspection Check List recommended by the Compressor OEM and as approved by HOGPL and also loading of mobile cascades including closing of cylinder valves and issue of excise gate pass (if applicable as per HOGPL's to LCV/MCV/HCV's).

OPERATIONS & DAILY ROUTINE CHECKS:

- 4.6. All the jobs mentioned under scope of services shall be carried out as per sound engineering practices, work procedures, documentation & recommendation of the Original Equipment Manufacturer (OEM) and as per the guidelines/direction of HOGPL EIC.
- 4.7. All CNG Online & Mother Stations installed with Gas Engine Driven Compressors requires dedicated operators for manning the CNG stations with few exceptions referred to cluster sheet.
- 4.8. Technicians/Operators provided shall have minimum qualification of ITI/Diploma in Mechanical/Fitter/Instrumentation/Electrician trade and shall be experienced in handling & servicing of oil & gas equipment, preferably CNG compressors & Gas engines, Electrical motor driven compressor packages, booster compressor packages, well trained & certified by Compressor/Engine OEM before they are inducted.
- 4.9. The services are required 365 days including Sundays and all holidays on round the clock basis as directed by HOGPL Engineer-In-Charge (EIC), for which the Contractor will deploy One Operator (minimum of ITI Technician level) in each shift to monitor a cluster of 2 to 5 CNG Stations. The Operator shall carry out daily inspection/checks and as per the Inspection Check List recommended by the Compressor OEM and as directed by HOGPL EIC.
- 4.10. Lube oil of various grades will be stored at the contractor's store, and it will be responsibility of Contractor to collect, transport and account for oil as per requirement at various maintenance locations/stations. Transportation and other charges shall be borne by the contractor. The Contractor shall ensure proper documentation (e.g. Outward gate pass) for transportation of oil from one station to another.
- 4.11. The Contractor shall be responsible for security & storage of all materials maintaining



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- at his store/ HOGPL premises on urgency basis or at site. Oil storage shall be such that it is not contaminated or mixed with water/other substances/used oil.
- 4.12. Closing of Cylinder valves and the cleaning of Radiator shall be carried out as per OEM recommendation & as and when deemed necessary.
- 4.13. In addition, operator/Cluster incharges shall submit the report on quarterly basis or as per decided frequency in a format decided by HOGPL EIC, which shall include the mentioned parameters in below clause. Contractor shall submit Daily Progress Report, Compressor performance and process parameters on daily basis as per HOGPL format.
- 4.14. Bidder shall ensure transportation arrangement for the operators for movement inside the cluster HOGPL shall not provide additional cost against transportation.
- 4.15. Bidder shall ensure proper transportation facility for supervisor/Tech team/Incharge for attending the break down/ Preventive maintenance in min time as per given schedule of HOGPL AIC. The falling to reach at site within the time due to non availability of own transport facility bidder shall attract penalties as per AIC HOGPL.
- 4.16. The Operator will perform the following activities during his visit to the Station:
- Check compressor & engine parameters and note down the same in prescribed format of HOGPL.
 - Check oil level of lubrication tank & crank case.
 - Drain oil from blowdown vessels, volume bottles etc. as per routine practice. Keep drain oil at designated place.
 - Check stock of lubricant oil/DM water/Nalcool/Nalprep etc. as well as make entry against consumption. Contractor shall send stock position to HOGPL EIC on fortnightly basis. But, service provider/ contractor has to monitor the stock position on daily basis.
 - Upkeep of the compressor package.
 - Ensure that no unwanted material is kept inside or around the compressor package. The Operator shall inform its Maintenance team to submit material to HOGPL CNG Store if found available at site.
 - Cleaning of compressor package.
 - Checking of oil drops of lubricator to ensure its working.
 - Record keeping of fresh oil and used oil at CNG Station.
 - Record keeping of Receipt and dispatch of fresh oil/used oil/DM Water.
 - Checking of CO2 Flooding system condition
 - Loading of CNG mobile cascades upto the specified pressure as per HOGPL instructions
 - Closing of CNG cylinder valves of mobile cascades before dispatch of LCV/MCV/HCV.
 - Issue of Excise gate pass to LCV/ MCV/HCV.
 - Any abnormality seen during the daily inspection shall be reported immediately to HOGPL EIC /HOGPL control room and immediate action shall be taken in consultation of HOGPL EIC.
 - Any leakages observed in gas, oil & water circuits shall be immediately attended before starting the compressor. If it is a major complaint, then immediately it should be reported to HOGPL EIC/ HOGPL control room.
 - The Operator deployed by the Contractor at CNG Stations installed with Gas Engine driven Compressor packages/ satellite mother station will have to record the Compressor & Engine Parameters on hourly basis in the logbook & the application suggested/provided as per HOGPL.
 - In case of CNG stations operated on cluster basis Operator shall record



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compressor parameters during his visit to the station on hourly basis till the time he leaves the station. The Logbooks shall be in the scope of the Contractor. Any abnormal values or deviation from standard specified values in the parameter readings shall be reported to HOGPL EIC/Respective cluster vendor Incharge(who is operating the cluster) immediately and the same shall be addressed on priority in consultation of HOGPL EIC.

- The Operator shall carry out topping-up of oil, coolant/water as and when required. Also, the Operator shall carryout draining of oil at regular intervals as per OEM guidelines and as directed by HOGPL EIC.
- The Operator shall be vigilant and report for any abnormal/unusual sounds coming from the compressor & its engine.
- Regular cleaning of the compressor package to ensure highest upkeep of the machine and its accessories including cascades and tubing installation.
- The Operator shall keep the compressor and its accessories clean and tidy at all times. Any kind of oil/water/coolant spillage inside and outside the compressor enclosure shall be immediately removed and cleaned.
- All consumables required for day-to-day operations is in the scope of bidder only. Based on the make/ type/ model service provider has to obtain lubricants with respective compressor OEM's.
- The contractor shall carry out daily operation activities round the clock on shift basis of CNG Compressor, Air compressor and other associated equipment as per OEM recommendations in order to ensure smooth operations and minimize downtime of the Compressor packages.
- The contract will deploy adequately trained personnel for carrying out Operations Activities.
- All the vital parameters of the CNG Compressor such as Oil Level, Air, Coolant level etc. are to be noted in daily log book at respective stations as per SO/ tender document.
- Bidder shall be responsible for procuring OEM-recommended lubricants for daily top-up of the compressor packages at various locations.
- For all MS/Satellite MS, Opening and Closing readings of all the Mass Flow Meters in the CNG Compressor packages are to be recorded at 06:00 AM or as advised by EIC and the meter reading records are to be provided to EIC/HOGPL's representative on daily basis. For remaining clusters as decided by EIC.
- The opening and closing pressure reading of all CNG cascades in the CNG Station will be recorded by operator and will be submitted to HOGPL.
- At least two dedicated Engineers/Supervisor/incharge per shift to be provided & shall be responsible for supervision and smooth operations of compressors at CNG Stations.
- The supervising engineer/Incharge shall monitor & ensure the operators schedule, availability & check the performance of operators, assist in



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troubleshooting of compressors, ensure preventive maintenance is carried out as per schedule, submission of reports, Report breakdown of equipment within 10 minutes, maintain consumables and spare parts. The supervisor shall also impart training as per SOP to the operators before inducting them into regular operations.

- Bidder to provide the daily DPR of Kolhapur GA or respective stations; under the scope of bidder for daily monitoring the compressors & engine parameter like gas loss, pressure, temperature, fuel consumption, oil level, oil top up & oil drain etc.
- Bidder shall ensure daily monitoring of DPR to be submitted to HOGPL for respective stations for health check-up of machine & also ensure visit of maintenance team for any abnormalities & oil top up.
- In addition to the Compressor operations, Compressor Operator should assist LCV filling activity at Mother stations/ satellite mother stations.
- The scope of Compressor operator for also includes LCV filling activities as follows at respective MS/Satellite Mother station where manpower is in the scope of bidder.
 - (a) Daily check-up of all Cascades and piping / tubing's of LCV stand etc.
 - (b) To fill CNG into mobile cascades as per the standard procedure.
 - (c) Noting the initial and final pressure of each mobile cascade and reporting the same to the Shift In-Charge.
 - (d) Compressor operator has to verify CNG cylinders testing validity prior to CNG filling in Natural Gas Vehicles (LCV/MCV/HCV).
- (e) Operators should coordinate with control room / shift in charge and LCV driver for safe filling of CNG to LCV from Mother Station / satellite mother stations.
- (f) Any other activity as directed by HOGPL nodal point of contact from time to time.
- (g) Safety alarms, Critical Operations notifications shall not be bypassed & shall be reported to HOGPL EIC.

4.17. Contractor shall maintain compressor operational data using mobiles in google forms/ excel or etc logbooks in addition to physical registers.

6) Scope of comprehensive maintenance of CNG compressor packages:

The scope/specification covers the minimum specified requirement for various activities to be carried out by the service provider towards comprehensive maintenance Services of various CNG Compressor packages installed at various CNG stations as per the location's list provided in the tender document.

The comprehensive maintenance Services scope includes but not limited to the following:

- 6.1 Any spare parts required during the contract period shall be supplied by contractor free of cost. Further, all the consumables, Lubricating oil, coolant, sealant, man power, DM water, housekeeping etc. required for carrying out the comprehensive Maintenance of the complete compressor package during the contract period, including periodic, breakdown maintenance for continuous and uninterrupted operation of the compressor packages shall be in scope of the contractor and shall be kept in stock. Electricity shall be supplied free of cost to the contractor.



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- 6.2 The contractor shall be keeping a minimum specified spares of specified quantity (as per Annexure – I attached) at all the GA sites or nearby locations.
- 6.3 Equipment under CAMC is as below: CAMC will be not limited to the equipment's listed below: list of compressors to be added
- 6.4 Including other accessories like Air compressor, Fire & Smoke detector, water motor pumps/ radiators/ Heat/Air exchanger, CO2 flooding system and Instrumentation & control panel, mass flow meters, PLC etc., related to the above CNG Compressor packages.
- 6.5 The contractor shall have to keep all the spares, consumables, lubricants, coolant, DM water etc. required for carrying out periodic, breakdown, emergency maintenance etc. of the CNG compressor package including the priority panels, electrical panels, air compressors, leak detection system, CO2 flooding system, CNG compressor, heat exchanger, PLC of compressor package, CNG piping around the compressor area and other auxiliaries with the CNG compressor package, air compressor etc., which were supplied by compressors package supplier, so as to minimize the down time of the equipment.
- 6.6 The old/ damaged parts which are replaced by the contractor along with the used oil are to be taken by the contractor after replacement, on obtaining valid gate pass from HOGPL authorities.
- 6.7 The contractor has to follow the Hazardous Waste Management Rules 2016 issued by MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE vide
- 6.8 Notification dated 04.04.2016 for handling and transport of Used Oil from HOGPL locations.
- 6.9 Non-availability of compressor package for non- availability of spares shall be liable for penalty as per clause no 14 of SCC.
- 6.10 All tools, tackles and fixtures required for carrying out the above maintenance of the compressor packages shall be in scope of the contractor. Contractor shall maintain exclusive toolboxes for each location. The scope will also include handling equipment like crane. Forklift chain pulley block, etc required during any maintenance activity.
- 6.11 Any expert services required from principal company or OEM (of any equipment in the package) shall be arranged by the contractor or his agent at his own cost. All arrangements like phone, fax, computer, internet etc required for correspondence with above personnel shall be arranged by the contractor.
- 6.12 Submission of monthly PREVENTIVE, SCHEDULED and BREAKDOWN maintenance reports to EIC of respective location along with supported documents.
- 6.13 Ensure 97% availability of each package on monthly basis.
- 6.14 The maintenance team shall repair any unplanned/emergency maintenance of equipment installed at CNG Station.
- 6.15 The contractor shall use only 100% genuine OEM's certified spares during maintenance. In case, the schedule maintenance of the OEM manual recommends checking and replacing parts like valve springs, valve plates, piston rings etc. after certain time interval, same shall be replaced or used. Any untoward consequences due to non-replacement of such parts shall be the responsibility of the contractor.
- 6.16 During preventive maintenance/ handing over of machine, any wear limits of all components of compressor package will be determined/ analyzed on pro rata basis
- 6.17 from the last date of spare replacement and considering total running hours of machine. Joint decision for replacement of parts will be taken with due consideration to total running hours of package.
- 6.18 A detailed report of all spares & consumables used have to be maintained by the contractor, having details of part no, quantity used, date, expected running hours before replacement, etc. The same has to be submitted monthly to HOGPL.
- 6.19 All routine and periodic checks/inspections required to be done as per OEM recommendation shall be done by the contractor. Instruments required for above inspection like vernier caliper, micrometer screw gauge, fill gauges, bore gauge, vibration meter etc. shall be in scope of the



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- contractor and these instruments shall be calibrated every year.
- 6.20 All spare parts to be replaced in the compressor package should be brand new and unused. However, repair of valves and packing assembly shall be permitted. Random Inspection of spare part to be utilized in the CNG Compressor may be carried out by HOGPL'S representative.
 - 6.21 All routine leak checks/inspections of the associated SS tubing, fittings valves and hoses outside the compressor package (i.e. inlet & outlet of compressor), which are part of compressors supplied packages, shall be done by contractor.
 - 6.22 The contractor shall ensure that compressor running parameters are recorded in daily log book including all vital parameters and Maintenance records of preventive and scheduled maintenance and spare used. The format of log book to be finalized in consultation with EIC in line with OEM specification/recommendations. All stationery including the printed material shall be in scope of the contractor.
 - 6.23 The contractor shall submit a copy of the monthly /quarterly and yearly maintenance reports to the EIC in both soft and hard form including safety interlock checks. All stationary including the printed material shall be in the scope of the contractor. None of the interlocks should be bypassed for normal CNG operations. Prior approval of EIC (EIC has to follow HOGPL maintenance policy for the same), has to be obtained, in case the same is unavoidable. The same should be rectified by contractor, within a weeks' time. A separate register is to be maintained for recording the time of occurrence and time of rectification and the same should be signed by the EIC for each such event.
 - 6.24 The entire maintenance / inspection job carried out by the contractor shall be recorded and the report of the same shall be jointly signed by owner representative.
 - 6.25 If availability of 97% in a month is not achieved and/or the engine fuel consumption or compressor losses are exceeding the values in the curves plotted against time, with commissioning date as origin, then the mutually agreed corrective actions have to be taken to ensure availability and healthiness of equipment.
 - 6.26 The contractor shall carry out yearly calibration of safety relief valves, , pressure gauges, transmitters and switches etc, and gas detectors & flame detectors (once in 06 months).
 - 6.27 Calibration shall be done from government approved laboratories and shall be carried out at least 15 days prior to the calibration due date. In case of POP-UP of any valve, the same has to be calibrated immediately.
 - 6.28 The contractor shall carry out retesting of pressure vessels periodically as per gas
 - 6.29 cylinder rules 1981 or static & mobile pressure vessels rules for the vessels supplied by compressors in the CNG Compressor packages.
 - 6.30 The periodic maintenance required to be done as per OEM recommendation shall be taken up promptly. The contractor shall plan such maintenance during non-peak hours and in consultation with the engineer-in – charge of owner. Any maintenance that needs to be taken up shall be well planned in advance with due approval of the EIC. The scope shall include preparation of maintenance schedule for carrying out the maintenance during the contract period.
 - 6.31 In case, the schedule maintenance of the OEM manual recommends checking and replacing parts like valve springs, valve plates, piston rings etc. after certain time interval, same shall replacement in the presence of OWNER representative.
 - 6.32 In general, the contractor has to carry out full Comprehensive Maintenance of the compressors make CNG packages at the CNG stations, thereby making available the equipment's in running conditions at all times, through supply of adequate experienced technicians, OEM spares, OEM recommended consumables and any other specialized service.
 - 6.33 Hydrotest, as per statutory requirements if applicable (once in three years) , of pressure vessels as per applicable codes (ASME Section VIII) installed in Compressor packages shall be in the



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- scope of this contract.
- 6.34 Zero calibration of mass flow meters shall be carried out on a half-yearly basis. HOGPL will provide an FCRI-calibrated master prover for the verification of the mass flow meters. It shall be the sole responsibility of the contractor to make all necessary arrangements for checking the meters installed in the compressor packages. Any repair, rectification, or adjustment required to ensure the proper functioning and accuracy of the mass flow meters shall be entirely within the scope of the bidder
 - 6.35 Any PLC part, electrical part failed due to abnormal voltage fluctuation in main incoming power to PLC system.
 - 6.36 Contractor shall have to arrange the hydro testing of the Co2 Cylinders of flooding system as per NFPA/ OISD standards.
 - 6.37 The service provider shall conduct periodic internal and external cleaning of radiators. Any required services, such as welding/brazing, drilling, cutting, plugging, tube cleaning, or chemical cleaning, shall also fall under the service provider's scope. All hot work, including welding, cutting, or drilling, is the responsibility of the service provider.
 - 6.38 The service provider must ensure that all necessary spares, consumables (e.g., cotton waste, cleaning solvents, insulation tape, thinner, soap solution, grease, Teflon tape), and tools (e.g., multimeter, soldering gun, torque wrench, power extension board) are available on-site. Non-sparking tools and flameproof equipment must be used for maintenance in hazardous areas.
 - 6.39 All software related works, installation/removal/reinstallation of original program and arrangement of original program wherever required etc.
 - 6.40 Contractor shall confirm to HOGPL about their availability to carry out Preventive Maintenance as per the schedule finalized along with HOGPL EIC. HOGPL will depute its person in case they wish to witness the work.
 - 6.41 Contractor's personnel shall inform the exact duration needed for carrying out the maintenance to HOGPL EIC. The Contractor shall get familiarized of the work to be executed and obtain all necessary permit/approval/clearance/authorization to carry out the work from HOGPL EIC before starting work at the CNG Station.
 - 6.42 Contractor shall obtain/collect all necessary permits from HOGPL EIC for the work to be performed. Contractor will understand and seek explanation if not understood properly about safety requirements and provisions of work permit/license to work. After completion of work, the work permit needs to be closed by the Contractor to CNG Control Centre/Master Control Room. Contractor will seek extension of work permit or apply for fresh work permit as applicable from HOGPL EIC as and when required.
 - 6.43 The Contractor shall ensure availability of Multimeter, soldering gun, torque wrench, power extension board, Special Tools and Tackles for opening of valves/piston/piston rods etc. at site before commencing maintenance work. Special tools shall be arranged by the Contractor.
 - 6.44 The Compressor Operator/Maintenance team shall record the Compressor performance parameters before and after carrying out the maintenance in the service report. Any deterioration in the performance parameters observed after carrying out the Maintenance, will attract penalty as defined in this document. After completion of work, the Contractor shall produce the compliance report to HOGPL within 24 Hrs. duly signed by HOGPL EIC. The downtime agreed for each type of Preventive Maintenance shall be adhered to.
 - 6.45 On receiving information from the Compressor Operator or HOGPL Control Room, Contractor shall dispatch its centralized Maintenance team to attend and rectify/repair the Compressor. Such services shall be provided on 24 x 7 basis. The breakdown response time of each complaint shall be maximum 45 mins for stations within city and 90 minutes for the stations located on the outskirts of city. Non-compliance of this SLA will attract penalty as defined in this document. Accordingly, the maintenance teams shall be strategically located. For Kolhapur



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- GA the response time is to be read as 90 mins. Failing which a penalty of Rs.2000/- per instance shall be deducted from the RA bills.
- 6.46 Upon reaching the CNG station, the Contractor personnel shall contact HOGPL CNG control room to report his attendance on site and confirm the breakdown
 - 6.47 After attending & solving the complaint, the Contractor shall inform to HOGPL Control room and HOGPL EIC will sign the service report after the complaint is fully attended.
 - 6.48 Machine Canopy Repairing and painting. Painting of canopy once in contract period or 02 years to be done is in Bidder Scope.
 - 6.49 Principal parts of packages like crankcase, distance pieces, compressor cylinders, pressure vessels, mass flow meters, electric motor, Heat exchangers, etc., replacement during breakdown and preventive maintenance including top and major overhauling is in Bidder Scope.
 - 6.50 The bidder shall take into account into top overhauling or major overhauling of the compressors that are due for immediate maintenance also in his scope. All costs associated with such overhauling shall be deemed to be included in the quoted rates and no additional claims shall be entertained.
 - 6.51 If there is any breakdown/malfunction in PLC and a new software/ software license renewal is required to restore the PLC working, the same shall be in Bidder scope. Also, all PLC software updating including (renewal/alterations/modification) is in Bidder Scope.
 - 6.52 All parts replaced by the Contractor during the above contract period shall be properly packed and to be returned to HOGPL.
 - 6.53 The Contractor shall submit a copy of the daily / weekly / fortnightly / monthly / bio-monthly / quarterly and yearly performance report to the EIC in both soft and hard form. All stationery including the printed material shall be in scope of the Contractor.
 - 6.54 Package loss should not be more than 0.5% .
 - 6.55 Contractor shall provide First Aid box at site. If the bidder fails to arrange the same, then a penalty of Rs.500/- per compressor per month and same will be levied from his RA Bills.
 - 6.56 The incomer cables from HOGPL electrical room to Compressor and the UPS is in the scope of bidder.
 - 6.57 For efficient monitoring of services, contractor shall provide GPS Tracking devices to the maintenance technicians & vehicles to give access of application to the supervising engineer & HOGPL representatives.
 - 6.58 Comprehensive maintenance contractor shall report to HOGPL within 2 days of receipt of spare parts & HOGPL may carry out inspections & verify the genuineness of the parts.
 - 6.59 Ensuring the Genuine OEM Parts & consumables shall be the sole responsibility of the contractor & although HOGPL/it's representative at it's discretion inspect on random basis. HOGPL reserves the right to inspect 100% of parts/consumables supplied/procured by the contractor.
 - 6.60 However this does not absolve responsibility of the contractor to ensure genuineness of spare parts/consumables.
 - 6.61 Electrical parts/components shall be procured from reputed makes like Schneider, ABB and L&T.
 - 6.62 Bidder shall procure the spares from OEM of respective compressor package manufacturers or arrange 100% genuine parts for carrying out the maintenance of the compressor packages & AIC will take decision for use of equivalent spares in case of emergency.
 - 6.63 Wherever feasible, integration with HOGPL's SCADA/monitoring systems shall be ensured.
 - 6.64 Oil/lubricant condition analysis. Reports of the above-mentioned monitoring activities shall be submitted to HOGPL EIC along with preventive maintenance reports.



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- 6.65 Contractor shall strictly adhere to response times as defined in the Scope of Work.
- 6.66 An escalation matrix (Operator → Supervisor → Area In-Charge → Head of Operations) shall be shared with HOGPL within 07 days of LOA.
- 6.67 Delay in reporting or attending complaints beyond the defined SLA shall attract penalties as per SCC.

7) SCHEDULED MAINTENANCE:

- 1). All activities required to be carried out as per instruction of EIC.
- 2). All kinds of machinery, tools, special tools, tackles and consumable items required to complete the above job are in the scope of the contractor.
- 3). De-coupling of starter motor/ electrical lockout of starter motor to be done before proceeding.
- 4).
- 5). Complete depressurizing of the equipment along with pipe fittings before proceeding with maintenance.
- 6). Contractor shall carry out the scheduled maintenance as per O&M Manuals
- 7). Vibration condition Monitoring will be carried out once a year.
- 8). The periodic maintenance required to be done as per OEM recommendation shall be taken up promptly. The Contractor shall provide the detailed preventive maintenance & break down repair schedule along with
 - a) Estimated down time required for each type of maintenance schedule.
 - b) List of spares and their quantities required for each type of maintenance schedule per compressor.
 - c) Type and number of man days required for each type of maintenance schedule per compressor.

8) Overhauling of the package:

- 1.0 Top and Major over hauling of engine (as per engine manufacturer's O&M manual/ any approved control document/ policy document or as per recommendations of the Engine Manufacturer) which includes spare as well as manpower deployment for the job as given below:
 - 1.1 Cummins Engine: Top Overhaul to be done at 12000 running hrs and Major Overhaul to be done at 24,000 running hrs or as per the OEM recommendations if any updated intervals, Sepearte line
 - 1.2 Top and major overhauling of compressor package is in the scope of bidder only HOGPL will not pay additional cost for overhauling activities it's part of AMC. Bidder shall ensure TOP & Majour Overhauling of compressor as per schedule.

9) General: contractors' responsibilities:

The operation & maintenance services shall be provided in terms of shift pattern on round the clock basis.

- a. The Contractor shall deploy adequate number of technicians/ operators/ engineers as well as tools & tackles for smooth and proper operation & maintenance of the compressors provided in terms of the contract. In case required to meet operational requirements, the Contractor shall augment the same as per direction of Engineer-in- Charge.



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- b. The Contractor is required to carry out all services as mentioned in the Scope of Services and Schedule of Rates on all the 365 days including Sunday and all holiday and around the clock
- c. The Contractor shall allow weekly rest and daily working hours to his workmen as per the relevant Act / Law / and Rule made there under. However, no work shall be left incomplete / unattended on any holiday / weekly rest. Technician / operator provided shall have minimum qualification of ITI & requisite experience. Contract in person or his authorized representative shall provide the services on daily basis to interact with Engineer-in-Charge and deployed workmen.
- d. The workforce deployed by the Contractor for O&M services at CNG installation shall be of sound relevant technical professional expertise which is otherwise also essential from the safety point of view of the personnel of the Contractor as well as for the installation.
- e. Contractor has to ensure the safety of man and machine all the times. Damages of equipment due to negligence will be recovered as per the decision of Engineer-in- Charge, which will be final.
- f. Regarding work completion, the decision of the Engineer-in-Charge/AIC will be final and binding.
- g. The Contractor shall make his own arrangements to provide all facilities like boarding and transport etc. to his workmen.
- h. All personnel of the Contractor entering on work premises shall be properly and neatly dressed and shall wear uniform, badges while working on premises of the company including work sites.
- i. Contractor shall maintain proper record of his working employee's attendance and payment made to them.
- j. The Contractor's representative/ Supervisor/Incharge shall report daily to the EIC for day to day working.
- k. All the safety rules and regulations prevailing and applicable from time to time at the installations as directed by HOGPL will be strictly adhered to by the contractor. Failure to follow the SOP's, safety or other HSE compliance shall attract penalty of Rs.5000/- per instance.
- l. The rates quoted by the Contractor must be inclusive of all taxes & duties except GST. GST to be quoted separately as specified in the SOR.
- m. It will be the responsibility of the Contractor to pay as per the minimum wages of the appropriate government applicable under the Minimum Wage Act 1948 from time to time.
- n. The maintenance services shall be provided in terms of shift pattern on the round the clock basis. The Contractor is responsible to provide effective and efficient services round the clock



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and assure that there is no disruption in the services for want of any resources.

- o. The Contractor shall deploy adequate number of technicians at various site offices in consultation with Engineer-In-Charge to provide trouble free operation & maintenance of the compressor packages. Site in charge/operators shall always be available 24 hours on Mobile Phone. Supervisors must obtain necessary permissions from HOGPL for outstation journeys.
- p. All arrangements for communication from control room to the contract person working on job under the services shall be the responsibility of the contractor, viz mobile.
- q. All the jobs mentioned under scope of services shall be carried out as per sound engineering practices, work procedure documentation, recommendation of the manufacturer and as per the guidelines / direction of engineer-in-charge of authorized representative.
- r. The Contractor shall ensure and will be solely responsible for payment of wages and other dues latest by 7th of the following month to the personnel deployed by him in the presence of the Company's representative and the wages should be distributed through bank and the statement of the wages should submitted along with monthly bills duly certified by Bank.
- s. The Contractor shall be directly responsible and indemnify the company against all charges, claims, dues etc. arising out of disputes relating to the dues and employment of personnel deployed by him.
- t. The Contractor shall indemnify the company against all losses or damages caused to it on account of acts of the personnel deployed by the contractor. The Contractor shall ensure regular and effective supervision of the personnel deployed by him.
- u. The Contractor shall be liable for making good all damages / losses arising out of loss or theft of each handled, leakage, pilferage of any office, furniture equipment fitting and fixtures what-so-ever as may be caused directly or indirectly by the engaged persons through him / work carried out by them.
- v. It is agreed between the parties that if the quality of jobs carried out by the BIDDER are not of standard as required by Company and breach of any of the terms and conditions herein mentioned, the Company is at liberty to terminate this Agreement at the option of the Company by giving one months' notice in the writing to the BIDDER without assigning any reasons thereof.
- w. On the termination of this Agreement, the BIDDER will immediately remove himself and his directly or indirectly employed or deployed manpower from the said premises with all the goods, if any, property and effects belonging to him. The BIDDER shall not cause any hindrance or objection in such circumstances.
- x. BIDDER should submit the trouble shooting & root cause analysis report to HOGPL, within 4-5 working days from the date of compressor Breakdown, failing to which RA bill will not be processed for the said LOA till the satisfactory report will not receive from bidder.
- y. The bidder shall submit a comprehensive list of spares required for carrying out the CAMC of the compressors, to be maintained for the entire duration of the contract period.



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E. Safety & Compliance Monitoring										
Sr · N o.	GA	Statio n Name	Safety Incidents (Nos.)	Mock Drills Conducte d (Date)	PPE Complia nce (Y/N)	Firefighting /First Aid Training Status	Waste Disposal Complia nce (Y/N)	Rema rks		

F. Supervisor / Engineer Report Summary										
Highlights of major issues during the month:										
Corrective & Preventive Actions planned for next month:										
Observations on operator performance, training needs, and spares sufficiency:										



SECTION 2: SPECIAL CONDITIONS OF CONTRACT

1. COMPREHENSIVE OPERATION & MAINTENANCE SERVICES

The party must follow the maintenance requirement as stated below in SCC, but not limited to and ensure to provide trouble free services to the satisfaction of the owner.

2. ACCOMMODATION/TRANSPORTATION/MEDICAL

The contractor shall make his own arrangement for the accommodation of his personal at respective locations and subsequent transportation arrangement for them from their place of residence to work place or any other place as required and company shall have no obligation in this respect. The company shall not be responsible for providing any medical assistance to the contractor's personnel.

3. DISCIPLINE

The contractor shall be responsible for the discipline and good behavior of all his personnel deployed in the service contracted out and should any complaint be received against any of his employee, he shall arrange to replace such persons within 24 hours of notice issued by the engineer-in-charge. The decision of the engineer-in-charge in this matter shall be final and binding on the contractor.

4. GATE PASS

The contractor and/ or approved sub-contractor shall arrange to supply/ renew identity card & Police Verification of his work force at his own cost. Those contractor's personnel shall be required to carry their respective identity card at all times while on duty and produce on demand.

5. CONTRACTOR'S RESPONSIBILITY

(a) Employment liability of contractor:

The contractor shall ensure and will be solely responsible for payment of wages and other dues latest by 7th of the following month to the personnel deployed by him in the presence of company's representative. All wages /salaries to employees shall have to be transferred by the contractor directly to employees' bank accounts.

The contractor shall be directly responsible and indemnify the company i.e. HOGPL against all charges, claims, dues etc. arising out of dispute relating to the dues and employment of personnel deployed by him.

The contractor shall indemnify the company against all losses or damages caused to it an account of acts of the personnel deployed by the contractor. The contractor shall ensure regular and effective supervision of the personnel deployed by him.

The contractor shall be liable for making good damages/ losses arising out of loss or theft of each handled. Leakage pilferage of any office, furniture equipment fitting and fixtures what- so-ever as may be caused directly by the engaged persons through him/ work carried out by them. However,



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the contractor shall not be liable for consequential damages.

6. A Contractor team (Technician / Operator) – Rolls and Responsibility:

Note: - Contractor shall deploy the technicians at GA 0.5 technician (suppose there are 02 number of machines then minimum 01 number of technicians to be deployed dedicated to Assigned GA) for each machine or mutually agreed by EIC and contractor. Over all dedicated Incharge at GA level for coordination with HOGPL.

The functions and responsibilities are listed below:

- a) To function as an integral member of the HOGPL O&M coordination team.
- b) Interface with Contractor / HOGPL on all equipment and system issues
- c) mobilize any Contractor / HOGPL resources required for scheduled or unscheduled maintenance.
- d) Assist HOGPL personnel with development and implementation of sound operating and maintenance strategy and procedures, including corrective action guidance.
- e) Assessments of consumables, operational and maintenance spares, OEM services etc. Maintain spares inventory well in stock to avoid any uninterrupted operations on round the clock basis.
- f) Provide reports as per HOGPL O&M practices.
- g) Conduct training programs for upgrading O&M resources; participate in all Contractor and safety trainings.
- h) Collect and provide data as deemed necessary by HOGPL to analyse equipment performance.
- i) Responsible for performing all routine, breakdown & scheduled maintenance activities during O&M.
- j) Monitor the performance of equipment's.
- k) Monitor all essential parameters of the running equipment and report any discrepancy in operational parameters.
- l) Responsible for log-book data capturing, minor maintenance activities, safety of equipment's for safe operations.
- m) The contractor shall submit a copy of the daily / weekly / fortnightly / monthly / bimonthly / quarterly and yearly performance report to the EIC in both soft and hard form. All stationery including the printed material such as compressor parameter logbook, complaint log book, service report, break down summary report etc. shall be in scope of the Contractor.

Operation & Maintenance team shall ensure available for work on 24 Hrs. basis

B Scope of work – Operation & Maintenance

1. Spares & Consumables

Bidder shall ensure OEM certified spares and Consumables like Frame oil, Air Compressor lube oil, Coolant, DM water, Gas etc. will be in Contractor scope during the Comprehensive AMC period. HOGPL shall approve the installation of OEM equivalent spares; however, contractor should submit all the technical details of equivalent spares to the concerned EIC prior to installation for approval.

2.0 Tools & Tackles

Contractor shall provide one set of conventional Mechanical & Electrical general tools for maintenance job at each site and advance tools tackles set to technical team.

3.0 Special Services

- Contractor shall arrange calibration of all the instruments which are installed in e



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package annually after necessary approval from HOGPL

- Contractor shall arrange filling of Co2 cylinders quarterly as per NFPA/OISD standards, however the flooding system function check with discharging the Co2 shall be carried periodically and recorded and contractor shall have to arrange the hydro testing of the Co2Cylinders of flooding system as per NFPA/ OISD standards.
- Contractor shall arrange visit of vendor representative for package routine maintenance depending on site requirement. Services like inspection, breakdown, top / major overhaul shall be taken care by contractor.
- Contractor shall arrange welder / plumber when required with material if required
- Contractor shall arrange Panel vendor / Software programmer visit when required with parts if required
- Contractor shall provide all necessary lifting equipment
- Contractor shall provide all necessary facilities of any additional repair, welding, testing, calibrations etc.
- OEM services if required for any Overhauls
- Maintenance of the instruments, transmitters, controls, switchgear within the battery limit
- Contractor shall provide First Aid box at site
- Contractor shall provide painting of canopy and equipment's annually / as and when required
- Contractor shall supply electrical system / panel which are damaged in case of power failure

4.0 Additional Services

Contractor shall provide any additional service that may be required, using the expertise and technology of OEM services and should provide a detailed inspection report

5.0 Scope for AMC Activities

Contractor shall depute site personnel as enlisted above for carrying out the AMC of the Booster compressor packages.

Uninterrupted service shall be provided round the clock including Sundays and other holidays throughout the contract period. Contractor shall advise the schedule / predictive maintenance that need to be carried out and HOGPL will provide reasonable time period to carry out such work.

6.0 Technician's activities are as detailed below:

1. All annual O&M spare parts (regular / breakdown / overhauling) will be in the scope of Contractor.
2. Dedicated Technicians Electrical , instrumentation and Mechanical expert needs to be deployed at Kolhapur GA. Same workforce shall not be utilized for the other than Kolhapur GA locations
3. Round the clock trouble free and safe operation and maintenance of the following equipment as per laid down operating procedures
 - a) Gas compressors, Electric motor, Cooling system, Overhead makeup coolant tank, Gas line within the battery limit, Valves etc.
 - b) Instrumentation – PTs, TTs, PGs, FTs, Electronic panels, Control valves, PSVs, flame detectors, gas detectors, emergency shutdown system etc.
 - c) Electrical panel, Radiator system, Air compressor system and Co2 flooding system.
4. Upkeep of all operational and maintenance records and everyday logging of all the critical parameters



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of equipment, hours run and any specific maintenance, repairs carried out including material and spares consumed.

5. Continuous vigil on the condition of running equipment.
6. Preventive maintenance schedule of all the equipment to be followed religiously using genuine OEM / OES spares and to be recorded in logbook.
7. Fault finding and troubleshooting of the equipment to be carried out and maintain the record of it.
8. Schedule maintenance shall normally be carried out by interacting with Engineer in charge during daytime general shift, however routine checks and maintenance to be carried out on round the clock.
9. Upkeep of equipment shall be taken up immediately after completion of maintenance or a repair and area shall be kept neat and clean. The waste generated during maintenance shall be dumped in a designated area with in the CNG stations.
10. Provide the quality and adequate quantity of lubricating oils and cleaning agent as per OEM recommendations.
11. Coordinate calibration of the instruments and maintain records
12. MIS duties – all Checklists, DPRs, Monthly reports miscellaneous correspondence regarding resource requirements and information required by management as and when required.
13. Providing resources such as tools, cotton waste etc. as required for operations
14. Providing all personnel with the necessary PPE like Safety shoes, Hand gloves, Cottonuniform etc. and ensure that the personnel shall all the time use PPE when they are at site.
15. Disposal of empty barrels / burnt oil barrels shall be disposed according to documented procedure and document shall be furnished to EIC HOGPL.
16. All wastes (hazardous, bio-degradable & non-biodegradable) are stored & disposed of as per documented procedure.

7. PENALTY CLAUSE:-

A1. The contractor has to ensure min. 97% availability of each package cumulative on monthly basis. The maximum allowable 3% downtime shall include cumulative downtime for breakdown maintenance and any other related activity excluding OEM recommended major and top overhauling maintenance, preventive maintenance of the compressor packages . Cumulative Non-availability of any machine over and above 3% will attract penalty as given below.

- | | | |
|---|---|--------------------------------|
| 1) Break-down time-up to 6 hours in a month | - | No penalty |
| 2) Break-down beyond 6 hours till 12 hours in a month | - | Rs 5,000/- |
| 3) Break-down beyond 12 hrs till 24 hours in a month | - | Rs 10,000/- |
| 4) Break-down beyond 24 hrs till 48 hours in a month | - | Rs 20,000/- |
| 5) Break-down beyond 48 hrs till 72 hours in a month | - | Rs 30,000/- |
| 6) Breakdown beyond 72 hrs in a month | - | Rs. 40,000/- |
| 7) Continuous Break-down beyond 72 hours till 360 hrs in a month- | | 25% of Monthly Invoice value |
| 8) Continuous Break-down beyond 360 hrs in a month | | - 50% of Monthly Invoice value |

(For example, in a month having 30 days (30x24= 720 hrs), Maximum allowable down time without penalty will be 3% of 720 hrs i.e. ~22 hrs.)



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In case there is a continuous break down beyond 72 hrs & upto 15 days, 25 % of monthly invoice value of concerned package will be deducted from monthly invoice. In case breakdown is prolonged beyond 15 days, 50% of monthly invoice value of concerned package will be deducted.

In any case/ any situation, total penalty will be limited to 50% of monthly invoice value of concerned package.

The calculations for levy of penalty as mentioned above shall be calculated on CNG Compressor wise basis for each month for each location of HPOIL Gas Pvt Ltd.

Monthly allowable days for preventive maintenance of compressor package is max.24 hrs. Beyond that specified time shall be treated as breakdown and penalty shall be calculated as mentioned above.

A2. Non-availability of manpower in any shift/any workplace will not be tolerable. The BIDDER will be penalized for each such act as follows:

For non-availability of compressor operator, PPE, Uniform = 1% of Max. Invoice value of Single Pkg. per Instance & Max. amount will be penalized up to 5% of the Max. Invoice value of each package in a month.

If the BIDDER fails to provide PPE and Uniform to his manpower after stipulated time, HOGPL will provide the PPE and Uniform at his risk and cost considering original invoice value plus 20% overhead charges which will be recovered from BIDDER.

We at HOGPL will not tolerate any kind of Indiscipline act at the premises from the BIDDER employee's during the service time. If any such incident happens, the BIDDER will be penalized 2% of the Max. Invoice Value per instance & Max. amount will be penalized up to 5% of single package invoice value.

For any IR (Industrial Relation) issue (like strike by operators for wages, union issues etc.) CNG station operation stopped, BIDDER will be penalized Rs. 25,000/Instance and. Max. Caping is up to Rs. 1,00,000 / Month.

Penalty Due to power consumption.

The volumetric efficiency and rated output of the compressor shall be consistently within the limit. Power consumption per Kg gas compressed should be within the benchmark set by HOGPL. At present benchmark for specific power consumption is 0.08 Kwh/kg (Between CNG supply suction pressure of approx. 200 Kg/cm² and mobile cascade disconnection at 30 Kg/cm²). Penalty calculation will as follows:

$$\text{Sp. Power in Kwh/kg} = \frac{\text{Total power units consumed by the compressor/ 3 months}}{\text{Total gas sold in same period i.e. In 3 months}}$$

The extra electricity bill amount due to inefficient operation shall be recovered from the lessor



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at the tariff prevailing at the time of operation. The extra electricity due to higher specific power consumption will be calculated as follows.

The extra expenses to be recovered from the lessor in Rs = (Specific power consumption over and above the benchmark) x (prevailing power tariff inclusive of taxes, duties & levies) x (Total sale of gas during the billing period.)

Package Gas Loss: Service Provider shall ensure that any action to limit gas losses within 1% is taken within 7 days from detection of gas loss. Any loss over and above 1% will be recovered from service provider for a period after 7days. Reconciliation of gas (gain or loss) will be done at average on monthly basis for individual package. In case OEM presumes MFM is faulty, then BIDDER must prove that MFM is faulty within 7 days' time period and BIDDER has to check the accuracy of MFM. If require BIDDER must repair/replace it within 7 days. If BIDDER fails to prove that HPOIL will consider the MFM reading is accurate. However, in any Case/any situation, total cumulative penalty from all accounts (i.e. from gas loss, break down time, statutory requirements etc.) will be limited to 60% of monthly invoice value of concerned package for concerned month only. Beyond 1%, BIDDER has to compensate the amount @45/Kg. during the O&M period. The amount will be deducted from monthly RA bill.

Calculation of Gas Loss for GED = $[MRI - (MRIC + MRO)] / MRI * 100$

Calculation of Gas Loss for EMD = $[MRI - MRO] / MRI * 100$ AMOUNT OF RECOVERY = $[TOTAL GAS LOSS(Kg) - 1\% \text{ of MRI}] * RS. 96.95$ Cost of natural gas Rs/kg

MRI- MASS REGISTERED IN INLET MASS FLOW METER

MRO -MASS REGISTERED IN OUTLET MASS FLOW METER

MRIC- MASS REGISTER INTERNAL COMBUSTION MASS FLOW METER

Penalty towards Excess Fuel Consumption:

At the start of O&M period or even at any point of time during the O& M period, cost towards excess fuel consumption beyond quoted figure shall be deducted from O&M bills.

Following calculations shall be used for deduction towards excess fuel consumption.

$$F = (G - Q) \times H$$

Where,

F= Monthly penalty in Rs.

G= Monthly Actual Gas Consumption kg

Q= Guaranteed consumption rate quoted by supplier based on gas composition, on monthly basis

H=Cost of Natural Gas @ Rs 96.95 Rs per kg for the monthly consumption

HPOIL will allow 5% Excess fuel Consumption of guaranteed parameter consumption on 5 years old packages and 10% excess fuel consumption on more than 10years old Packages.



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8. SPECIFICATION

Work shall be carried out as per the O&M manuals of the OEM.

9. COMPLETION/ FINAL CERTIFICATE

Citi wise FOAs / LOAs shall be issued by HPOIL Gas Pvt Ltd.

The Completion/ Final Certificate shall be issued by EIC on successful and satisfactory completion of O&M contract upon application by contractor

SPECIAL WORK CONDITIONS:

1. BIDDER should ensure his operator to get trained properly and possess STC card before deploying at site. Without STC training operator should not allow to do the CNG compressor operations.
2. BIDDER will select the compressor operator and before deployment at HOGPL sites, HOGPL representative will take the Interviews of the operators for the respective site as mentioned in tender.
3. BIDDER should provide its photo identity card to all the employees deployed for compressor operation. These I-card /Batch are to be constantly displayed during duty hours. The ID card should be reissued immediately in case of loss or damage.
4. Shuffling of operator from one location to another in consultation with EIC / HOGPL representative instructions.
5. Office/control room set up for co-ordination & to run the smooth O&M operations.
6. One dedicated Office set up along with manpower for 24 Hrs to co-ordinate day to day O&M activities along with all instruments, Phones, PC's, Net Facility, equipment's, special tools & tackles and 100% availability of spares around the clock.
7. BIDDER shall provide uniform (Both T-Shirt/Shirt + Trouser are mandatory) & PPEs (Good quality safety shoes, helmets, Raincoat, Gloves etc.) to All the services as approved by HOGPL & All services / attendants shall wear uniform and PPEs. At the time of duty, Workers without proper uniform & PPE penalty will be imposed.
8. Contractor shall submit a consolidated Key Performance Indicator (KPI) Dashboard to HOGPL every month covering:
 - Compressor availability (%) vs. 97% target.
 - Number of breakdowns and mean time to repair (MTTR).
 - Gas loss %, oil/coolant consumption trends.
 - Operator attendance and training compliance

Format of the KPI Dashboard shall be finalized with HOGPL EIC within one(01) month of commencement of services.

9. Root Cause Analysis (RCA) & Breakdown Reporting: RCA reports shall be submitted for all breakdowns exceeding 04 hours within 48 hours of restoration. The report shall include cause, corrective action, preventive action, and timeline for recurrence avoidance. Failure to submit RCA within stipulated



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timelines shall attract penalties and withholding of RA bills until compliance.

10. Contractor shall ensure full compliance with PESO, OISD, and other applicable statutory regulations.
11. Use of flameproof, intrinsically safe tools and mandatory PPE is compulsory during all activities.
12. Disposal of used oil, filters, and other hazardous waste shall be carried out strictly through State Pollution Control Board authorized vendors, with records submitted quarterly to HOGPL.
13. HOGPL reserves the right to conduct random audits/inspections of spares, consumables, and service quality. bidder shall extend full cooperation and furnish all required documents during such audits.

STATUTORY & LEGAL COMPLIANCES:

1. The BIDDER shall comply with the provisions of all the applicable labour laws, particularly following Acts and any amendments/modifications there-to or any other law relating there-to and rules and thereunder from time to time and comply with all provisions applicable there-in and/or make all the payments specified therein.
 - a) Payment of Wages Act 1936. (Central Wages)
 - b) Workmen's Compensation Act 1923.
 - c) Industrial Disputes Act, 1947
 - d) Minimum wages Act 1948
 - e) Employees State Insurance Act 1948
 - f) Maternity Benefit Act 1961
 - g) Mines Act 1952
 - h) Employees provided funds and Misc., Provisions Act 1952.
 - i) Contract Labor (Regulation and Abolition) Act 1970
 - j) Payment of Bonus Act, 1965
 - k) Factories Act 1948
 - l) Shops and Establishment, Factories Act
2. The BIDDER shall be fully responsible for complying with the provisions (including documentation and submission of Reports on the above to the concerned authorities) and shall indemnify the Company from any such lapse for which the Government/statutory authorities hereunder may take action against the BIDDER and/or the Company.
3. The BIDDER shall be liable to pay his contribution and his employee's contribution to the State Insurance Scheme, Provident Fund Authorities, etc. in respect of all his employees for the performance of his obligations under this Agreement in accordance with the provisions of the Employees' State Insurance Act, 1948. Employees Provident Fund and Miscellaneous Provisions Act 1952 as amended from time to time. The PF no. & payment details of each employee



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are to be presented with the monthly bills.

4. In case the BIDDER fails to submit and/or pay full details of his labor employed and the contributions payable, the Company shall recover from the monthly Bills of the BIDDER the amount of the shortfall in contribution assessed by the concerned authorities. The amount so recovered shall be paid to the concerned authorities against the actual contribution payable to Employees State Insurance or Employees Provident Fund, etc
5. The monthly PF, ESIC challans etc. to be presented along ECR statement with the monthly RA bills. Also, Individual PF & ESIC Nos. of all contractual employee to be submitted to HOGPL otherwise RA bills will not be process for releasing the payments.
6. The BIDDER will be responsible for making the salary directly to the bank account of the employees by 7th of each month from his own sources and subsequently raise bill for reimbursement which will be verified on the basis of actual amount disbursed and attendance etc. and the concerned bank statement should be readily available with the BIDDER and can be asked for verification by client any time.
7. The BIDDER shall deploy at his own cost suitably qualified persons for all the jobs required to be carried out by him under this Contract.
8. All payments shall be made by the BIDDER to his employees in accordance with the various Rules and Regulations stated above. The BIDDER shall keep the Company indemnified from any claims whatsoever inclusive damages/costs or otherwise arising from injuries or alleged injuries or to death of persons employed by the BIDDER.
9. The BIDDER shall provide the manpower as per HOGPL's requirement as mentioned in the clause mentioned in the general work description. If the services is absent for any reason, it is the duty of BIDDER to immediately provide the replacement. If BIDDER fails to do so, Penalty will be imposed as per the penalty clause.
10. The BIDDER shall, at his own expense, comply with the Model rules of labor welfare framed by the Govt. /Statutory Authorities under the various labor laws from time to time for the protection of their health, etc. In case BIDDER fails to make arrangements as aforesaid, the Company shall be entitled to do so and recover the cost thereof from BIDDER.
11. The insurance for the following will be covered and paid by BIDDER and he shall indemnify the Company and hold the Company harmless in respect of all and any expenses arising from any injury and/or damage in respect of:
12. Workmen's compensation and risk of accidents of BIDDER's own employees.
13. Risk of accident of BIDDER's own employees, representatives, sub- contractors and agents' property of third parties arising out of the acts of BIDDER's employees, representatives, sub- contractors and agents.
14. The BIDDER will be fully responsible for complying with all relevant provisions of the Contract Labor (R&A) Act, 1970, including registering himself / themselves under this Act and shall pay rates of wages and observing hours of work and conditions of employment according to rules in- force from time to time.
15. The BIDDER shall observe and implement all the laws of the land, and the rules framed there under for the staff employed by him and the Company shall in no event be liable or responsible for any default or non-observance of such laws / rules on the part of the BIDDER.



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16. Bidder shall provide insurance coverage (accidental, medical, and life) for all deployed manpower and submit proof to HOGPL along with first RA bill.

SPECIAL CONDITIONS OF CONTRACT:

1. The services shall be provided in terms of shift patterns as mentioned below.
2. The BIDDER is required to carry out all services as mentioned in the scope of service and schedule of rates as mentioned in the service order on all the 365 days including Sundays, All Holidays & National Holidays.
3. The BIDDER shall allow weekly off to his workmen and daily working hours will be fixed as per relevant Act / Law and rules made there under. However, no work shall be left incomplete / unattended on any holiday / weekly rest. The BIDDER or his authorized representative shall interact with the Engineer In-Charge daily for smooth operation and maintenance of all the stations.
4. Regarding work completion, the decision of the Engineer In-Charge shall be final.
5. The BIDDER shall make his own arrangement to provide all facilities like accommodation and transport etc. to his workmen. HOGPL does not make any commitment to provide his employees with facilities such as office accommodation, transport, canteen, tea, telephone etc.
6. The BIDDER will strictly adhere to all the safety rules and regulations prevailing and applicable from time to time at the installations as directed by HOGPL.
7. It is the responsibility of the BIDDER to pay wages as per the minimum wages as per central wages of the appropriate government rules applicable under the minimum wages act 1948. Weekly Off to be provided to the employee as per Local Labor Laws and Reliever is in the scope of BIDDER.
8. Overtime to be paid by BIDDER as per Local Labor Laws applicable to work location / sites and NO separate payment will be made against overtime by HOGPL.

The current minimum wages applicable as per the Minimum Wages Act 1948. i.e., Bidder shall apply central wages for deployed staff.

**Any Statutory variation in minimum wages and other applicable statutory requirement as per Minimum Wages Act 1948 shall be paid by contractor to deployed staff. **. Bidder to consider all possibilities and submit the quote accordingly.

HOGPL will not pay any statutory variation and national holiday's payment to the Contractor. The rates quoted by the bidder remains firm during the entire contract period.

9. BIDDER has to pay the National Holidays payment as per the labour laws, no separate payment will be paid by HOGPL.



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- 10 If the BIDDER finds any discrepancy in the bill payment from company, such discrepancy should be brought to the notice of the Company within 3 months from the date of such payment failing

which the said discrepancy will be ignored, and the BIDDER will not be entitled to any payment therefore. This right of the Company is without prejudice to any other right; the Company is having under this agreement or in law.
- 11 Nothing herein contained shall prevent the Company from engaging any other BIDDER(s) to carry out the work similar to the work entrusted to the BIDDER(s).
- 12 It is agreed between the parties that if the quality of jobs carried out by the BIDDER are not of standard as required by Company and breach of any of the terms and conditions herein mentioned, the Company is at liberty to terminate this Agreement at the option of the Company by giving one months' notice in the writing to the BIDDER without assigning any reasons thereof.
- 13 On the termination of this Agreement, the BIDDER will immediately remove him and his directly or indirectly employed or deployed services from the said premises with all the goods, if any, property and effects belonging to him. The BIDDER shall not cause any hindrance or objection in such circumstances.
- 14 All relevant formats (ISO/ SAP), reports, logbooks, monthly breakdown reports, etc. will be in the BIDDER scope as per direction of Engineer In-Charge and HOGPL requirement.
- 15 List of critical spares should be available at BIDDER site office during the AMC period and Inventory of the critical spares should be maintained by BIDDER on monthly basis, also updated critical spares list submitted by BIDDER to Engineer –in-Charge on monthly basis.
- 16 At the end of the contract, the spares consumed during carrying out PM and B/D maintenance will belong to HOGPL. The replaced/damaged parts/spare belongs to BIDDER.
- 17 Qualification document along with experience and ID proof have to be submitted by contractor to EIC of respective location.
- 18 Contractor has to ensure the safety of man and machine all the times. Damages of equipment due to negligence will be recovered as per the decision of engineer- in-charge, which will be final. However, consequential damages shall be out of coverage of this clause.
- 19 Regarding work completion, the decision of the engineer- in-charge will be final and binding.
- 20 All personnel of the contractor entering on work premises shall be properly and neatly dressed and shall wear uniform, badges while working on premises of the company including work sites. Contractor shall provide cotton uniform, safety shoes and other Personal Protective Equipment (PPEs) to his personnel's.
- 21 Contractor shall maintain proper record of his working employee's attendance and payment made to them.
- 22 The contractor's representative/ supervisor shall report daily to the shift-in- charge for day to day working.
- 23 All the safety rules and regulations prevailing and applicable from time to time at the



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installations as directed by owner will be strictly adhered to by the contractor.

- 24 The contractor shall provide the communication facilities, to its deployed manpower without additional cost to HOGPL.
- 25 The contractor shall depute his supervision of the services to receive instructions from engineer- in-charge or his representative.
- 26 The contractor shall carry out an independent and comprehensive assessment of the condition of the compressor on an "as is where is" basis prior to submission of the bid. The contractor shall be deemed to have satisfied himself regarding the scope, condition, and extent of work involved. Any request for increase in quoted rates, for whatsoever reason, shall not be admissible during the execution of the contract.
- 27 The bidder shall ensure that lubricants, oils, and consumables supplied by PSU Oil Marketing Companies (OMCs) are used for the compressor packages. Such products shall strictly conform to or be of equivalent specifications as recommended by the Original Equipment Manufacturer (OEM).
- 28 The daily top-up of required lubricants for CNG compressors shall be in the scope of the Operation Services Providing Contractor. However, the complete top-up/replacement of any lubricants necessitated after carrying out breakdown or preventive maintenance activities shall be in the scope of the Comprehensive Maintenance Contractor.

1. Deficiency:

"Deficiency" shall mean a deficiency in the performance of service(s) as mentioned in the Scope of Work including deployment of minimum resources / average monthly resources (whichever is applicable), poor quality of service, quantity and quality of material, inefficiency of any service(s), non-compliance of statutory provision(s) or non-compliance of any of the RFQ condition(s).

HOGPL/ Engineer in Charge (EIC) on observing any deficiency may inform/advise the supervisor / Representative of the Contractor to rectify the same. If the deficiency(ies) still persists even after repeated advice / information, the Contractor will be issued show-cause notice, setting out the deficiency(ies) observed, to give the Contractor an opportunity to make a representation within 7 (seven) days from the date of receipt of such notice. If any such representation is made by the Contractor, HOGPL shall take cognizance of the same before taking a final decision to impose penalty(ies) in respect of deficiency(ies). The decision of the EIC with regard to any deficiency in service and penalty(ies) for such deficiency(ies) shall be final and binding on the contractor(s).

- a) It is recognized that there may be deficiencies in the performance by the Contractor with regards to one or more of the services required to be performed under the Scope of Work. With a view to discourage deficiency(ies) in the performance of any service(s) by the Contractor, it is agreed that for each Deficiency as determined by EIC/ HOGPL in any service(s) to be performed by the Contractor, HOGPL shall be entitled to levy a token penalty, if not specified elsewhere, of Rs. 1,000/- (Rupees One Thousand only) per day per deficiency.
- b) The Contractor shall maintain all the Reports, Returns, Forms, proforma(s) and other prescribed documents under the applicable Labour Legislations (including those mentioned above) and HOGPL shall have the right to satisfy itself in this regard at any point of time. Each deficiency by the Contractor shall entitle the HOGPL to levy a token penalty on the Contractor by deduction in the invoice(s) of the Contractor or from the Security Deposit @ Rs. 1,000/- per instance.



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- c) List of deficiencies and penalties thereof:

Table 4: List of deficiencies and penalties thereof

Sl. No.	Nature of Deficiency in services	Rate of Penalty (Rs.)
1	Non deployment /short deployment of resource(s)	For operation services Rs. 1600/- per resource per instance & for CAMC services Rs.2000/- per instance
2	Complaints of misbehavior or negligence on the part of the resource	Rs. 1,000/- per instance
3	Non-wearing of uniform / wearing untidy uniform by the resource on duty.	Rs.100/- per day per resource
4	Non-submission of running / final bill beyond 30 days of stipulated time for the applicable date of bill submission	Rs. 1,000/- per instance and Rs.100/- per day beyond that.
5	Any other deficiency(ies) in service and/or material as defined in scope of work.	<i>As per SOW/ SCC</i>

However, the total amount deducted towards deficiencies under the contract shall not exceed 5 % of the total contract value.

In addition to the deficiencies regular penalty clause is applicable for non-availability or breakdown of machinery.

- d) In case, the deficiency continues for such period or in such manner as determined by HOGPL that affects the services as mentioned in the Scope of Work, the EIC may, on expiry of notice period, rectify / re-execute the service as the case may be at the risk and cost of the Contractor or may terminate the contract due to non-performance.

The decision of the EIC, as to any issue arising under this clause, shall be final and conclusive without prejudice to its the right to terminate the Contract thereof / terminate the service(s) on the basis of repeated occurrence of identified deficiency(ies) / instance of persisting poor performance.

In the event of such termination of services / contract, HOGPL reserves the right to get such service(s) performed at the risks and costs of the Contractor for a period equivalent to the unexpired period of the Contract thereof.

- e) HOGPL reserves the right to terminate the contract at any time without any reason with 01- month prior written notice.
- f) If the contractor or employees/ representatives of contractor participated in any activities prone to disruption of supplies, then HOGPL shall have a complete right to take penal action against the contractor and recover the complete loss including overheads from the bidder as per decision of EIC.



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Preventive Maintenance Schedules

ICL 2000/6000 Hours Preventive Maintenance		
Sr. No.	Type of Maintenance	Remarks
A) Booster Compressor:		
1	Clean the Lubrication Oil Filter	
2	Clean the Suction Gas Filter	
3	Clean the Suction Valve for 1st stage	
4	Clean the Discharge Valve for 1st stage	
5	Clean the suction Valve for 2nd stage	
6	Clean the Discharge Valve for 2nd stage	
7	Clean the contacts of Main / Star / Delta Contactors	
8	Tight all the Electrical connections	
9	Check Voltage and Current with Multimeter	
10	Check the setting of Overload relay of Main Motor	
11	Check the setting of Overload relay of Auxiliary Motors	
12	Clean the electrical panel	
13	Check the oil level. It should be 50% to 70%	
14	Check the water level it should be 60% to 90%	
15	Check for any Gas leakage. Rectify if found any	
16	Check for any Oil leakage. Rectify if found any	
17	Check for any Water leakage. Rectify If found any	
18	Check for any Abnormal Sound. Rectify If found any	
19	Fill all the working parameters in the Log Book	
20	Drain the moisture and oil from the oil separator	
21	Clean the compressor	
B) Air Compressor		
1	Check the oil level in Air Compressor	
2	Check for any Air leakage Rectify If found any	
3	Drain Water from the Air Receiver of Air Comp.	
4	Check for any Abnormal Sound. Rectify if found any	
5	Check the condition of Air Compressor Belt, replace if required	

ICL 4000 Hours Preventive Maintenance		
Sr.No.	Type of Maintenance	Remarks
A) Booster Compressor:		
1	Replace the Lubrication Oil Filter	
2	Replace the Suction Gas Filter	
3	Check the condition of Suction Valve for 1st stage, replace if required	
4	Check the condition of Discharge Valve for 1st stage, replace if required	
5	Check the condition of Suction Valve for 2nd stage, replace if required	
6	Check the condition of Discharge Valve for 2nd stage, replace if required	
7	Clean the contacts of Main / Star / Delta Contactors, replace if required	



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8	Check the setting of Reversal valve	
9	Check the setting of Pressure Switch of High Bank	
10	Check the setting of Pressure Switch of Medium Bank	
11	Check the setting of Suction Pressure Switch	
12	Check the setting of Emergency Pressure Switch	
13	Tight all the Electrical connection.	
14	Check Voltage and Current with Multimeter	
15	Check the setting of Overload relay of Main Motor	
16	Check the setting of Overload relay of Auxiliary Motors	
17	Clean the electrical panel	
18	Check the oil level. It should be 50% to 70%	
19	Check the water level. It should be 60% to 90%	
20	Check for any Gas leakage. Rectify if found any	
21	Check for any Oil leakage. Rectify if found any	
22	Check for any Water leakage. Rectify if found any	
23	Check for any Abnormal Sound. Rectify if found any	
24	Fill all the working parameters in the Log Book	
25	Drain the moisture and oil from the oil separator	
26	Clean the Compressor	
B) Air Compressor		
1	Replace the Air compressor Oil	
2	Check the oil level in Air Compressor	
3	Check for any Air leakage Rectify If found any	
4	Drain Water from the Air Receiver of Air Comp.	
5	Check for any Abnormal Sound. Rectify if found any	
6	Check the condition of Air Compressor Belt, replace if required	

ICL 8000 / 16000 Hours Preventive Maintenance			
Sr. No.	Type of Maintenance	Comments to Replace	Remarks
A) Booster Compressor:			
1	Replace the Lubrication Oil Filter		
2	Replace the Suction Gas Filter		
3	Replace the 1st Stage Piston rings	Replace only if the compressor lb having back pressure	
4	Replace the 2nd Stage Piston rings		
5	Replace the 1st Stage Piston Slyde Rings		
6	Replace the 2nd Stage Piston Slyde Rings		



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7	Replace the 1st Stage Oil Dynamic Seal	problem	
8	Replace the 2nd Stage Oil Dynamic Seal		
9	replace the 1st Stage Oil Slyde Ring		

10	Replace the 2nd Stage Oil Slyde Ring		
11	Replace the Compressor Oil		
12	Replace the Water in Compressor Radiator		
13	Check the condition of Liner 1st Stage		
14	Check the condition of Liner 2nd Stage		
15	Check the condition of Piston Rod 1st Stage		
16	Check the condition of Piston Rod 2nd Stage		
17	Check the condition of Piston 1st Stage		
18	Check the condition of Piston 2nd Stage		
19	Check the condition of Suction Valve for 1st stage, replace if required		
20	Check the condition of Discharge Valve for 1st stage, Replace if required		
21	Check the condition of Suction Valve for 2nd stage, Replace if required		
22	Check the condition of Discharge Valve for 2nd stage, replace if required		
23	Check the condition of Air Compressor Belt, replace if required		
24	Clean the contacts of Main / Star / Delta Contactors, Replace if required		
25	Check the setting of Reversal valve		
26	Check the setting of Pressure Switch of High Bank		
27	Check the setting of Pressure Switch of Medium Bank		
28	Check the setting of Suction Pressure Switch.		
29	Check the setting of Emergency Pressure Switch		
30	Tight all the Electrical connection.		
31	Check Voltage and Current with Multimeter		
32	Check the setting of Overload relay of Main Mator		
33	Check the setting of Overload relays of Auxiliary Motors		
34	Clean the electrical panel		
35	Check the oil level. It should be 50% to 70%		
36	Check the water level. It should be 60% to 90%		
37	Check for any Gas leakage. Rectify If found any		
38	Check for any Oil leakage. Rectify If found any		
39	Check for any Water leakage. Retry if found any		
40	Check for any Abnormal Sound. Rectify If Young any		
41	Fill all the working parameters in the Log Book		



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42	Drain the moisture and oil from the oil separator		
43	Clean the Compressor		
B) Air Compressor			

1	Replace the Air compressor Oil		
2	Check the setting of Air Compressor Pressure Switch		
3	Check the condition of Air Compressor Belt, replace if required		
4	Check for any Air leakage. Rectify if found any		
5	Drain Water from the Air Receiver of Air Comp.		
6	Check for any Abnormal Sound. Rectify if found any		

Booster Compressor- Monthly Maintenance Check List

Date:		Time:	
Client Name:		Station Name:	
Booster Compressor Model No:			
Maintenance Type: Monthly Maintenance		Booster Compressor No :	
Name of Incharge:		Booster Compressor HMR:	
Sr. No	Check list	Status	Remarks
A) Booster Compressor			
1	Check Gas Leakage, arrest if any		
2	Check Oil Level in oil Tank		
3	Check Oil Leakage		
4	Check DM water Level in water tank		
5	Check Condition of Flexible Hoses		
6	Check Heat exchanger Fins and clean IR		
7	Inspect Drive Coupling & bolts of Motor		
8	Check for Auto Start /Stop		
9	Clean contacts of Main/Star/Delta Cont.		
10	Check Current drawn by all Motors		
11	Tighten Electric Connection in Panel		
12	Check indication /canopy lamps & Display		
13	Clean Interior of Booster Compressor		
14	Check any Abnormal sound. Rectify if any		
15	Fill all working Parameter in logbook		
B) Air Compressor			



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1	Check oil Level in Air Compressor		
2	Check Air Leakage Rectify if found		
3	Check for any Abnormal sound		

4	Drain water from air receiver		
5	Check condition of Air Compressor Belt		

C) LCV Filling Post

1	Check Breakaway Coupling		
2	Check Hose Condition		
3	Check for the gas Leakage		

OEM: Sopan O & M Co Pvt Ltd

Client:

Name:

EIC Name :

Signature:

Signature:

Booster Compressor- 500 Hours Maintenance Check List

Date :	Time :
Client Name:	Station Name:
Booster Compressor Model No:	
Maintenance Type: 500 hrs Maintenance	Booster Compressor No :
Name of Incharge:	Booster Compressor HMR:

Sr.No	Check list	Status	Remarks
A) Booster Compressor			
1	Check Gas Leakage, arrest if any		
2	Check Oil Level in oil Tank		
3	Check Oil Leakage		
4	Check DM water Level in water tank		
5	Check for the Coolant in Water Tank		
6	Check Condition of Flexible Hoses		
7	Check Heat exchanger Fins and clean if required		
8	Inspect Drive Coupling and bolts of Motor		
9	Check for Auto Start /Stop		
10	Clean the contacts of Main/Star/Delta Contactors		
11	Check Current drawn by all Motors		



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12	Tighten Electric Connection in Panel		
13	Check indication /canopy lamps and Display		
14	Check Functioning of GD, FD and Hooter		
15	Check condition of Position Transducer		

16	Check compressor capacity		
17	Check Functioning of Main Isolation System		
18	Clean Interior of Booster Compressor		
19	Check for any Abnormal sound. Rectify if Found any		
20	Fill all the working Parameter in logbook		

B) Air Compressor

1	Check oil Level in Air Compressor		
2	Check Air Leakage Rectify if found		
3	Check for any Abnormal sound		
4	Drain water from Air Receiver		
5	Check the condition of Air Compressor Belt		
6	Check setting of Air Compressor Pressure Switch		
7	Check Motor and Starter condition		

C) LCV Filling Post

1	Check Breakaway Coupling		
2	Check Hose Condition		
3	Check for the gas Leakage		

OEM: Sopan O & M Co Pvt Ltd

Client:

Name:

EIC Name :

Signature:

Signature:

**Booster Compressor- 2000 Hours Maintenance
Check List**

Date :		Time :	
Client Name:		Station Name:	
Booster Compressor Model No:			
Maintenance Type:2000 hrs Maintenance		Booster Compressor No :	
Name of Incharge:		Booster Compressor HMR:	
Sr.No	Check list	Status	Remarks



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A) Booster Compressor

1	Check Gas Leakage, arrest if any		
2	Check Oil Level in oil Tank		
3	Check Oil Leakage		
4	Check water Level in water tank		
5	Check for the Coolant in Water Tank		
6	Check Condition of Flexible Hoses		
7	Check Heat exchanger Fins and clean if required		
8	Inspect Drive Coupling and bolts of Motor		
9	Replace the Lubrication oil Filter		
10	Replace the Suction Gas Filter		
11	Check the setting of Inversion Valve		
12	Check the setting of Oil PRV		
13	Check the setting of Priority Header Pressure Switch		
14	Check the condition of oil pump		
15	Check the condition of Water pump		
16	Check for Auto Start /Stop		
17	Clean the contacts of Main/Star/Delta Contactors		
18	Check Current drawn by all Motors		
19	Tighten Electric Connection in Panel		
20	Check indication /canopy lamps and Display		
21	Check Functioning of GD,FD and Hooter		
22	Check condition of Position Transducer		
23	Check compressor capacity		
24	Check Functioning of Main Isolation System		
25	Check the setting of Overload Relay of Main Motor		
26	Check the setting of Overload Relay of Auxiliary Motor		
27	Check the Voltage & Current with Multimeter		
28	Clean Interior of Booster Compressor		
29	Check for any Abnormal sound. Rectify if Found any		
30	Fill all the working Parameter in logbook		

B) Air Compressor

1	Check oil Level in Air Compressor		
2	Check Air Leakage Rectify if found		
3	Check for any Abnormal sound		
4	Drain water from Air Receiver		
5	Check the condition of Air Compressor Belt		
6	Check setting of Air Compressor Pressure Switch		
7	Check Motor and Starter condition		

C) LCV Filling Post

1	Check Breakaway Coupling		
2	Check Hose Condition		



**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
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3	Check for the gas Leakage		
OEM:Sopan O & M Co Pvt Ltd		Client:	
Name:		EIC Name :	
Signature:		Signature:	

Booster Compressor- 5000 Hours Maintenance Check List

Date :		Time :	
Client Name:		Station Name:	
Booster Compressor Model No:			
Maintenance Type:5000 hrs Maintenance		Booster Compressor No :	
Name of Incharge:		Booster Compressor HMR:	
Sr.No	Check list	Status	Remarks
A) Booster Compressor			
1	Check Gas Leakage, arrest if any		
2	Check Oil Level in oil Tank (should be 75 % of tank Volume)		
3	Check Oil Leakage		
4	Check water Level in water tank (Should be more than 3/4 of the full volume)		
5	Check for the Coolant in Water Tank		
6	Check Condition of Flexible Hoses		
7	Check Heat exchanger Fins and clean if required		
8	Inspect Drive Coupling and bolts of Motor		
9	Replace the Lubrication oil Filter		
10	Replace the Suction Gas Filter		
11	Check the setting of Inversion Valve		
12	Check the setting of Oil PRV		
13	Check the setting of Priority Header Pressure Switch		
14	Replace the 1st Piston Seal		
15	Replace the 1st Rod Seal		
16	Replace the 1st Flat Rings		



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17	Replace the 2st Piston Seal		
18	Replace the 2st Rod Seal		
19	Replace the 2st Flat Rings		
20	Check the Condition of 1st Stage Piston Rod		
21	Check the Condition of 2nd Stage Piston Rod		
22	Check the Condition of 1st Stage Suction Valve		
23	Check the Condition of 2nd Stage Suction Valve		
24	Check the Condition of 1st Stage Discharge Valve		
25	Check the Condition of 2nd Stage Discharge Valve		
26	Check the Condition of Liner for 1st & 2nd stage		
27	Check Radiator Fan-1 & Radiator Fan-2		
28	Check all the Pneumatic actuator		
29	Check for Auto Start /Stop		
30	Clean the contacts of Main/Star/Delta Contactors		
31	Check Current drawn by all Motors		
32	Check the direction of fan Rotation		
33	Tighten Electric Connection in Panel		
34	Check indication /canopy lamps and Display		
35	Check Functioning of GD, FD and Hooter		
36	Check condition of Position Transducer		
37	Check compressor capacity		
38	Check Functioning of Main Isolation System		
39	Check the setting of Overload Relay of Main Motor		
40	Check the setting of Overload Relay of Auxiliary Motor		
41	Check the Voltage & Current with Multimeter		
42	Clean Interior of Booster Compressor		
43	Check for any Abnormal sound. Rectify if found any		
44	Calibration of SRV & Instruments		
45	Check the Set Points of all Parameter		
46	Fill all the working Parameter in logbook		

B) Air Compressor

1	Check oil Level in Air Compressor		
2	Check Air Leakage Rectify if found		
3	Check for any Abnormal sound		
4	Drain water from Air Receiver		
5	Check the condition of Air Compressor Belt		
6	Check setting of Air Compressor Pressure Switch		
7	Check Motor and Starter condition		

C) LCV Filling Post

1	Check Breakaway Coupling		
2	Check Hose Condition		
3	Check for the gas Leakage		



HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
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OEM:Sopan O & M Co Pvt Ltd	Client:
Name:	EIC Name :
Signature:	Signature:

Booster Compressor- Set Points Check List

Date :			Time :	
Client Name:			Station Name:	
Booster Compressor Model No: SOPAN.22.DA.450				
Set Points - Check list & Range Value			Booster Compressor No :	
Name of Incharge:			Booster Compressor HMR:	
Sr.No	Set Value Parameter	Unit	Range	Actual Set Point
1	Suction Pressure	Bar	40	
2	Discharge Pressure	Bar	240	
3	Auto stop Cascade Pressure High	Bar	240	
4	Auto start Cascade Pressure Low	Bar	200	
5	Auto Start on Suction Pressure	Bar	180	
6	Discharge Temperature High	Deg	60	
7	Low Suction Auto Start Delay	Sec	30	
8	High Bank Cascade SOV ON	Bar	190	
9	High Bank Cascade SOV OFF	Bar	150	
10	Medium Bank Cascade SOV ON	Bar	200	
11	Medium Bank Cascade SOV OFF	Bar	100	
12	Low Bank Cascade SOV ON	Bar	210	
13	Low Bank Cascade SOV OFF	Bar	200	
14	Cascade Empty	Bar	120	
15	Gas Leakage LEL Level-1	% LEL	20	
16	Gas Leakage LEL Level-2	% LEL	40	
17	Position Transducer Low	mm	55	
18	Position Transducer High	mm	435	
19	Star Delta Switching Time	sec	5	
20	Oil Pressure	Bar	190	
21	Oil Temperature High	Deg	75	

Ideate Monthly Preventive Maintenance Check List:-

Sr.No.	DETAILS OF OPERATION /TASK LIST	REMARKS
1	FUNCTIONING OF PLC AND DISPLAY	



**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
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2	TOTAL RUNNING HOURS OF BOOSTER COMPRESSOR	
3	INCOMING VOLTAGE SUPPLY	
4	CURRENTLY KWH OF BOOSTER COMPRESSOR POWER METER	
5	AMPERE OF BOOSTER COMPRESSOR	
6	KWH OF BOOSTER COMPRESSOR	
7	COMPRESSOR MASS FLOWMETER READING	
8	CHECK OIL PRESSURE OF BOOSTER COMPRESSOR	
9	EMERGENCY SWITCH CHECK	
10	CHECK TIGHTNESS OF ELECTRICAL CONNECTION	
11	CHECK TIGHTNESS OF ALL FITTING AND JOINTS CONNECTION	
12	CHECK WATER COOLER AND PUMP	
13	CHECK THE STAUUS OF RETURN LINE OIL FILTER	
14	CHECK TEMPRATURE OF WATERCOOLER	
15	CHECK OIL & WATER LEVEL	
16	CHECK GAS, OIL & WATER LEAKAGE	
17	HOUSEKIPPING OF BOOSTER COMPRESSOR	
18	CHECK WORKING CONDITION OF PRIORITY PANEL	
19	CHECK ACTUATOR OPRERATION OF LP/MP/HP	
20	CHECK THE SUPPLY OF GD/FD	
21	CHECK THE PRESSURE AND WEIGHT OF CO2	

Ideate Yearly Preventive Maintenance Check List: -

Sr.No.	DETAILS OF OPERATION /TASK LIST	REMARKS
1	WATER QUALITY & CONTAMINATION	
2	OIL LEVEL READING (Mounted on Tank)	
3	FINCTION OF PT (SUCTION & Discharge)	
4	HYDROLIC OIL QUALITY (It Should not be blackish)	
5	PRESSURE GAUGE READING CROSS VERIFY TO HMI	
6	PT READING CROSS VERIFY TO HMI	
7	RETURN LINE PRESSURE GAUGE READING	
8	TO CHECK ANY LOOSE CONNECTION IN FITTING (electrical & Mechanical)	
9	TO CHECK THE OIL LEAKAGE	
10	TO CHECK THE WATER LEAKAGE	
11	TEMP. OF RADIATOR WATER	
12	OILING (PUMP & MOTOR)	
13	FUNCTION OF WATER PUMP AND MOTOR	
14	WORKING OF GD/FD	

Maintenance Schedule - Air Compressor - Ideate

Sr No.	Maintenance Plan	Schedule
1	Replace the Air Compressor Oil	Once in year



HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA AND KOLHAPUR GA

2	Check the setting of Air Compressor Pressure Switch	Once in 3 month
3	Check the condition of Air Compressor Belt	Once in 3 month
4	Check any leakage from Fittings	Once in 3 month
5	Drain Water from the Air Receiver of Air Comp.	Once in Week
6	Check for any Abnormal Sound. Rectify if found any	Once in

IDEATE - TABLE OF SCHEDULED MAINTENANCE- HOURLY MAINTENANCE

Part / Activity	1000 Hrs	2000 Hrs	4000 Hrs	6000 Hrs	8000 Hrs	10000 Hrs
Gas Filter	Check	Replace	Replace	Replace	Replace	Replace
Oil Filter	Check	Check / Replace	Replace	Check / Replace	Replace	Check / Replace
Hydraulic Oil	Check	Check / Replace	Replace	Check / Replace	Replace	Check / Replace
Piston Seals		Check / Replace				
Rod Seals		Check / Replace				
Piston Guide Rings		Check / Replace				
Rod Guide Rings			Check / Replace	Check / Replace	Check / Replace	Check / Replace
Oil Delivery Hose	Check	Check / Replace	Check / Replace	Replace	Check / Replace	Check / Replace
Intensifier NRV Block		Check	Check	Replace	Check	Check
Direction & Reversal Valve Setting		Check	Check	Check	Check	Check
Function of Oil Level Switch		Check	Check	Check	Check	Check
Radiator Cleaning		Check	Check	Check	Check	Check
Heat Exchanger Cleaning			Check	—	Check	—
Tighten All Electrical Connections		Check	Check	Check	Check	Check
Cleaning of Contactors, Overload Relay, MCB, MCCB		Check		Check		Check
Voltage & Current of Motors		Check	Check	Check	Check	Check
Functional Test of All ESD	Check	Check	Check	Check	Check	Check
Functional Test of GD, FD		Check	Check	Check	Check	Check
Functional Test of CO₂		Check	Check	Check	Check	Check

Ideate Compressor parts description :-

Ref No.	Designation
1	1st Stage Gas Compression Cylinder



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2	2nd Stage Gas Compression Cylinder
3	1st Stage Gas Suction Pressure Gauge
4	1st Stage Gas Discharge Pressure Gauge
5	2nd Stage Gas Discharge Pressure Gauge
6	Oil Charge Cap
7	Oil Tank
8	Oil Drain Tap
9	Oil Level Indicator
10	Oil Thermostat
11	Gas / Water Heat Exchanger
12	Explosion Proof Electric Motor
13	2 Contacts By-Pass and Minimum Pressure Switch
14	Pump
15	Lantern
16	Oil Filter Clogging Indicator
17	Oil Filter
18	Oil-Water Heat Exchanger
19	1st Stage Cylinder By-Pass Taps
20	Gas Filter
21	Gas Filter Clogging Indicator
22	Hoses
23	Electric Level Indicator Safety Oil

KPCL Monthly Maintenance Check List

Sr. No.	Type of Maintenance	Remarks
1	Inter-stage temperature and pressure checks	
2	Compressor capacity checks	
3	Fan motor current checks	
4	Gas leak detection	
5	Oil usage monitoring	
6	Safety valve leakage inspection	
7	Mechanical seal oil leakage rate check	

Preventive Maintenance Schedules



**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA
AND KOLHAPUR GA**

KPCL 1500 Hours Maintenance Check List

Sr. No.	Type of Maintenance	Remarks
1	Inter-stage temperature and pressure checks	
2	Compressor capacity checks	
3	Fan motor current checks	
4	Gas leak detection	
5	Oil usage monitoring	
6	Safety valve leakage inspection	
7	Mechanical seal oil leakage rate check	
8	Includes monthly checks, plus:	
9	Inlet filter inspection	
10	Oil and oil filter change	
11	Oil analysis	
12	Water analysis (applicable for engine cooling)	
13	Check valve inspection	
14	Drive coupling inspection (including clamp bolts)	

KPCL 3000 Hours Maintenance Check List

Sr. No.	Type of Maintenance	Remarks
1	Inter-stage temperature and pressure checks	
2	Compressor capacity checks	
3	Fan motor current checks	
4	Gas leak detection	
5	Oil usage monitoring	
6	Safety valve leakage inspection	
7	Mechanical seal oil leakage rate check	
8	Includes monthly checks, plus:	
9	Inlet filter inspection	
10	Oil and oil filter change	
11	Oil analysis	
12	Water analysis (applicable for engine cooling)	
13	Check valve inspection	
14	Drive coupling inspection (including clamp bolts)	
15	Compressor valve inspection	
16	Compressor capacity check	

KPCL 6000 Hours Maintenance Check List

Sr. No.	Type of Maintenance	Remarks
1	Inter-stage temperature and pressure checks	
2	Compressor capacity checks	
3	Fan motor current checks	
4	Gas leak detection	
5	Oil usage monitoring	
6	Safety valve leakage inspection	



**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA
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7	Mechanical seal oil leakage rate check	
8	Includes monthly checks, plus:	
9	Inlet filter inspection	
10	Oil and oil filter change	
11	Oil analysis	
12	Water analysis (applicable for engine cooling)	
13	Check valve inspection	
14	Drive coupling inspection (including clamp bolts)	
15	Compressor valve inspection	
16	Compressor capacity check	
17	Compressor valve overhaul	

KPCL 15000 Hours Maintenance Check List

Sr. No.	Type of Maintenance	Remarks
1	Inter-stage temperature and pressure checks	
2	Compressor capacity checks	
3	Fan motor current checks	
4	Gas leak detection	
5	Oil usage monitoring	
6	Safety valve leakage inspection	
7	Mechanical seal oil leakage rate check	
8	Includes monthly checks, plus:	
9	Inlet filter inspection	
10	Oil and oil filter change	
11	Oil analysis	
12	Water analysis (applicable for engine cooling)	
13	Check valve inspection	
14	Drive coupling inspection (including clamp bolts)	
15	Compressor valve inspection	
16	Compressor capacity check	
17	Compressor valve overhaul	
18	Visual inspection of piston rings	
19	Inspect compression pistons	
20	Overhaul compressor valves	
21	Inspect oil pump	
22	Visual inspection gudgeon pin bearings	
23	Visual inspection of big end bearing shells and gudgeon pins	
24	Visual inspection rod packings	
25	Clean heat exchanger	
26	Check coupling alignment	
	Oil and Filter Maintenance	
1	Use SAE 40 compressor oil (consult KPCL for oil selection)	
2	After first 500 hours, change oil filter and inspect crankcase	
3	Change oil and filter every 2000 hours	
4	Drain oil while warm	



HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
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5	Oil capacity: Crankcase - 16 liters	
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**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
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Sr. No.	Part Description	Old Part Number Cameron	New Part Number KPCL
1	SHELL BEARING (THRUST)	ZGRF133000002999	757.32.10.108.
2	SHELL BEARING (FLOAT)	ZGRF133000001999	757.32.10.107.
3	CROSS HEAD BUSHING	Z630-110-001	757.32.10.702.
4	BUSHING NARROW CON ROD SMALL END	Z210750	757.32.10.303.
5	BUSHING WIDE CON ROD SMALL END	Z210760	757.32.10.313.
6	WRISTPIN LONG	ZGRF00120098B111	757.32.10.711
7	WRISTPIN SHORT	ZGRF00120099C111	757.32.10.713.
8	PRELUBE PUMP	GRF141000002999	757.32.10.806.
9	PRELUBE DRIVE ASSEMBLY	Z630-415-001	757.32.10.501.
10	PUMP LUBRICATOR	ZGRF141000001999	757.32.10.514.
11	PREMIER P-55UPUMP 1/4" PLUNGER	Z904-462-001	G8888.40.SP.351.
12	O RING KIT (9EA ORINGS)	Z625-604-001	G8888.40.SP.272.
13	RUPTURE DISCKIT (25PSC, 6400 PSI)	Z625-603-012	G8888.40.SP.271.
14	SMX-08SMETERING ELEMENT	Z625-605-001	G8888.40.SP.2886.
15	SMX-12LMETERING ELEMENT	Z625-605-020	G8888.40.SP.381.
16	SMX-35SMETERING ELEMENT	Z625-605-005	G8888.40.SP.1048.
17	SMX-16SMETERING ELEMENT	Z625-605-003	G8888.40.SP.271.



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18	SMX-12SMETERING ELEMENT	Z625-605-002	G8888.40.SP.259.
19	SMX-16TMETERING ELEMENT	Z625-605-012	G8888.40.SP.370.
20	PREMIER MODEL P- 55 LUBRICATOR	Z626-101-001	G8888.40.SP.368.
21	FILTER 10 MICRON	Z620-209-001	G8888.40.SP.257.
22	RUPTUREINDICATOR, 6400 PSI	Z625-602-012	G8888.40.SP.369.
23	SWITCH FLOW(DNFT)	Z620-233-002	757.32.40.134.
24	MASTER DV BLOCK	08S-12L-35S	757.32.10.802.
25	SECONDARY DV BLOCK	16S-12S-16T	757.32.10.602.
26	NUPROBALANCING VALVE SETTING 2900 PSI	Z939-032-001	757.32.10.605.
27	PIN INDICATOR 5000 PSI	Z625-601-007	757.32.10.607.
28	EXTERNALOUTLET CHECK VALVE	Z620-208-001	757.32.10.612.
29	INJECTION POINT CHECK VALVE SINGLE BALL	Z620-244-001	757.32.10.404.
30	INJECTION POINT CHECK VALVE DOUBLE BALL	Z922-084	757.32.10.520.
31	FILTER AIR	ZGRF132000001999	757.32.10.521.
32	GASKET FRAME	ZGRF001200630121	757.32.10.519.
33	GASKET – DRIVE END	ZGRF001200590121	757.32.10.522
34	GASKET – AUX. END	ZGRF001200610121	757.32.10.523.
35	GASKET-CROSSHEAD GUIDE COVER	Z630-301-001	757.32.10.608.
36	GASKET - FRAME / XHD GUIDE	ZGRF001200620121	G8888.40.SP.351.
37	FILTER ELEMENT	ZGRF121000001999	G8888.40.SP.259.
38	GASKET HEAD	ZGRF001202570139	757.32.43.127.
39	FILTER – HEAD	ZGRF143000001999	G8888.40.SP.774.
40	SEAL O-RING	Z900-838-165	G8888.40.SP.776.
41	MANIFOLD LUBE OIL	ZGRF001203240119	G8888.40.SP.777.
42	OIL SEAL MECANICAL	ZGRF 131000001999	G8888.40.SP.775.
43	PREMIER P-55UPUMP 1/4" PLUNGER	904-462-001	G8888.40.SP.776.
44	SWITCH FLOW(DNFT)	Z620-233-002	G8888.40.SP.777.
45	OILFILTER ELEMENT	ZGRF- 121000001999	G8888.40.SP.778.
46	GASKET HEAD 4.125	ZGRF00120057B122	G8888.40.SP.159.
47	SUCTION VALVE	Z630-122-136	G8888.40.SP.151.
48	SUCTION VALVE PLATE	Z630-013-012	G8888.40.SP.139.
49	SUCTION SPRING PLATE	Z630-018-002	G8888.40.SP.159.
50	DISCHARGE VALVE	Z630-121-336	G8888.40.SP.151.



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51	DISCHARGE VALVE PLATE	Z630-013-020	G8888.40.SP.134.
52	DISCHARGE SPRING PLATE	Z630-018-002	G8888.40.SP.154.
53	SUCTION VALVE	Z630-122-136	G8888.40.SP.164.
54	SUCTION VALVE PLATE	Z630-013-012	G8888.40.SP.155.
55	SUCTION SPRING PLATE	Z630-018-002	G8888.40.SP.153.
56	DISCHARGE VALVE	Z630-121-336	757.32.43.115.
57	DISCHARGE VALVE PLATE	Z630-013-020	757.32.40.113.
58	DISCHARGE SPRING PLATE	Z630-018-002	757.32.40.114.
59	CONCENTRIC VALVE	Z630-133-036	757.32.40.108.
60	SUCTION VALVE PLATE	Z630-013-006	757.32.33.110.
61	SUCTION SPRING PLATE	Z630-018-003	757.32.17.110.
62	DISCHARGE VALVE PLATE	Z630-013-005	757.32.10.108.
63	DISCHARGE SPRING PLATE	Z630-018-001	757.32.10.107.
64	RING SET PISTON	ZGRF00120996 G137	757.32.10.702.
65	NUT PISTON 1 EA	ZGRF00120161 0111	757.32.10.303.
66	NUT PISTON ROD	ZGRF00120160 0109	757.32.10.313.
67	PACKING COMPR ROD	ZGRF211100	757.32.10.711
68	RING SET PISTON	ZGRF00120996 C137	757.32.10.713.
69	NUT PISTON ROD	ZGRF00120160 0109	757.32.10.806.
70	RING SET PISTON	ZGRF21121C	757.32.10.501.
71	INTERFACING MODULE	N/A	N/A
72	DIGITAL INPUT CARD 32 CHANNEL	N/A	N/A
73	DIGITAL INPUT CARD 16 CHANNEL	N/A	N/A
74	DIGITAL OUTPUT CARD 32 CHANNEL	N/A	N/A
75	ANLOG INPUT CARD 8 CHANNEL	N/A	N/A
76	COMMUNICATION CARD MODBUS RTU SLAVE-	N/A	N/A
77	Gas Detector :	N/A	N/A
	Model No. : CROW ON		
78	Flame Detector :	N/A	
	Model No. : HONEYWELL		
79	Temperature Element: Simplex type, with weather proof housing/SS braided	N/A	N/A



HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA AND KOLHAPUR GA

	wire of 5 meter length, Sensor: RTD PT100. Process connection: 1/2"NPT, Instrument connection :1/2"NPT, Stem dia: 8 mm. Thermowell made out of bar stock SS304, suitable for pressure rating as per the service below.		
80	Temperature Gauge with Thermowell, MIS,Capillary type, Dial Size: 65mm, SS304 Case, Mounting: Front Flange Back Entry, Instrument Connection: 1/2" NPT (M), Stem Material: AISI 316 SS, Stem Diameter: 12 mm, Stem Length: Suitable to ThermowellLength, Capillary: SS Armoured, Capillary length: 5 Meters.65 MM DIAL SIZE,SS CASING,IP-65 , GLYCERENE FILLED ,CONNECTION : ¼" NPT(M) , GAUGE BOARD MOUNTING AND FIELD MOUNTING	N/A	
81	PRESSURE GAUGES MAKE:GEN. INSTRUMENTS 65MM DIAL SIZE,SS CASING,IP-65 , GLYCERENE FILLED ,CONNECTION : ¼" NPT(M) , GAUGE BOARD MOUNTING AND FIELD MOUNTING	N/A	N/A
82	Pressure Transmitter Make : WIKA Model No. : IS 20, Connection: 1/4"NPT(M)	N/A	N/A
83	Ball Valve Repair Kit FOR Pneumatic Operated Ball Valve for Drain Make : PARKER Model No. : 8A-B8LPKR- BN-SS, FULL BORE, OD CONNECTION, VALVE SIZE: 15 NB, PRESSURE RATING: 6000 PSI SS316	N/A	N/A
84	Ball Valve Repair Kit FOR Pneumatic Operated Ball Valve for Compressor Inlet Make : PARKER Model No. : 16A- B12LPKR-BN-SS, FULL BORE, THREADED (BSP) CONNECTION, VALVE SIZE: 50 NB, PRESSURE RATING: 6000 PSI	N/A	N/A
85	Actuator Repair Kit FOR Actuator Type: Single Acting Make :Rotex Model No. : EC-50E-7	N/A	N/A



HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA AND KOLHAPUR GA

86	Actuator Repair Kit FOR Actuator Type: Single Acting Make : Rotex	N/A	N/A
87	Solenoid Valve, 3/2Way Direct Acting, NC, FLAMEPROOF to IIA/IIB, NAMUR	N/A	N/A

Sr. No.	Part Description	Part Number
1	TRANSFORMER ASSEMBLY	2152434
2	SPARK PLUG	4W-2256
3	REGULATOR AS-GAS PRESSURE	349-8809
4	STARTING MOTOR GP-AIR	7W-6569
5	FILTER ELEMENT AS-AIR (PRIMARY)	6I-2505
6	FILTER ELEMENT AS-AIR (SECONDARY)	6I-2506
7	CARTRIDGE GP-TURBOCHARGER	150-6304
8	PUMP GP-WATER	135-4926
9	CARBURETOR GP	135-0454
10	FILTER-ENGINE OIL (ADVANCED EFFICIENCY)	1R-1808
11	PUMP GP-ENGINE OIL	4N-0733
12	CARTRIDGE GP-TURBOCHARGER	150-6304

Sr. No.	Part Description	Part Number
1	HRC FUSE LINK 400A FOR SFU	N/A
2	STAR DELTA TIMER COIL VOLTAGE 230V AC	N/A
3	MPCB FOR AUX MOTOR 5.5 KW WITH AUX TRIP CONTACT RANGE 8-13 AMP	N/A
4	LOAD POWER SUPPLY UNIT I/P 230V AC O/P 24V DC RATING 5 AMP FOR PLC AND LOAD	N/A
5	AUX RELAY COIL 24V DC CONTACTS 2C/O	N/A
6	ACTIVE BARRIER INPUT 4-20MA, OUTPUT 4-20MA, TYPE KFD2-STC4-EX1	N/A
7	PASSIVE BARRIER FOR RTD INPUT TYPE MTL 7756AC	N/A
8	ACTIVE BARRIER INPUT POT FREE CONTACT OUTPUT POT FREE CONTACT FOR DNFT TYPE KFD2-SR2-EX1.W.L.B	N/A
9	AUX RELAY COIL 230V AC CONTACTS 4 C/O WITH LED INDICATION	N/A
10	"CONTACTOR KIT FOT POWER CONTACTOR MODEL NO. 3TF 52 170AMP"	N/A
11	"CONTACTOR COIL FOT POWER CONTACTOR COIL VOLTAGE 230VAC MODEL NO. 3TF 52 170AMP"	N/A



**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA
AND KOLHAPUR GA**

KPCL MAKE- GED / EMD COMPRESSOR - CRITICAL SPARE LIST

Item Nos.	Description	Unit	Qty.
A	CNG Compressor		
1	Crank shaft	No	1
2	Roller Bearing DE	No	1
3	Roller Bearing NDE	No	1
4	Crosshead	No	1
5	Crosshead PISTON	Set	1
6	Piston rings / Rider Ring (sealing wear rings) for all cylinders.	Set	1
7	Piston Rods	Set	1
8	Piston for all stages	No	1
9	Complete valve assembly, Suction, for all stages	Set	1
10	Complete valve assembly, Discharge, for all stages	Set	1
11	Replaceable parts of main packing, partition packing, all scrapper ring, O rings, Gaskets etc.	Set	1
12	Complete Lubricator assembly	Set	1
13	complete coupling/ pulley	Set	1
14	Idler pulley, if applicable	Set	1
15	Belt, if applicable / bended Belt	Set	1
16	Cooling fan bearing	Set	1
17	Cooling fan shaft	Set	1
18	Cooling fan blades with hub	Set	1
B	Electric Moto Driven		
1	HRC FUSE LINK 400A FOR SFU	N/A	3
2	STAR DELTA TIMER COIL VOLTAGE 230V AC	N/A	1
3	MPCB FOR AUX MOTOR 5.5 KW WITH AUX TRIP CONTACT RANGE 8-13 AMP	N/A	1
4	LOAD POWER SUPPLY UNIT I/P 230V AC O/P 24V DC RATING 5 AMP FOR PLC AND LOAD	N/A	1
5	AUX RELAY COIL 24V DC CONTACTS 2C/O	N/A	1
6	ACTIVE BARRIER INPUT 4-20MA, OUTPUT 4-20MA, TYPE KFD2-STC4-EX1	N/A	1
7	PASSIVE BARRIER FOR RTD INPUT TYPE MTL 7756AC	N/A	1
8	ACTIVE BARRIER INPUT POT FREE CONTACT OUTPUT POT FREE CONTACT FOR DNFT TYPE KFD2-SR2-EX1.W.L.B	N/A	1
9	AUX RELAY COIL 230V AC CONTACTS 4 C/O WITH LED INDICATION	N/A	1
10	"CONTACTOR KIT FOT POWER CONTACTOR MODEL NO. 3TF 52 170AMP"	N/A	1



**HIRING OF AGENCY FOR PROVIDING CLUSTER BASED OPERATION AND
MAINTENANCE SERVICES FOR CNG COMPRESSORS AT AMBALA-KURUKSHETRA
AND KOLHAPUR GA**

11	"CONTACTOR COIL FOT POWER CONTACTOR COIL VOLTAGE 230VAC MODEL NO. 3TF 52 170AMP"	N/A	1
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C	Instrumentation		
1	Analog card	No	1
2	Relays	Set	2
3	Digital card	Set	1
4	Barrier	Set	1
5	Power supply unit	Set	1
6	Pressure Transducer	Set	1
7	Temperature Element	Set	1
8	LEL detectors	Set	1
9	Flame detectors	Set	1
10	Pressure Gauge	Set	1
11	Temperature gauge (100 - 200 degC)	Set	1
12	Solenoid Cils	Set	1
13	Solenoid valve	Set	1
D	Package Spares		
1	NRV	Set	1
2	Coalescing Filter Element	Set	1
3	Suction Gas Filter Element	Set	1
4	Lube Oil Filter Element	Set	1
E	Air Compressor		
1	Air compressor kit	Set	1

Critical spares should be stored at centralized location OF KOLHAPUR and AMBALA – KURUKSHETRA GA (i.e., within 20 KM radius of both the GAs) to minimize the maintenance time period.

Annexures: -

1. ICL Manual Copy

2. Ideate Manual Copy