



ENQUIRY NO: AHT0000026954

DESCRIPTION: NITROGEN PURGING SERVICES AT THE PetroSA GTL REFINERY, MOSSEL BAY.

1. SCOPE OF WORK

1.1 INTRODUCTION

The Petroleum Oil and Gas Corporation of South Africa SOC Ltd, herein after called PetroSA, operate a Gas to Liquid Processing Refinery and related facilities in Mossel Bay, FA Platform

PetroSA requires a capable Supplier to undertake and provide the following Nitrogen Purging Services at the above-mentioned PetroSA facilities for unit 51 LPG HP Tank Farm:

- **First Phase:**

Provision of a Nitrogen Purging service for purging the PetroSA High Pressure Tank Farm LPG system, i.e., piping, and bullets with nitrogen gas to remove Oxygen to below PetroSA's required level to provide an inert atmosphere. (2 x 211m³ bullets)

- **Second Phase:**

Provision of a Nitrogen Purging service for purging the PetroSA High Pressure Tank Farm LPG system, i.e., piping, and spheres with nitrogen gas to remove Oxygen to below PetroSA's required level to provide an inert atmosphere. (2 x 2205m³ Spheres)

Provision of all the required supervision, labour, and equipment as specified in this agreement and administration related to the provision of Nitrogen Purging services, including the Nitrogen required for the purging.

It is expected from the Supplier to provide the service expertise, advanced techniques, reliable equipment, manpower, and experienced project management, including preparation and execution plan of the works in accordance with a time frame of between 4 and 6 days.

1.2 SERVICES

*Prepared by: PetroSA Legal Services Department
Revision: 03 – 25 September 2013*

The scope of work for the required service shall include but not be limited to the following:

- Project pre-engineering in conjunction with the client to compile the method statements and design of N2 purging packs.
- Supply of all relevant nitrogen purging equipment to execute the required service, e.g., 16ton LIN (21,000 litre) Portable ISO liquid nitrogen storage tank, and personnel to execute the purging operation.
- The supply of the required N2

Based on the pressure cycle purging method, where the vessel is pressurised with nitrogen, and then vented, repeating the cycles until the required maximum oxygen concentration is achieved:

The number of pressure cycles and mass of N2 that is required between 50 kPa and 1200 kPa (Nitrogen isotainer outlet pressure) to reduce the oxygen content from 21 vol% to 0.5 vol% is calculated.

The purge days and the volumetric flowrate required to achieve the desired oxygen concentration in the vessels was calculated.

For phase 1 it was assumed that it would take approximately 24 hours to purge each bullet, with 1 day for setting up and 1 day for demobilisation, giving you a total of 4 days.

For phase 2 it was assumed that it would take approximately 48 hours to purge each sphere, with 1 day for setting up and 1 day for demobilisation, giving you a total of 6 days.

Based on the above, the required nitrogen for phase 1 is estimated to be 12tons, i.e., for 51VD165A and B.

Based on the above, the required nitrogen is estimated to be 126tons for phase 2, i.e., for 51VS161A and 51VS164.

The Supplier will be expected to be familiar and have the necessary skill, experience and knowledge of all nitrogen purging techniques and procedures.

The Supplier will be expected to provide PetroSA with their operating procedure. PetroSA will incorporate this into their specific procedure for the purging operation.

1.2.1 MINIMUM PERSONNEL REQUIRED ON SITE

The Supplier shall be expected to maintain a minimum crew at the GTL Refinery as follows:

Minimum Crew Requirements: GTL Refinery HP Tank Farm

Designation	Quantity
Supervisor	2
Technician	2
Total	4

PetroSA shall pay for the minimum crew whether there is work or not for the supplier. Additional crew / personnel requirements shall be agreed between the supplier and PetroSA. PetroSA shall not be responsible for the payment of additional personnel without prior written agreement. The requirement is thus 1 supervisor and 1 technician per 12hour shift.

1.2.2 Tender deliverables

The Supplier shall ensure that the following information is available and, where required, provided to support the execution of the Nitrogen Purging service:

The Supplier shall, supply full details of the Supervisors and Technicians that will execute the Nitrogen Purging operation, including curriculum vitae.

1.2.3 Supplier's responsibilities

In rendering the service, the Supplier shall be responsible for the provision of the following, required for setting up their equipment and executing the Nitrogen Purging operation:

- Required Nitrogen
- Plant & Equipment
- Small tools
- Manpower
- Supervision
- Transport.

1.2.4 Technical

- Supplier to supply a PFD, indicating all equipment from the ISOTAINER to the point of injection. The drawing must clearly show flexible connections and vendor supplied hard piping and clearly indicate the scope of supply between vendor and client.
- Supplier to confirm how vaporisation rate will be controlled (e.g., orifice plate or other), and the expected flowrate using the selected vapouriser configuration.
- Design pressures of all equipment are to be indicated.
- Relief valve set pressures on ISOTAINER and vapouriser circuit to be provided.
- All pressure relief valves (and their setpoint) , pressure control valves (and their setpoints) must be indicated. Setpoint for N2 supply pressure

for a PCV and required downstream relief valve set pressure must be 500kPa

(51-VD165A/B Des. Pres. 1725kPa; 51-VS161 Des. Pres. 1725kPa; 51-VS164 Des. Pres. 1725kPa)

- Vendor to supply latest pressure test certification (and expiry dates) of all equipment (including, ISOTAINER, vendor supplied relief valves, flexible hoses, etc.).
- After site visits, vendor is to supply marked up plot plan of purging facilities and a viable path for an articulated N2 truck to offload into the ISOTAINER.

1.2.5 Procedures (Available on Request)

The Supplier shall develop a comprehensive Nitrogen Purging Procedure, which shall be submitted for review and formally approved by PetroSA's Blending and Storage Operations before any work is undertaken. PetroSA will incorporate this into their specific procedure for the purging operation.

1.2.6 Normal operating conditions

A purchase order will be issued to the supplier at the commencement of the agreement, and all invoices shall be submitted against this purchase order.

Before commencing with any job the Supplier shall be issued with a Works Order / Job Card, and the Works Order number shall also be reflected on the Supplier invoices and the job card attached as one of the invoice supporting documents.

It will be the responsibility of the Supplier to fully acquaint itself with the conditions and environment of each job and to plan accordingly.

PetroSA will have no obligation in any aspect on work performed by the Supplier without an official Works Order number.

Any changes to an official works order must be authorised by means of a new or supplementary works order.

The Supplier shall have no authority to change any conditions in a works order and any work performed in excess of the approved scope shall be for the account of the Supplier.

Any rework required as a result of the Supplier's negligence shall be for the Supplier's account. This shall include all associated costs, including materials, labour, consumables, and any required certification.

1.3 Inclement Weather

PetroSA shall, in the event of adverse weather conditions, pay the Supplier for the crews on site at a minimum of four hours or the actual hours that the crews would have spent on site and ordered to stand down.

1.4 Prerequisites

The Supplier will be required to obtain the necessary permits to work prior to the commencement of the services specified on the works order.

The Supplier shall submit proof of calibration and certification of all equipment used to perform the service.

The Supplier shall not acquire the service of any sub-contractor without the prior written approval from PetroSA.

The Supplier shall ensure that all approved subcontractor personnel are competent and fully equipped to execute the service in a safe and compliant manner, where applicable.

1.5 Site Establishment

1.5.1 Equipment and tools

PetroSA will supply an area for setting up the equipment, Nitrogen off-loading to the contractor's skid/equipment, operation of the contractor's skid/equipment.

The cleanliness of the area must adhere to basic safety and housekeeping principles.

PetroSA reserves the right to conduct safety inspections at random of the area on site.

1.5.2 Fuel Supply

PetroSA will not provide fuel for Supplier's vehicles.

1.5.3 Personnel Qualifications

The Supplier to confirm in writing that the staff supplied have been trained in the operation of all the equipment being used and in safe handling of nitrogen.

1.5.4 Materials

The Supplier shall generally supply all materials, excluding consumables, required for the performance of the services and carry sufficient stock, so as not to delay the completion of the services. Consumables used for the provision of this service will be supplied by PetroSA.

Any materials supplied by PetroSA on a free issue basis shall remain the property of PetroSA and any surplus material shall be returned to PetroSA upon completion of the Services.

The Supplier shall also be responsible for any loss of material due to negligence, misconduct or bad workmanship. No payment will be made for any inferior/rejected materials.

The Supplier to keep a material register of all the Nitrogen Purging machines and material on site and supply PetroSA with such register before they commence with the work.

1.5.5 Plant, Equipment and Tools

The Supplier shall provide all the necessary equipment and tools of trade necessary for the performance of the Services, excluding consumables.

1.5.6 Identification

The Supplier shall clearly mark all its material, plant, equipment, and tools for ease of identification, and be responsible for any loss thereof.

1.5.7 Safety Equipment/Apparel

The Supplier shall ensure that all its personnel engaged in the performance of the Service are provided as a minimum with the following safety equipment/apparel in good condition:

- Safety shoes
- Overall with long sleeves
- Hard hat
- Rain suit
- Safety gloves
- Hearing protectors
- Safety glasses
- Harness for any work carried out on top of the Isotainer

All safety equipment to bear the SABS mark and be approved by the PetroSA Safety Department.

PetroSA will supply any other safety equipment, which is a specific area requirement, to the Supplier's personnel free of charge. The safety equipment will remain the property of PetroSA and will only be replaced due to normal wear and tear. The Supplier shall replace any safety equipment damaged as a result of abuse, neglect, misuse, etc.

1.6. Supplied by PetroSA

1.6.1 Utilities and facilities free of charge

PetroSA will allocate an area in the contractor yard.

1.6.2 Utilities and facilities at charge

The Supplier must apply for cell phone permits to use in the Blending & Storage plant production building. No other communication services would be provided.

1.7 WORKING HOURS

The Supplier shall ensure that the Services are available on a 24 hours per day, until the purging has been completed.

1.8 GENERAL

Any activity, work or condition not covered in this Agreement shall be negotiated and agreed on in advance with PetroSA.

Proper clean up after completion of a specific job shall be deemed part of the job and payment may be withheld if not adhered to.

Any damage to PetroSA's equipment due to negligence or poor workmanship will be for the account of the Supplier.

The Supplier shall be responsible for the proper protection of surrounding equipment against damage whilst performing the services.

The Power supply on site is 220V and 525V.

1.9 QUALITY ASSURANCE

The Supplier shall ensure that the Services, including workmanship, products, materials, documentation, tools and equipment used or required for the rendering of the Services comply with ISO 9001:2015 and ISO 45001:2018.

1.10 QUALITY CONTROL PLAN

The Supplier's Quality Control Plan (QCP) shall cover all tasks identifying all witness hold points required for PetroSA interventions. These QCPs will be requested by PetroSA on a regular basis.

This will be issued to PetroSA as a complete work pack for final acceptance before any work can commence. This will include all requirements as per specifications.

1.11 SAFETY PLAN

The Supplier's Safety Plan shall be specific to this Agreement and shall contain details of the following: (The Plan will be updated on a regular basis).

- Standards and Procedures to be followed to ensure Supplier personnel safety in the execution of the works and in compliance with PetroSA SHEQ requirements, including procedures for identifying protective equipment for specific jobs and procedures for confined space entry.
- Accountability of Supplier's key personnel with regards to safety at the work site.
- Responsibility of Supplier's Safety Officers and number of Safety Officers to be used.
- Supplier safety indoctrination for its personnel and safety meeting frequency.
- Procedures to ensure safety hazards are identified through proper planning and continuous monitoring.
- Preparation of risk assessments to identify hazards and the control measures to be used to eliminate or reduce the risk
- Emergency procedures and first aid
- Housekeeping
- Basic personal protective equipment; compliance with PetroSA requirements
- Accident / incident reporting

The Supplier shall describe in this plan how they will comply with environmental regulations of PetroSA.

1.12 CHANGES TO THE SCOPE OF SERVICES

The scope of the Services shall be subject to changes by additions, deletions or revisions thereto by PetroSA. The Supplier shall be advised of any such changes by written notification from PetroSA describing the change. The Supplier shall promptly perform and strictly comply with each such change when so instructed by PetroSA. Any extra services resulting from such changes will be charged at the Supplier's normal or agreed rates.