

REQUEST FOR EXPRESSION OF INTEREST FOR PROVISION OF GASES**REFERENCE NO.: CPP-PROC-TZ-039-0810**

China Petroleum Pipeline Engineering Co., Ltd. (hereinafter abbreviated as CPP) as Pipeline, Feederline & Above Ground Installation Contractor for the East African Crude Oil Pipeline (EACOP) Project invites experienced and reputable Contractors to express their interest in providing **gases** to the EACOP Project.

The EACOP Project involves the construction and operation of an underground and cross-border pipeline to transport crude oil for export to international markets. The pipeline will run from Kabaale, Hoima District in Uganda to the Chongoleani peninsula near Tanga in Tanzania. The length of the pipeline is 1,443 km, of which 1,147 km will be in Tanzania.

BRIEF DESCRIPTION OF THE SCOPE OF THE SERVICES:

- Supply of gases for project (Argon, Acetylene, Carbon Dioxide, Oxygen, Mixture Argon 80% - Co2 20%, etc.)

MINIMUM REQUIREMENTS:

Companies or organizations expressing their interest are invited to document their request with:

- Proof of registration with the Tanzania Revenue Authority (TRA).
- Proof of registration/application to the EWURA Local Supplier Service Provider (LSSP) database at the time of submission of the response to this expression of interest is strongly recommended.
- Compliance with Petroleum (Local Content) Regulations, 2017, and Local Company definition for Tanzania.
- Fully filled Key personnel list with CV(Appendix1) and Equipment list of production and inspection (Appendix2) in requested format. (Blank is regarded as an unqualified item.)
- Similar supplying experience within the last three years (Appendix 3) in the requested format.
- Copy of certificates of ISO 9001, ISO 45001, ISO 14001, EPA, OSHA, GGA, or equivalent of them.
- Tax Clearance Certificate for the latest year available.
- Respond to General Requirement for Gas Suppliers (Appendix 4), the gas and cylinders provided by the applicant shall meet all technical requirements
- The supplier must provide Manufacturer's Commitment Letter /Manufacturer's authorization.

Companies which have the ability, capacity, and resources to implement the activities listed above should express their interest by sending together with the documents stated in the above section through an email to **supplierdata1@cpptz.com** (Max. Email Size: 20 MBs, all documents must be submitted in the **English language**) on or before **24:00 hours East African Time (EAT), on 25th August 2023. Subject of the email should be "EOI for CPP-PROC-TZ-039-0810-COMPANY NAME". CPP reserves the right not to consider companies that submit an incorrect email subject and the incorrect format of Appendix 1, 2,3, and 4.**

The **format** of the required documents and **relevant technical requirements** which are mentioned in Minimum Requirements should be **downloaded from EACOP's website**

(<https://eacop.com/opportunities-by-main-construction-contractors/china-petroleum-pipeline-engineering-co-ltd/>).

Note: CPP will review and assess the documents provided by companies that have expressed interest in accordance with this EOI and conduct evaluations based on internal criteria to determine which companies will be included in the list of pre-qualified companies. Only the pre-qualified companies will receive, by signing a Non-Disclosure Agreement (NDA), an invitation to bid as a continuation of the call for tender process. CPP reserves the right at its sole discretion to make the decision to select or reject a company and maintain its decision.

General Requirements for Gas Supplier.

1- Contractor to Compliance with Regulations:

- Contractor to adhere and stick with company legislations system and procedures.
- Mixed gas suppliers must comply with all applicable regulations governing the production, storage, transport, and distribution of gases. These regulations may be set by government agencies, such as the Environmental Protection Agency (EPA) or the Occupational Safety and Health Administration (OSHA), or industry associations such as the Compressed Gas Association (CGA) or the International Organization for Standardization (ISO)
- Gas purities and mixing tolerances are specified as delivered by the supplier (manufacturer) and not at the point of use.

2- Quality Assurance:

- Following the reference standards ISO-90001/14001/45001.
- Mixed gas suppliers must have a comprehensive quality assurance program in place to ensure that their products meet the required specifications and standards. This program should include procedures for testing, sampling, and analysis of the gases to ensure their purity, composition, and quality.
- Following the International standard ISO 14175:2008, specifies requirements for the classification of gases and gas mixtures used in fusion welding and allied processes.
- Gases or gas mixtures may be supplied in either liquid or gaseous form, but when used for welding and allied processes, the gases are always used in the gaseous form.

3- Certifications:

- The mixed gas supplier should have relevant certifications such as ISO 9001, which outlines requirements for a quality management system, and ISO 17025, which specifies general requirements for the competence of testing and calibration laboratories
- Gas cylinder supplier shall comply with Total quality and safety system requirements
- All certificates and relative documentation shall be computerized, hand written is not acceptable.

4- Gas detection method:

- Collect the sample gas mixture from the source in a gas-tight container using a gas sampling pump.
- Use a gas chromatograph (GC) to analyze the gas mixture. GC is a widely used analytical instrument that separates gas mixtures into their individual components

and measures their concentrations.

- Set the GC conditions to separate CO₂ and Argon. The column should be chosen in such a way that it provides maximum separation between the two gases.
- Calibrate the GC using standard gas mixtures of known CO₂ and Argon concentrations to ensure accuracy and reliability of the results.
- Inject the sample gas mixture into the GC and allow it to run until the chromatogram stabilizes.
- Record the retention times and peak areas of both CO₂ and Argon.
- Calculate the percentage of CO₂ and Argon in the gas mixture using the peak area ratio method. The peak area ratio is the ratio of the area under the CO₂ peak to the area under the Argon peak. The percentage of CO₂ and Argon can be calculated using the following formula:
$$\% \text{ CO}_2 = (\text{Area of CO}_2 \text{ peak} / \text{Area of Argon peak}) \times 100$$
$$\% \text{ Argon} = 100 - \% \text{ CO}_2$$
- Calculate the purity of the gas mixture. The purity is the degree to which the gas mixture contains only the two desired gases and no other impurities. The purity can be calculated by subtracting the sum of all other impurities from 100%. The impurities can be determined by comparing the peak areas of all other gases with the sum of the peak areas of CO₂ and Argon:
$$\% \text{ Purity} = 100 - (\text{Total area of all impurities} / \text{Total area of sample gas}) \times 100$$
- Compare the results obtained with the specifications of the gas mixture. The specifications can vary depending on the application, so it is important to ensure that the gas mixture meets the required specifications.

5- Gas cylinder:

Implementation standards:

- ISO 20475 : Gas cylinders — Cylinder bundles — Periodic inspection and testing
- ISO 6406: Gas cylinders — Seamless steel gas cylinders — Periodic inspection and testing
- ISO 7225: Gas cylinders — Precautionary labels
- ISO 10462, Gas cylinders — Acetylene cylinders — Periodic inspection and maintenance
- ISO 10961, Gas cylinders — Cylinder bundles — Design, manufacture, testing and inspection
- ISO 11372, Gas cylinders — Acetylene cylinders — Filling conditions and filling inspection
- ISO 22434, Transportable gas cylinders — Inspection and maintenance of cylinder valves
- ISO 25760, Gas cylinders — Operational procedures for the safe removal of valves from gas cylinders

5-1 Gas cylinder inspection requirements:

1- Argon Cylinders:

- The cylinders should be visually inspected for any signs of damage or corrosion, including dents, cracks, or rust.
- The valves and fittings should be checked for proper operation and tightness.
- The cylinder should be hydrostatically tested every 5 years to ensure its structural integrity.

2- Acetylene Cylinders:

- Acetylene cylinders are subject to more rigorous testing protocols due to the potential for the gas to decompose and become unstable under certain conditions.
- The cylinders should be visually inspected for any signs of damage or corrosion, including dents, cracks, or rust.
- The valves and fittings should be checked for proper operation and tightness.
- The cylinder should be hydrostatically tested every 10 years to ensure its structural integrity.
- The acetylene gas content should be periodically analyzed to ensure that it remains within acceptable levels.

3- Carbon Dioxide Cylinders:

- The cylinders should be visually inspected for any signs of damage or corrosion, including dents, cracks, or rust.
- The valves and fittings should be checked for proper operation and tightness.
- The cylinder should be hydrostatically tested every 5 years to ensure its structural integrity.

4- Oxygen Cylinders

- The cylinders should be visually inspected for any signs of damage or corrosion, including dents, cracks, or rust.
- The valves and fittings should be checked for proper operation and tightness.
- The cylinder should be hydrostatically tested every 5 years to ensure its structural integrity.
- The oxygen content should be periodically analyzed to ensure that it remains within acceptable levels.

6- Other requirements:

- The gas cylinder certificate shall include, but not be limited to, at least the following:
- Gas cylinder design drawings
- Hydrostatic test report
- Non-destructive testing report
- Heat treatment report

6.1- Sub-tier Suppliers

If a Supplier chooses to outsource a Critical Process, the Supplier is fully responsible for qualifying sub-tier Suppliers to meet EACOP and CPP requirements and notifying CPP of this qualification.

No outsourcing can be performed to any Sub-Supplier beyond the list of approved sub-tier Suppliers.

CPP reserves the right to review the Supplier's process for selection, qualification and surveillance of sub-tier Suppliers, to approve sub-tier Supplier qualifications, audit and monitor the sub-tier Supplier's processes and facilities when deemed necessary.

7- Classification and designation. ISO 14175.

Gases and gas mixtures shall be classified by the number of this International Standard, followed by the symbol for the gas in accordance with Table 2.

Main group

The letter codes and numbers used for the main groups are:

- I: inert gases and inert gas mixtures;
- M1, M2 and M3: oxidizing mixtures containing oxygen and/or carbon dioxide;
- C: highly oxidizing gas and highly oxidizing mixtures;
- R: reducing gas mixtures;
- N: low reactive gas or reducing gas mixtures, containing nitrogen;
- O: oxygen;
- Z: gas mixtures containing components not listed or mixtures outside the composition ranges listed in Table 2.

Table 2 — Classification of process gases for fusion welding and allied processes

Symbol		Components in nominal percentage of volume					
Main group	Sub-group	Oxidizing		Inert		Reducing	Low reactivity
		CO ₂	O ₂	Ar	He	H ₂	N ₂
I	1			100			
	2				100		
	3			balance	0,5 ≤ He ≤ 95		
M1	1	0,5 ≤ CO ₂ ≤ 5		balance ^a		0,5 ≤ H ₂ ≤ 5	
	2	0,5 ≤ CO ₂ ≤ 5		balance ^a			
	3		0,5 ≤ O ₂ ≤ 3	balance ^a			
	4	0,5 ≤ CO ₂ ≤ 5	0,5 ≤ O ₂ ≤ 3	balance ^a			
M2	0	5 < CO ₂ ≤ 15		balance ^a			
	1	15 < CO ₂ ≤ 25		balance ^a			
	2		3 < O ₂ ≤ 10	balance ^a			
	3	0,5 ≤ CO ₂ ≤ 5	3 < O ₂ ≤ 10	balance ^a			
	4	5 < CO ₂ ≤ 15	0,5 ≤ O ₂ ≤ 3	balance ^a			
	5	5 < CO ₂ ≤ 15	3 < O ₂ ≤ 10	balance ^a			
	6	15 < CO ₂ ≤ 25	0,5 ≤ O ₂ ≤ 3	balance ^a			
M3	1	25 < CO ₂ ≤ 50		balance ^a			
	2		10 < O ₂ ≤ 15	balance ^a			
	3	25 < CO ₂ ≤ 50	2 < O ₂ ≤ 10	balance ^a			
	4	5 < CO ₂ ≤ 25	10 < O ₂ ≤ 15	balance ^a			
	5	25 < CO ₂ ≤ 50	10 < O ₂ ≤ 15	balance ^a			
C	1	100					
	2	balance	0,5 ≤ O ₂ ≤ 30				
R	1			balance ^a		0,5 ≤ H ₂ ≤ 15	
	2			balance ^a		15 < H ₂ ≤ 50	
N	1						100
	2			balance ^a			0,5 ≤ N ₂ ≤ 5
	3			balance ^a			5 < N ₂ ≤ 50
	4			balance ^a		0,5 ≤ H ₂ ≤ 10	0,5 ≤ N ₂ ≤ 5
	5					0,5 ≤ H ₂ ≤ 50	balance
O	1		100				
Z	Gas mixtures containing components not listed, or mixtures outside the composition ranges listed. ^b						

^a For the purpose of this classification, argon may be substituted partially or completely by helium.

^b Two gas mixtures with the same Z-classification may not be interchangeable.

8- Tolerances of mixtures:

Mixture tolerances apply to the volumetric percentage of the components in accordance with Table 3.

Table 3 — Mixture tolerances

Component gas nominal concentration %	Allowable tolerance
> 5	± 10 % of the nominal
1 to 5	± 0,5 % absolute
< 1	Not specified in this International Standard

EXAMPLE 1 An addition of 25 % carbon dioxide nominal value shall not vary by more than ± 2,5 %
(From 22,5 % to 27,5 %).

EXAMPLE 2 An addition of 2,5 % oxygen shall not vary by more than ± 0,5 % (from 2,0 % to 3,0 %).

Table 4 — Minimum requirements on purities and moisture contents of gases and gas mixtures

Main groups/gas		Purity % by volume minimum	Dew point at 0,101 MPa °C	Moisture ppm max. volume
I	inert	99,99	- 50	40
M1 ^a	gas mix	99,9	- 50	40
M2 ^a	gas mix	99,9	- 44	80
M3 ^a	gas mix	99,9	- 40	120
C ^a	carbon dioxide	99,8	- 40	120
R	reducing	99,95	- 50	40
N	nitrogen	99,9	- 50	40
O	oxygen	99,5	- 50	40
NOTE For certain applications a higher purity and/or lower dew point may be recommended to avoid possible oxidation and contamination				
^a Nitrogen: 1 000 ppm maximum.				

