

RFQ
<b>FOR SUPPLY OF DIFFERENT TYPES AND SIZE OF VALVES (ARV &amp; TRV) FOR OUR PROJECT SITE AT VIHAMA, GHANA, WEST AFRICA</b>

Techno-Commercial and Price bid are invited for Supply of material as indicated under scope of work

## INDEX

Annexure No.	Description	Page No.
1	INTRODUCTION	3
2	INSTRUCTION TO BIDDER	4
3	SCOPE OF WORK	8
4	PRICE BID FORMAT	10
5	INSTRUCTION / CHECK LIST FOR TENDERER	11
6	SPECIAL TERMS & CONDITIONS OF ACCEPTANCE TO TENDER	12

## **ANNEXURE 1**

### **INTRODUCTION**

**LUTECH ENGINEERING PROVIDES WORLD-CLASS ENGINEERING AND CONSTRUCTION SOLUTIONS**

Lutech Engineering is a leading provider of Engineering and Design, Procurement and Construction services in the areas of Oil & Gas, Power, Water, Transport and Real Estate Infrastructure. We specialize in offering engineering services, supplying products, fabricating equipment and erecting & commissioning engineered systems.

Lutech Engineering FZ LLC, having its principle office at 12F-6, RAKEZ Amenity Centre Tower 2, Al Hamra, P. O. Box: 330553 - Ras Al Khaimah, UAE. M/s. Telesuprecon India Pvt. Ltd. is one of its sister concern, having their Mumbai office at 125,1st Floor, Neha Industrial Estate, Behind Metro Mall, Western Express Highway, Borivali (East), Mumbai - 400 066. Details about company can be seen on web sites [www.lutechengineering.com](http://www.lutechengineering.com) and [www.telesuprecon.com](http://www.telesuprecon.com) respectively.

We are executing project in West Africa at Tema, Ghana and need various type of project material, for which this RFQ is floated.

M/s. Lutech Engineering FZ LLC is having their Mumbai office in the premise of M/s. SAGA Global Consultants, having its principle office at B-608, Western Edge-II, Western Express Highway, Borivali (East), Mumbai - 400 066, Maharashtra, India. M/s. SAGA GLOBAL is helping in detail engineering and Project management. Details about SAGA Global Consultant can be seen on [www.sagaconsultants.com](http://www.sagaconsultants.com).

### **DOCUMENT OBJECTIVE**

This document provides terms and conditions for Supply of materials as described including techno commercial conditions.

## ANNEXURE 2 INSTRUCTIONS TO BIDDERS

RFQ Dated 29.04.2021

RFQ is issued for Supply of Material as indicated under "SCOPE OF WORK".

TELESUPRIOCON INDIA PVT LTD, hereinafter referred to as "PURCHASER", hereby invites the RFQ

The quantity / quantities of the RFQ shall be ordered on SINGLE source, on the basis of the lowest quote.

In case all the material cannot be supplied by single source, based on lowest bids, order may be split.

### **DELIVERY PERIOD:**

Material is required to be supplied at the earliest from the date of approval of fabrication drawing & QAP (If Applicable).

Offers from indigenous manufacturers / Dealers / Stockiest are requested.

- Bidder is requested to confirm their status. In case they are Dealer or Stockiest and are representing various brands. They are requested to submit such proofs along with their offer for each brand.
- Bidder can offer different brands of same materials, confirming to Code / Grade of materials specified, separately, by attaching extra sheets.
- Technical acceptance of the offer: It is essential that following doc. are submitted along with offer -
  - a. Bidder is required to read the conditions carefully and is required to submit one set duly stamped & signed, as token of having read, understood and accepted the conditions, along with information called for. In case of any variance, suggested conditions may be submitted.
  - b. Bidder is required to submit latest valid doc. which tells their entity is one of the approved vendors of Indian Oil PSUs / Industries.

- c. Offered Material should have original material Test certificate other reports from the manufacturer of the goods and its traceability up to raw material, confirming to code / data sheet asked.
- d. Manufacturing unit should have ISO certified quality systems and an approved entity by API. Kindly submit valid document / certificate confirming that unit is approved by API.
- e. Manufacturing unit should be an approved Entity by TPI agencies like TUV India, Lloyds Register, BUREAU VERITAS, IR Class, Chempro India Ltd. etc. Kindly submit the relevant docs.
- f. Offer should accompany detailed MOC confirming to specify Code / Data sheet and required data indicated in attached data sheet. QAP is required to be submitted.

#### **METHOD OF ACCEPTANCE BY TPI**

- After award of job, successful bidder needs to submit fabrication drawing / QAP. Inspections will be carried out as per approved QAP and conformance. Material test certificate, including its traceability from raw material to finished goods will be reviewed / checked, including witnessing the performance and found acceptable.
- Sampling for TPI Inspection - Dimensional and thicknesses checks: Where quantity is in number of pieces - Up to 15 pieces 100% checks. 10% of the samples will be checked in case no of pieces exceeds 15, subject to a minimum no's being 15.

#### **MEASUREMENT & PAYMENT:**

Each item will be measure and paid on the basis of unit indicated in schedule of rate.

#### **FOR VALVES:**

On the basis of no of units supplied as per specified code / approved drawings.

#### **TEST CERTIFICATE:**

Each item of materials offered, should have corresponding Test certificate, as per code requirement. In case of offer from stockiest / Dealer, Test certificate should be available from Principal manufacturer with an endorsement in their name.

**TPI INSPECTION:**

Material will be accepted only after inspection by our appointed TPI and clearance. Successful bidder needs to offer documents, TCs, Proof of purchase from Manufacturer (Without price) etc. in advance, before TPI Inspection is scheduled, for our review.

**SEA-WORTHY EXPORT PACKING:**

Bidder to note that material is required to be packed in a manner, which is suitable for transportation by Sea in a container. In case material, whose edges needs to be protected from damage, needs to be packed suitably to ensure serrated finish, bevel end of pipe & fittings are protected by caps / covers. Pipeline and fittings, flanges, valves need to be packed in suitable box, with needed supports/ cover. All such cost needs to be considered and included in quoted rate. Kindly specify the packing considered for each quoted item, confirming to sea worthy export packing requirements as per international best practices,

**SHIPPING MARK AND PACKING LIST:**

It will be responsibility of the successful bidder to submit packing list giving HSN code, size of package, country of origin, its gross and net weight, before dispatch of goods. Shipping marks will be provided at the time of dispatch and each package needs to have given shipping mark, suitably fixed either by sticker or by tape. All such work & cost of providing shipping marks will be the responsibility of successful bidder and needs to be included in the quoted price.

**CERTIFICATE OF ORIGIN & QUALITY CONFORMANCE:**

Bids are invited for items manufactured in India. Bidder will be required to submit the compliance certificate about the material supplied, confirming to the data sheet and quantity billed. In case any component or parts are of foreign origin, such facts need to be indicated in the offer, drawing / packing list along with availability of MADE IN INDIA certificate.

**PLACE OF RECEIPT OF GOODS:**

Bidder need to note that material needs to be delivered at the notified place / area near Nahava Sheva / JNPT Mumbai PORT. Exact place, date & time will be communicated when all arrangement are made to receive and transport the goods to ship is finalized. Till such time, material needs to be stored by supplier at his end at his own cost.

**BASIS OF RATE:**

The price quoted should be on FOR, Nhava Sheva / JNPT Port Mumbai basis, inclusive of applicable taxes, duties, levies, Insurance, packing and Freight. However, the rate of taxes, duties, levies, Insurance, packing and freight considered are to be indicated separately, as shown in price bid. In case of change in statutory taxes and duties at the time of delivery, same shall be reimbursed at actual, during the original contractual delivery period. Any change in taxes and duties beyond the original contractual delivery period is to be borne by the Supplier.

**GST APPLICABILITY:**

This being deemed export, as per present rule, rate applicable is @ 0.1%. Bidder to confirm their acceptance and is must. Telesuprecon will submit documents as proof of export within 90 days from the date of submission of Final invoice and packing list, by successful bidder.

**TERMS OF PAYMENT:**

- 10% Advance against order acceptance and submission of drawing (if applicable)
- 90% against TPI inspection & clearance and submission of packing list and delivery of material at Nhava Sheva Port.

**VALIDITY OF THE OFFER / RATE:**

Offer should be firm and valid for acceptance for a period of 90 (Ninety) days from the date of Quotation. Order once accepted, till delivery is successfully made.

**SUBMISSION OF OFFER:**

Bidder is requested to submit offer within 7 days from the receipt of e-mail request to submit offer.

### **ANNEXURE 3**

#### **SCOPE OF WORK**

The scope of work comprises but not limited to the following:

1. For Supply of ARV & TRV as per the attached annexure and Data sheet. The terminal is being constructed in Tema, Ghana, WEST AFRICA. All Material will be required in seaworthy Export Packing suitable for transportation by sea.
2. Transporting up to Nhava Sheva / JNPT port along with necessary documentation, shipping mark, Test certificates, packing list etc., as detailed above.

#### **REFERENCE CODE:**

Respective codes of material indicated in data sheet attached (If Applicable).

The scope shall include all leads and lift and transporting the material from manufacturing place / stock yard to identified place near port and hand over to our appointed shipping agent with all necessary documentation work.

Material shall be free from all defects such as lamination, porosity, slag inclusion and shall conform to quality and dimensional tolerance as per the relevant codes.

Bidder shall submit the offer with the name of the manufacturers along with QAP / ITP / TC from the manufacturer and other relevant documents.

Bidder shall offer the material for inspection by Telesuprecon / SAGA / LUTECH / appointed TPI before dispatch. Cost for the TPI shall be borne by Telesuprecon / SAGA / LUTECH.



Bidder is requested to submit best competitive offer within 7 days from receipt of communication.

For any communication or clarification on the RFQ please contact the following:

Mr. A M Sharma / Mr. Tushar / Mr. Pratik

Mobile: +91 9833927790 / +91-9820385559 / +91 72084 20311

E-MAIL: arvind\_mbd@yahoo.com / saga.procurements1@gmail.com / saga.pratik8186@gmail.com

**NOTE:**

Notwithstanding anything specified in this Documents, TELESUPRECON / SAGA / LUTECH, in its sole discretion and without having to assign any reason reserves to itself the rights:

- a. To accept or reject the lowest offer or any other offer or all the offers;
- b. To accept any offer in full or in part;
- c. To procure the quantity from more than one bidder;
- d. To reject the offers not conforming to the terms and
- e. Non-submission of complete offers, appending signature on the offer and the prescribed formats.
- f. Receipt of offers after the due date & time. (Unless specified otherwise).

**Please refer attached PDF file Data Sheet of Valves from Page No.17**

ANNEXURE 4  
PRICE BID FORMAT

Please refer attached BOQ

## ANNEXURE 5

### INSTRUCTIONS TO BIDDERS

CHECK LIST TO BE FILLED UP AND SENT ALONG WITH TECHNO-COMMERCIAL OFFER

Sl. No.	Terms	As Required by Telesuprecon / SAGA / Lutech	To be Confirmed by Party Accepted / Not Accepted	Deviations, If Any
1	Name and Address of the Bidder			
2	Quantity Offered	To be confirmed as Price Bid Quantity		
3	Technical Data sheets with BOQ	To be confirmed as per requirement		
4	Delivery Schedule	To be confirmed as per RFQ		
5	Payment Terms	To be confirmed as per RFQ		
6	Price Basis	To be confirmed as per RFQ		
7	Insurance	To be confirmed as per RFQ		
8	Packing	To be confirmed as per RFQ		
9	Validity of Offer	To be confirmed as per RFQ		
10	Inspection	To be confirmed as per RFQ		
11	Test cum Guarantee Certificate	To be confirmed as per RFQ		
12	Liquidated Damages	To be confirmed as per RFQ		
13	Jurisdiction	To be confirmed as per RFQ		
14	Force Majeure	To be confirmed as per RFQ		

Signature and Name of the Bidder with Seal

## **ANNEXURE 6**

### **SPECIAL TERMS & CONDITIONS OF ACCEPTANCE TO BIDDER**

#### **ACCEPTANCE:**

We reserve the right to cancel this tender enquiry without assigning any reason.

#### **MATERIAL:**

All materials are to be supplied strictly in accordance with data sheets having dimensional standards, material standards and specification of wrapping and coating attached. No departure from specification / samples is permissible without our prior agreement in writing. Goods not conforming to specification or samples are liable to be rejected and no claim or liability will lie against us in respect of the same. In case material is offered from more than one manufacturer, details need to be provided for each type.

#### **INSPECTION:**

Inspection of the offered Material at Supplier's Premises shall be carried out prior to dispatch by the designated agency as specified in the Acceptance to Tender by the Purchaser against the readiness of the Material. The supplier shall submit Test certificates / Internal Inspection Reports along with the Inspection call. The material shall be dispatched only on acceptance by such designated agency. Accepted Inspection certificate shall form a part of the documents for negotiating the payment. All the materials will be checked at your works. Any goods rejected by us for not meeting the specification contained in this tender or for not being in accordance with sample shall be removed by supplier at his own expense. This inspection does not relieve the supplier of his responsibilities for any defects in material. Third Party Pre-Shipment Inspection at your works on our account shall be carried out. Party to confirm exact date when such inspection can be arranged, at least 7 days in advance. Party to submit necessary Manufacturer's Test Certificate and in-house quality inspection certificate duly certified by authorized person at the time of TPI / delivery.

#### **TEST CUM GUARANTEE CERTIFICATE:**

The Seller should submit Manufacturer's Test cum Guarantee certificate along with every consignment, clearly indicating the relevant Parameters and batch no. and other identification marks, if any and give guarantee for replacement in case of any deviations / manufacturing defects.

Replacement of defective materials shall be made free of cost (including duties in India to Seller's account) at Purchaser's site by the Supplier and the collection of the defective material to the Supplier's works shall be the Supplier's responsibility and shall be made at his expenses.

#### **TESTING:**

The responsibility for certification, etc. of all materials lies with the Vendor. Mill test certificates and other certificates and documents pertaining to quality assurance must be submitted in advance

#### **PACKING & MARKING:**

The material should be securely packed ACCORDING TO ACCEPTED industry practice and International Standard as applicable to the product being supplied and transported by Sea.

The Supplier shall include and provide for securely protecting and sea worthy packing the material in accordance with best established practices so as to protect the contents from damage during transit from point of production until after arrival at Purchaser's site under conditions which may involve multiple handling, transport by ship, rail and road, storage, exposure, to heat moisture rain etc. Wherever considered necessary, the Purchaser or his representative may check the packing before dispatch and may ask for modifications to the extent considered necessary to be carried out in the packing and the Supplier shall carry out the same free of charge. All packing shall allow for removal and checking at site.

#### **PRICES:**

Prices as quoted by the bidder shall be are firm and no plea for any increase will be entertained without written request showing adequate reasons for the increase. Moreover, the prices quoted by the bidder must be for Nhava Sheva / JNPT / Mumbai Port.

#### **CURRENCY OF OFFER:**

The offer quoted by bidder must strictly in INR only

#### **DELIVERY:**

Immediately for item required urgently and rest within 15 days from placement of the Purchase Order.

**DESTINATION:** The supplier will note the destination of material. Demurrage or other expenses incurred, owing to any negligence, delay or default on the part of the supplier will be for the supplier's account. Material to be delivered upto Nhava Sheva / JNPT / Mumbai Port trust. Inland freight charges from supplier warehouse / yard to port shall be borne by bidder.

**SCOPE:**

Scope of supply is strictly as per the rate schedule provided in this tender. In case material is submitted other than the specified code, justification and correlation / comparison of equivalent standard must be submitted before finalization of PO.

**LIQUIDATED DAMAGES:**

Delivery is the essence of the Contract and hence should any consignment be delayed, liquidated damages @ 0.5% of the price of the delayed portion of the consignment, for each week or part thereof shall be levied and recovered subject to a maximum of 5% of the undelivered portion of the order value. We reserve the right to ask you to suspend dispatches of the material covered by the order for such period as we think fit in the event of strikes, accidents or other causes beyond our control.

**RESPONSIBILITY:**

The PURCHASER on the one hand and the SELLER on the other hand shall be responsible for the performance of all their respective obligations under this Acceptance to Tender.

**TRANSFER AND SUB-LETTING:**

The SELLER shall not sublet, transfer, assign or otherwise part with the Acceptance to Tender or any part thereof, either directly or indirectly, without the prior written permission of the PURCHASER.

**TAXES AND DUTIES:**

0.1% GST as deemed export. The SELLER shall be entirely responsible for all taxes, stamp duties, Licence fees and other such levies imposed outside the PURCHASER'S country.

**INSURANCE:**

Will be in scope of Bidder and will be responsible upto port of delivery.

**COMPLETENESS OF THE AGREEMENT AND MODIFICATION:**

This Acceptance to Tender cancels all previous negotiations between the parties hereto. There are no understandings or agreement between the PURCHASER and the SELLER which are not fully expressed herein and no statement or agreement, oral or written, made prior to or at the signing hereof shall affect or modify the terms hereof or otherwise be binding on the parties hereto. No change in respect of the terms covered by this Acceptance to Bidder shall be valid unless the same is agreed to in writing by the parties hereto specifically stating the same as an amendment to this Acceptance to Tender.

**WAIVER:**

Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

**FORCE MAJEURE:**

If at any time during the continuance of this Contract, the performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reasons of war, hostility, acts of public enemy, civil commotion, sabotage, fire, floods, explosions, epidemics, quarantine restriction, or acts of God (herein after referred to as "eventualities") and provided notice of happenings of any such eventuality (duly certified by International Chamber of Commerce in case of foreign parties) is given by either party to other within 21 days from the date of occurrence thereof, neither party shall by reasons of such eventuality be entitled to terminate this Contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance. Deliveries under this Contract shall be resumed as soon as practicable after such eventuality has come to an end or ceased to exist and the decision of the Purchaser as to whether the deliveries have so resumed or not shall be final and conclusive. Provided further that if the performance in whole or in part of any obligations under this Contract is prevented or delayed by reasons of any such event for a period exceeding 60 days either party may at its option terminate the Contract. Provided also that the Contract, if terminated under this clause, the Purchaser shall be at liberty to take over from the Contractor at a price to be fixed by the Purchaser which shall be final, all unused, undamaged and acceptable material, bought out components and stores in course of manufacture in the possession of the Seller at the time of such termination or such portion thereof as Purchaser may deem fit except such

material, bought out components and stores as the Seller may with the concurrence of the Purchaser, elect to retain.

#### **ARBITRATION AND JURISDICTION:**

All disputes arising out of or in connection with the Acceptance to Tender shall be finally settled by Arbitration in accordance with the rules of Arbitration of the Indian Council of Arbitration and the Award made in pursuance thereof shall be binding on the parties. The Arbitration bench shall give a reasoned award. Cost of arbitration to be borne by the losing party. The venue of arbitration shall be Mumbai, India and language of arbitration shall be in English.

In case of any legal proceedings are instituted against M/s. Telesuprecon India shall be instituted in the appropriate Civil courts of Mumbai and the Courts at Mumbai only shall have Jurisdiction.

#### **LIABILITY OF GOVT. OF INDIA:**

It is expressly understood and agreed by and between the SELLER and the PURCHASER that the PURCHASER is entering into this Acceptance to RFQ solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that the Govt. of India is not a party to this Acceptance to Tender and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that the PURCHASER is an independent legal entity with power and authority to enter into contracts solely in its own behalf under the applicable laws of India and general principles of Contract Law. The SELLER expressly agrees, acknowledges and understands that the PURCHASER is not an agent, representative or delegate of the Govt. of India. It is further understood and agreed that the Govt. of India is not and shall not be liable for any acts, omissions, commissions, breaches or other wrongs arising out of this Acceptance to Tender. Accordingly, the SELLER hereby, expressly waives, releases and foregoes any and all actions or claims, including cross claims, impleader claims or counter claims against the Govt. of India arising out of this Acceptance to Tender and covenants not to sue the Govt. of India as to any manner, claim, cause of action or thing whatsoever arising of or under this Acceptance to Tender.



## PROCESS DATA SHEET FOR SELF REGULATING AUTO RECIRCULATING VALVE

1	REV NO.	0			
2	TAG NO.	ARV-1101, ARV-1102 & ARV-1201, ARV-1202			
3	P&ID NO.	VHM-LU01-PR-PI-001 Sh.01 & Sh.02			
4	QUANTITY.	4 Nos.			
5	LOCATION:	P-101 A/B/C/D			
6	SERVICE	PMS (Mogas)			
7	FLUID / FLUID STATE	LIQ.			
8	INLET TEMP., °C				
A	MIN. / NOR. / MAX	Ambient			
B	DESIGN	65			
9	INLET PRESSURE, kg/cm <sup>2</sup> g	PUMP OUTLET PRESSURE = ARV INLET PRESSURE			
A	MIN. / NOR. / MAX	--/4/6			
B	DESIGN SHUTOFF	5.3			
10	FLOW RATE, m <sup>3</sup> /hr	LIQ.			
A	MIN. (Minimum recirculation flow required through ARV)	61	The normal capacity of pumps ( P-101 A/B/C/D) is 165 m <sup>3</sup> / hr, Minimum recirculation flow for pump = 61 m <sup>3</sup> /hr		
B	NORMAL	160			
C	MAX.	165			
11	PRESSURE DROP FOR				
A	MIN. FLOW	VENDOR TO SPECIFY			
B	NOR. FLOW	VENDOR TO SPECIFY			
C	MAX. FLOW	VENDOR TO SPECIFY			
12	FLUID PROPERTIES				
A	DENSITY AT OPERATING P.T., Kg/m <sup>3</sup>	720 - 780			
B	MOL. WEIGHT	-			
C	VISCOSITY (MIN / MAX), Cst	0.5-1			
D	C <sub>p</sub> / C <sub>v</sub>	-			
E	VAP. PRESSURE @ 38 °C , kg/cm <sup>2</sup>	0.61			
13	ADDITIONAL FEATURES				
A	ENERGY FAILURE POSITION	CLOSE			
B	LEAKAGE CLASS	VI			
C	HAND WHEEL	YES / NO	NO		
D	SET POINT FOR PR. REGULATING VALVE	4.5 kg/cm <sup>2</sup> (g) (Note 1)			
E	INLET / OUTLET SIZE	3"			
F	RATING & END CONNECTION	150#			
G	VALVE TYPE	GLOBE-STRAIGHT TYPE			
H	SOLENOID VALVE				
I	LIMIT SWITCHES POSITION (OPEN / CLOSE)	VENDOR TO SPECIFY			
J	POSITION INDICATOR / TRANSMITTER				
K	ACTION	SELF REGULATING			
L	FIRE SAFE TYPE VALVE	YES / NO	YES		
UNITS:	Pressure:	kg/cm <sup>2</sup> g	Flow:	m <sup>3</sup> /hr	
	Pressure diff.:	kg/cm <sup>2</sup>	LIQ:	m <sup>3</sup> /hr	
			Temp:	°C	
NOTE:					
1	Set Pressure shall be adjustable from 1.1 to 7 kg/cm <sup>2</sup> g.				

PROCESS DATA SHEET FOR SELF REGULATING AUTO RECIRCULATING VALVE					
1	REV NO.	0			
2	TAG NO.	ARV-3101, ARV-3103 & ARV-3201, ARV-3203			
3	P&ID NO.	VHM-LU01-PR-PI-003 Sh.01 & Sh.02			
4	QUANTITY.	4 Nos.			
5	LOCATION:	P-201 A/B/C/D			
6	SERVICE	AGO (Gasoil)			
7	FLUID / FLUID STATE	LIQ.			
8	INLET TEMP., °C				
A	MIN. / NOR. / MAX	Ambient			
B	DESIGN	65			
9	INLET PRESSURE, kg/cm <sup>2</sup> g	PUMP OUTLET PRESSURE = ARV INLET PRESSURE			
A	MIN. / NOR. / MAX	--/4/6			
B	DESIGN SHUTOFF	5.3			
10	FLOW RATE, m <sup>3</sup> /hr	LIQ.			
A	MIN. (Minimum recirculation flow required through ARV)	61	The normal capacity of pumps ( P-201 A/B/C/D) is 165 m <sup>3</sup> / hr, Minimum recirculation flow for pump = 61 m <sup>3</sup> /hr		
B	NORMAL	160			
C	MAX.	165			
11	PRESSURE DROP FOR				
A	MIN. FLOW	VENDOR TO SPECIFY			
B	NOR. FLOW	VENDOR TO SPECIFY			
C	MAX. FLOW	VENDOR TO SPECIFY			
12	FLUID PROPERTIES				
A	DENSITY AT OPERATING P.T. (Kg/m <sup>3</sup> )	820 - 880			
B	MOL. WEIGHT	-			
C	VISCOSITY (MIN / MAX), Cst	2.2 - 5.3			
D	C <sub>p</sub> / C <sub>v</sub>	-			
E	VAP. PRESSURE @ 38 °C , kg/cm <sup>2</sup>	0.1			
13	ADDITIONAL FEATURES				
A	ENERGY FAILURE POSITION	CLOSE			
B	LEAKAGE CLASS	VI			
C	HAND WHEEL	YES / NO	NO		
D	SET POINT FOR PR. REGULATING VALVE	4.5 kg/cm <sup>2</sup> (g) (Note 1)			
E	INLET / OUTLET SIZE	3"			
F	RATING & END CONNECTION	150#			
G	VALVE TYPE	GLOBE-STRAIGHT TYPE			
H	SOLENOID VALVE				
I	LIMIT SWITCHES POSITION (OPEN / CLOSE)	VENDOR TO SPECIFY			
J	POSITION INDICATOR / TRANSMITTER				
K	ACTION	SELF REGULATING			
L	FIRE SAFE TYPE VALVE	YES / NO	YES		
UNITS:	Pressure:	kg/cm <sup>2</sup> g	Flow:	m <sup>3</sup> /hr	
	Pressure diff.:	kg/cm <sup>2</sup>	LIQ:	m <sup>3</sup> /hr	
			Temp:	°C	
NOTE:					
1	Set Pressure shall be adjustable from 1.1 to 7 kg/cm <sup>2</sup> g.				

PROCESS DATA SHEET FOR SELF REGULATING AUTO RECIRCULATING VALVE (MECHANICAL SPECIFICATION OF ARV)			
Mechanical specification of ARV:			
Cast steel auto recirculation valves shall be confirming to ASME B16.34 for material, construction and dimensions.			
-	Valve Size	:	80 NB
-	Body / Cover Material	:	A216 Gr.WCB
-	Seat Material	:	SS Conforming to A351 Gr. CF8M
-	Diaphragm & 'O' Ring Material	:	Nylon Reinforced Viton
-	Tubing / Fitting Material	:	SS304
-	Body Type	:	Globe-Straight type
-	Service Fluid	:	PMS/ AGO
-	Inlet Pressure	:	As Per Data Sheet
-	Adjustable Discharge Range	:	As Per Data Sheet
-	End Connection	:	Flanged Ends to ANSI B16.5 150# R.F. 125 - 250 AARH Serrated Finish
-	Regulation	:	Upstream
-	Packing	:	Gland Less
-	Needle Valve	:	SS304
-	Pilot Material	:	SS304
-	Leakage Class	:	VI of ASME / FCI 70-2
-	Temp	:	As Per Data Sheet
-	Flow	:	As Per Data Sheet
-	Strainer Type and Mesh	:	As Per Strainer Data Sheet

PROJECT: VIHAMA OIL TERMINAL, GHANA

DATA SHEET FOR THERMAL RELIEF VALVE							
1		Tag Nos.					Remarks
2		Line / Equipment No.		TK-01, TK-04	TK-02, TK-03		
3		P & ID No.					
4		Service		AGO	PMS		
5		Quantity		2 Nos.	2 Nos.		
6	OPERATING CONDITIONS	Operating Pressure	kg/cm <sup>2</sup> g	6	6		
7		Fluid	Phase	Liquid	Liquid		
8		Set Pressure	kg/cm <sup>2</sup> g	8	8		
9		Back Pressure	kg/cm <sup>2</sup> g	2	2		
10		Operating Temperature	°C	38	38		
11		Density	kg/m <sup>3</sup>	830	750		
12		Viscosity @ 38°C	Cst	5	1		
13	DESIGN CONDITIONS	Design Pressure	kg/cm <sup>2</sup> g	12	12		
14		Design Temperature	°C	65	65		
15		Allowable Over Pressure	%	21%	21%		
16		Relieving Capacity		VTs	VTs		
17		Relieving Temperature		50	50		
18		Cold Bench Test Pressure		VTs	VTs		
19	VALVE	Type		Thermal Relief	Thermal Relief		
20		Nozzle Type		Modified Nozzle	Modified Nozzle		
21		Bonnet Type		Closed	Closed		
22		Conventional / Balanced Bellow / Pilot Operated		VTs	VTs		
23		Inlet Connection	Size	Rating	FLANGED	1"	ANSI 150#
24		Facing	Finish		RF	125 - 250 AARH	
25	Outlet Connection	Size	Rating	FLANGED	1"	ANSI 150#	
26		Facing	Finish		RF	125 - 250 AARH	
27		Cap Connection Type Screwed / Bolted		Bolted	Bolted		
28		Cap Covered Adjustment Bolt		Required	Required		
29		Lever Plain		Required	Required		
30		Test Gag		Required	Required		
31	MATERIAL	Body & Bonnet		ASTM A105	ASTM A105		
32		Nozzle, Seat & Disc		ASTM 316	ASTM 316		
33		Spring		ASTM 316	ASTM 316		
34		Flanges		ASTM A105	ASTM A105		
35							
36	BASIS	Code		API			
37		Calculation Sheet		API RP 520			
38		Basis of Selection		Thermal Expansion Due to Temperature Rise / Fire			
39							
40	ORIFICE	Calculated Area	m <sup>2</sup>	VTs	VTs		
41		Actual Flow Capacity		VTs	VTs		
42		Selected Area		VTs	VTs		
43		Orifice Designation		VTs	VTs		
44		Total Area	m <sup>2</sup>	VTs	VTs		
45							
46	TEST	Radiography		10% of Valve Casting shall go Radiographic Examination			
47		Calibration Test		Required			
48		Hydro Test		Required			
49		Material Certification		Required			
50		Dimensional Report		Required			
51		Type Test Certificate		Required			
52							
53	MODEL	Manufacturer		-			
54		Model Number		VTs			
55		Approval		VTs			
56		IBR Certificate		NA			
57							
<b>Notes</b> 1 For NOTES refer Page 3 of 3. 2 RFS: Refer Follow Sheet 3 VTs: Vendor to Specify 4 NA: Not Applicable							

DATA SHEET FOR THERMAL RELIEF VALVE							
						Remarks	
1		Tag Nos.					
2		Line / Equipment No.	Inlet pipeline (OSBL)	Inlet pipeline (OSBL)			
3		P & ID No.					
4		Service	AGO	PMS			
5		Quantity	1 No	1 No			
6	OPERATING CONDITIONS	Operating Pressure	kg/cm <sup>2</sup> g	8	8		
7		Fluid	Phase	Liquid	Liquid		
8		Set Pressure	kg/cm <sup>2</sup> g	10	10		
9		Back Pressure	kg/cm <sup>2</sup> g	2	2		
10		Operating Temperature	°C	38	38		
11		Density	kg/m <sup>3</sup>	830	750		
12		Viscosity @ 38° C	Cst	5	1		
13	DESIGN CONDITIONS	Design Pressure	kg/cm <sup>2</sup> g	15	15		
14		Design Temperature	°C	65	65		
15		Allowable Over Pressure	%	21%	21%		
16		Relieving Capacity	VTs	VTs			
17		Relieving Temperature	50	50			
18		Cold Bench Test Pressure	VTs	VTs			
19	VALVE	Type	Thermal Relief	Thermal Relief			
20		Nozzle Type	Modified Nozzle	Modified Nozzle			
21		Bonnet Type	Closed	Closed			
22		Conventional / Balanced Bellow / Pilot Operated	VTs	VTs			
23		Inlet Connection	Size	Rating	FLANGED	1"	ANSI 150#
24			Facing	Finish		RF	125 - 250 AARH
25		Outlet Connection	Size	Rating	FLANGED	1"	ANSI 150#
26			Facing	Finish		RF	125 - 250 AARH
27		Cap Connection Type Screwed / Bolted	Bolted	Bolted			
28		Cap Covered Adjustment Bolt	Required	Required			
29	Lever Plain	Required	Required				
30	Test Gag	Required	Required				
31	MATERIAL	Body & Bonnet	ASTM A105	ASTM A105			
32		Nozzle, Seat & Disc	ASTM 316	ASTM 316			
33		Spring	ASTM 316	ASTM 316			
34		Flanges	ASTM A105	ASTM A105			
35							
36	BASIS	Code	API				
37		Calculation Sheet	API RP 520				
38		Basis of Selection	Thermal Expansion Due to Temperature Rise / Fire				
39							
40	ORIFICE	Calculated Area	m <sup>2</sup>	VTs	VTs		
41		Actual Flow Capacity		VTs	VTs		
42		Selected Area		VTs	VTs		
43		Orifice Designation		VTs	VTs		
44		Total Area	m <sup>2</sup>	VTs	VTs		
45							
46	TEST						
47		Radiography	10% of Valve Casting shall go Radiographic Examination				
48		Calibration Test	Required				
49		Hydro Test	Required				
50		Material Certification	Required				
51		Dimensional Report	Required				
52	Type Test Certificate	Required					
53							
54	MODEL	Manufacturer	-				
55		Model Number	VTs				
56		Approval	VTs				
57		IBR Certificate	NA				
Notes							
1 For NOTES refer Page 3 of 3.							
2 RFS: Refer Follow Sheet							
3 VTs: Vendor to Specify							
4 NA: Not Applicable							

#### DATA SHEET FOR THERMAL RELIEF VALVE

##### NOTES

- 1 Refer Thermal Relief / Pressure Relief valve tag list with process parameters as mentioned in Follow Sheet.
- 2 All items as indicated shall be provided with a permanently attached stainless steel tag plate.
- 3 Mandatory Spares are part of vendor scope.
- 4 Vendor to quote 2 YEARS Operation and Maintenance Spare for ordering at later stage by Owner.
- 5 Commissioning and Consumable spare, Special Tools and tackles are to be supplied by vendor.
- 6 Each TRV shall be designed for Maximum load.