

**KERALA STATE CO-OPERATIVE FEDERATION FOR FISHERIES
DEVELOPMENT LTD
KAMALESWARAM, TRIVANDRUM – 695009, KERALA STATE
Phone: 0471 – 2457172, 2457756 Fax: 0471 – 2457752**

TENDER NOTICE NO.II

Competitive tenders in separate sealed covers super scribed with the name and number of tender are invited in two-bid system for the supply and erection of the following machinery/equipments for its Glucosamine Plant as per European Pharma copeia standards from the manufacturers, authorized distributors reputable suppliers and sole agents.

Tender No.	Description.	Tender document price (Non Refundable).
No. II	Purchase of Chemical process plant & machinery. S.S Reactors & Accessories	Rs 1000+ tax

The tender forms with detailed specifications and terms and conditions may be had from the Matsyafed head office at Trivandrum on payment of Rs 1000 + tax and is not refundable under any circumstances or can be downloaded from the web site www.matsyafed.org

The tenderers can submit tenders for either all the machinery/equipment or in part.

Due date and time for receipt of tender at 3 PM on 23.9.2010

Due date and time for opening of tender at 4 PM on 23.9.2010

The tender documents should contain two parts namely technical bid and financial bid.

The technical bid should contain

- a) Prescribed tender form duly signed and sealed
- b) Detailed technical specifications with out price quote.
- c) Original brochure & literature supporting the technical specification.
- d) Earnest Money Deposit of 2.5% of the quoted value max Rs100000
- e) Agreement in Rs100 stamp paper
- f) List of installations in India, fully your own installed or part.
- g) Details of service facility

- h) Compliance to payment condition
- i) Delivery period
- j) Place of delivery
- k) Warranty
- l) Training details etc
- j) The bidder should submit a quality assurance plan for the equipment they intend to supply
- k) The organizational chart and balance sheet of the bidding firm also to be submitted

The Financial bid should contain

- a) Price of the equipment and its accessories
- b) AMC details
- c) Price list of essential spare parts
- d) Compliance of the time schedule, Terms & conditions

The tenders duly filled and signed by the tenderer along with necessary documents should be submitted to the Managing director, Kerala state co-operative federation for fisheries Development Ltd(MATSYAFED),Kamaleswaram, Manacaud. P.O Trivandrum-695009 on or before 3 pm on 23.9.2010 .

Specimen of the agreement to be submitted in stamp paper is in the last page of the tender form. Earnest Money Deposit (EMD) amount of Rs..... shall be submitted by way of demand draft, deposit receipt or bank guarantee in favour of The Managing Director, Kerala state co-operative federation for fisheries Development Ltd(MATSYAFED),Kamaleswaram,Manacaud.P.O Trivandrum-695009. In the case of bank guarantee, its validity should be up to 30/6/2011.

The technical bids will be opened at 4 PM on 23.09.2010 at the office Managing Director ,conference hall in the presence of such tenderers or their authorized representatives who may be present at that time.

The financial bids of the technically qualified firms will be opened at a later stage and the date will be intimated. The Managing Director, MATSYAFED, Trivandrum reserves the right to accept or reject all or any tender at his sole discretion without assigning any reason.

For legal purposes, the cause of action will be deemed to have arisen in Trivandrum, Kerala state.

TERMS AND CONDITIONS

1. The latest model shall be quoted and certified.
2. The Technical bid will be examined by a committee decided by the management to assess the technical capability, credibility and authenticity of the bidder.
3. The quoted price should include cost of the equipment, freight, insurance, installation and commissioning separately.
4. Payment condition:
If the price is quoted in Indian rupees, 90% payment will be released after successful commissioning. 10% of the price will be retained as security deposit and will be released on completion of the guarantee period.
5. Factory site/Installation site
All the equipments/machinery as per this tender is to be delivered & installed in the factory site in **Paravoor** village in **Alappuzha district**
6. The installation should be done by the supplier.
7. Delivery period: The equipment and its accessories should be completely supplied, installed and commissioned within 3 months from the date of supply order.
8. Warranty: The entire equipment and its accessories should have comprehensive warranty from the date of acceptance. Specify the warranty period
9. The rates and terms of AMC (both comprehensive and labor) for a minimum period of 5 years after the warranty period shall be clearly specified. The labor AMC amount will be taken in to consideration for final selection.
10. Training should be given to the staff free of cost.
11. List of installations in India over past 5 years shall be provided
12. Duly completed tender document through registered post or in person will only be accepted as per the time schedule.
13. The Detailed specification of the equipment are given in the website: www.matsyafed.org

SD/-
THE MANAGING DIRECTOR
KERALA STATE CO-OPERATIVE
FEDERATION FOR FISHERIES
DEVELOPMENT LTD.
KAMALESWARAM, MANACAUD
P.O, THIRIVANANDAPURAM PIN -
695009, KERALA Phone: 0471 –
2457172,2457756 Fax: 0471-2457752

ANNEXURE – 1

AGREEMENT

[to be executed on Rs.100/- Kerala Stamp Paper (non-judicial)and submitted with the tender documents – technical proposal]

Articles of agreement executed on this the day of two thousand BETWEEN the Managing director, Kerala state co-operative federation for fisheries Development Ltd(MATSYAFED),Kamaleswaram, Manacaud. P.O Trivandrum-695009 herein after called MATSYAFED and (here enter name and address of the tenderer) (here in after referred to as “the bidder”) of the other part.

WHEREAS in response to the Notification Nodated the bidder has submitted to MATSYAFED a tender for the supply and erection of the machinery/equipments fro its Glucosamine plant as per European pharma copeia standards subject to the terms and conditions contained in the said tender.

WHEREAS the bidder has also deposited with MATSYAFED, a sum of Rs.100000 (Rupees one lakh only) as earnest money for execution of an agreement undertaking the due fulfillment of the contract in case his tender is accepted by Matsyafed

NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows:

1. In case the tender submitted by the bidder is accepted by Matsyafed, and the contract for the supply & erection of the machinery/equipments for its glucosamine plant has been awarded to the bidder, the bidder shall within 14 days of acceptance of his tender, execute an agreement with Matsyafed incorporating all the terms and conditions under which Matsyafed accepts his tender.
2. In case the bidder fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, MATSYAFED shall have power and authority to recover from the bidder any loss or damage caused to Matsyafed by such breach as may be determined by Matsyafed by appropriating the earnest money deposited by the bidder and if the earnest money is found to be inadequate, the deficit amount may be

recovered from the bidder and his properties movable and immovable in the manner hereinafter contained.

3. All sums found due to Matsyafed under or by virtue of this agreement shall be recoverable from the bidder and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as Matsyafed may deem fit.

In witness where of Sri..... (here enter name and designation) for and on behalf of Matsyafed and Sri. the bidder have hereunto set their hands, the day and year shown against respective signatures
Signed by (date) (for Matsyafed)

In presence of witnesses

:

1.

2.

Signed by (date) (for bidder)

In the presence of witnesses:

1.

2.

ANNEXURE – II

CONTRACT AGREEMENT

(to be executed by the successful bidder on award of the contract on Rs. 100/- Kerala Stamp Paper(Non Judicial))

This agreement made on this day of
..... between the Managing director, Kerala state co-operative federation for fisheries Development Ltd(MATSYAFED),Kamaleswaram, Manacaud. P.O Trivandrum-695009 herein after called MATSYAFD which expression shall include its administrators, successors, executors and assigns) of the one part and (name of contracting company), a company/firm incorporated under the having its registered Office at (herein after referred to as “Contractor”, which expression shall include its administrators, successors, executors and permitted assigns) of the other part.

WHEREAS MATSYAFED has invited bids for supply and erection of the machinery/equipments for its Glucosamine plant as per European pharma copeia standards from manufacturers ,authorized distributors, reputable suppliers (briefly describe scope of the works) as per its Tender notice No.dated

AND WHEREAS *.....
had participated in the above referred bidding vide their proposal no. dated and Matsyafed accepted the aforesaid proposal and awarded the contract to*..... on terms and conditions contained in its work order No.dated and the documents referred to therein,

which have been accepted by *..... esulting into a “Contract”.

NOW THEREFORE THIS DEED WITNESSETH AS UNDER:-

1. AWARD OF CONTRACT

1.1 MATSYAFED has awarded the contract to *..... for the work of the supply and erection of on the terms and conditions contained in its work order No.....dated..... and the documents referred to therein. The award has taken effect from ie., the date of issue of the aforesaid letter. The terms and expressions used in this Agreement shall have the same meaning as are assigned to them in the “Contract Documents” referred to in the succeeding Article.

2. CONTRACT DOCUMENTS

2.1 The contract shall be performed strictly as per the terms and conditions stipulated as per the following documents attached herewith (hereinafter referred to as “Contract Documents”):

- i) Matsyafed Tender Documents in respect of tender No.datedconsisting of Notice inviting Tender and conditions of contract including all amendments issued vide its letter(s) no(s). dated(Volume-I)
- ii)Matsyafed’s Schedule and Technical Specification (including Amendments issued vide its letter no..... dated(Volume-II)
- iii) proposal no..... dated along with proposal sheets, payment terms and work schedules submitted by Contractor for the supply and erection of the Glucosamine plant (Volume-III)
* Brief name of the contracting company
- iii) Agreed Minutes of the meeting held on between MATSYAFED and the Contractor.(Volume-IV)
- iv)Matsyafed Work Order No.dated duly accepted by the Contractor.(Volume-V)

2.2 All the aforesaid contract documents shall form an integral part of this Agreement, in so far as the same or any part thereof conform to the Bid Documents (Volume I & II) and what has been specifically agreed to by Matsyafed in its Work Order. Any matter inconsistent there with, contrary or repugnant thereto or any deviations taken by the Contractor in its “Proposal” (Volume-.III) but not agreed to specifically by Matsyafed in its Work Order shall be deemed to have been withdrawn by the Contractor. For the sake of brevity, this Agreement along with its aforesaid contract documents shall be referred to as the “Agreement”.

3. CONDITIONS AND COVENANTS

3.1 The scope of contract, consideration, terms of payment, price adjustment, taxes wherever applicable, insurance, liquidated damages, performance guarantee and all other terms and conditions are contained in MATSYAFED’s Work Order No.dated..... read in conjunction with other aforesaid contract documents. The contract shall only be performed by the Contractor strictly and faithfully in accordance with the terms of the Agreement.

3.2 The scope of work shall also include supply and installation of all such items which are not specifically mentioned in the contract documents, but which are needed for successful, efficient, safe and reliable operation of the equipment unless otherwise specifically excluded in the specification under “exclusions” or Work Order.

3.3 TIME SCHEDULE

Time is the essence of the contract and schedules shall be strictly adhered to. The Contractor shall perform the work in accordance with the agreed schedule as given in the work order.

3.4 The Contractor guarantees that the equipment package under the contract shall meet the ratings and performance parameters, as stipulated in the Technical Specifications (Volume II) and in the event of any deficiencies found in the requisite performance figures, the MATSYAFED may at its option reject the equipment package or alternatively accept it on the terms and conditions and subject to levy of the liquidated damages in terms of contract documents. The amount of liquidated damages so leviable shall be in accordance with the contract documents and without any limitation.

3.5 It is further agreed by the Contractor that the contract performance guarantee shall in no way be construed to limit or restrict the Matsyafed ’s right to recover the damages/compensation due to short-fall in the equipment performance figures as stated in

para 3.4 above or under any other clause of the Agreement. The amount of damages/compensation shall be recoverable either by way of deduction from the contract price, contract performance guarantee and/or otherwise.

3.6 This agreement constitutes full and complete understanding between the parties and terms of the presents. It shall supersede all prior correspondence to the extent of inconsistency of repugnancy to the terms and conditions contained in the Agreement.

Any modification of the Agreement shall be effected only by a written instrument signed by the authorised representatives of both the parties.

4. SETTLEMENT OF DISPUTES

4.1 It is specifically agreed by and between the parties that all the differences of disputes arising out of the agreement or touching the subject matter of the agreement, shall be decided by process of settlement & arbitration as specified in the relevant clauses of the conditions of the contract and the provisions of the Indian Arbitration Act, 1940 shall apply and Kerala Courts at Alappuzha alone shall have exclusive jurisdiction over the same.

4.2 Notice of default given by either party to the other party under the Agreement shall be in writing and shall be deemed to have been duly and properly served upon the parties hereto if delivered against acknowledgement or by telex or by registered mail with acknowledgement due, addressed to the signatories at the address mentioned herein above.

IN WITNESS WHEREOF, the parties through their duly authorised representatives have executed these presents (execution whereof has been approved by the competent authorities of both the parties) on the day, month and year first above mentioned at Thiruvananthapuram.

For KERAL STATE CO-OPERATIVE FEDERATION FOR FISHERIES DEVELOPMENT LTD

(Signature)

(Name), (Designation)

(Seal)

for Contractor

(Contractors signature),

(Name), (Designation)

(Seal)

Witnesses:

1.

2.

Witnesses:

1.

2.

KERALA STATE CO-OPERATIVE FEDERATION FOR FISHERIES DEVELOPMENT LTD
(MATSYAFED)
Specification sheet for tender No.II

PURCHASE OF CHEMICAL PROCESSING PLANT & MACHINERY
S.S REACTORS, TANKS AND ACCESSORIE

Sl. No.	Description	Purpose	Qty	Rate/unit	Remarks
	a. stainless steel 316 reactor cap. 2.0KL	A To carry out reactions ,	01 No.		For details ref. Anx-4.A
	b. stainless steel 316 condenser 7.5sqm		01 No.		For details ref. Anx-4.B
	c. stainless steel 316 sub cooler 3.0 sqm	B,c,d.: facilitate reflux,	01 No.		For details ref. Anx-4.C
	d. stainless steel 316 receiver cap 250ltrs	distillation & vacuum distillation	01 No		For details ref. Anx-4.D
	e Stainless steel 316 pipe lines. 150 dia vapour line, 50 dia reflux & distillate line		01 Set..		For details ref. Anx-4.E

6	Stainless steel 316 service tank cap.250 ltrs	To store known quantity of Solvents to charge in reactor.	01		For details ref. Anx-6
8	Stainless steel 316 storage tank cap.1000 ltrs	To store known qty of DM water to charge in reactor.	01		For details ref. Anx-8
11	Stainless steel 316 holding tank cap.2.0KL	To store the MLR filtrate	01		For details ref. Anx-11

Annexure- 4 – A

DOCUMENT NAME :	DATA SHEET FOR 2.0 KL SSR MONO BLOCK TYPE
DOCUMENT NUMBER :	CON / KER / DS SSR 2.0 KL / 06

SI. No.	OPERATING CONDITIONS	Shell	Vendor Complinces	Remarks
01	Diameter mm	**1350		
02	Height TT mm	**1670		
03	Process fluid	Traces of HCI ,methanol		
04	Pressure kg/cm2 (g)	3 & FV		
05	Temperature oC	-20 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m3	2		
08	Corrosives	YES		
09	pH	5 to 8		
10	Fluid Viscosity (cp)	~15000		
11	Orientation	Vertical		
12	Minimum stirring volume	**100		
13	Minimum thermo well touching volume Agitator	**250		
14		Anchor/propeller (double stage)		

16	Operating Volume m3	2.0		
17	Water filled volume m3	2.25		
18	End covers: 10 % Tory spherical dish end	required		

SI No	OPERATING CONDITIONS	Jacket	Vendor Complinces	Remarks
01	Diameter mm	**1450		
02	Height/length/width - TT mm	**		
03	Process fluid	STEAM/CWS /CHB		

04	Pressure kg/cm2 (g)	4		
05	Temperature deg. C	-20 to 220		
06	Specific Gravity	0.4 to 1.2		
07	Liquid. Level max. m3	**		
08	Corrosives	None		
09	pH	Neutral		
10	Fluid Viscosity (cp)	2 – 25		
11	Operating Volume m3	**		
12	Water filled volume m3	**		
13	Insulation Hot	50 mm rock wool		
14	Cold	32 mm PUF		
15	End covers:10 % Tory spherical dished end	required		

SI No	DESIGN CONDITIONS	SHELL	Vendor Complinces	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	3 & F.V.		
03	Temperature deg C	** -28 to 250		
04	Hydro test Kg/cm2(g)	**4.5		
05	Vac. Test at 750 mm Hg	Required		
06	Joint Efficiency	85%		
07	Radiography	100% Dish ,10% Shell		
08	Corrosion Allowance (Wetted/non.Wetted/)			
	Weight Empty Kg	1.0/00 mm		
09	Weight Operating Kg	**		
10	Weight Water Full Kg	**		
11	Heat transfer area	**		
12	Surface Finish External	** 7.5 sqm		
13	Surface finish Internal	80 grit matt		
14		mirror finish 240 grit		

Sl. No.	DESIGN CONDITIONS	JACKET	Vendor Complines	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	5		
03	Temperature oC	** -30 to 220		
04	Hydro test Kg/cm2(g)	** 7.5		
05	Radiography Shell/head	**Nil/full		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendor Complines	Remarks
01	SHELL	SS.316		
02	END CAP	SS.316		
03	END BOTTOM	SS.316		
04	AGITATOR	SS.316		
05	NOZZLE/MAN WAY	SS 316		
06	JACKET	MS		
07	FLANGES	SS316		
08	BOLTS } EXT	SS304		
09	NUTS } INT.	SS304		
10	GASKET	Teflon enveloped food grade.		
11	SUPPORTS	SS 304		
12	EARTHLINE BOSS	SS304		
13	LIFTING LUGS	SS-316		
	INSULATION & CLADDING.	50 mm rock wool,32 mm PUF with 3 mm SS 304 sheet.		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendor Complines	Remarks
N1	450 mm dia.	MANHOLE WITH 100 MM DIA SIGHT GLASS. CHARGING LINE		
N2	50 mm dia.	ADDITION LINE		
N3	50 mm dia.	VAPOR LINE		
N5	100 mm dia.	LIGHT GLASS		
N6	100 mm dia.	STRAIGHT THERMOWELL		
N7	80 mm dia.			

N9	80 mm dia.	50 mm	VENT / RUPTURE DISC / SRV		
N10 & N16		dia.	SPARE		
M			ANCHOR AGITATOR ENTRY		
L	100 mm dia.		B.O.VALVE		
N11 & N14	100 mm dia.		JACKET INLET		
N12 & N15	50 mm dia.		JACKET OUTLET		
T11	50 mm dia.		JACKET DRAIN		
N13	½" BSPT		JACKET VENT		
	50 mm dia.				

GENERAL DATA REQD.	
Heat transfer area	** 7.50 Sq. Mtrs.
Approx weight	** Kgs.
Weight full of water	** Kgs.
Shell O/D	**1350 mm.
Jacket OD	**1450 mm
Main Shell thickness	**10 mm.
Main dish thickness	**10 mm.
Jacket Shell thickness	**8.0 mm.
Jacket dish thickness	**8.0 mm
Reactor body height	**1670 mm.
Total height of reactor	** mm
Motor	**TEFC Flange mounted flame proof, 7.5 HP, 1440 RPM, 415 V AC, 50 Hz., Frame size E-132M,Make Crompton Greaves
Gear box	: **Inline Helical gear (Make Bonfiglioli), Model : **AS55, Ratio : 29.8:1
Shaft Seal	: Single Mechanical Seal reputed make with C V/s ceramic and kalrez O ring
External Surface Prep.	: 80 grit matt : mirror finish 240 grit

Internal Surface prep.	
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AGITATOR DETAILS		
Type	Anchor/propeller (double stage)	SWD** 1250
Speed	**48	RPM
Shaft diameter	**80	mm
Motor power	**7.5	HP
Run out	**0.08 max. at seal portion	mm

SI No	Notes
1.	Top dish and exposed shell to be finished to 80 grit matt & internal 240 grit mirror .
2.	Jacket to have spirals at 125mm pitch
3.	Spare nozzles to be provided with Gasket and Blinds
4.	All nozzles shall be provided with blind flanges
5.	**vendor to verify the design & give specifications
6	Vendor to quote along with the supply ,errection & commissioning.
7	Vendor to submit G.M.PO related documents such as IQ,PQ&DQ etc.
8	Any other accessories & additional features can be quoted as optional.
9	Vendor to issue 18 months Guarantee certificate.

VENDOR SCOPE OF WORK

Vessel	Yes	Agitator	Yes
Access Ladder	NA.	Drive Motor	Yes

Blind Flanges	Yes	Drive Assembly	Yes
Fasteners	Yes	End Bolts	Yes
Gaskets	Yes		Yes

INSPECTION AND TESTING	To be offered	To be Witnessed by party
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes
FAT	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by

ANNEXURE - 4B

DOCUMENT NAME :	DATA SHEET FOR SS 316 SHELL & TUBE HORIZONTAL 7.5 SQM CONDENSER
DOCUMENT NUMBER :	CON / KER / DS STH 7.5 SQM / 07

Sl.No.	OPERATING CONDITIONS	Shell	Vendor Complinces	Remarks
01	Diameter mm	**400		
02	length/width TT mm	**2000.		
03	Process fluid	Methanol & other organic solvents		
04	Pressure kg/cm2 (g)	4 & FV		
05	Temperature oC	-20 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m3	**		
08	Corrosives	No		
09	pH	5 to 8		
10	Fluid Viscosity (cp)	5000		
11	Orientation	horizontal shell and tube		
12	Area sq.m	7.5		
13	Insulation cold	**50 mm PUF with SS 304 Cladding		

SI No	OPERATING CONDITIONS	TUBES	Vendor Complines	Remarks
01	Diameter mm	**25 O D		
02	Process fluid	CWS /CHB(Dilute solvent)		
03	Pressure kg/cm2 (g)	4		
04	Temperature deg. C	-20 to 100		
05	Specific Gravity	0.4 to 1.2		
06	Corrosives	No.		
07	pH	Neutral		
08	Fluid Viscosity (cp)	2 – 25		
09	No. of Tubes.	48		

SI No	OPERATING CONDITIONS	END COVERS	Vendor Complines	Remarks
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01	Diameter	mm	**400 O D		
02	Process fluid		CWS /CHB(Dilute solvent)		
03	Pressure kg/cm2 (g)		4		
04	Temperature deg. C		-20 to 100		
05	Specific Gravity		0.4 to 1.2		
06	Corrosives		No.		
07	pH		Neutral		
08	Fluid Viscosity (cp)		2 – 25		
09	Length mm		300		
10	Insulation Cold		50 mm PUF with SS 304 Cladding.		
			04		
11	No. of Passes				

SI No	DESIGN CONDITIONS	SHELL	Vendor Complines	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	3 & F.V.		
03	Temperature deg C	** -28 to 200		
04	Hydro test Kg/cm2(g)	**4.5		
05	Vac.Test mm Hg	Required		
06	Joint Efficiency	70/1 %		
07	Radiography	Spot		
08	Corrosion Allowance (Wetted/non. Wetted)	1.0/00 mm		
09	Weight Empty Kg	**		
10	Heat transfer area	**7,5 sqm		
11	Surface Finish Ext	80 grit matt		

SI No	DESIGN CONDITIONS	TUBE	Vendor Complinces	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	5 / FV		
03	Temperature oC	** -20 to 200		
04	Hydro test Kg/cm2(g)	**7.5		
05	Radiography Shell/head	**spot/full		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendor Complinces	Remarks
01	Shell	SS 316		
02	End Covers	SS 316		
03	Tubes	SS 316		
04	Nozzles	SS 316		
05	Flanges	SS 316 ASA 150 std with raise face.		
06	Header flanges	SS 316 ** 25 mm thk.		
07	Bolts } Ext.	SS 316		
08	Nuts } Int.	SS 316		
09	Gasket	Teflon enveloped food grade..		
10	Supports	SS 304		
11	Earthing Boss	SS 304		
12	Lifting Lugs	SS 304		
13	Insulation & Cladding	50 mm PUF with SS 304 sheet 3 mm thk.		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendor Complinces	Remarks
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N1	150 mm dia.	VAPOR INLET		
N2	80 mm dia	CONDENSATE OUTLET		
N3	50 mm dia	WATER INLET (ON TUBE SIDE)		
N4	50 mm dia	WATER OUTLET (ON TUBE SIDE)		
N5	50 mm dia	VENT (FOR SHELL SIDE)		
N6	50 mm dia	VENT (FOR TUBE SIDE)		

GENERAL DATA REQD.

1)	Heat transfer area	**7.5 Sq. Mtrs.
2)	Approx weight	** Kgs.
3)	Weight full of water	** kgs
	Shell O/D	
4)	Shell length.	**400 mm.
5)	Main Shell thickness	**2000 mm
6)	Main dish thickness	**6.0 mm.
	Tube thickness	
7)	No. of tubes	
	Dish end thk.	**6.0 mm.
8)	Condenser total	**Shedule 10.
9)	length	**48
10)	External Surface prep	**6.0 mm
11)	Condenser type	
		** 2600 mm
12)		80 grit matt.
13)		Shell and tube 4 pass type

SI No	Notes
1	End covers and exposed shell to be finished to 80 grit matt
2	Spare nozzles to be provided with Gasket and Blinds
3	All nozzles shall be provided with blind flanges
4	**vendor to verify the design & give specifications
5	Vendor to quote along with the supply ,errection & commissioning.
6	Vendor to submit G.M.PO related documents such as IQ,PQ&DQ etc.
7	Any other accessories & additional features can be quoted as optional.
8	Vendor to issue 18 guarantee certificate.

VENDOR SCOPE OF WORK

Condenser	Yes	Agitator	NA
Access Ladder	NA	Drive Motor	NA
Blind Flanges	Yes	Drive Assembly	NA
Fasteners	Yes	End Bolts	Yes
Gaskets .	Yes		

INSPECTION AND TESTING	To be offered	To be Witnessed by party
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes
FAT	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by

ANNEXURE - 4C

DOCUMENT NAME :	DATA SHEET FOR SS 316 SHELL & TUBE HORIZONTAL 3.0 SQM CONDENSER
DOCUMENT NUMBER :	CON / KER / DS STH 3.0 SQM / 08

SI. No.	OPERATING CONDITIONS	Shell	Vendor Compliances	Remarks
01	Diameter mm	**250		
02	length/width TT mm	**1800.		
03	Process fluid	Methanol& other organic solvents		
04	Pressure kg/cm ²	4 & FV		
05	Temperature Deg C	-20 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m ³	**		
08	Corrosives	No		
09	pH	5 to 8		
10	Fluid Viscosity (cp)	5000		
11	Orientation	horizontal shell and tube		
12	Area sq.m	3.0		
13	Insulation cold	**50 PUF with SS 304 Cladding		

SI No	OPERATING CONDITIONS	TUBES	Vendor Compliances	Remarks
01	Diameter mm	**20 O D		
02	Process fluid	CWS /CHB(Dilute solvent)		
03	Pressure kg/cm2 (g)	4		
04	Temperature deg. C	-20 to 100		
05	Specific Gravity	0.4 to 1.2		
06	Corrosives	yes		
07	pH	Neutral		
08	Fluid Viscosity (cp)	2 – 25		
09	No. of Tubes.	28		

SI No	OPERATING CONDITIONS	END COVERS	Vendor Compliances	Remarks
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01	Diameter mm	**250 O D		
02	Process fluid	CWS /CHB(Dilute solvent)		
03	Pressure kg/cm2 (g)	4		
04	Temperature deg. C	-20 to 100		
05	Specific Gravity	0.4 to 1.2		
06	Corrosives	No		
07	pH	Neutral		
08	Fluid Viscosity (cp)	2 – 25		
09	Length mm	250		
10	Insulation Cold	50 mm PUF with SS 304 Cladding.		

SI No	DESIGN CONDITIONS	SHELL	Vendor Compliances	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	3 & F.V.		
03	Temperature deg C	** -28 to 200		
04	Hydro test Kg/cm2(g)	**4.5		
05	Vac. Test 760 mm Hg	Required		
06	Joint Efficiency	70/1 %		
07	Radiography	Spot		
08	Corrosion Allowance (Wetted/non. Wetted)	1.0/00 mm		
	Weight Empty Kg			
09	Heat transfer area	**		
10	Surface Finish Ext	**3.0 sq m		
11		80 grit matt		

Sl. No.	DESIGN CONDITIONS	TUBE	Vendor Compliances	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	5 / FV		
03	Temperature oC	** -20 to 200		
04	Hydro test Kg/cm2(g)	**7.5		
05	Radiography Shell/head	**spot/full		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendor Compliances	Remarks
01	Shell	SS 316		
02	End Covers	SS 316		
03	Tubes	SS 316		
04	Nozzles	SS 316		
05	Flanges	SS 316 ASA 150 std with raise face.		
06	Header flanges	SS 316 ** 25 mm thk.		
07	Bolts } Ext.	SS 316		
08	Nuts } Int.	SS 316		
09	Gasket	Teflon enveloped. food grade		
10	Supports	SS 304		
11	Earthing Boss	SS 304		
12	Lifting Lugs	SS 304		
	Shell & End covers	PUF Insulated & Cladded with SS 304 Sheet		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendor Compliances	Remarks
N1	80	VAPOR INLET		
N2	40	CONDENSATE OUTLET		
N3	40	WATER INLET (ON TUBE SIDE)		
N4	40	WATER OUTLET (ON TUBE SIDE)		
N5	40	VENT (FOR SHELL SIDE)		
N6	40	VENT (FOR TUBE SIDE)		

GENERAL DATA REQD.		
SI No	Description	SHELL
	Heat transfer area	**3.0 Sq. Mtrs.
	Approx weight	: ** Kgs.
	Weight full of water	: ** kgs
	Shell O/D	**250 mm.

Shell length.	: **1800 mm
Main Shell thickness	: **5.0 mm.
Main dish thickness	: **5.0 mm.
Tube thickness	: ** Schedule 10.
No. of tubes	: **28
Dish end thk.	: **5.0 mm
Condenser total length	: ** 2300 mm
External Surface prep	: 80 grit matt.
Condenser type	Shell and tube type

SI No	Notes
1	End covers and exposed shell to be finished to 80 grit matt
2	Spare nozzles to be provided with Gasket and Blinds
3	All nozzles shall be provided with blind flanges
4	**vendor to verify the design & give specification
5	Vendor to quote along with the supply ,errection & commissioning.
6	Vendor to submit G.M.P related documents such as IQ,PQ&DQ etc.
7	Any other accessories & additional features can be quoted as optional
8	Vendor to issue 18 months guarantee.

VENDOR SCOPE OF WORK

Condenser	Yes	Agitator	NA
Access Ladder	NA	Drive Motor	NA
Blind Flanges	Yes	Drive Assembly	NA

Fasteners	Yes	End Bolts	Yes
Gaskets	Yes		

INSPECTION AND TESTING	To be offered	To be Witnessed by party
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by

ANNEXURE - 4D

DOCUMENT NAME :	DATA SHEET FOR 250 LITRS SS 316 VERTICAL DISHED END TYPE RECIEVER
DOCUMENT NUMBER :	CON / KER / DS RC 250 LITRS / 09
DATE / REVISION	24-09-2009 / REV – 00

Sl.No.	OPERATING CONDITIONS	Shell	Vendor Compliances	Remarks
01	Diameter mm	**675		
02	Height TT mm	**1485		
03	Process fluid	methanol & other organic solvents		
04	Pressure kg/cm2 (g)	2 & FV		
05	Temperature deg. C	0 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m3	0.25		
08	Corrosives	Nil		
09	pH	5 to 8		
10	Fluid Viscosity (cp)	~5000		
11	Orientation	Vertical, Cylindrical, dishes welded		
12	Operating Volume m3	0.25		
13	Water filled volume m3	**0.28		
14	End covers: 10 % Tory spherical end	required		

SI No	DESIGN CONDITIONS	SHELL	Vendor Compliances	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	3 & F.V.		
03	Temperature deg C	**0 to 200		
04	Hydro test Kg/cm2(g)	**4.5		
05	Vac. Test at 760 mm Hg	Required		
06	Joint Efficiency	75%		
07	Radiography	--		
08	Corrosion Allowance (Wetted/non Wetted)	1.0/00 mm		
	Weight Empty Kg			
09	Weight Operating Kg	**		
10	Weight Water Full Kg	**		
11	Surface Finish Ext	**		
12	Internal Surface Prep.	80 grit matt		
13		240 grit mirror		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendor Compliances	Remarks
01	Shell	SS 316		
02	Side dishes	SS 316		
03	Nozzles/ man hole	SS 316		
04	Flanges	SS 316		
05	Bolts } Ext.	SS 316		
06	Nuts } Int.	SS 316		
07	Gasket	Teflon food grade.		
08	Supports	SS 304		
09	Earthing Boss	SS 304		
10	Lifting Lugs	SS 304		
11	Insulation for jacket	PUF with SS 304 Cladding.		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendor Compliances	Remarks
N1	50 MM DIA	SPARE		
N2	50 MM DIA	CHARGING LINE		
N3	50 MM DIA	VENT LINE		
N4	80 MM DIA	VIEW GLASS ON SHELL PORTION		
N5	80 MM DIA	LGHT GLASS ON SHELL PORTION		
N6	50 MM DIA	OUTLET		
N7	40 MM DIA	JACKET INLET		
N8	40 MM DIA	JACKET OUTLET.		

GENERAL DATA REQD.	
Approx weight	: ** Kgs.
Weight full of water	: ** Kgs.
Shell O/D	**675 mm.
Shell Length	: **725 mm
Main Shell thickness	: **5 mm.
Main dish thickness	: **5 mm..
External Surface Prep.	: 80 grit matt
Internal Surface Prep.	: 240 grit mirror

SI No	Notes
1.	Top dish and exposed shell to be finished to 80 grit matt
2.	Spare nozzles to be provided with Gasket and Blinds
3.	All nozzles shall be provided with blind flanges
4.	**vendor to verify the design & give specifications
5	Vendor to quote along with the supply ,errection & commissioning.
6	Vendor to submit G.M.P related documents such as IQ,PQ&DQ etc.
7	Any other accessories & additional features can be quoted as optional.

VENDOR SCOPE OF WORK

Vessel	Yes	Fasteners	Yes
Access Ladder	NA	Gaskets	Yes
Blind Flanges	Yes		

INSPECTION AND TESTING	To be offered	To be Witnessed by party.
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by

ANNEXURE - 4E

DOCUMENT NAME :	DATA SHEET FOR SS. PIPING FOR 2.KL SSR DISTILLATIUN SET UP
DOCUMENT NUMBER :	CON / KER / DS SSP/26

SI. No.	OPERATING CONDITIONS	Vapour column	Vendor Compliances	Remarks
01	Diameter mm	**150		
02	Height/length/width TT mm	** Approx. Horizontal condenser located at a height of -2200mm		
03	Process fluid	methanol		
04	Pressure kg/cm2 (g)	3 & FV		
05	Temperature Deg C	-20 to 150		
06	Corrosives	yes		
07	pH	4 to 10		
08	Fluid viscosity cp	-5000		
09	Orientation	Vertical/horizontal		

SI No	OPERATING/DESIGN CONDITIONS	Distillate, reflux & reflux line etc.	Vendor Compliances	Remarks
01	Diameter mm	**50		

02	Height/length/width TT mm	From the condenser to the sub cooler- 1000mm& sub cooler to the receiver- 1500mm		
03	Process fluid	Methanol & other organic solvents		
04	Pressure kg/cm2 (g)	-6& FV		
05	Temperature deg. C	-20 to 150		
06	Corrosives	yes		
07	pH	4 – 10		
08	Fluid Viscosity (cp)	-5000		
09	orientation	Vertical/Horizontal		

SI No	Notes	
1	SS exposed portion should be buffed to mat finish 80 Grit	
2	**vendor to verify the design & give specifications	
3	Vendor to quote along with the supply ,erection & commissioning.	
4	Vendor to submit G.M.P related documents such as IQ,PQ&DQ etc.	
5	Any other accessories & additional features can be quoted as optional.	
6	There may be slight variations in the dimensions at sight , vendors are requested to take the proper dimensions & carry out the work accordingly. The offer should include the provision for the same.	
INSPECTION AND TESTING		
	To be offered	To be witnessed by the party
Test Certificate	Yes	Yes
Material	Yes	Yes

Hydro. Dimensional Check	Yes Yes	Yes Yes
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Checked by	Authorized by

ANNEXURE-6

DOCUMENT NAME :	DATA SHEET FOR 250 LITRS SS 316 VERTICAL DISHED END TYPE SERVICE TANK
DOCUMENT NUMBER :	CON / KER / DS ST 250 LITRS / 11

SI. No.	OPERATING CONDITIONS	Shell	Vendor Compliances	Remarks
01	Diameter mm	**675		
02	Height TT mm	**1485		
03	Process fluid	methanol & other organic solvents		
04	Pressure kg/cm2 (g)	2 & FV		
05	Temperature deg. C	0 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m3	0.25		
08	Corrosives	Nil		
09	pH	5 to 8		
10	Fluid Viscosity (cp)	~5000		
11	Orientation	Vertical, Cylindrical, dishes welded		
12	Operating Volume m3	0.25		
13	Water filled volume m3	**0.28		
14	End covers: 10 % Tory spherical end	required		

SI No	DESIGN CONDITIONS	SHELL	Vendor Complinces	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	3 & F.V.		
03	Temperature deg C	**0 to 200		
04	Hydro test Kg/cm2(g)	**4.5		
05	Vac. Test mm Hg	Required		
06	Joint Efficiency	75%		
07	Radiography	--		
08	Corrosion Allowance (Wetted/non Wetted)	1.0/00 mm		
	Weight Empty Kg			
09	Weight Operating Kg	**		
10	Weight Water Full Kg	**		
11	Surface Finish Ext	**		
12	Internal Surface Prep.	: 80 grit matt		
13		: 240 grit mirror		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendor Complinces	Remarks
01	Shell	SS 316		
02	Side dishes	SS 316		
03	Nozzles/ man hole	SS 316		
04	Flanges	SS 316		
05	Bolts } Ext.	SS 316		
06	Nuts } Int.	SS 316		
07	Gasket	Teflon food grade		
08	Supports	SS 316		
09	Earthling Boss	SS 316		
10	Lifting Lugs	SS 316		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendor Compliances	Remarks
N1	50 MM DIA	SPARE		
N2	50 MM DIA	CHARGING LINE		
N3	50 MM DIA	VENT LINE		
N4	80 MM DIA	VIEW GLASS ON SHELL PORTION		
N5	80 MM DIA	LGHT GLASS ON SHELL PORTION		
N6	50 MM DIA	OUTLET		
N8	50 MM DIA	SPARE		

GENERAL DATA REQD.	
Approx weight	** Kgs.
Weight full of water	** Kgs.
Shell O/D	**675 mm.
Shell Length	**725 mm
Main Shell thickness	**5 mm.
Main dish thickness	**5 mm..
External Surface Prep.	80 grit matt
Internal Surface Prep.	240 grit mirror

SI No	Notes
1.	Top dish and exposed shell to be finished to 80 grit matt
2.	Spare nozzles to be provided with Gasket and Blinds
3.	All nozzles shall be provided with blind flanges
4.	**vendor to verify the design & give specifications
5	Vendor to quote along with the supply ,erection & commissioning.

6	Vendor to submit G.M.PO related documents such as IQ,PQ&DQ etc.
7	Any other accessories & additional features can be quoted as optional.

VENDOR SCOPE OF WORK

Vessel	Yes	Fasteners	Yes
Access Ladder	NA	Gaskets	Yes
Blind Flanges	Yes		

INSPECTION AND TESTING	To be offered	To be Witnessed by party.
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by

ANNEXURE-8

DOCUMENT NAME :	DATA SHEET FOR 1000 LITRS SS 316 VERTICAL DISHED END TYPE SERVICE TANK
DOCUMENT NUMBER :	CON / KER / DS ST 1000 LITRS / 12

SI. No.	OPERATING CONDITIONS	Shell	Vendor Complines	Remarks
01	Diameter mm	**1050		
02	Height TT mm	**1360		
03	Process fluid	DM Water & Organic solvent.		
04	Pressure kg/cm ² (g)	2 & FV		
05	Temperature deg. C	0 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m3	1.0		
08	Corrosives	Nil		
09	pH	5 to 8		
10	Fluid Viscosity (cp)	~1000		
11	Orientation	Vertical, Cylindrical, dishes welded		
		1.0		
12	Operating Volume m ³	**1.150		
13	Water filled volume m ³	required		
14	End covers: 10 % Tory spherical end			

No	DESIGN CONDITIONS	SHELL	Vendor Complines	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm ² (g)	3 & F.V.		
03	Temperature deg C	**0 to 200		
04	Hydro test Kg/cm ² (g)	**4.5		

05	Vac. Test	mm Hg	Required		
06	Joint Efficiency		75%		
07	Radiography		--		
08	Corrosion Allowance (Wetted/non Wetted)		1.0/00 mm		
	Weight Empty	Kg			
09	Weight Operating	Kg	**		
10	Weight Water Full	Kg	**		
11	Surface Finish Ext		**		
12	Internal Surface Prep.		: 80 grit matt		
13			: 240 grit mirror		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendor Compliances	Remarks
01	Shell	SS 316		
02	Side dishes	SS 316		
03	Nozzles/ man hole	SS 316		
04	Flanges	SS 316		
05	Bolts } Ext.	SS 316		
06	Nuts } Int.	SS 316		
07	Gasket	Teflon food grade		
08	Supports	SS 316		
09	Earthing Boss	SS 316		
10	Lifting Lugs	SS 316		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendor Compliances	Remarks
N1	400 MM DIA	MAN HOLE WITH DAVIT ARM/HINGES .		
N2	50 MM DIA	CHARGING LINE		
N3	50 MM DIA	VENT LINE		
N4	50 MM DIA	VACUUM LINE		
N5	25 MM DIA	LEVEL GLASS		
N6	25 MM DIA	LEVEL GLASS		

N7	50 MM DIA	OUTLET		
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GENERAL DATA REQD.	
Approx weight	: ** Kgs.
Weight full of water	:** Kgs.
Shell O/D	**1050 mm.
Shell Length	: **1150 mm
Main Shell thickness	: **6 mm.
Main dish thickness	: **6 mm..
External Surface Prep.	: 80 grit matt
Internal Surface Prep.	: 240 grit mirror

SI No	Notes
1.	Top dish and exposed shell to be finished to 80 grit matt
2.	Spare nozzles to be provided with Gasket and Blinds
3.	All nozzles shall be provided with blind flanges
4.	**vendor to verify the design & give specifications
5	Vendor to quote along with the supply ,erection & commissioning.
6	Vendor to submit G.M.PO related documents such as IQ,PQ&DQ etc.
7	Any other accessories & additional features can be quoted as optional.

VENDOR SCOPE OF WORK

Vessel	Yes	Fasteners	Yes
Access Ladder	NA	Gaskets	Yes
Blind Flanges	Yes		

INSPECTION AND TESTING	To be offered	To be Witnessed by party
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by

ANNEXURE-11

DOCUMENT NAME :	DATA SHEET FOR 2000 LITRS SS 316 HORIZONTAL DISHED END STORAGE TANK
DOCUMENT NUMBER :	CON / KER / DSST 2000 LITRS / 16
DATE / REVISION	23-10-2009 / REV – 00

SI. No.	OPERATING CONDITIONS	Shell	Vendors Compliances	Remarks
01	Diameter mm	**1200		
02	Height/length TT mm	**1200/1500		
03	Process fluid	HCl & methanol (MLR)		
04	Pressure kg/cm ² (g)	2 & FV		
05	Temperature deg. C	10 to 150		
06	Specific Gravity	0.8 to 1.8		
07	Liq. Level max. m ³	2.0		
08	Corrosives	YES		
09	pH	4 to 10		
10	Fluid Viscosity (cp)	~5000		
11	Orientation	Horizontal, Cylindrical, dishes welded		
12	Operating Volume m ³	2.0		
13	Water filled volume m ³	2.25		
14	End covers: 10 % Tory spherical end	required		

SI No	DESIGN CONDITIONS	SHELL	Vendors Compliances	Remarks
01	Design code	ASME Sec VIII . Div.1		
02	pressure Kg / cm2 (g)	3 & F.V.		
03	Temperature deg C	**5 to 200		
04	Hydro test Kg/cm2(g)	**4.5		
05	Vac. Test mm Hg	Required		
06	Joint Efficiency	75%		
07	Radiography	--		
08	Corrosion Allowance (Wetted/non Wetted)	1.0/00 mm		
	Weight Empty Kg			
09	Weight Operating Kg	**600		
10	Weight Water Full Kg	**2000		
11	Surface Finish Ext	**2850		
12	Internal Surface Prep.	80 grit matt		
13	Supports	240 grit mirror		
14		02 No's U type		

SI No	DESCRIPTION	MATERIAL OF CONSTRUCTION	Vendors Compliances	Remarks
01	Shell	SS 316		
02	Side dishes	SS 316		
03	Nozzles/ man hole	SS 316		
04	Flanges	SS 316		
05	Bolts} Ext.	SS 316		
06	Nuts } Int.	SS 316		
07	Gasket	Teflon food grade		
08	Supports	SS 304 U Type.		
09	Earthing Boss	SS 316		
10	Lifting Lugs	SS 316		

NOZZLE TYPE	SIZE	DISCRIPTION / PURPOSE	Vendors Compliances	Remarks
N1	400 MM DIA	MAN HOLE WITH DAVIT ARM/HINGES .		
N2	50 MM DIA	CHARGING LINE		
N3	50 MM DIA	VENT LINE		
N4	25 MM DIA	LEVEL GLASS		
N5	25 MM DIA	LEVEL GLASS		
N6	50 MM DIA	OUTLET		
N7	50 MM DIA	DRAIN		
N8	50 MM DIA	DIP STICK		

GENERAL DATA REQD.		Vendors Compliances	Remarks
Approx weight	**~ 600 Kgs.		
Weight full of water	** ~2850 Kgs.		
Shell O/D	**1200 mm.		
Shell Length	**1500 mm		
Main Shell thickness	**8 mm.		
Main dish thickness	**8 mm..		
Tank body height(from gr)	**1820 mm.		
External Surface Prep.	80 grit matt		
Internal Surface Prep.	240 grit mirror		

SI No	Notes
1.	Top dish and exposed shell to be finished to 80 grit matt
2.	Spare nozzles to be provided with Gasket and Blinds
3.	All nozzles shall be provided with blind flanges

4.	**vendor to verify the design & give specifications
5	Vendor to quote along with the supply ,erection & commissioning.
6	Vendor to submit G.M.PO related documents such as IQ,PQ&DQ etc.
7	Any other accessories & additional features can be quoted as optional.
8	Vendor to quote along with Tube type level indicator and suitable guard as optional.

VENDOR SCOPE OF WORK

Vessel	Yes	Fasteners	Yes
Access Ladder	Yes	Gaskets	Yes
Blind Flanges	Yes		

INSPECTION AND TESTING	To be offered	To be Witnessed by party
Test Certificate	Yes	Yes
Material	Yes	Yes
Hydro.	Yes	Yes
Dimensional Check	Yes	Yes

Prepared by	Approved by
Checked by	Authorized by