

OILY WATER TREATMENT PLANT

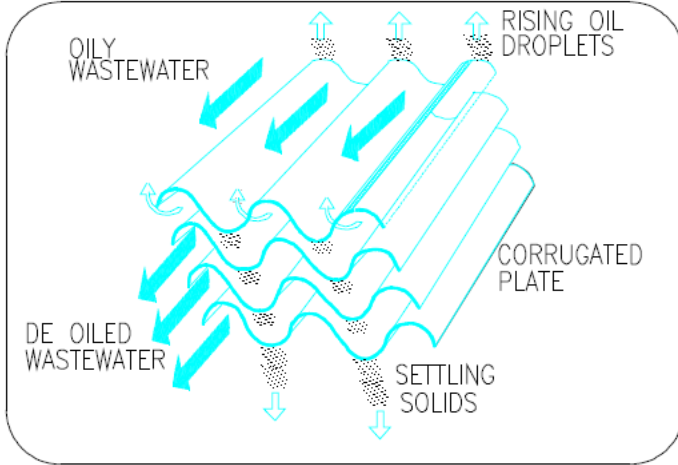
DESCRIPTION

NEVER USED, NEVER ASSEMBLED – This Oily Water Treatment Plant removes oil and suspended solids from rain-water / wash water collected from different areas of an industrial job site, factory or other such applications.

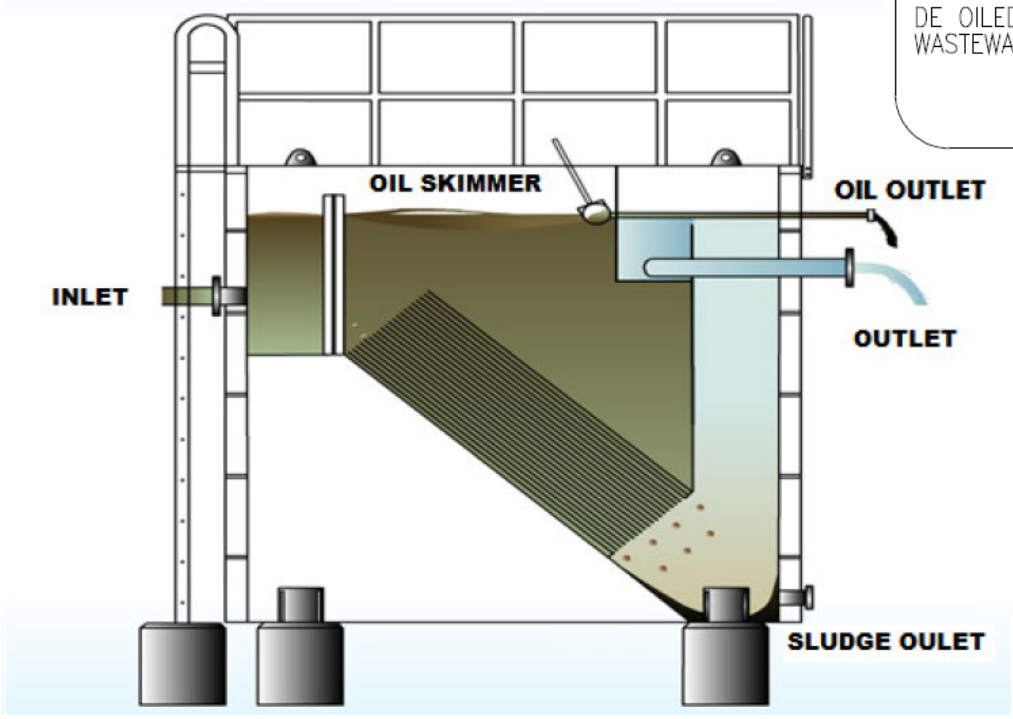
Oily wastewater collection is fed to a retention tank and then pumped to a tilted plate separator (TPI). Water is separated from oil and sludge. Treated water then flows to a dissolved air floatation (DAF) treatment stage along with coagulant and flocculant dosing systems carried out in the pipe flocculator.

This is a well-designed system complete with PLC control panels. See Detailed Process Description for more detail.

ID	18C-AR-05
Manufacturer	Ion Exchange India Ltd.
YOM	2014
Location	Indoor Warehouse Dunkirk, France
Condition	NEVER USED
Packaging	Original Crates



TPI – TILTED PLATE SEPERATOR



The TPI Unit consists of bays with each bay separated into 3 chambers as shown above.

1. Inlet Chamber
2. Process Chamber
3. Outlet Chamber



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OILY WATER TREATMENT PLANT

SPECIFICATIONS

FEED STREAM

- Design Flow Rate: 40 M3 / Day
- Operating Hours: 12 Hrs. / Day
- No. of Streams: 1 X 100%
- Operating Temp.: 5 – 47 Degrees C

Oil Water Feed Analysis

No.	Desc	Unit	Concentration
1	Total oil concentration (max)	mg/l	450
2	Total suspended solids (max)	mg/l	200
3	Oil specific gravity	--	0.8 – 0.9
4	Oil droplet size		
	- Before transport	µm	20 - 150
	- After transport	µm	< 30

Product Streams

No.	Constituent	Unit	Concentration
1	Treated water analysis		
	Total oil concentration	mg/l	≤ 10
	Total suspended solids	mg/l	≤ 50
2	Skimmed oil downstream the separator		
	Water content *	--	10 – 25%
3	Oily Sludge characteristics		
	Sludge consistency	--	1 – 1.5%

Performance

No.	Performance Description	Value	Tolerances
1.	Capacity	40 m3/day	- 0%
2.	Quality of treated water		
	Oil concentration	≤ 10 mg/l	- 0%
	Total suspended solids	≤ 50 mg/l	- 0%
3.	Utility consumption rates		
	Electrical consumption	34 kWh/day	+/- 5%
	Process water consumption	64 Liter/ day	+/- 5%
4.	Chemical consumption rates		
	Alum (solution strength 10% / 30 ppm)	1.32 kg/day as 100%	+/- 5%
	Polymer (solution strength 0.1% / 1 ppm)	0.050 kg/day as 100%	+/- 5%



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PROCESS DESCRIPTION

Oily water is collected into its dedicated pit fed by other systems and transferred to the oil water retention tank (1250-TK-1210) for temporary storage. The oily water effluent from Oily water retention tank is pumped by TPI Feed pumps (1250-PU-1231 A/B) to the TPI separator (1250-SR-1230).

The TPI is an enhanced gravity separation and consists of 10 inclined corrugated plates mounted parallel to each other at 20mm spacing. This system is the ideal method of removing free oil from water. The Plate Pack, constructed in FRP, is installed in the designed steel tank. The oily water flows into the interceptor through flow distribution baffle, then into the plate pack. Here oil droplets are intercepted and coalesce into large droplets as perfect laminar condition are created and maintained throughout. In the case of counter-current, the droplets leave the pack rapidly, subsequently flowing upwards against the liquid flow to the surface for eventual removal through the skimmer pipe. Any sludge is also effectively separated by the reverse process.

Skimmed oil is collected in oil drum (1250-TK-1232) and sludge periodically (site specific) drained from the bottom of the tank into the oily sludge pit (1250-TK-1300) for disposal.

Treated water from TPI Separator flows by gravity to DAF Feed tank (1250-TK-1241) from where water gets fed to the DAF System by means of DAF feed pumps (1250-PU-1242A/B).

To enhance the emulsified oil-water separation; coagulant & flocculant dosing system are provided. Coagulation & flocculation is carried out in pipe flocculator (1250-ZM-1243). In pipe flocculator, the mixing energy for flocculation is obtained by the turbulence in the mixing unit and the pipe.

Coagulant i.e. alum dosing system consist of a alum preparation cum dosing tank (1250-TK-1270) with 2 x 100% Alum dosing pumps (1250-PU-1271A/B) with all relevant discharge valve and interconnecting piping up to the pipe flocculator. Agitator (1250-AG-1270) is provided for preparation of 10% Alum solution in dosing tank.

Flocculent polymer dosing system consist of polymer preparation tank (1250-TK-1262) and polymer dosing tank (1250-TK-1260) with 2x 100% polymer dosing pumps (1250-PU-1261A/B) with all relevant discharge valves and interconnecting piping up to the pipe flocculator. Agitator (1250-AG-1262) is provided in polymer preparation tank for preparation of 0.1% polymer solution. Prepared solution is then transferred by gravity to the polymer dosing tank.

First coagulant is dosed by means of coagulant dosing pump (1250-PU-1271A/B) at inlet of pipe flocculator. Immediately after the dosing point a mixing unit is installed for mixing coagulant and feed water. The reaction is completed in pipe following the mixing unit. Mixing energy & reaction energy in the mixing unit & Pipe are a result of turbulence. When the

coagulation is completed flocculent is dosed by means of polymer dosing pumps (1250-PU- 1261A/B). Mixing of water & flocculant takes place in a second mixing unit. Floc growth will further be completed in pipe following the mixing unit. In this way uniform floc can be formed for the separation of floc & water in a dissolved air floatation unit.

DAF unit is a high built open tank separator for dissolved air assisted separation of floc from water. The water enters the inlet of the compartment via distribution system, which regulates & stabilizes the flow before entering the plate zone. Dissolved air is already dosed before water enters the compartment. Heavy particles will settle down and are collected in central sludge cone. Dissolved air is dosed at beginning of the unit to provide sufficient air bubbles to give buoyancy to the floc and create an air cushion under floating layer.



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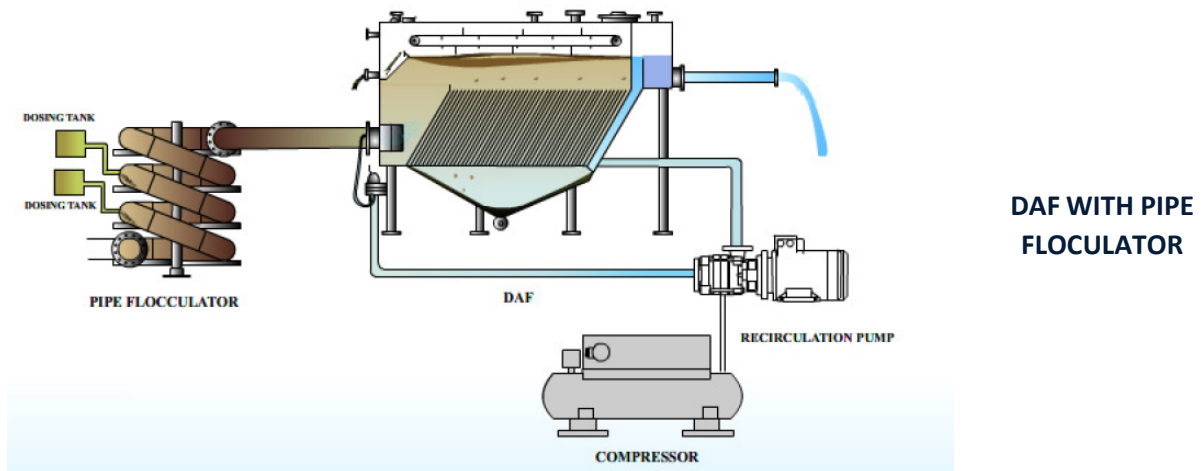
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OILY WATER TREATMENT PLANT

PROCESS DESCRIPTION

Floc is collected in floating layer and treated water leaves the separator via a retention baffle and overflow weirs.

At the outlet of flocculator the pretreated water is being mixed with recycle water in which very finely dispersed air bubbles are contained. These attach themselves to the floc and thus impart strong buoyancy to them. After being homogeneously mixed the liquid is evenly distributed over the whole width of the separator basis. The rapidly rising floc accumulate instantly in a floating surface layer while the slower rising floc are being separated counter currently to the flow and are collected in the bottom cone of the separator.



Part of the treated water is recycled by means of recirculation pump (1250-PU-1244-A/B) for aeration purpose. Recirculation pump is a unique compact micro-bubble generator which generates plenty of micro-bubbles by three hydrodynamic principals;

- Negative pressure sucking both air & water simultaneously from each port.
- Air effectively mixed into water.
- Finally properly producing pressurized air enriched discharge.

Further dissolving of air in water as well as separation of dissolved air will take place in the aeration header. From aeration header, the air-water mixture is dosed to various points of the unit through the set of deaeration valves.

De-pressurization takes place in specifically designed device as a result of which fine air bubbles of 30-50 micron are formed. The size of air bubbles is essential for the efficiency of the floatation unit. Small air bubbles easily adhere to flocs which are formed within flocculator & rise towards the surface of DAF unit. These suspended solids which are collected on the surface of DAF is called FROTH (Sludge) which are skimmed off with the help of skimming device mounted on top of the DAF tank. Froth is scrapped / skimmed off toward one end of the DAF in a separate compartment which is withdrawn by gravity from time to time into oily sludge pit (1250-TK-1300) for further disposal.

The sludge removal by the sludge de-watering/ skimming device is adjusted by level adjustment. Adjustable outlet weirs are provided to set the level in the floatation unit to the optimum position. Heavy sludge is removed from the sludge cones at the bottom of the separation compartment and taken into the oily sludge tank (1250-TK-1300) by gravity for disposal.

The treated water flows from the effluent compartment into the discharge system by other..



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OILY WATER TREATMENT PLANT

MAIN COMPONENTS LIST

ITEM	MARK NO.	TYPE	DESCRIPTION	SIZE/CAPACITY	QUANTITY
1	1250-TK-1210	OILY WATER RETENTION TANK	MAKE- ION EXCHANGE, MOC-GRP/FRP HORIZONTAL TANK	CAPACITY-40 m3 SIZE-3.2 DIA x 5.0 LOS	1 No.
2	1250-PU-1231A/B	TPI* FEED PUMPS	MAKE- SEEPEX/BN-5-6L, MOC-Wetted casing part material: 1.4408/A 743 CF8M Rotor material: SS 304L	5 m3/h @1.0kg/cm2	2 Nos. (1W+1S)
3	1250-SR-1230	TPI* SEPARATOR	MAKE- ION EXCHANGE, MOC TANK-C.S.E.P. PLATES- FRP TANK SIZE- 2.350mLx1.0mWx2.450m H	3.5 m3/h	1 No.
4	1250-TK-1232	OIL DRUM	MAKE- ION EXCHANGE, MOC-GRP TANK SIZE- 0.6M Dia.x0.9m HOS	0.2m3	1 No.
5	1250-TK-1241	DAF** FEED TANK	MAKE- ION EXCHANGE, MOC-GRP/FRP TANK SIZE- 2.3 m Dia.x2.5mHOS	10m3	1 No.
6	1250-PU-1242A/B	DAF** FEED PUMPS	MAKE- SEEPEX/BN-5-6L, MOC-Wetted Casing Part Material: 1.4408/A 743 Rotor material: SS 304L	5 m3/h @1.0kg/cm2	2 Nos. (1W+1S)
7	1250-ZM-1243	PIPE FLOCCULATOR	MAKE- ION EXCHANGE MOC- HDPE	5 m3/h	1 No.
8	1250-TK-1240	DISSOLVED AIR FLOATATION TANK	MAKE- ION EXCHANGE, MOC TANK-C.S.E.P. TANK SIZE- 2.5m L x 1.0m W x 2.3 m H	2.5m L x 1.0m W x 2.3m H	1 No.

* TPI – Tilted Plate Separator

** DAF – Dissolved Air Floatation



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ITEM	MARK NO.	TYPE	DESCRIPTION	SIZE/CAPACITY	QUANTITY
9	1250-PU-1244A/B	AIR SATURATED RECIRCULATION PUMPS FOR DAF	MAKE- ION EXCHANGE CLOSED COUPLED/MONOBLOCK PUMP	1 m3/h @ 4 Bar	2 Nos. (1W+1S)
10	1250-TK -1262	POLYELECTROLYTE PREPARATION TANK	MAKE- ION EXCHANGE, MOC TANK-FRP/GRP TANK SIZE- 0.6 Mdia x 0.9 mHOS	150 Ltrs	1 No.
11	1250-TK-1260	POLYELECTROLYTE DOSING TANK	MAKE- ION EXCHANGE, MOC TANK-FRP/GRP TANK SIZE- 0.6M dia x 0.9mHOS	150 Ltrs	1 No.
12	1250-TK-1261A/B	POLYELECTROLYTE DOSING PUMPS	MAKE- MILTON ROY, MOC- POLYPROPYLENE	10 LPH @0.5kg/cm2	2 Nos. (1W+1S)
13	1250-AG-1262	POLYELECTROLYTE PREPARATION AGITATOR	MAKE-ION EXCHANGE/MILTON ROY MOC-SS316, TYPE- PROPELLER TYPE.	LENGTH 650 MM	1 No.
14	1250-TK-1270	ALUM* DOSING TANK	MAKE- ION EXCHANGE, MOC TANK-FRP/GRP TANK SIZE- 0.6 Mdia x 0.9 m HOS	150 Ltrs	1 No.
15	1250-PU-1271A/B	ALUM* DOSING PUMPS	MAKE- MILTON ROY, MOC- POLYPROPYLENE	8 LPH @ 0.5 kg/cm2	2 Nos. (1W+1S)
16	1250-AG-1270	ALUM* DOSING AGITATOR	MAKE-ION EXCHANGE/MILTON ROY MOC-SS316, TYPE- PROPELLER TYPE.	LENGTH- 650MM	1 No.
17	1250-LCP-0001	STARTER / PLC PANEL	MAKE- ION EXCHANGE/SIEMENS		1 No.

* ALUM – Aluminum Sulfate



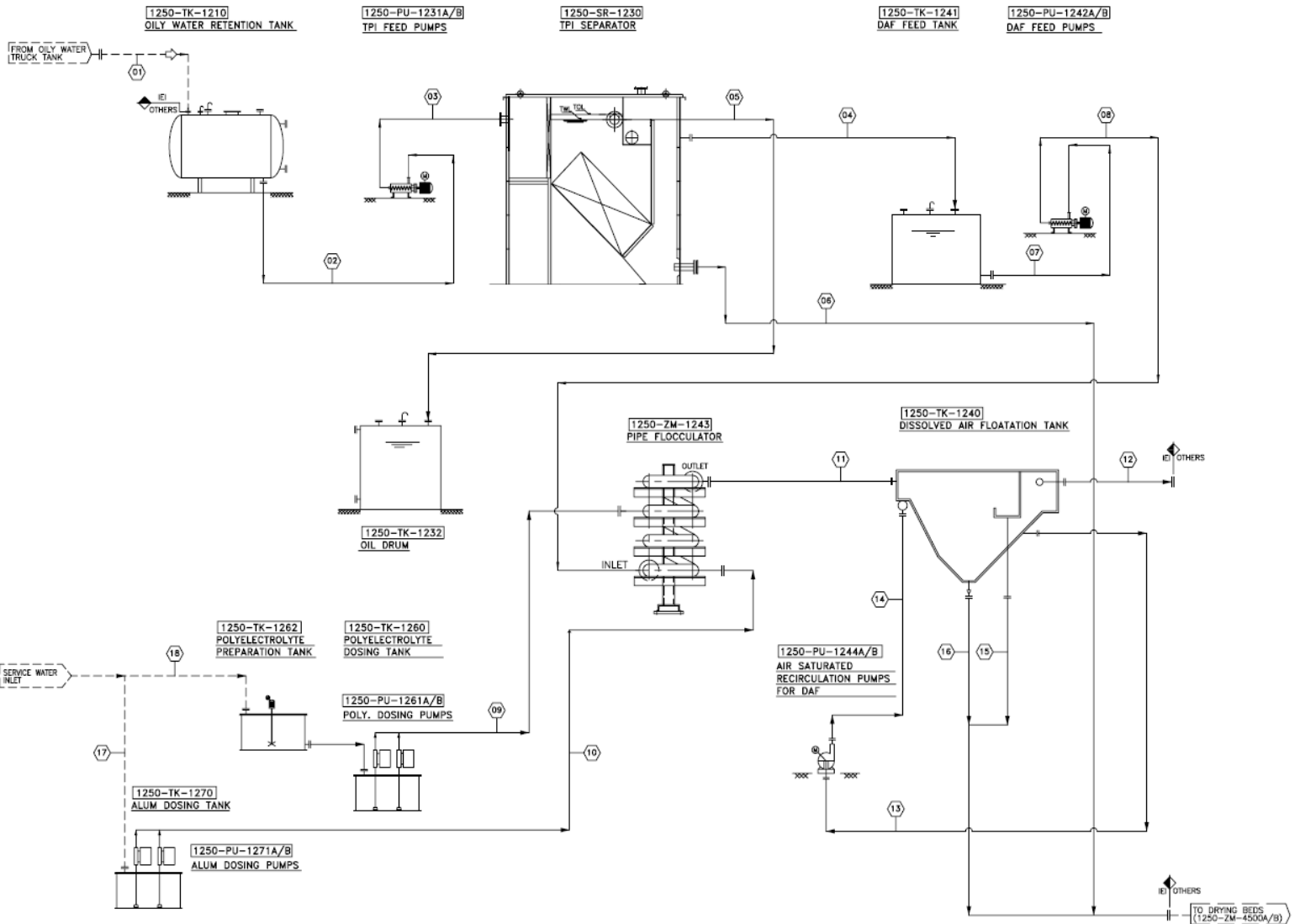
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PROCESS FLOW DIAGRAM



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PROCESS FLOW DIAGRAM

POSITION	UNIT	01	02	03	04	05	06	07	08	09
SERVICE		1250-TK-1210 INLET	1250-TK-1210 OUTLET	TPI INLET	TPI OUTLET	SLOP OIL FROM TPI	SLUDGE FROM TPI	DAF FEED TANK OUTLET	PIPE FLOCCULATOR INLET	ALUM DOSING LINE
FLUID		OILY WATER	OILY WATER	OILY WATER	OILY WATER	SKIMMED OIL	OILY SLUDGE	OILY WATER	OILY WATER	10% ALUM SOLUTION
FLOW RATE	m ³ /hr	3.333	3.333	3.333	3.316	0.003	0.015	3.316	3.316	0.001
AVERAGE FLOW RATE	m ³ /day	40	40	40	39.790	0.030	0.180	39.790	39.790	0.012
OPERATING PRESSURE bar(g)	barg	1.0	Atm	1.5	Atm	Atm	Atm	Atm	1.0	2
OPERATING TEMPERATURE (°C)	°C	5-47	5-47	5-47	5-47	5-47	5-47	5-47	5-47	5-47
SPECIFIC GRAVITY OF FLUID		--	--	--	--	0.9	--	--	--	1.3
OIL SPECIFIC GRAVITY		0.8-0.9	0.8-0.9	0.8-0.9	0.8-0.9	0.9	--	0.8-0.9	0.8-0.9	--
DESIGN PRESSURE	barg	5	5	5	5	5	5	5	5	5
COMPOSITION										
TOTAL OIL CONTENT	ppm	450	450	450	--	--	--	--	--	
OIL DROPLET SIZE	micron	20-150	20-150	20-150	<60	>60	>150	<60	<60	30-40%
TOTAL SUSPENDED SOLIDS	ppm	200	200	200	135	--	15000	135	135	ALUM SOLUTION

10	11	12	13	14	15	16	17	18
POLYMER DOSING LINE	PIPE FLOCCULATOR OUTLET	DAF OUTLET	RECIRCULATION FLOW	RECIRCULATION PUMP DISCHARGE	OILY SCUM OUTLET	OILY SLUDGE OUTLET FROM DAF UNIT	PROCESS WATER FOR ALUM PREP.	PROCESS WATER FOR POLY. PREP.
0.1% POLYMER SOLUTION	OILY WATER+ COAGULANT+ FLOCCULANT	TREATED WATER	OILY WATER+ FLOCS	OILY WATER+ FLOCS+ SATURATED PRESSURIZED AIR	OILY SCUM (FROTH)	OILY SLUDGE	SERVICE WATER (TO BE PROVIDED BY CLIENT)	SERVICE WATER (TO BE PROVIDED BY CLIENT)
0.003	3.320	3.305	1	1	0.002	0.009	--	--
0.040	39.790	39.664	1	1	0.020	0.106	0.012	0.040
2	0.5	Atm	Atm	4	Atm	Atm	Atm	Atm
5-47	5-47	5-47	5-47	5-47	5-47	5-47	5-47	5-47
AROUND 1	--	1	AROUND 1	AROUND 1	0.9	AROUND 1	--	--
--	0.8-0.9	--	0.9	0.9	--	--	1	1
5	5	5	5	5	5	5	5	5
0.1% POLYMER SOLUTION	--	10	--	--	--	--	--	--
	135	50	>50	>50	>50	15000	--	--



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ION EXCHANGE (INDIA) LIMITED
International Division,Rabale

Title:-Datasheet of Alum Dosing System	IEI DOC. NO.-A4-058000120068-12-34-REV D	
	TSU Doc. No.: A1001	
	Checked By : SS	Prep. By : ND

I. OPERATING CONDITIONS

Liquid handled	30 - 40 % Alum Solution	Nature of solids	NA
Specific gravity @ 15 deg C	1.3-1.33	Size of solids	NA
Service temp.	5 - 47 °C	Location	Indoor
pH	2-3	Corrosivity	Non Corrossive
Viscosity @ 20 deg C	25 - 30 cP		

II. ALUM DOSING TANK

Make:	Ion exchange (I) Ltd	Alum Dosing Tank Nozzels Details		
Mark No:	1250-TK-1270	Tag no.	Size	Description
Quantity:	01 No.	25-I-001	25 NB	Service water inlet
Type:	Flat Bottom tank	25-I-002	25 NB	1250-PU-1271A suction
Gross Capacity	300 LTRS	25-I-003	25 NB	1250-PU-1271B suction
Effective Capacity	200 LTRS	25-I-004	25 NB	Agitator
Size:(ID x HT) Mtrs	650mm Dia x 1040mm HOS	25-V-005	25 NB	Vent
Liquid to be handle:	30-40% Alum Solution	100-LT-006	100 NB	Level transmitter
Operating Pressure:	Atmospheric	25-OF-007	25 NB	Drain
Material of Construction:	FRP	25-D-008	25 NB	Overflow
Inspection	As per Approved ITP			

III. AGITATOR FOR ALUM SOLUTION PERPERATION

Make:	ION EXCHANGE	Shaft length	650 mm
Mark No:	1250-AG-1270	Mixer Speed	100RPM
Quantity:	01 No.	Lubrication method & description	Gear Box Lubricated for Life.
Duty	Intermittent	GEAR BOX DETAILS	
MATERIAL OF CONSTRUCTION		Gear Ratio	14:01
Impeller	SS316	Make:	BONFIGLIOLI
Shaft	SS316	Coupling type	NA
Blade	SS316	AGITAOR DRIVE MOTOR	
CONSTRUCTION FEATURE		Motor rating	0.18KW
Type	Propeller type	Motor RPM	1440 RPM
Mixer Mounting	Directly ecentric mounting on the top of THE tank	Motor make	BONFIGLIOLI
Fixing type of agitator on tank	Flanged	Motor frame size	63
No. of blades	3NO'S	Power supply	400 V, 50Hz, 3 phase
		Protection Class	IP 55, Non classified

IV. ALUM DOSING PUMP FOR DAF UNIT

Make:	Milton Roy	Dimension	GA Drawing Attached
Mark No:	1250-PU-1271-A/B	Dosing pump mounting location	
Model:	V-12		
Type:	Positive displacement pump	MATERIAL OF CONSTRUCTION	
Flow Rage	1.2 - 6 LPH	Diaphragm	Teflon faced hypalon
Quantity:	2 Nos.	Head	Polypropylene
Maximum injection pressure	3.5 bar (g)	Ball	Ceramic
Pump rated Speed	90 - 100 SPM	Ring seal	Teflon
Adjustability	10 -100% of full range only by manual	Discharge valve	PVC
	strook length adjustment	Antisypnone valve	PVC
Drive	Solenoid	Foot valve	PVC
End connection	1/2" NPT	Suction Tubing	LDPE
Electrical Supply	230 V, Single phase, 50 Hz AC, 40-70 watts	Discharge piping & Fitting	HDPE
Weight	Approx. 5 kg		

V. PAINTING SPECS :- As per manufacturer's std.

MILTON ROY INDIA (P) LTD

DOCUMENT NAME	DATA SHEET FOR V-SERIES PUMPS	REV NO.	2
DOCUMENT NUMBER	DS-VS	DATE	21.12.2013
APPROVED BY	C.RAMESH	PAGE	1 OF 2
TYPE	ELECTRONICALLY ACTUATED DIAPHRAGM TYPE		
MODEL			V-12
MAX FLOW (IN LPH)			6
MIN FLOW (IN LPH)			1.2
MAX PRESSURE(KG/SQCM)			3.5
DIAPHRAGM SIZE			1.8 SI
STROKE LENGTH			1.5mm (apx)
VOLUMETRIC EFFICIENCY			>55%
TOLERANCE FOR FLOW	0 to +25 %		
REPEATABILITY	+ / - 5%		
STEADY STATE ACCURACY	+/- 2%		
FLOW ADJUSTMENT	a) BY MANUAL STROKE ADJUSTMENT,		
SPEED	100 SPM		
INPUT	230V,1PHASE,50HZ AC		
POWER	40 WATTS (APPX)		
DRIVE	ELECTRICAL POWER UNIT, CLASS "F" INSULATION		
SUCTION LIFT	1.5 M OF WATER COLUMN		
LIQUID END TEMPERATURE	50 DEG C MAXIMUM		
DIFFERENTIAL PRESSURE	0.7 KG/SQ.CM MINIMUM		
SUCTION PRESSURE	1 KG/SQ.CM MAX		
AMBIENT TEMPERATURE	50' C MAX		
OPTIONS	a) SPEED - 25 SPM, 60 SPM		
M O C			
1.HOUSING	30 % GLASS FILLED PP		
2.SPACER	30 % GLASS FILLED PP		
3.DIAPHRAGM	TEFLON FACED HYPALON		
4.BALL	CERAMIC		
5.LIQUIFRAM SHAFT	SS 316		
6.HEAD	PP		
7.VALVE SEAT	PVC		
8.VALVE HOUSING	PVC		
9.RING SEAL	TEFLON		
10.ANTISYPHON VALVE	PVC		
11.FOOT VALVE	PVC		
12.SUCTION STRAINER-Y TYPE	PP		
END CONNECTION	SUCTION - 1/2" BSP(F) FOR Y-STRAINER DISCHARGE - 1/2" NPT(M)		

ELECTROMAGNETIC FLOW TRANSMITTER DATASHEET

CONTRACT NO :05800120068

GENERAL	TAG NO.	1250-FT -1230-1
	SERVICE/LOCATION	INLET OF TPI SEPARATOR (1250-SR-1230)
	LINE NO.	40-OW-1250-014-DW11-N
	FUNCTION	FLOW MEASUREMENT
	TYPE	ELECTRO MAGNETIC
	AREA CLASSIFICATION	ZONE 2, GAS GRP. IIC,TEMP. CLASS T4
SENSOR	MATERIAL OF CONSTRUCTION	
	ENCLOSURE TYPE	SS 304
	LINER	PTFE
	ELECTRODES	SS 316
	GROUNDING RINGS	SS 316
	COIL HOUSING	SS316
	CONNECTION SIZE & RATING	1 " FLANGED ANSI B16.5 # 150 RF
	JUNCTION BOX	NA
POWER SUPPLY	230 VAC,50 Hz	
TRANSMITTER	TYPE	COMPACT TYPE
	MATERIAL OF CONSTRUCTION	
	ELECTRONIC HOUSING	POLYURETHANE COATED ALUMINIUM
	ENCLOSURE CLASS	IP 65
	FEATURES	
	OUTPUT SIGNAL	4-20mA
	LOCAL DISPLAY	LCD DISPLAY
	COMMUNICATION	HART
	CALIBRATION RANGE	0-5.5 m3/hr
	CERTIFICATION	ATEX FLAMEPROOF,Eex d
	CONNECTION DETAILS	
	CABLE ENTRY	1/2" NPTF
	MOUNTING	INTEGRAL
	SENSOR CABLE LENGTH	NA
ACCESSORIES	TAG PLATES, GASKET, MOUNTING BRACKET, BOLTS, CALIBRATION KIT, GROUNDING STRIPS & LUGS ETC.	
PERFORMANCE	ACCURACY	+/- 0.25% OF SPAN OR BETTER
	REPEATABILITY	+0.1% OF READING OR BETTER
FLUID DATA	FLUID	OILY WATER
	NORMAL / OPER. FLOW	3.33 m3/hr
	DESIGN FLOW	5 m3/hr
	LINE SIZE	40 mm
	OPER. SP. GRAVITY	0.8-0.9
	DESIGN PRESS.	5 Bar
	OPER. PRESS.	1 Bar
OPER. TEMP.	5 – 47 deg C	
MAKE & MODEL	MAKE	EMERSON
	MODEL NUMBER	8705TSA010S1WOKDG5B3 / 8732EST1A1EDM4
Notes:	<p>(1) Instruments shall be supplied with stainless steel labels permanently attached to instrument using rivets or screws, containing following information- manufacturers name,Inst tag no.,serial no., model no.,supply voltage,calibrated range,output, and hazardous area certification. The label shall be 75 mm long and 25 mm high with 6 mm characters and a line width of 0.6 mm</p> <p>(2) The vendor has to supply following documents (a) Calibration & Test Certificates (b) Operation & Maintenance Manual in 3 sets</p> <p>(3) Sunshade for solar protection shall be provided</p>	

ION EXCHANGE LIMITED

	IEI DOCUMENT NO.	A4-05800120068-12-240
	CLIENT DOC.NO.	A3101
	REV NO	C
	SHEET NO.	1 OF 1

DATASHEET FOR PRESSURE INDICATOR			
CONTRACT NO : 05800120068			
GENERAL DATA	TAG NO.	1250-PI-1231A/B-1 and 1250-PI-1242A/B-1	
	SERVICE / APPLICATION	REF. ANNEXURE	
	LINE / EQUIPMENT NO.	REF. ANNEXURE	
PROCESS DATA	OPER. TEMP.	5-47 deg C	
	PRESSURE (DESIGN)	5 bar	
	PRESSURE (OPER.)	REF. ANNEXURE	
CONSTRUCTIONAL FEATURES	TYPE	DIRECT READING	
	RANGE bar(g)	REF. ANNEXURE	
	MOUNTING	DIRECT BOTTOM ENTRY	
	PRESSURE ELEMENT	BOURDON TUBE	
	ELEMENT MATERIAL	SS316	
	DIAL		
	SIZE	100 mm	
	COLOUR	WHITE BACKGROUND WITH BLACK MARKING	
	SCALE	LINEAR, GRADUATED IN METRIC UNITS	
	ENCLOSURE MATERIAL	SS 304	
	LENS MATERIAL	SHATTER-PROOF GLASS BOROSILICATE	
	BEZEL RING	BAYONET BAZEL	
	SOCKET MATERIAL	SS316	
	PROCESS CONNECTION-SIZE	1/2" NPT (M)	
	MOVEMENT PARTS	SS304	
	BLOW OUT PROTECTION	BLOW-OUT DISC (NEOPRENE) ON TOP OF CASE	
	ENCLOSURE TYPE	WEATHER PROOF TO IP-68 AS PER IEC: 60529	
OVER RANGE PROTECTION	130 % OF FSD		
ZERO ADJUSTMENT	MICROMETER POINTER,INTERNAL		
PERFORMANCE DATA	ACCURACY	± 1% OF FSD	
ACCESSORIES	2- VALVE MANIFOLD	N.A.	
	SIPHON	N.A.	
	GLYCERINE FILLED	N.A.	
	DIAPHRAGM SEAL	REQUIRED AS PER ANNEXURE	
	MOC	SS316	
	PROCESS CONNECTION	2" 150# RF Flange in SS316	
	SNUBBER / PULSATION DAMPENER	N.A.	
	SS TAG PLATE	PROVIDED	
SUNSHADE	REQUIRED FOR SOLAR PROTECTION		
CERTIFICATION / DOCUMENTATION	GA/CATALOGUES/O & M	BY VENDOR	
	TC & GAURENTEE CERTIFICATE	BY VENDOR	
	QAP	BY IEI	
	INSPECTION	BY IEI	
PURCHASE DETAILS	MAKE	GENERAL INSTRUMENTS CONSORTIUM	
	MODEL NO.	BSPG-V-10-S4-S-S-4-15NTM-0to1.6-A-U=CSU-FD-S6-XX-50ARF-S-L	
<p>NOTES:- (1) Instruments shall be supplied with stainless steel labels permanently attached to instrument using rivets or screws, containing following information- manufacturers name,Inst tag no.,serial no., model no.,supply voltage,calibrated range,output. The label shall be 75 mm long and 25 mm high with 6 mm characters and a line width of 0.6 mm</p>			
ION EXCHANGE (INDIA) LTD			
		IEI DOCUMENT NO.	A4-05800120068-12-201
		DATE	12.02.14
		SHEET	1 OF 3
		REV NO.	C

DATASHEET FOR PRESSURE INDICATOR			
CONTRACT NO : 05800120068			
GENERAL DATA	TAG NO.	1250-PI-1244A/B-1	
	SERVICE / APPLICATION	REF. ANNEXURE	
	LINE / EQUIPMENT NO.	REF. ANNEXURE	
PROCESS DATA	OPER. TEMP.	5-47 deg C	
	PRESSURE (DESIGN)	5 bar	
	PRESSURE (OPER.)	REF. ANNEXURE	
CONSTRUCTIONAL FEATURES	TYPE	DIRECT READING	
	RANGE bar(g)	REF. ANNEXURE	
	MOUNTING	DIRECT BOTTOM ENTRY	
	PRESSURE ELEMENT	BOURDON TUBE	
	ELEMENT MATERIAL	SS316	
	DIAL		
	SIZE	100 mm	
	COLOUR	WHITE BACKGROUND WITH BLACK MARKING	
	SCALE	LINEAR, GRADUATED IN METRIC UNITS	
	ENCLOSURE MATERIAL	SS 304	
	LENS MATERIAL	SHATTER-PROOF GLASS BOROSILICATE	
	BEZEL RING	BAYONET BAZEL	
	SOCKET MATERIAL	SS316	
	PROCESS CONNECTION-SIZE	1/2" NPT (M)	
	MOVEMENT PARTS	SS304	
	BLOW OUT PROTECTION	BLOW-OUT DISC (NEOPRENE) ON TOP OF CASE	
	ENCLOSURE TYPE	WEATHER PROOF TO IP-68 AS PER IEC-60529	
	OVER RANGE PROTECTION	130 % OF FSD	
ZERO ADJUSTMENT	MICROMETER POINTER,INTERNAL		
PERFORMANCE DATA	ACCURACY	± 1% OF FSD	
ACCESSORIES	2- VALVE MANIFOLD	N.A.	
	SIPHON	N.A.	
	GLYCERINE FILLED	N.A.	
	DIAPHRAGM SEAL	REQUIRED AS PER ANNEXURE	
	MOC	SS316	
	PROCESS CONNECTION	2" 150# RF FLANGE IN SS316	
	SNUBBER / PULSATION DAMPENER	N.A.	
	SS TAG PLATE	PROVIDED (REFER NOTE 1)	
SUNSHADE	REQUIRED FOR SOLAR PROTECTION		
CERTIFICATION / DOCUMENTATION	GA/CATALOGUES/O & M	BY VENDOR	
	TC & GAURENTEE CERTIFICATE	BY VENDOR	
	QAP	BY IEI	
	INSPECTION	BY IEI	
PURCHASE DETAILS	MAKE	GENERAL INSTRUMENTS CONSORTIUM	
	MODEL NO.	BSPG-V-10-S4-S-S-4-15NTM-0to6-B-U=CSU-FD-S6-S6-50ARF-S-L	
<p>NOTES:-</p> <p>(1) Instruments shall be supplied with stainless steel labels permanently attached to instrument using rivets or screws, containing following information- manufacturers name,Inst tag no.,serial no., model no.,supply voltage,calibrated range,output. The label shall be 75 mm long and 25 mm high with 6 mm characters and a line width of 0.6 mm</p>			
ION EXCHANGE (INDIA) LTD			
		IEI DOCUMENT NO.	A4-05800120068-12-201
		DATE	12.02.14
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ANNEXURE – PRESSURE GAUGE (PG)

CONTRACT NO : 05800120068

SR NO	TAG NO.	LINE NO.	SERVICE / APPLICATION	FLUID	INST. TYPE	OPERATING PRESSURE bar(g)	RANGE bar(g)	ACCESSORIES REQD	QUANTITY	REMARKS
1	1250-PI -1231A-1	40-OW-1250-012-DW11-N	PRESSURE AT DISCHARGE OF 1250-PU-1231A	OILY WASTE	PRESSURE GAUGE (DIAPHRAGM SEALED)	1.00	0-1.6	DIAPHRAGM SEAL	1	
2	1250-PI -1231B-1	40-OW-1250-013-DW11-N	PRESSURE AT DISCHARGE OF 1250-PU-1231B	OILY WASTE	PRESSURE GAUGE (DIAPHRAGM SEALED)	1.00	0-1.6	DIAPHRAGM SEAL	1	
3	1250-PI -1242A-1	40-OW-1250-031-DW11-N	PRESSURE AT DISCHARGE OF 1250-PU-1242A	OILY WASTE	PRESSURE GAUGE (DIAPHRAGM SEALED)	1.00	0-1.6	DIAPHRAGM SEAL	1	
4	1250-PI -1242B-1	40-OW-1250-032-DW11-N	PRESSURE AT DISCHARGE OF 1250-PU-1242B	OILY WASTE	PRESSURE GAUGE (DIAPHRAGM SEALED)	1.00	0-1.6	DIAPHRAGM SEAL	1	
5	1250-PI -1244A-1	40-OW-1250-041-DW11-N	PRESSURE AT DISCHARGE OF 1250-PU-1244A	OILY WASTE + FLOCS+SATURATED PRESSURIZED AIR	PRESSURE GAUGE (DIAPHRAGM SEALED)	4.00	0-6	DIAPHRAGM SEAL	1	
6	1250-PI -1244B-1	40-OW-1250-042-DW11-N	PRESSURE AT DISCHARGE OF 1250-PU-1244B	OILY WASTE + FLOCS+SATURATED PRESSURIZED AIR	PRESSURE GAUGE (DIAPHRAGM SEALED)	4.00	0-6	DIAPHRAGM SEAL	1	
7	SPARE					1.00	0-1.6		2	
8	SPARE					4.00	0-6		2	

ION EXCHANGE (INDIA) LTD

IEI DOCUMENT NO.	A4-05800120068-12-201
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ION EXCHANGE (INDIA) LIMITED			
International Division, Rabale.			
Title : Datasheet of Roto Pumps		IEI Doc. No. : A4-058000120068-12-32/ REV D	
		Checked By : SS	Prep. By : ND
1. GENERAL		6. DRIVE	
Name	TPI Feed Pump	Type	Direct drive through Geared Motor
Mark no.	1250-PU-1231 A/B	Manufacturer	Nord
Fluid	oily waste	Type	NORD-SK172.1F-80LH/4
Make	Roto Pump	Output speed	439 rpm
Model	RLAB 541 R7 CF 1N	Motor speed	1450 rpm
Quantity	2 Nos. (1W + 1S)	Rated output	0.75 kW
		Starting	Direct online
2. DESIGN CODE	API 676 II Edition with std deviation	Power supply	400 +/-10% V, 50 +/-5% Hz, 3 ph
		Protection Class	IP 55
		Insulation class	F
3. OPERATING CONDITIONS		Efficiency class	IE1
Liquid handled	Oily waste	Mounting	B3-(Foot mounted)
Sp.Gr. at pumping temp.	0.8 - 0.9		
Service temp.	5 - 47 °C		
pH	9 - 11.5	7. MATERIAL OF CONSTRUCTION	
Nature of solids	Suspended partical	Wetted Casing part material	DIN/EN 1.4408/ CF8M/ SS316
Location	Outdoor	Pump shaft	1.4571 / SS AISI 316 - Un Plated
Capacity	5 m3/hr	Bearing housing	CI as per (IS 210 FG 220)
Total developed pressure	1.0 bar(g)	Stator	Nitrile Black
Duty	Continuous	Rotor	SS AISI 316 - Hard Chrome Plated
NPSH available	8 mt	Mechanical seal	Single acting unbalanced Bi-Directional Wave Spring, Face Comb Sic vs Sic, Viton elastomer, SS316 seal MOC
4. CONSTRUCTION FEATURES		Base plate	MS fabricated Epoxy painted
Type of pump	Progressive cavity	Foundation bolts	Stainless steel
No. of stages	Single		
Suction nozzle size	50 NB		
Discharge nozzle size	50 NB		
Pump weight	83 kg		
Nozzle orientation	Suction - Top	8. TESTING & INSP.	As per approved QAP
	Discharge - End		
Coupling	Flexible (Pin & Bush type)	9. PAINTING	
Bearing / Lubrication	CI as per (IS210FG220) /Grease	PUMP	Coating Thickness 150 µm
		MOTOR	Paint Shade RAL 6016(Turquoise Green) Mfg Standard.
		10. ACCESSORIES	
Suction / Discharge nozzle	Flange as perASME B16.5 150#/ RF	Common base frame for pump and motor	
Direction of rotation	Counter clockwise (SOG)	Coupling	
Drive is required with VFD.	No.	Foundation bolts (For details kindly refer pump GA drawing)	
		11. ATTACHMENTS	
Starting torque	27.02 Nm	- Pump performance curve	
Maximum power absorbed	0.48 kW	- Pump GA & Cross sectional Drawing	
Recommended motor	0.75 kW		
Pump speed	439 rpm		
NPSH required	1.8 m		
Noise level	Less than 85 dBA at 1m		

ION EXCHANGE (INDIA) LIMITED			
International Division, Rabale.			
Title : Datasheet of Progressive Cavity Pumps		IEI Doc. No. : A4-058000120068-12-32/ REV-D	
		Checked By : SS	Prep. By : ND
1. GENERAL		6. DRIVE	
Name	DAF Feed Pump	Type	Direct drive through Geared Motor
Mark no.	1250-PU-1242 A/B	Manufacturer	Nord
Service	oily water to DAF unit	Type	NORD-SK172.1F-80LH/4
Make	Roto Pump	Output speed	439 rpm
Model	RLAB 541 R7 CF 1N	Motor speed	1450 rpm
Quantity	2 Nos. (1W+1S)	Rated output	0.75 kW
		Starting	Direct online
2. DESIGN CODE		Power supply	400 +/-10% V, 50 +/-5% Hz, 3 ph
API 676 II Edition with std deviation		Protection Class	IP 55
		Insulation class	F
3. OPERATING CONDITIONS		Efficiency class	IE1
Liquid handled	Oily waste	Mounting	B3-(Foot mounted)
Sp.Gr. at pumping temp.	0.8 - 0.9		
Service temp.	5 - 47 °C		
pH	9 - 11.5	7. MATERIAL OF CONSTRUCTION	
Nature of solids	Suspended partical	Wetted Casing part material	DIN/EN 1.4408/ CF8M/ SS316
Location	Outdoor	Pump shaft	SS AISI 316 - Unplated
Capacity	5 m3/hr	Base plate	MS Fabricated Epoxy painted
Total developed pressure	1.0 bar(g)	Stator	Nitrile Black
Duty	Continuous	Rotor	SS AISI 316 - Hard Chrome plated
NPSH available	8 mt.	Mechanical seal Single acting unbalanced Bi-Directional Wave Spring, Face Comb Sic vs Sic, Viton elastomer, SS316 seal MOC	
4. CONSTRUCTION FEATURES			
Type of pump	Progressive cavity	Foundation bolts	Stainless steel
No. of stages	Single	Bearing housing	CI as per (IS 210 FG 220)
Suction nozzle size	50 NB		
Discharge nozzle size	50 NB		
Pump weight	83 kg		
Nozzle orientation	Suction - Top Discharge - End	8. TESTING & INSP.	As per approved QAP
Coupling	Flexible (Pin & Bush type)	9. PAINTING	
Bearing / Lubrication	CI as per (IS210FG220) /Grease	PUMP	Coating Thickness 150 µm
			Paint Shade RAL 6016(Turquoise Green)
Suction / Discharge nozzle	Flange as per ANSI B16.5, 150# RF	MOTOR	Mfg Standard.
		10. ACCESSORIES	
Direction of rotation	Counter clockwise (SOG)	Common base frame for pump and motor	
Drive is required with VFD.	No.	Coupling	
		Foundation bolts (for details kindly refer GA Drawing)	
5. PERFORMANCE		11. ATTACHMENTS	
Starting torque	27.02 Nm	- Pump performance curve	
Maximum power absorbed	0.48 kW	- Pump GA & Cross sectional Drawing	
Recommended motor	0.75 kW		
Pump speed	439 rpm		
NPSH required	1.8 m		
Noise level	Less than 85 dBA at 1m		

DATA SHEET FOR LEVEL TRANSMITTER (ULTRASONIC TYPE)

CONTRACT NO: 05800120068

GENERAL	Tag Number	Refer Annexure	
	Service/Location	Refer Annexure	
	Function	Transmit & Indicate	
	Type	Non-contact Type, Programmable	
	Area Classification	Zone 2, Gas Grp.IIC,Temp. Class T4	
TRANSMITTER	Enclosure-MOC	Polyurethane-covered Aluminium	
	Enclosure Class	Weather Proof to IP-66	
	Power Supply	24 VDC, loop powered	
	Blanking Distance, mm	304 mm	
	Range	0.3 - 11 m	
	Unit	m (meter)	
	No of measurement	at update interval of 1 sec.	
	Accuracy	Better than or equal to ± 0.2 % of measured range	
	Local Display	Digital LCD Display (configurable in Engg. Units)	
	Output - Signal	Two Wire, 4-20 mA with HART protocol	
	Certification	ATEX Intrinsically Safe	
	Cable Entry	1/2" NPT	
Mounting	Top Mounted		
SENSOR	Measuring Principal	Ultrasonic Echo Level Measurement, Time of Flight	
	MOC – Wet side	PVDF	
	Protection Class	IP-66	
	Measurement Range,mm	Refer Annexure	
	Process Connection	2" NPT thread	
	Cable length	NA (Compact Transmitter cum Transducer)	
	Beam Angle	6 degree max.	
MODEL	Make	EMERSON	
	Model-Transmitter	3105HA1FRCIIQ4ST	
	Documents	Test Certificates,Operation and Maintenance Manual	
Notes:	<p>(1) Instruments shall be supplied with stainless steel labels permanently attached to instrument using rivets or screws, containing following information- manufacturers name,Inst tag no.,serial no., model no.,supply voltage,calibrated range,output, and hazardous area certification. The label shall be 75 mm long and 25 mm high with 6 mm characters and a line width of 0.6 mm</p> <p>(2) Transmitter will be factory calibrated, have self diagnostic capability & complete with mounting accessories</p> <p>(3) Sunshade for solar protection shall be provided</p>		
ION EXCHANGE (INDIA) LIMITED			
	IEI DOCUMENT NO :	A4- 05800120068-12-217	
	REV. DESCRIPTION :	C	
	DATE :	11.02.14	
	SHEET :	1 OF 2	

ANNEXURE – LEVEL TRANSMITTER (ULTRASONIC)

CONTRACT NO : 05800120068

SR NO	TAG NO.	SERVICE / LOCATION	DESIGN PRESSURE bar	OPERATING TEMP deg C	TANK HEIGHT m	TANK DIAMETER m	INST. RANGE m	CALIBRATION RANGE %	REMARKS
1	1250-LT -1210-1	LEVEL IN OILY WATER RETENTION TANK (1250-TK-1210)	5	5-47	5	3.2	0-5 m	0-100 %	
2	1250-LT -1232-1	LEVEL IN OIL DRUM (1250-TK-1232)	5	5-47	0.9	0.6	0-1 m	0-100 %	
3	1250-LT -1241-1	LEVEL IN DAF FEED TANK (1250-TK-1241)	5	5-47	2.5	2.3	0-2.5 m	0-100 %	
4	1250-LT -1262-1	LEVEL IN POLYELECTROLYTE PREPARATION TANK (1250-TK-1262)	5	5-47	0.9	0.6	0-1 m	0-100 %	
5	1250-LT -1260-1	LEVEL IN POLYELECTROLYTE DOSING TANK (1250-TK-1260)	5	5-47	0.9	0.6	0-1 m	0-100 %	
6	1250-LT -1270-1	LEVEL IN ALUM DOSING TANK (1250-TK-1270)	5	5-47	0.9	0.6	0-1 m	0-100 %	

ION EXCHANGE (INDIA) LTD

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