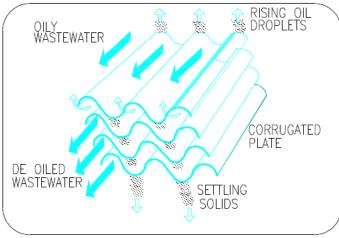
DESCRIPTION

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.

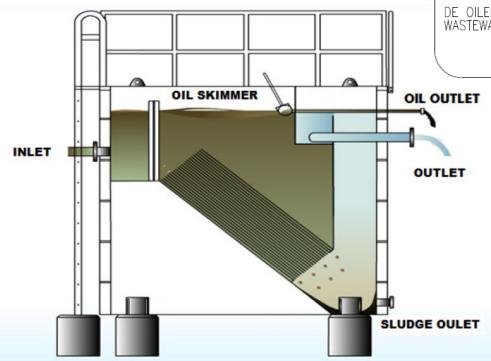
Oily wastewater collection is fed to a retention tank and then pumped to a tilted plate separator (TPI). Water is separated from oil and sludge. Treated water then flows to a dissolved air floatation (DAF) treatment stage along with coagulant and flocculant dosing systems carried out in the pipe flocculator.

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.
УОМ	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



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%



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.

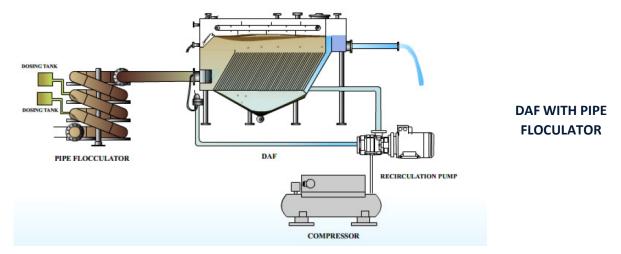
DAF unit is a high built open tank separator for dissolved air assisted separation of floc from water. The water enters the inlet of the compartment via distribution system, which regulates & stabilizes the flow before entering the plate zone. Dissolved air is already dosed before water enters the compartment. 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.



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 flotation 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..



MAIN COMPONENTS LIST

ITEM	MARK NO.	ТҮРЕ	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* SEPATATOR	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



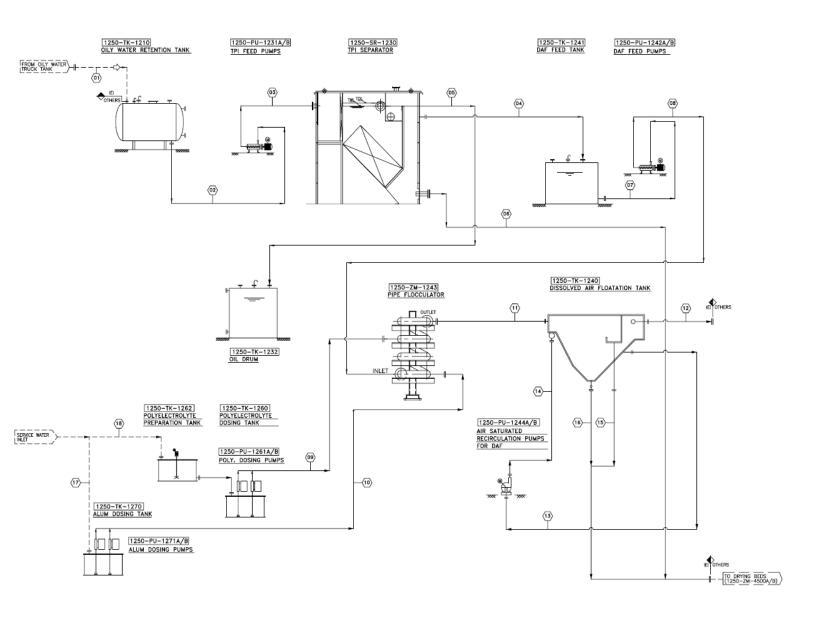
MAIN COMPONENTS LIST

ITEM	MARK NO.	ТҮРЕ	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 CTROLYTE TANK-FRP/GRP		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 MAKE- MILTON ROY, DOSING PUMPS 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



PROCESS FLOW DIAGRAM





PROCESS FLOW DIAGRAM

POSITION	UNIT	<u>(01)</u>	(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 FLOCULATOR 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	m3/hr	3.333	3.333	3.333	3.316	0.003	0.015	3.316	3.316	0.001
AVERAGE FLOW RATE	m3/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.
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
		10						
0.1% POLYMER								
SOLUTION	135	50	>50	>50	>50	15000	-	-



e:-Dat	asheet of Alum Dosing System		IEI DOC. NO	-A4-058000120068-	12-34-REV D
			TSU Doc. No.	: A1001	
			Checked By:	SS	Prep. By : ND
	TING CONDITIONS	20. 40.0/ 41 6.1	Natura of cal	:4-	Into
	quid handled pecific gravity @ 15 deg C	30 - 40 % Alum Solution 1.3-1.33	Nature of sol Size of solids		NA NA
	ervice temp.	5 - 47 °C	Location		Indoor
la	•	2-3	Corrosivity		Non Corrossive
- 1	scosity @ 20 deg C	25 - 30 cP	COTTOSIVILY		Non corressive
	DOSING TANK ake:	Ion ovehange (I) Itd	Alum Dosing	Tank Nozzals Dotail	
	ark No:	Ion exchange (I) Ltd 1250-TK-1270		Tank Nozzels Detail:	Description
			Tag no. 25-I-001	25 NB	·
	uantity:	01 No. Flat Bottom tank	25-I-001 25-I-002	25 NB	Service water inlet 1250-PU-1271A suction
	/pe: ross Capacity	300 LTRS	25-I-002 25-I-003	25 NB	1250-PU-1271A suction
	fective Capacity	200 LTRS	25-I-003 25-I-004	25 NB	Agitator
	ze:(ID x HT) Mtrs	650mm Dia x 1040mm HOS	25-I-004 25-V-005	25 NB	Vent
	quid to be handle:	30-40% Alum Solution	100-LT-006	100 NB	Level transmitter
_	perating Pressure:	Atmospheric	25-OF-007	25 NB	Drain
	laterial of Construction:	FRP	25-D-008	25 NB	Overflow
	spection	As per Approved ITP			0.0.11011
<u> </u>		P. P. P. 1559.777			
AGITA	TOR FOR ALUM SOLUTION PERI	PERATION			l
N	lake:	ION EXCHANGE	Shaft length		650 mm
	lark No:	1250-AG-1270	Mixer Speed		100RPM
Q	uantity:	01 No.		nethod & description	n Gear Box Lubricated for Life.
	uty	Intermittent	GEAR BOX D		<u> </u>
N	ATERIAL OF CONSTRUCTION	+	Gear Ratio		14:01
In	npeller	SS316	Make:		BONFIGLIOLI
Sł	naft	SS316	Coupling type		NA
Bl	ade	SS316	AGITAOR DRIVE MOTOR		
C	ONSTRUCTION FEATURE	•	Motor rating		0.18KW
Ty	/pe	Propeller type	Motor RPM		1440 RPM
	liver Mounting	Directly ecentric mounting on the top of	Motor make		BONFIGLIOLI
IV	lixer Mounting	THE tank	Motor frame	size	63
Fi	xing type of agitator on tank	Flanged	Power supply	/	400 V, 50Hz, 3 phase
N	o. of blades	3NO'S	Protection Cl	ass	IP 55, Non classified
	DOSING PUMP FOR DAF UNIT	Milton Roy	Dimension		
	ake: lark No:	1250-PU-1271-A/B		mounting location	GA Drawing Attached
	lodel:	V-12	אווינטטן bump	mounting location	
_	/pe:	Positive displacement pump	MATERIALO	F CONSTRUCTION	1
	ow Rage	1.2 - 6 LPH	Diaphragm	. construction	Teflon faced hypalon
	uantity:	2 Nos.	Head		Polypropylene
	laximum injection pressure	3.5 bar (g)	Ball		Ceramic
	ump rated Speed	90 - 100 SPM	Ring seal		Teflon
	•	10 -100% of full range only by manual	Discharge va	lve	PVC
— A	djustability	strock length adjustment	Antisyphone		PVC
D	rive	Solenoid	Foot valve	. · -	PVC
	nd connection	1/2" NPT	Suction Tubir	ng	LDPE
		230 V, Single phase, 50 Hz AC, 40-70	Discharge pig	_	HDPE
EI	ectrical Supply	watts		3	
	/eight	Approx. 5 kg			
W	0				

	MILTON R	OY INDIA (F	P) LTD			
DOCUMENT NAME	DATA SHEET	FOR V-SER	IES PUMPS	REV NO.	2	
DOCUMENT NUMBER	DS-VS			DATE	21.12.2013	
APPROVED BY	C.RAMESH		PAGE	1 OF 2		
TYPE	ELECTRON	ELECTRONICALY 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

REPEATABILITY

STEADY STATE ACCURACY

0 to +25 %
+ / - 5%
+ / - 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 TEMPERATURE50 DEG C MAXIMUMDIFFERENTIAL PRESSURE0.7 KG/SQ.CM MINIMUM

SUCTION PRESSURE 1 KG/SQ.CM MAX

AMBIENT TEMPERATURE 50' C MAX

OPTIONS a) SPEED - 25 SPM, 60 SPM

MOC

1.HOUSING30 % GLASS FILLED PP2.SPACER30 % GLASS FILLED PP3.DIAPHRAGMTEFLON FACED HYPALON

4.BALL CERAMIC **5.LIQUIFRAM SHAFT** SS 316 PΡ 6.HEAD 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)

		E (INDIA) LIMITED		
	International	Division, Rabale.		
Title : Datasheet of Dissolved air flot	aion unit	IEI Doc. No. : A4-058000120068-12	-30-REV C	
		TSU Doc. No. : A1001		
		Checked By : SS	Prep	By:ND
1. OPERATING CONDITIONS	Toos :	Nozzle Details	6:	
Name	DAF system To remove Free + emulsified oil from the	Description Inlet	Size 50 NB	Tag no. 50-I-001
Service	waste water	Outlet	50 NB	50-0-001
Make	Ion Exchange (I) Ltd	Outlet for recycled water	50 NB	50-R- 003
Quantity	1 set	Inlet for recycled water	40 NB	40-1-004
2 INTLUENT OUADA CTEDICTIOS		Sludge outlet	50 NB	50-0-005
2. INFLUENT CHARACTERISTICS Specific Gravity of oil	0.8 - 0.9	Oily scum outlet Drive Details	50 NB	50-0-006
Operating temperture	5 - 47 °C	Motor rating	0.37 kW	
Operating pressure	Atmospheric	Motor make	Siemens	
Location	Outdoor	Motor RPM	2900	
Operating flow rate Design flow rate	3.320 m3/hr 5 m3/hr	Power supply Protection Class	400 V 50Hz 3phase A	C
Total inlet oil	oil partical size < 60 micron	Flame proof protection	Provided	
Suspended solids	135 ppm	Material of Construction		
		Tank	Carbon steel as IS 20	52 Gr B
		Plate Packs	FRP (ISOPTHALIC)	
3. TREATED WATER CHARACTERISTICS	< 10 nnm	Weir plate	Carbon steel as IS 20 SS304	oz Gr B
Oil & Grease Suspended solids	< 10 ppm 50 ppm	Chain shaft	SS304 SS304	
ouspeniaca sonas	Τος Αδιτι	Shaft Bearing	CI, lubrication fitting	& Self alignment
4. TOP OILY SCUM	T	Sprocket	SS304	
flow rate	0.002 m3/hr	Aeration Valves	SS304	
		Nuts, bolts, Fasteners	GI	
5. BOTTOM SLUDGE		WEIGHT DETAILS		
flow rate	Approx 0.01 m3/hr	Empty weight	Approx. 2400 kgs	
Sludge consistancy	around 1.5% to 2%	Working weight	Approx. 5300 kgs	
6. UNIT CHARACTERISTCS		III. RECIRCULATION PUMP		
I. PIPE FLOCULATOR		Name	Recirculation pump	
Quantity	1 No.	Mark no.	1250-PU-1244 A/B	
Mark No:	1250-ZM-1243	Make	NIKUNI KTM20F-000	
Design Flow rate Design pressure	5 m3/hr 6 bar	Model No. Service	Air saturated water r	ecirculation
Operating pressure	1.0 bar	Type of pump	Closed-couple pump	con caractori
Pipe diameter	50 mm (NB)	Quantity	2 nos (1w+1s)	
Dosing point with check valve	Provided	Bare pump weight	Approx. 18 kg	
Type of Nozzles Alum Dosing point tag no.	ANSI B 16.5 15-Al-003	Operating condition Location	Outdoor	
Polyelectrolyte dosing point tag no.	15-PI-004	Water flow rate	1 m³/hr	
		air flow rate	0.08 Nm3/hr	
Material of Construction		Discharge pressure	3 bar(g)	
Pipe material	HDPE	Duty	Continuous	
skid Flanges	Carbon steel (IS 2062) Epoxy painted HDPE	Suction current	Flooded 1.3 A	
Skid anchorage type	"L" type	Air water discharge amount ratio	0.08	
	Approx. 3m(L) X 0.5m (W)X0.9m (H)	Air bubles size	50 - 60 micron	
overall dimension of pipe floculator skid	Approx. 311(L) A 0.3111 (W)A0.3111 (H)	Suction nozzle size	RC 3/4	
		Discharge nozzle size	RC 1/2	
II. DISSOLVED AIR FLOTATION UNIT Quantity	1 No.	Suction / Discharge nozzle Material of Construction	Threaded	
Туре	Rectangular	Casing	Cast iron	
Mark No:	1250-TK-1240	Impeller	SS304	
Operating Flow rate	3.32 m3/hr + 1 m3/hr (Recycle)	Drive Details	0.751:::	
Rising rate Effective area	1.5 m/hr 3 m2	Motor rating RPM	0.75 kW 2900	
Design pressure	Atmospheric air	Power supply	400 V 50Hz 3phase A	C
No. of plates	14 Nos		222 0 p.1000 / 1	
Space between plates	30 mm	7. TESTING & INSP.	As per approved QAF	/ITP
Angle of inclination	60 deg			
Individual plate dimension Type of plates fixation onto DAF	1200 m L x 990 m W x 1.2 mm thick	8. PAINTING	As per manufaturer's Minimum thickness 1	
Recycle ratio	Tie Rod 20% - 40%		willing thickness 1	.συμπ
Air Source	Atmospheric air	9. ATTACHMENT	L	
Skimmer drive	Electric motor with gear box	- G.A.& Cross Sectional drawing of D.	ΔF Skid	
Skimmer speed	6 - 8 rpm	- G.A.& Cross Sectional drawing of Di		
Power consumption	0.37 kW	- Pump performance curve	conculation pullps	
ower consumption	5.57 KVV	Recirculation pump mounting detail	ile	
	 	recirculation pump mounting detail	113	
	†			
	<u> </u>	1		

	ELECTROMAGN	NETIC FLOW TRANSMITTE	R DATASHEET	
ONTRACT NO :0580	00120068			
	TAG NO.	1250-FT -1230-1		
ے	SERVICE/LOCATION	INLET OF TPI SEPARATOR	R (1250-SR-1230)	
₹	LINE NO.	40-OW-1250-014-DW11-N	,	
GENERAL	FUNCTION	FLOW MEASUREMENT		
	TYPE	ELECTRO MAGNETIC		
G	AREA CLASSIFICATION	ZONE 2, GAS GRP. IIC,TEM	IP. CLASS T4	
	MATERIAL OF CONSTRUCTION	99.204		
	ENCLOSURE TYPE	SS 304		
	LINER ELECTRODES	PTFE SS 316		
0	GROUNDING RINGS	SS 316 SS 316		
SENSOR	COIL HOUSING	SS 316 SS316		
SE.	CONNECTION SIZE & RATING	1 " FLANGED ANSI B16.5 #	+ 150 DE	
	JUNCTION BOX	NA	130 KF	
	POWER SUPPLY	230 VAC,50 Hz		
	TOWER SOITET	230 VAC,30 Hz		
	TYPE	COMPACT TYPE		
	MATERIAL OF CONSTRUCTION			
	ELECTRONIC HOUSING	POLYURETHANE COATED	O ALUMINIUM	
	ENCLOSURE CLASS	IP 65		
	FEATURES			
\mathbf{R}	OUTPUT SIGNAL	4-20mA		
TRANSMITTER	LOCAL DISPLAY	LCD DISPLAY		
A M	COMMUNICATION	HART		
S	CALIBRATION RANGE	0-5.5 m3/hr		
3	CERTIFICATION	ATEX FLAMEPROOF,Eex d		
Ě	CONNECTION DETAILS			
	CABLE ENTRY	1/2" NPTF		
	MOUNTING	INTEGRAL		
	SENSOR CABLE LENGTH	NA		
	ACCESSORIES	TAG PLATES, GASKET, MO	· · · · · · · · · · · · · · · · · · ·	
		BOLTS, CALIBRATION KIT	Γ, GROUNDING STRIPS &	LUGS ETC.
PERFOR MANCE	ACCURACY	+/- 0.25% OF SPAN OR BET	TER	
ER (A)				
	REPEATABILITY	+0.1% OF READING OR BE	ETTER	
	FLUID	OILY WATER		
4	NORMAL / OPER. FLOW	3.33 m3/hr		
TA	DESIGN FLOW	5 m3/hr		
DA	LINE SIZE	40 mm		
FLUID DA	OPER. SP. GRAVITY	0.8-0.9		
5	DESIGN PRESS.	5 Bar		
도	OPER. PRESS.	1 Bar		
	OPER. TEMP.	5 – 47 deg C		
<u> </u>	MAKE	EMERSON		
MAKE & MODE L) / 0720ECT1 A1EDM4	
<u> </u>	MODEL NUMBER	8705TSA010S1WOKDG5B3	8/32ESTTATEDM4	
otes:	(1) Instruments shall be supplied with state containing following information- many and hazardous area certification. The let (2) The vendor has to supply following to (b) Operation & Maintenance Manual (3) Sunshade for solar protection shall be	nufacturers name,Inst tag no.,serial abel shall be 75 mm long and 25 mm documents (a) Calibration & Test Co 1 in 3 sets	no., model no., supply voltagm high with 6 mm character	ge,calibrated range,output,
		ION EXCHANGE LIMITED		
		ION EXCHANGE LIMITED	IEI DOCUMENT NO.	A4-05800120068-12-240
		ION EXCHANGE LIMITED	IEI DOCUMENT NO. CLIENT DOC.NO.	A4-05800120068-12-240 A3101
		ION EXCHANGE LIMITED		

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	DATASHEI	ET FOR PRESSURE INDICATOR
	Co	ONTRACT NO : 05800120068
	TAG NO.	1250-PI-1231A/B-1 and 1250-PI-1242A/B-1
	SERVICE / APPLICATION	REF. ANNEXURE
GENERAL DATA	LINE / EQUIPMENT NO.	REF. ANNEXURE
	OPER. TEMP.	5-47 deg C
	PRESSURE (DESIGN)	5 bar
PROCESS DATA	PRESSURE (OPER.)	REF. ANNEXURE
	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
CONSTRUCTIONAL	ENCLOSURE MATERIAL	SS 304
FEATURES	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	ACCURACY	± 1% OF FSD
DATA		
	2-VALVE MANIFOLD	N.A.
	SIPHON	N.A.
	GLYCERINE FILLED	N.A.
	DIAPHRAGM SEAL	REQUIRED AS PER ANNEXURE
ACCESSORIES	MOC	SS316
	PROCESS CONNECTION	2" 150# RF Flange in SS316
	SNUBBER / PULSATION DAMPENER	N.A.
	SS TAG PLATE	PROVIDED
	SUNSHADE	REQUIRED FOR SOLAR PROTECTION
	GA/CATALOGUES/O & M	BY VENDOR
CERTIFICATION /	TC & GAURENTEE CERTIFICATE	BY VENDOR
DOCUMENTATION	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

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

ION EXCHANGE (INDIA) LTD		
	IEI DOCUMENT NO.	A4-05800120068-12-201
	DATE	12.02.14
	SHEET	1 OF 3
	REV NO.	C

	DATASHEI	ET FOR PRESSURE INDICATOR
		ONTRACT NO : 05800120068
	TAG NO.	1250-PI-1244A/B-1
	SERVICE / APPLICATION	REF. ANNEXURE
GENERAL DATA	LINE / EQUIPMENT NO.	REF. ANNEXURE
	OPER. TEMP.	5-47 deg C
	PRESSURE (DESIGN)	5 bar
PROCESS DATA	PRESSURE (OPER.)	REF. ANNEXURE
	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
CONSTRUCTIONAL	ENCLOSURE MATERIAL	SS 304
FEATURES	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
	L GGYM L GY	44.0777
PERFORMANCE	ACCURACY	± 1% OF FSD
DATA		
	2-VALVE MANIFOLD	N.A.
	SIPHON	N.A.
	GLYCERINE FILLED	N.A.
	DIAPHRAGM SEAL	REQUIRED AS PER ANNEXURE
ACCESSORIES	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
	CA/CATALOGUES/O A M	DVATADAD
	GA/CATALOGUES/O & M	BY VENDOR
CERTIFICATION /	TC & GAURENTEE CERTIFICATE	BY VENDOR
DOCUMENTATION	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

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

ION EXCHANGE (INDIA) LTD		
	IEI DOCUMENT NO.	A4-05800120068-12-201
	DATE	12.02.14
	SHEET	2 OF 3
	REV NO.	C

				ANNEXURE - PRE	SSURE GAUGE (PG)					
				CONTRACT N	O: 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 EXCHANG	GE (INDIA) LTD					
								IEI DOCUMENT NO.		A4-05800120068-12-201
								DATE		12.02.14
								SHEET		3 OF 3
								REV		C

	Interna	ANGE (INDIA) LIMITED tional Division, Rabale.			
	interna	donar Division, Navaic.			
Title : Datasheet of Roto Pumps		IEI Doc. No. : A4-058000120068-12-32/ REV D			
	· · · · · · · · · · · · · · · · · · ·	III. 200 TOTAL OCCUPANTION OF SELF INC. OF S			
		Checked By : SS	Prep. By : ND		
1. GENERAL		6. DRIVE			
Name	TPI Feed Pump	Туре	Direct drive through Geared Motor		
Mark no.	1250-PU-1231 A/B	Manufacturer	Nord		
Fluid	oily waste	Туре	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 Starting	0.75 kW Direct online		
	API 676 II Edition with std	Power supply			
2. DESIGN CODE	deviation	Protection Class	400 +/-10% V, 50 +/-5% Hz, 3 ph		
	deviation	Insulation class	F F		
3. OPERATING CONDITIONS		Efficiency class	IE1		
Liquid handled	Oily waste	Mounting	B3-(Foot mounted)		
Sp.Gr. at pumping temp.	0.8 - 0.9	Widuming	bs (Foot mounted)		
Service temp.	5 - 47 °C				
рН	9 - 11.5	7. MATERIAL OF CONSTR	RUCTION		
Nature of solids	Suspended partical	Wetted Casing part mate			
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		Single acting unbalanced Bi-Directional		
		Mechanical seal	Wave Spring, Face Comb Sic vs Sic, Viton		
4. CONSTRUCTION FEATURES		- Wicerianical Scal	elastomer, SS316 seal MOC		
Type of pump	Progressive cavity		clastomer, 55510 scar wide		
No. of stages	Single	Base plate	MS fabricated Epoxy painted		
Suction nozzle size	50 NB	Foundation bolts	Stainless steel		
	50 NB				
Discharge nozzle size					
Discharge nozzle size Pump weight	83 kg				
Pump weight	Suction - Top	8. TESTING & INSP.	As per approved QAP		
		8. TESTING & INSP.	As per approved QAP		
Pump weight	Suction - Top	8. TESTING & INSP. 9. PAINTING			
Pump weight Nozzle orientation Coupling	Suction - Top Discharge - End Flexible (Pin & Bush type)	9. PAINTING PUMP	Coating Thickness 150 μm		
Pump weight Nozzle orientation Coupling	Suction - Top Discharge - End	9. PAINTING PUMP	Coating Thickness 150 μm Paint Shade RAL 6016(Turquoise Green)		
Pump weight Nozzle orientation Coupling	Suction - Top Discharge - End Flexible (Pin & Bush type)	9. PAINTING PUMP	Coating Thickness 150 μm		
Pump weight Nozzle orientation Coupling	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas	9. PAINTING PUMP e MOTOR	Coating Thickness 150 μm Paint Shade RAL 6016(Turquoise Green)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5	9. PAINTING PUMP e MOTOR 10. ACCESSORIES	Coating Thickness 150 μm Paint Shade RAL 6016(Turquoise Green) Mfg Standard.		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for	Coating Thickness 150 μm Paint Shade RAL 6016(Turquoise Green) Mfg Standard.		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation	Suction - Top Discharge - End Flexible (Pin & Bush type) CI as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG)	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling	Coating Thickness 150 μm Paint Shade RAL 6016(Turquoise Green) Mfg Standard.		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD.	Suction - Top Discharge - End Flexible (Pin & Bush type) CI as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG)	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No.	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No.	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor Pump speed	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm 1.8 m	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor Pump speed NPSH required	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor Pump speed NPSH required	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm 1.8 m	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor Pump speed NPSH required	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm 1.8 m	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor Pump speed NPSH required	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm 1.8 m	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		
Pump weight Nozzle orientation Coupling Bearing / Lubrication Suction / Discharge nozzle Direction of rotation Drive is required with VFD. 5. PERFORMANCE Starting torque Maximum power absorbed Recommended motor Pump speed NPSH required	Suction - Top Discharge - End Flexible (Pin & Bush type) Cl as per (IS210FG220) /Greas Flange as perASME B16.5 150#/ RF Counter clockwise (SOG) No. 27.02 Nm 0.48 kW 0.75 kW 439 rpm 1.8 m	9. PAINTING PUMP MOTOR 10. ACCESSORIES Common base frame for Coupling Foundation bolts (For de 11. ATTACHMENTS - Pump performance cur	Coating Thickness 150 µm Paint Shade RAL 6016(Turquoise Green) Mfg Standard. pump and motor tails kindly refer pump GA drawing)		

	intern	national Division, Rabale.			
Title : Datasheet of Progr	ressive Cavity Pumps	IEI Doc. No. : A4-058000120068-12-32/ REV-D			
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		Checked By : SS	Prep. By: ND		
1. GENERAL		6. DRIVE			
Name	DAF Feed Pump	Туре	Direct drive through Geared Motor		
Mark no.	1250-PU-1242 A/B	Manufacturer	Nord		
Service	oily water to DAF unit	Туре	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	Power supply	400 +/-10% V, 50 +/-5% Hz, 3 ph		
DESIGN CODE	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				
<u>.</u> рН	9 - 11.5	7. MATERIAL OF CONSTRUCTION	V		
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.		·		
	•	1	Single acting unbalanced Bi-Directional		
4. CONSTRUCTION FEATURE	S	Mechanical seal	Wave Spring, Face Comb Sic vs Sic, Vitor		
Type of pump	Progressive cavity	1	elastomer, SS316 seal MOC		
No. of stages	Single	Foundation bolts	Stainless steel		
Suction nozzle size	50 NB	Bearing housing	Cl as per (IS 210 FG 220)		
Discharge nozzle size	50 NB	Jean M. Briefer M. Bri	o. 45 pc. (15 225 1 5 225)		
Pump weight	83 kg		.		
	Suction - Top	8. TESTING & INSP.	As per approved QAP		
Nozzle orientation	Discharge - End	o. restined a most.	As per approved dati		
Coupling	Flexible (Pin & Bush type)	9. PAINTING			
coupinig	Tiexible (Fill & Bush type)	PUMP	Coating Thickness 150 μm		
Bearing / Lubrication		1 GWII	Paint Shade RAL 6016(Turquoise Green)		
	CI as per (IS210FG220) /Grease	MOTOR	Mfg Standard.		
			im 6 standardi		
Suction / Discharge nozzle	RF	Common base frame for pump a	nd motor		
Direction of rotation	Counter clockwise (SOG)	Coupling			
Drive is required with VFD.	No.	Foundation bolts (for details kin	dly refer GA Drawing)		
Brive is required with VI B.	No.	roundation poits (for details kin	ary refer 67 brawing)		
5. PERFORMANCE	1	11. ATTACHMENTS			
Starting torque	27.02 Nm	- Pump performance curve			
Maximum power absorbed	0.48 kW	- Pump GA & Cross sectional Dra	awing		
Recommended motor	0.75 kW	. amp of the cross sectional Dis			
Pump speed	439 rpm				
NPSH required	1.8 m				
Noise level	Less than 85 dBA at 1m				
NOISE IEVEI	LC33 triair 03 UDA at IIII	1			

	International C	(INDIA) LIMITED		
	international L	Division, Rabale.		
Title : Datasheet of Tilted Plate Sepe	prator	IEI Doc. No. : A4-058000120068-12-31	-RFV C	
Title . Datasticot of Titlou Flate Cope	T	TSU Doc. No. : A4-030000120000-12-31	-11.2 0	
	.	Checked By: PK	Prep. By : ND	
	Т	Officered by . The	Trep. by . No	
1. GENERAL	+	5. OIL SKIMMER DETAILS		
Name	TPI Seperator	Type of skimmer	Slotted pipe	
Mark no.	1250-SR-1230	Diameter of oil skimmer	80 NB	
Service	Free floating oil partical removal	 		
Make	Ion Exchange (I) Ltd	6. NOZZLE DETAILS		
Quantity	1 No.	Description	Size / Tag No	
add inty	1110.	Inlet	50 NB / N1	
2. INFLUENT CHARACTERISTICS	+	Outlet	50 NB / N2	
Specific Gravity of oil	0.8 - 0.9	Skimmed Oil Outlet	80 NB / N3	
Operating temperture	5 - 47 ℃	Sludge Outlet	50 NB / N 4	
Operating temperture Operating pressure	Atmospheric	Sludge Odliet	00 ND / N 4	
Location	Outdoor under shelter	7. MATERIAL OF CONSTRUCTION		
Capacity - Operating	3.333 m3/hr	Tank	CSEP - SA 36 / IS 2062 Gr. A	
Capacity - Design	3.5 m3/hr	Plates	FRP (Isopthalic)	
Total inlet oil (Free+Emulsified oil)	450 ppm	flow distribution baffles	CSEP - SA 36 / IS 2062 Gr. A	
Suspended solids - Setteable	200 ppm	Weir Plate	CSEP - SA 36 / IS 2062 Gr. A	
3. TREATED WATER CHARACTERISTICS		Nozzles	SA 106 Gr. B	
Free oil size	Oil particals < 60 micron	Victolic coupling for oil skimmer	Cast Iron	
Supended solids	135 ppm	Oil Skimmer	Pipe SA 106 Gr. B	
	around 10 25 % subjected to			
water content in skimmed oil	adjustment of weir plate & oil skimmer.			
		7. WEIGHT		
4. UNIT CHARACTERISTCS		Empty weight	Approx. 2450 kgs	
Flow Direction	Counter current	Working weight	Approx. 5850 kgs	
Type of plates	Corrugated			
No. of operating bay	1 No.			
Rising rate	0.7 m/hr	8. TESTING & INSP.	As per approved QAP	
No.of plates/pack	10			
Angle of inclination of plate	45 deg		3 layer of painting primer,intermediate	
No. of packs/ bay	1 No.	o BAINTING	& final paint and total thickness will be	
Provided Effective surface area / pack	11 sq.m	9. PAINTING	around 260 micron	
Plate Spacing	20 mm	7		
Size of unit	2.4 m L x 1.0 m W x 2.5 m H			
Dimension of plate	1.75m L X 0.99 m W X1.2mm THK	10. ANCHORAGE TYPE OF TPI	Chemical Dowel M16 - 125	
Fixing type of the plate pack	Tie Rod.			
	†	11. ATTACHMENT	•	
	-	- G.A. & Cross Sectional Drawing of TPI	Unit	
		<u> </u>		

	DATA SHE	ET FOR LEVEL TRA	ANSMITTER	(ULTRASO)	NIC TYPE)		
		CONTRACT	NO: 05800120	068			
,	Tag Number	Refer Annex	xure				
GENERAL	Service/Location	Refer Annex	xure				
JER.	Function	Transmit &					
Ē	Type	Non-contact	t Type, Program	mable			
9	Area Classification		Grp.IIC,Temp.				
	Enclosure-MOC		e-covered Alum				
	Enclosure Class		Weather Proof to IP-66				
	Power Supply		24 VDC, loop powered				
	Blanking Distance, mm	304 mm	op powers				
ER	Range	0.3 - 11m					
	Unit	m (meter)					
M	No of measurement		terval of 1 sec.				
TRANSMITTER	Accuracy		Better than or equal to ± 0.2 % of measured range				
RA	Local Display		Digital LCD Display (configurable in Engg. Units)				
Ι	Output - Signal		Two Wire, 4-20 mA with HART protocol				
	Certification	· · · · · · · · · · · · · · · · · · ·	ATEX Intrinsically Safe				
	Cable Entry		1/2" NPT				
	Mounting		Top Mounted				
	Measuring Principal	•	Ultrasonic Echo Level Measurement, Time of Flight				
	MOC – Wet side	PVDF					
JR.	Protection Class	IP-66					
SENSOR	Measurement Range,mm		Refer Annexure				
E	Process Connection		2" NPT thread				
01	Cable length	NA (Compa	act Transmitter c	um Transduce	r)		
	Beam Angle	6 degree ma		111111111111111111111111111111111111111	-7		
,	Make	EMERSON					
MODEL	Model-Transmitter	3105HA1FI	RCI104ST				
00	Documents		cates,Operation a	nd Maintenan	ce Manual		
M			,				
Notes:		manufacturers name, Ins ne label shall be 75 mm l ated, have self diagnostic of	t tag no.,serial no long and 25 mm	o., model no.,s high with 6 m	upply voltage, calibrated range, output, m characters and a line width of 0.6 mm		
		ION EXCHANGI	E (INDIA) LIN	MITED			
			IEI DOCUM		A4- 05800120068-12-217		
			REV. DESCI		С		
			DATE:		11.02.14		
			SHEET:		1 OF 2		

CONTRACT NO: 05800120068									
SR	TAG NO.	SERVICE / LOCATION	DESIGN PRESSURE	OPERATING TEMP	TANK HEIGHT	TANK DIAMETER	INST. RANGE	CALIBRATION RANGE	REMARKS
NO			bar	deg C	m	m	m	%	
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 %	

DATE

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