FORM – I [i] /SA-3

*FOR CENTRAL SUGAR FACTORIES SCHEDULE

OF MACHINERY *

• **NAME OF THE FACTORY**	SHRI VIGHNAHAR SAHAKARI SAKHAR KARKHANA LTD. JUNNAR/AMBEGAON, AT NIVRITTINAGAR (DHALEWADI), PO. SHIROLI BK., TAL JUNNAR, DIST PUNE (MAHARASHTRA) PIN – 410 511 PHONE NO. 02132 – 280261,280264, 278282 FAX NO. 02132-245476
• **REG. NO**	PNA/PRG/A-3 DATED 17/10/1981
• **LICENCE NO**	CIL/478(84) DATED 13/12/1984
• **MAKE**	RICHARDSON & CRUDDAS (1972) LTD., BOMBAY – 8
• **CAPACITY**	5000 TCD
• **TYPE OF PLANT**	SEMI-ELECTRIC DRIVEN
• **PROCESS**	DOUBLE - SULPHITATION PROCESS

- **WEIGH BRIDGE**

5 NOS, AVERY MAKE

2 NOS, 30 M.T. CAPACITY

2 NOS, 10 M.T. CAPACITY

1 NO, 50 M.T. CAPACITY

I MILLING

I st TANDAM

- **CANE UNLOADER -** Mechanical cane unloader of Standard Plates and Vessels Kolhapur make. Three motion all motorized span 22 x 30 x 10 mtrs. Capacity 5 M.T. - 3 Nos.

1) CANE CARRIER .

A) Cross Feeding cane Carrier & Feeder table.

1. Nos. 2 Nos
2. Size – 7 x 6 mtrs.
3. Angle of Inclination with carrier - 6°
4. Drive H.P. – 15
5. No. Of chains – 8 strand
6. Dist. pitch two arms - 600 mm.
7. Gear box ratio – 60:1

B) Main Cane Carrier

Chain slat apron type cane carrier Part (A)
And Part (B) rake type cane carrier

Size, width and length between center and lengthof horizontal parts and Feeding depth

Sr	Particulars	PART (A)	PART (B)
1.	Size	1525x46545mm	1525x24352mm
2.	Inclined Part length	14850 mm	24352 mm
3.	Horizontal part length	31695 mm	~~23100~~ --
4.	Length between two centres.	46545 mm	24352 mm
5.	Angle of inclination	15° & 12°	18 .5°
6.	Speed	10 Mtr/Min	25.5 Mtr/Min
7.	Feeding depth	870 mm	--
8.	Chain two strands pitch	152.4 mm	229 mm
9.	Breaking load of chain	40000 Kgs	60000 Kgs.

C) Push Roller

Swing dia 650 x 1850 mm LG
Drive Motor H.P. 20, RPM-1450
Reduction G.B. Ratio – 60:1

II) Preparation of cane -

A) Cane kicker

Knives type cane Kicker
No.of arms – 24
Size 1000 x 3190 mm. length
Direction of rotation = Reverse
Location – 4000 mm. before leveller centre
Speed reduction Gear Box ratio 20:1
Motor speed – 1400 RPM, 30 HP.

B) Cane Knives.

State No. Of sets of No. Of pitch of blades in each set and particulars of drive specifying speed

One set of leveller driven by electric motor coupled by flexible coupling. Leveller on part 'A' Carrier

H.P. for each set, clearance between tips and carrier bed location and knives (If two sets centre to distance)

Sr.	Particulars	Leveller
1.	No. Of Knives	36
2.	Pitch	60 mm
3.	Dia of tip location (Swing diameter)	1300 mm
4.	Setting	250 mm
5.	Speed	585 R.P.M.
6.	H. P.	250 H.P.

C) Particulars of the other cane preparatory equipment if any. : Not Applicable

III) CRUSHERS -

State type and number of Crushers and for each crusher. Number of roller and the diameter and length of each roller in mm.

: Not Applicable

IV) FIBRIZER -

State type of fibrizer and give its details

Sr. No	Particulars	Details.
1.	Make and type	MERU make Swing type
2.	No. of Hammers	96
3.	Size	2130 mm. (Swing dia.)
4.	Speed.	750 RPM
5.	Drive.	800 HP
6.	Location.	After leveller on 1st Cane carrier.

a) If electric motor used state no. Type of motor, particulars of current, No. Of crushers and mill driven by each motor and H.P. developed of full load by each motor.

No – Two
Make – Kirloskar
Type – Slipring Induction
Volt – 415, RPM – 760
HP/KW – 600 KW

V) Rotary Juice Screen

Make	:	Suviron Equipment Pvt. Ltd.,
Screen Size	:	Ø 1800 x 3600 mm long
Overall size of screen drum assembly	:	Ø 1800 x 4850 mm long
Overall size of entire screen assembly	:	2150 mm wide x 5650 mm long x 2750 mm ht.
Drive	:	7.5 HP / 1440 RPM
Planetary gear box Make	:	Premier
Ratio	:	27.5
Type	:	2722
Sprocket Drive	:	18T / 92 T
Drum Final RPM	:	10.30

VI) MILLS:

State No. of mills & for each mill the diameter & length of roller in mm. also Mention if mills have force feed arrangement, their type & number.

4 Mills, 12 Rollers Tandem Size 840 x 1525 mm. WIL make

Particular	Mills			
	I	II	III	IV
Diameter	840mm	840 mm	840 mm	840 mm
Length	1525m	1525mm	1525mm	1525mm

There are TRPF system for 1st and 4th mill having roller of Tip to Tip dia 800mm and band dia 770mm x 1525 mm long and under feed rollers for 2nd & 3rd mill of size dia 600 mm. x 1525 mm.

1) Surface and Juice Grooves:

A) Circumferential 'V' Grooves

No. of Grooves on roller				
Roller	**1 Mill**	**II Mill**	**III Mill**	**IV Mill**
Top	24	30	30	50
Bottom	25	29	29	49
Pitch (mm.)	60	50	50	30

B) Circumferential Messchaert Grooves on Feed Roller

Particulars	MILLS			
	I	II	III	IV
Nos.	20	14	14	22
Pitch (mm.)	60	100	100	60

2) Mill Setting:

(PCD to PCD) mm.

Rollers	Mills			
	I	II	III	IV
Feed	33	25	22	13
Discharge	13	8	5.5	4

3) Type & Setting of Trash Plate (mm.)

Floating Type of trash plate

Mills	I	II	III	IV
Setting	74	50	45	34.5

4) Speed of Rollers in RPM and M/ Min.

Mills	I	II	III	IV
RPM	5	5	4.5	4.5
M/ Min.	13.2	13.2	11.9	11.9

5) Make and type of Hydraulic system

Make- BEMCO
Type – Hydraulic accumulation type.

6) **Total hydraulic pressure on top roller (in kgs/cm^2) hydraulic load in M.T./hrs. length of roller**

Particulars	Mills			
	I	II	III	IV
Pressure (Kgs/cm^2)	160	160	170	180
Total Load (M.T.)	281.52	281.52	299.11	316.70
M.T./Length Mtr	184.60	184.60	196.10	207.70

7) **Length and diameter of Journals in mm.**

Mills	I	II	III	IV
Length	452	452	452	452
Diameter	380	380	380	380

8) Drive for crusher and mills –
   a) If steam engine used state no. and type of engine & no. for crusher & mill driven by each engine the dia. of cylinder stroke speed and normal indicated H.P. :- Not Applicable
   b) Mill drive :- 2 Nos, 750 KW, 1000 RPM, AC Motor VFD Drive, 2 Mills are driven by one motor.

VII) INTER - CARRIER-

2 Nos. Apron type from 1st mill to 2nd mill &2nd mill to 3rd mill	
1.	Size – 1525 x 2080 mm.
2.	Angle of Inclination 24 °
3.	Speed – 12.2 mtr. /min.
4.	Three strands chain pitch 3.17 "
5.	Breaking load of chain – 14000 kgs.

1 Nos. Short Space Rake type carrier from 3rd mill to 4th mill	
	Size – 1525 x 2915 mm.
2.	Angle of Inclination 69 °
3.	Speed – 25.4 Mtr/Min
4.	Two strands chain pitch ---150mm"
5.	Breaking load of chain – 40000 kgs.

IX) BAGASSE ELEVATOR-

a) Type, length and drive

Type	- Chain Rake type
Size (Centre to Centre)	- 1000 x 24500 mm.
Capacity	- 40000 kgs/Hr.
Speed	- 28.8 m/min.
Drive	- Electric Motor
H.P.	- 25 HP
Speed	- 1440 RPM
Speed reduction by.	- I) One gear box type U 1000 Ratio – 30:1

b) Return bagasse carrier

Type	- Chain Rake type
Size (Centre to Centre)	- 1000 x 58600 mm.
Capacity	- 40000 kgs/Hr.
Speed	- 32.4 m/min.
Drive	- Electric Motor
H.P.	- 40 HP
Speed	- 1440 RPM
Speed reduction by.	- I) One gear box type U 1200 Ratio – 40:1

a) Gearing arrangement type reduction ratio and type of teeth

Two spur wheel-gearing arrangement for driving four mills and two stage-enclosed precision R.G. Box WIL make.

Details: -

a) First Gear Box (slow speed): Single pair reduction by helical teeth pinion and gear wheel. WIL make. Type – K 75/90, Ratio – 983: 30.69
b) Final gear train pair of spur pinion and gears wheel ratio 122:29, Pinion teeth – 29 OD. 775 mm. Gear wheel teeth 122, OD 3100 mm.
c) Overall reduction ratio (moter to Mill) – 1000: 7.43

X) IMBIBITION :-

State whether used in hot or cold & arrangement provided for measuring or weighing.

Imbibition by hot water before last mill only.
One weighing scale of 3.5 Tones capacity is used for measurement of water.

2nd TANDEM
NEW MILL

CANE UNLOADER-

3 Nos. Mechanical cane Unloaders, three motion, all motorized

a) Nos, Make & Capacity

Cane unloading on feeding table
1) Make - Kay Iron works, Satara /
Capacity - 5 M.T. – 2 Nos
2) Make - Hallmark Technical Services Pvt Ltd., Pune
Capacity - 10 M.T. – 1 No.
3) Span – 22 x 30 x 10 Mtrs.

ROTATING TYPE TILTING TABLE CANE UNLOADER.

Make	- SKS Global Technologies,
Type	- SKS – 50 (R),
Type of un-loader	- Rotating platform,
Cap.	- 50 MT

FEEDER TABLE -

2Nos.	
1) Size	- 7 x 6
2) Angle of inclination with	- 6 °
3) Drive	- 15 HP 1450 RPM
4) No. of pitch	- 600 mm.
5) Gear box ratio	- 50:1

I) CANE CARRIER -

Size, width & length between centre and length of horizontal part and feeding depth.

Size	- 1700 mm. Width
1) Inclined part length	- 4000 mm.
2) Horizontal part length	- 30000 mm
3) Length between two centre	- 53725 mm
3) Angle of inclination	- 17 °/ 6°
4) Speed	- 3 to 15.51 M/min
5) Feeding depth	- 967 mm
6) Chain three strands pitch	- 150 mm
7) Breaking Load	- 40000 kgs

II) PREPARATION OF CANE

A) CANE CHOPPER -

Size	- Ø 1600 mm
1) No. of Knives	- 30
2) Direction of rotation	- Forward
3) Location	- Before Leveler
4) Drive	- 125 HP. 1440 RPM

5) Gear Box Ratio	- 4.88:1
6) Setting.	- Tip of knife to top of slat 400 mm. 860 mm

C) CANE LEVELLER

State No. Of sets, pitch of Blades in each set & Particulars of drive specifying RPM H.P. for each set clearance between tips and carrier bed location & knives (If two sets centre to centre distance

1) No.of knives	- 42
2) Pitch	- 40 mm
3) Size	- ϕ 1600 mm. (Swing dia)
4) Setting	- 25 mm. (Tip of knife to top of slat) 287 mm
5) Direction	- Forward
6) Drive	- 550 HP. 560 RPM

D) PUSHER ROLLER

1) Size	- ϕ 1500 mm
2) Direction	- Forward
3) Drive	- 20 HP. 1440 RPM
4) Gear Box Ratio	- 40:1

E) FIBRIZER -

State type of fibrizer & Give its details.

a) No. of hammers	- 108
b) Size	- ϕ 2130 mm (swing dia)
c) Speed.	- 745 RPM
d) Drive.	- 1500 KW
e) Location.	- After pusher roller

Electric Motor Drive

a) No	One
b) Make	Crompton Greaves
c) Type	Slipring H.T Motor .
d) KW & RPM	1500 & 745
e) Amp	103

III) CRUSHERS -

State type & No. of crushers & for each crusher No. of rollers and dia and length of each roller in mm.

Not Applicable

IV) Rotary Juice Screen

M/s Hi-Tech Engineers , (Meerut)

Screen Size – Ø 1800 x 3600 mm Long
Drive – 10 HP, RPM -1440,
Sprocket Drive 2" pitch – 19 T / 95 T

Planetary Gear Box make - Gear Torque Transmission, Satara, Ratio – Type –
Drum Final RPM – 10

V) Mills

State No. of mills & for each mill the diameter & length of roller in mm. also Mention if mills have force feed arrangement, their type & number.

4 Mills, 12 Rollers Tandem Size 910 x 1700 mm. 3 Nos Meru make, 1 No. Vikram Project make

	Mills			
	Meru make Mill			VPL Make
Particular	**I**	**II**	**III**	**IV**
Diameter Length	910 mm 1700mm	910 mm 1700mm	910 mm 1700mm	910 mm 1700mm

There are TRPF system for all mill having roller of Tip to Tip dia 915mm and band dia 785 mm x 1700mm long.

1) Surface and Juice Grooves:

A) Circumferential 'V' Grooves

No. of Grooves on roller				
Roller	**1 Mill**	**II Mill**	**III Mill**	**IV Mill**
Top	34	34	56	56
Bottom	33	33	55	55
Pitch (mm.)	50	50	30	30

B) Circumferential Messchaert Grooves on Feed Roller

Particulars	MILLS			
	I	II	III	IV
Nos.	30	30	24	24
Pitch (mm.)	50	50	60	60

2) Mill Setting:

(PCD to PCD) mm.

Rollers	Mills			
	I	II	III	IV
Feed	54.5	34.5	30	27.5
Discharge	20.5	13.5	13	15.5

3) **Type & Setting of Trash Plate** (mm.)

Floating Type of trash plate

Mills	I	II	III	IV
Setting	98	63	55	57

4) **Speed of Rollers in RPM and M/ Min.**

Mills	I	II	III	IV
RPM	4.5	4.5	4.5	3.8
M/ Min.	12.86	12.86	12.86	10.86

5) **Make and type of Hydraulic system**

Make- Kamakshi Engineering, Belgaum
Type – Hydraulic accumulator type.

6) **Total hydraulic pressure on top roller (in kgs/cm^2) hydraulic load in M.T./hrs. length of roller**

Particulars	Mills			
	I	II	III	IV
Pressure (Kgs/cm^2)	160	160	170	180
Total Load (M.T.)	341.84	341.84	363.21	361.95
M.T./Length Mtr	201.10	201.10	213.65	212.91

7) **Length and diameter of Journals in mm.**

Mills	I	II	III	IV
Length	430	430	430	430
Diameter	540	540	540	540

V) INTER RAKE CARRIER

State No, size, angle of Inclination

Nos	- 4 Nos
a) Size	- 1700 mm Wide
b) C to C Dist.	- I. 6817 III. 7630
	- II. 13955 IV. 5895
c) Chain Pitch	- 229 mm.
d) Angle of Inclination	- I. 51° III. 44°
	- II. 37° IV. 62°
e) Breaking Load	- 50000 Kgs.
f) Distance bet^n 2 rakes	- 600 mm.
g) Drive	- 25 H.P. 1475 RPM
h) Planetary G.B. Ratio	- 177:1
i) Speed.	- 26.7 mtr/min.

VI) Drive for crushers and Mills-

Three Nos (1st, 2nd & 3rd) are driven by electric motors of 500 KW, 1000 RPM with planetary gear box of out put RPM – 5.6

And 4th Mill driven by 500 KW, 1000 RPM D.C. Drive motor with reduction gear box and open gearing having combined reduction ratio 1000:4.5

VII) BAGASSE ELEVATOR-

a) Type	- Chain Rake Type
b) Size (mm)	- 1500 mm. x 26000 mm
c) Capacity	- 40000 Kgs/hr.
d) Speed	- 28.7 m/min.
e) Drive	- 40 H.P. 1440 RPM
f) Reduction Ratio	- 22:4:1, (13T/61T respectively)
g) Chain pitch (mm)	- 150 mm.

VIII) RETURN BAGASSE CARRIER-

a) Type	- Chain Rake Type
b) Size (mm)	- 1500 mm. x 65485 mm
c) Capacity	- 40000 Kgs/hr.
d) Speed	- 25 m/min.
e) Drive	- 50 H.P. 1440 RPM
f) Reduction Ratio	- 25:1, 13T/61T respectively
g) Chain pitch (mm)	- 150 mm.
h) Driven sprocket	- 14T x 150 Pitch
i) **Drive (Standby)**	- Make – Top Gear Transmission, Satara - Planetary – 4 B - HP – 75, RPM – 1440 - 127.15: 1 - Model – 3670

IX) RETURN BAGASSE ELEVATOR -

a) Type	- Chain Rake Type
b) Size	- 1000 mm. x 22200 mm
c) Drive	- 40 HP. 1440 RPM
d) Reduction Ratio	- 30:1, 61:13 respectively
e) Chain pitch	- 150 mm.
f) Driven sprocket	- 14T x 150 Pitch

X) CROSS BAGASSE CARRIER-

a) Type	- Chain Rake Type
b) Size (mm)	- 1200 mm. x 50000 mm
c) Capacity	- 40000 Kgs/hr.
d) Speed	- 25 m/min.
e) Drive	- 25 H.P. 1440 RPM
f) Reduction Ratio	- 40:1, 12T / 36T respectively
g) Chain pitch (mm)	- 152.4 mm.

XI) IMBIBITION - By hot water before 4th Mill. Water flow meter used for water measuring.

CLARIFICATION PLANT

I) MEASUREMENT & WEIGHMENT OF RAW JUICE-

a) Measuring equipment for water
State no. type & weighing capacity per charge of each tank and arrangement provided for recording quantity of water.

1 Nos.
Platform type water weighing scale of **capacity 3.5 M.T. / tip** for Imbibition water.
1 No online water flow meter to measure flow in m^3/hr. for LPE mill.

b) Weighing Equipment:
State nos. type & weighing Capacity per charge of each tank and arrangement Provided for recording quantity of juice.

1 No.
Automatic Juice weighing scale having **5.00 M.T.** Capacity / tip. Automatic counter is provided for recording number of discharge.
1 No. on line juice flow meter to measure flow in m^3/hr. for NEW mill.

II) Juice Heaters

-

10 - Nos.
High Velocity vertical multiple circulation type juice heater.

State no; type and heating surface (m^2) of each, and purpose for which it is used.

Particulars	V.L.J.H	CLJH	RJH	SJH	
	1 No	2 Nos	2 Nos	3 Nos	1 No.
Heating Surface (m^2)	400	300	460	350	500
No.of Tubes	660	552	864	620	924
Size of Tube					
Inner Dia.mm	42	42	42	42	42.6
Outer Dia. mm	45	45	45	45	45
Length (mm)	4500	4150	4050	4150	4050
No. of passes	20	24	24	20	22
No.of tubes per pass	33	23	36	31	42

JUICE HEATING -

A) Raw Juice Heating

I) First heating by vapour line juice heater (400 m^2) on IVth Body (440 m^3) vapour.
II) Second heating by one vertical Juice Heater (460 m^2) on 2nd Body (440 m^3) vapour.

B) Sulphur Juice Heating

I) First heating by one vertical juice heater (350 m^2) on IInd effect of DEVC (1300 m^3)
II) Second heating by one vertical Juice heater (350 m^2) on exhaust OR I st effect of DEVC (3600 m^3).

C) Clear Juice Heating

I) Heating by one vertical juice heater (300 m^2) on Exhaust or I st effect of DEVC vapour (3600 m^3).

III)JUICE SULPHURING

2 Nos.

TANK

State no; type and capacity in cubic meter and its dimensions.

Continuous Juice sulphuring units.

Sr.	Particulars	One No. for Juice	One No. for filtrate
1.	Working cap. (m^3)	42	6
2.	Height (mm)	4080	1000
3.	Diameter (mm)	4900	2650
4.	Retention Time	9.00 Min.	8.00 Min
5.	Stirrer speed	16 RPM	Natural circulation

IV) SUBSIDERS

a) **Settling tanks**
Nos. and working cap. (m^3)

Nil.

b) **Continuous settler**
No. and working capacity in (m^3) of each

2 Nos Continuous Settlers.

Sr.	Particulars	TRAYLESS CLARIFIER	444 Comp. Clarifier
1.	Make	SUVIRON	Universal Engg.
2.	No.of compt.	--	4
3.	Capacity (m^3)	310	526
4.	Height (mm.)	3000	6100
5.	Diameter (mm)	10000	10363

V) SULPHUR GAS PLANT

a) Sulphur furnace
State Nos. type of furnace, tray area in m^2 for each furnace & Capacity in Kg/hr. each.

4 Nos.
Automatic digitally controlled operated automatic continuous sulphur burner.

I) 1 No. having cap. 70 kg/hr. of sulphur
II) 2 Nos. having cap. 100 kg/hr. of sulphur
III) 1 No. having cap. -200 Kg/hr. of sulphur.

VI) Air Blowers

1) Juice Sulphitor, Model – SR 113
Cap. – 800 m^3,
2) Syrup sulphitor – Model – SR 069
Cap. – 600 m^3

b) Vapcon System	**-- 1 No** For syrup sulpher burner
Make :	Addresh Engg. & sugear Equpt. P. Ltd.,
Size :	ID – 700 x 2200 Ht. x 10 thk.
No of heater:	

-- 1 No For Juice sulphiter sulpher burner

Make : Addresh Engg. & sugear Equpt. P. Ltd.,

Size : ID – 800 x 2800 Ht. x 10 thk.

No of heater:

C) Air Compressor:

State Nos. type cap. in m^3 / hr displacement per unit and discharge pressure in Kg/cm^2 **-- 4 Nos. .**

Sr.	Particulars	Compressor No.1	Comp. No.2	Comp. No.1
1.	Make	Kay International	INGERSOLL RAND	
2.	Type	WC	ESV-1-LUBESV-1-LUB	
3.	Size (Inch)	8 x 7	7 x 5	9.5 x 5
4.	Cap. (m^3/hr)	900 CFM	225.00	404.17
5.	Speed(RPM)	1336	675	675
6.	Discharge pressure (Kg/hr)	1	1.36	1.36

VI) FILTER PRESSES

a) State Nos. Type & filtering area (m^2) of each and tightening device Juice & scum pressure to be given separately I & II to be given separately

Nil

b) **Rotary vacuum filter :**

State No; type, make, diameter, length and filtering area together with the details of screen.

3 Nos

Sr. No	Particulars	Vacuum filter	Vacuum filter
1.	Make	UNIVERSAL HEAVY ENG. CO. LTD.	UNIVERSAL HEAVY ENG. CO. LTD.
2.	Drum size (mm) No. i) Diameter(mm) ii) Length (mm)	8FT x 16 FT- 1 2440 4880	10FT x 20FT 2 3050 6100
3.	Filtering Area m^2	38	55
4.	Screen Details	Stainless steel	Stainless steel
5.	Screen size	2.44x0.3x20 Swg.	3.05x0.3x30 Swg
6.	No.of holes/ sq.inch	625	625
7.	Hole Dia. (mm)	0.5	0.5

VII) MILK OF LIME PLANT

State No; type and size of lime slacker and also mention size of storage tank, capacity and speed.

A) Rotary type Lime Slacker – 1 No

a) Size I) Length - 4500 mm.

II) Diameter - 1500 mm.

b) Capacity - 1200 kgs/hr.

c) Speed - 6-8 RPM

B) Storage tank - 3 Nos

Size of Tank

i) Diameter - 2250 mm.

ii) Height - 2450 mm.

Stirrer speed 37 RPM

A) Lime Classifier - 1 No

Dorr make, Rake type, Lime classifier, Size L 15' x Q 2' x Ht. 2' –10" RPM 10

VIII) CARBONATION PLANT

To be filled up with only for the factories following carbonation process for clarification of juice.

Not Applicable.

IX) ALTERNATIVE EQUIPMENT

Give here particulars of equipment if any used of processing item

Not Applicable.

EVAPORATION AND BOILING PLANT

I) EVAPORATORS

The Vessels from which vapours are bled should be specified stating the use to which the bled vapours are put to

Double Effect Vapour Cell + Quadruple set.

a) State No.& for each evaporator the number of vessels & total heating surface (m^2) of each vessel together with diameter of tube & height & diameter of the body and size of vapour pipes of each body.

Sr No	Particulars	New Rising film evapo-rator	Old Rising film evapo-rator	Robert body	Falling film evapo-rator	Quadruple Set			
						I	II	III	IV
1.	Heating surface (m^2)	3600	1300	2600	1040	560	440	440	440
2.	Body Dia. mm.	5302	2800	5300	2450/ 3000	3094	2789	2789	2789
3.	Body Height mm.	7891	8475	5500	11000	6505	6505	6505	6505
4.	No.of Tubes	5314	2160	7044	1442	2125	1669	1669	1669
5.	Tube size	--	--		--	--	--	--	--
	i) Inner Dia. mm.	42	38	42	38	42	42	42	42
	ii) Outer Dia. mm	45	40	45	40	45	45	45	45
	iii. Length mm.	5000	5000	2750	6000	2000	2000	2000	2000
6.	Vapour Pipe Dia mm.	1400	900	1200	500	600	600	700	1050

a) Vapour bled from Ist (new) rising film Evaporator to-	I) IInd (Old) Rising film evaporator. II) Falling Film evaporator /2600 m^2 Body. III) Juice Heater. (S.J.)
b) Vapour bled from IInd (Old) Rising film evaporator to-	I) 'A' Cont. Pan
c) Vapour bled from falling film evaporator to -	I) 'B ' & 'C ' Cont. Pan
d) Vapour bled from 1st Body of Quadruple set to	I) Juice Heaters (R.J.)
B) Give particulars of apparatus if any Provided for recording and controlling	----
C) State heating surface of pre Evaporator if any provided	---
D) Details of save all and juice catcher	Inside baffle type entrainment catcher
E) Arrangement for drawing of condensate From vessels.	Condensate extracting pumps are provided for each vessel.
F) Flash Heat recovery system	-- 1 No.
Size :	Ø 2300 x 2000 Mtr Ht.
Overflow height :	1850 mm
	Condensate vapour of 3600 m^2 H.S. body to 2nd body inlet vapour Line

II) SYRUP TREATMENT PLANT -

a) **Sulphuring Tank:** State No; type size and working capacity of tank in m^3	1 NO Continuous type syrup sulphitation tower a) Working cap. 12.05m^3 b) Retention Time 10.55 Minutes c) Size I) Height 1635 mm. II) Diameter 3300 mm.
c) Filters: State No. and filtering area in m^2 .	Not Applicable

III) SYRUP STORAGE: 12 Nos

State No. and capacity in m^3 of each tank.

Number of Tanks	2 Nos	2 Nos	8 Nos
Capacity in m^3 each	12	12	20

IV) MOLASSES STORAGE: 17 Nos Molasses storage (Pan supply) tanks.

State No.of tanks & capacity in m^3. of each tank.

	Molasses			
Particulars	**A-Light**	**A-Heavy**	**B-Heavy**	**C-Light**
No.of Tanks	5	2 + 3	4	3
Cap. in m^3 each	10	10 15	10	10

V) VACUUM PANS: 8 Nos

a) State type No.of pans of each type & for each pan state the normal strike cap. (in H.L.) & total heating surface (in sq.mtrs) each ,circulato-rs, if any size of tube or coil in mm.

1) Five Nos. are center flow calendria batch pan for 'seed' and 'Grain',1 80 MT batch pan for seed & A mas.

2) Four Nos. are continuous Pan used as follows.
Two Nos. for 'A' boiling cap. 35 M.T./hr. each
One No. for 'B' – boiling capacity – 30 MT/hr.
One No. for 'C' boiling capacity – 17.5 MT/hr.

		Batch type Pan				Continuous Pans		
Sr No	**Particulars**	**1 & 2**	**3**	**4**	**5 & 6**	**1**	**2**	**3**
1.	Cap. in MT	60	40	50	80	35	30	17.5
2.	Heating surface m^2	268	165	222	370	710	572	410
3.	No.of tubes	1148	602	988	1768	2288	2068	1490
4.	Tube size mm							
	i)Inner Dia. mm	98	98	96	98	98	98	98
	ii)Out Dia. mm	102	102	100	102	102	102	102
	iii)Length mm.	800	900	750	750	1000/ B.Z. 1200/ T.Z.	900	900
5.	Strike cap.(HL)	--	--	--	--	--	--	--
6.	Body Dia. mm	5070	4000	4730	6280	--	--	--
7.	Body Height mm	2800	3160	2610	3500	--	--	--
8.	Vapour pipe Dia. mm.	900	900	900	1220	1220	1130	1100

Note- B.Z.- Boiling Zone
& T.Z- Tightening Zone

B) Hydraulic discharge valve -- 2 Nos for 60 MT Vaccum pan
-- 1 No for 80 MT Batch pan
Make : Kamashi International, Pune

C) Give particulars of apparatus if any provided

1) For Recording vacuum — Vacuum Gauges.

2) For Controlling Pan boiling — Syrup seed control system is provided for 35 MT/hr. capacity A1 continuous pan.

D) Mechanical Circulator — **3 Nos**

1) Pan No. 1 Impeller Ø 1780
Drive Gear Box planetary
Megtorque make, Model – D 2360,
Ratio – 27.5:1, Motor – 75 HP / RPM - 1440

2) Pan No. 2 Impeller Ø 1775
Drive – Gear Box Planetary
Megtorque ,make, Model – 2400 X -10,
Ratio – 28:1, Motor – 60 HP / RPM -1475

3) Pan No. 3 Impeller Ø 1400
Drive – Gear Box Planetary
Megtorque ,make, Model – D2290
Ratio – 20:1, Motor – 50, RPM – 1440

4)Pan No.5 Impeller Ø 2550
Drive G.B. Planetary Premium Transmission Ltd.,
Model – VB3SA – 280
Ratio – 38.4:1P1, Motor – 75 KW / RPM – 1480

5) Pan No. 6 Impeller Ø 2562
Drive G.B. Planetary Elecon Engg. Co.,
Model – 03-21-VN-1- A-03-08011LR-Rev.
Ratio-27.22:1, Motor – 55/75, RPM – 1475

VII) CONDENSATION PLANT

Condensers :

a) State type, Dia and height. Also give particulars of pans and

Sr. No	Condenser	Type of Cond.	Height mm.	Dia mm	No.of spray	Nozzle Jet
1.	Evaporator	Single entry	2250	1050	30	14

Evaporators connected to each Condenser.

2.	Batch Pan No.1 & 2	Single entry	2020	900	28	16
3.	Batch Pan No.3 & 4	Single entry	2250	900	24	10
4.	Cont. Pan No.6	Single entry	2100	1576	36	23
5.	Cont. Pan No.3	Single entry	2250	1066	30	10
6.	Cont. Pan No.4	Single entry	2100	1400	28	14
7.	Booster condenser for pans	Single entry	2250	900	24	10
8.	Batch pan no 5	Single entry		1180	24	24

b)Condenser water pump:

State No. Type & capacity (Lit/sec.) for each

6 Nos.

Cold Water for both Jet nozzles and spray nozzles have provided.

Injection water Pumps are as follows.

Sr. No	Pump make Type	No.	Pump size mm	Head M	Cap. (Lit/ sec.)	Sped (RPM)	Motor H.P.
1.	10 UPI Kirloskar	3	250x300	24	194.5	1480	80
2.	12 UPH1	1	300x350	20	417	1450	150
3.	14 UPH1	1	350x400	22	555	980	215
4.	16 UPH1	1	400x450	22	700	960	270

C) **Water Cooling System**:

i) Spray Pump :

State No. Type and Cap. in lit./sec. each

3 Nos Spray Pumps are as follows

Sr. No	Pump type	Make	No	Pump size mm	Head M	Cap Lit/ Sec.	Speed RPM	Motor HP
1.	MF-35x35	Kirloskar	2	350 x 350	10	445	980	90
2.	16 Uph1	-"-	1	400 x 450	22	700	960	270

ii) Spray Pond-

State No and type of Nozzles size of spray pond.

Mist cooling system at spray pond.

Size 76 x 61 x 2.50(meters)

Total No. of nozzles - 500 Nos.

For 16 UPH 1 Pump – 265 Nos

Mf 35 x 35 Pump - 235 Nos

iii) **Cooling tower Details -**

Cap. 50 MT/hr. condensate water of 70°C to 26°C

Type – Fan less, Fillies induced draught ERP- Jet

Size of tower cooling water tank- 52' x 8'is made.
Spray system – A balanced spray system is made out of class 'C' G.I. pipes & Nylon Nozzles.
No.of nozzles: 48, No. Of Louvers – 320

COOLING CURING AND DRYING PLANT

A) (I) CRYSTALLISERS:

State No. Type of each crystall -isers (open or closed and Jacketed etc) and for each crystalliser give the normal Massecuite cap. type of Massecuite cooled and cooling surface and type of cooling Coils.

a) Thirteen Nos. Open crystallisers

Sr no	Particulars	No	Type	Capacity each (m^3)
1.	C-m/c receiver Crystalliser	1	Air cooled	30
2.	C-m/c Crystalliser	6	Water cooled with stationary coils	30
3.	B-m/c crystalliser	2	Water cooled with stationary coils	30
4.	A-m/c crystalliser	5	Air cooled i) For batch pan- 2 Nos 1 No ii) For Cont.pan 2 Nos.	 30 90 45

b) Five Nos Vacuum crystallisers with stationery coils

Sr. No.	Particulars	Nos	Capacity each (m3)
1.	C- Grain Material	2	30
2.	B-Grain material	1	60
3.	A-seed	2 1	45 20

B) CONTINUOUS CRYSTALLISERS:

One No. Vertical Crystallisers (Cap. 300 T)
With Heating Coils & Stirrer
Size 5000 x 12700
Drive Motor - 30 HP
RPM – 1440
Speed reduction G.B. Ratio 60:1

II) SEED CRYSTALLISERS :

a) Mention No. & capacity in m^3 — Two Nos. 1 No 'U' shaped open crystallisers of cap. 20 M.T. for B-seed and 1 No of capacity 30 M.T. for Dry Seed.

b) Give details of reheating arrangement at Pug mill. — : 3 Nos
Reheating of 'C'- massecuite is done by separate in one No. transient heater for each machine having heating surface 20 m^2 Cap.8 to10 M.T./Hr. massecuite.

III) CENTRIFUGAL MACHINES : : Eighteen Nos.

a) State No. of machines used as a fore workers and after workers separately for each type of massecuite height & diameter in (mm) RPM & type of drive (e.g. belt or electrical) & whether manually operated semi auto or fully automatic.

I) Batch type Machines – 7 Nos
II) Continuous type Machines - 10 Nos.

Sr. No	Machines used as	Make	Nos	Type	Basket size	Speed (RPM)	Capacity	Type of Drive	Motor H.P.
1.	A) A-m/c single curing	WIL	2	Batch type self discharge	49"x32"	Three Speed	500 kgs per charge	Elec-tric or A.C.	125
	B) A-m/c single curing (Fully automatic)	WIL	3	Batch type flat bottom	54"x40"	Four Speed	1250 Kgs per charge	Elec-tric D.C.	200
		modern engine ering	2	Batch type flat bottom	54"x40"	Four Speed	1250 Kgs per charge	Elec-tric D.C.	200
2.	C) A-m/c single curing (Fully automatic)	WIL	1	Batch type flat bottom	?	Four Speed	1750 Kgs per charge	Elec-tric D.C.	200
3	A) B-m/c fore worker	WIL	2	WK 1350 cont.					200
	B) B-m/c After worker	WIL	1	DC-10/34^0	1040 mm	1500	10 T/hr.	--"--	60
4.	A) C-Fore worker	AB Engg.	1	AB - 1100	1100 mm	2000	.....T/Hr.	Elect. A.C.	75
	B) C-m/c fore worker	NHEC	2	NK-1100/30° Continuous	1100 mm	2000	10 T/hr.	--"--	75

	C) –"----	WIL	2	DC-10/34° Continuous	1040 mm	1500 2100	8 T/hr.	--"--	60
	D) C-m/c After	WIL	2	DC-10/34° Continuous	1040 mm	1500 2100	8 T/hr.	--"--	60

B) Vapcon system -- 1 No for 'A' c/f machine (V – 1250)
Make : Addarsh Engg. & Sugar Eqpt. Pvt. Ltd., Nashik
Size : Ø 1300 x 3900 mm long x 10 thk.
Vapcon system heater : 144 Nos, 440 V, 4 W, 2 Phase

C) **Air Compressors:**

State Nos. Type & cap.of each and discharge pressure

Sr. No	Particulars	Compressor 2 Nos.
1.	Type	ESV-1LUB
2.	Size (Inch)	8" x 7"
3.	Capacity (M^3/hr)	442
4.	Speed (RPM)	650
5.	Discharge Pressure (kg/cm^2)	9.45

D) **Melting Tank**

I) 1 No Sugar Melter, Size – Ø 3750 x 3700 ht.
Cap. – 35m^3, Drive – 10 HP, 960 RPM
planetary G.B. Make – Top Gear Transmission
Ratio – 45.1, Final RPM – 21.33
II) 1 No Receiver Size – Ø 2500 x 2750 Ht.
III) Vertical melting tank No.2 with heating coil and stirrer
Old Size I) Height - 2225 mm
II) Diameter - 2016 mm
Receiver provided for the melting tank
Size - I) Height - 1472 mm.
II) Diameter – 1396 mm.

IV) SUGAR DRYER :

a) **Hopper:**

State No. and Size.

Two sets consists of six grass hoppers

		Old set			New Set
Sr. No	Size (mm)	Hopper No. 1	Hopper No. 2	Hopper No.3	Hopper NO.1 2 & 3
1.	Length (m)	14.260	10.450	10.750	12.000

2.	Width(m)	1.500	1.500	1.500	2.000
3.	Height (m)	0.300	0.300	0.300	0.300

Hot & Cold air blowing arrangement is provided at both sets.

b) **Elevator** : Three Nos.

i) 1 No. c/f belt type bucket Elevator having Make – Chintamani Enggs., Cap. - 25 MT C/C – 14 Mtrs, Speed – 65 Mtr/Min

ii) 1 No. c/f belt type bucket elevator having make Chintamani Engg. Cap.- 30 Ton/hr C/C – 11 Mtr, Speed - ?

iii) 1 No. C/f belt type bucket elevator having make chintamani Engg. Cap – 35 Ton/hr, C/C – 12 Mtr, Speed – 65 Mtr

Three Nos.

c) **Sugar Grader:**
State Nos. Size and capacity

Sr. No	Particulars	Grader No.1	Grader No.2	Grader No.3
1.	Length(m)	5.000	2.065	6.000
2.	Width (m)	1.500	2.000	2.000
3.	Capacity MT/Hr	15.00	25.00	30.000

d) **Sugar Dust Catcher :**
State No, Type and Drive.

One No
Cyclone type driven.
by 15 H.P. Electric Motor.

V) SUGAR SILO SYSTEM:

A) **Sugar Silo (Bins)**

2 Nos. For M & S Grade sugar One No. each
Capacity - 185 MT. each
1 No. for L Grade sugar Capacity – 10 Ton

B) **Auto Weighing Machine**

3 Nos
Make – Chronos Richardson
Type – Model E –55, Speedac Controller No.8
Microprocessor based with printer, Software and PC.
Capacity – 900 bags/hr. and max. 1440 bags/hr. each
Accuracy: ± 20 gms.
a) 1 No

Mass make Duplex type
Speed – 500 – 600 bag/ hr,, Accuracy - ±5 grms

C) **Bag stitching machine** 2 Nos

a) Make – Reed Medway packing company

b) Type - Model UHH

c) Capacity – 1200 bags/hr. each

b) 1 No

Bag stitching machine with 4 M long slat conveyor
Motor – HP 0.5, RPM – 1440, HP – 1

D) **Bucket elevator** 2 No

Type- Vertical

Capacity – 20 MT/hr. each

c) 1 No

Type – Vertical, Cap. – 10 T/hr

E) **Belt conveyor** 2 Nos

One belt each to convey sugar from elevator to sugar silo

2 Nos. (In Series)

To convey sugar from old sugar elevator to I.C.Grader

d) 1 No.

To Convey Sugar from grade to New sugar silo

e) 1 No

To conveyor sugar from 35 Ton belt type bucket elevator to 30 Ton sugar grader.

VI) VIBRO SCREENS: Pannwalt sharpless vibro screen

Units - 2 Nos

Vibro Screen for			
Particulars	**Oliver filtrate 2 Nos**	**M.O.lime 1 No**	**Sugar seed 2 Nos**
Diameter	60"	60"	60"
Capacity	50 MT/hr.		
Screen size	80 mesh	40 mesh	24 mesh
Motor Details	400/440 Volts, 3 Phase, 50H, A.C. supply.		

BOILERS

A) State No. type and make of boilers its working pressure in kg/cm^2 Heating Surface in m^2. Grate area for bagasse and coal in m^2. Super Heater surface and degree of super Head and details of soot blower.

Sr. No	Particulars	1 & 2	3
1	**Make**	**WIL**	**IJT**
1.	Capacity (MT/hr)	35.00	70.00
2.	Working pressure Kg/cm^2	45.00	86.00
3.	Heating surface (m^2)	1140.00	3315.00
4.	Grate Area (m^2.)	20.46	23.80
5.	H.S. of super heater (m^2.)	150.00	707.67
6.	Degree of superheat(°C)	440+/-5	515+/-5
7.	Soot blowers (Nos)	2	8

B) **Feed Water Treatment :**
Give particulars of arrangement if any for softening or otherwise treating the feed water entering Boilers

Fecl 3 Dosing –
Chlorination –
Filtration –
Activated carbon filter –
Activated Carbon filter –

D) **Turbo Feed Pump**	1 No. (for boiler 1& 2) Belliss India Ltd., make Single Stage Turbine Type SS-4A B.H.P. 550 Inlet Steam Press – 45 kg/cm2 Exhaust Steam press. 15 kg/cm2 Speed - 7000 RPM Feed Pump – Sulzer make turbo feed pump Model – MC, 100/6, Head – 650 m, RPM- 3250, Disch. 135 m^3/hr. Gear Box WIL make Type CN 16, Ratio- 7000/3045
Feed Pump	3 Nos. (for Boiler 1 & 2) Khimline pumps Ltd. make Type – mc- 50/12 Head – 650 mtr. KW 126.3 KW , RPM - 2980 Discharge - 50 m^3/hr, 2 Nos. KSB Make Type - HDA 50/12, Head - 620 Mtr. KW – 49 , RPM – 2970 Discharge - 15 m^3/hr,
E) **Feed Pump for 70 TPH Boiler**	3 Nos. Make – KSB Pumps ltd. Model – HGB 2/16 Head – 1200mmWC ,Dish – 45 m^3/hr, RPM -2980, KW – 250 (VFD)
F) 1) **Feed Water Tank-**	3 Nos. (for boiler 1 & 2) 1 } Size - ϕ 3400 x 7000 mm. LG Cap- 60 m3 2} Size - ϕ 2500 x 6500 mm. LG Cap – 30 m3 3}Size - ϕ 3000 x 8500 mm. LG Cap – 60 m3

G) **Deareated Water Tank-** Size - ϕ 3000 x 7000 mm. LG Cap- 40 m3
(normal water level)

H) **For 70 TPH Boiler**

1) feed water storage tank capacity- 60 m^3

2) Deaerator Tank size ID 3000 x 7800 x 10mm tk.
Type-spray cum Tray
capacity - 86.5 TPH,
heating steam quantity- 7.5 MT/hr

3) Deaerator storage Tank Tank size-ID 2000 x 2200 x 10mm tk
.
capacity - 55.12 m^3
Tank size- ID 3200 x 9500 x 10mm tk.

I) ECONOMISERS-
Give particulars stating type and heating surface

Sr No	**Particulars**	**35 TPH Economizer No. 1 & 2**	70TPH boiler Eco.
1.	Design pressure (Kg/cm^2)	55.5	104
2.	Hydraulic pressure (Kg/cm^2)	83.25	
3.	Design Temp. (°C)	220	309
4.	Heating surface (sq.mtr.)	382	1780
5.	Tube size (O.D.)	50.8 x 8 SWG	38 x 4mm tk
6.	No.of tubes.	21 each	

J) CHIMNEY :
Give dia. and height. Also type of draughts (i.e. forced induced or natural draught) and give particulars of forced and induced draught fans.

Three Nos

Sr.No	**Particulars**	**Chimney No.1**	**Chimney No.2**
1.	Construction	RCC constructed	RCC constructed
2.	Top Diameter (m)	3.000	2.330
3.	Bottom Dia (m)	3.000	2.100
4.	Height (m)	60.000	76.000

Balanced draught system is followed by using forced Draught fan and induced draught fan separately for each boiler associated with chimney.

Sr No	Particulars	35 TPH Boiler No.1 & 2			70TPH Boiler			
		F.D. Fan	I.D. fan.	SA Fan	C R Fan	SA Fan	FD Fan	ID Fan
1.	Diameter (m)	1.082	2.244	1.27	0.614	1.343	1.307	2.157
2.	Capacity (m^3/Sec)	17.5	45.0	6.25	1.5	8.3	13	42
3.	Speed (RPM)	1440	750	1500	2980	1440	960	750
4.	Qty.	1	1	2	2	2	2	2
5	Motor HP	100	300	75				

K)WET SCRUBBER: State No. & size.

Two Nos.
Size - i) Diameter - 4.500 m
ii) Height - 9.100 m

L) CLARIFIER : State No. and size and capacity.

One No
Size - i) Diameter - 8.600 m
ii) Height - 2.560 m
Working Capacity - 148.630 m^3

M)ELECTROTIC precitatior

Make – HIMENVIRO
At 110% mcr – gas flow rate at ESP exit – 67.54 m3/hr
gas temp. rate at ESP exit – 150 ^{0}C
Inlet flue gas suction pressure -160mmW
gas velocity at electrode zone on total area-1.0 m/sec
dust concentration at ESP -69 mg/nm3
Inlet dust concentration at ESP exit – 115 mg/nm3
ESP collecting area - 3150 m2
No of working field - 2
Length &Height of field – 5000 x 10500 mm
collecting electrode - CRCA sheet as per IS:513 Gr D
emitting electrode - Rigid multi spike type

N) B. Bailing Press M/C –

3 Nos
A) Kay Iron Make -3 nos ,Horizontal type fabricated boiling m.c ,. C.I. 'V' Belt Pulleys ;Fly wheel and conn. Rods which is made Bagasse bails; Size – 300 mm x 300 mm.x 600 mm.
Cap – 80-100 bails /hr.
B) Adity auto test make two stationed hydraulic Bagasse bailing m /c; Size – **300** mm x 300 mm.x 600 mm.
Cap – 10 MT /hr.; Drive motor Kirloskar make HP -40, RPM-1440

Opening Gearing Arrangement:

Drive HP – 2.5 RPM - 960 Output – RPM - 34

POWER PLANT

State No. of Prime movers slating for each : Four Nos.

A) The purpose for which used its Make. Cylinder diameter, stroke RPM and normal IHP or BHP

1) One No. D.G. set Kirloskar Cummins make 160 KVA, 1500 RPM each. Cylinder diameter – 152 mm. each. Used for power and lightening during off-season. And cleaning days.
2) One No. D.G. set Kirloskar Cummins make 380 KVA, 1500 RPM, cylinder diameter. Used for power & lightening during off-season, cleaning days & for emergency period
3) Two nos DG set for Cogeneration & used for power while starting of Cogeneration plant during off season & cleaning days
   Make – Cummins India ltd ; 750 KVA, 1500 rpm , 415 volt.

B) If any turbine is also used state its type No. of stages system conditions of outlet.

Three Nos. Multi Stage Impulse Turbine.

Sr No	Particulars	Turbine No.1	Turbine No.2	Turbine no. 3
1.	Make	Kessels	Kessels	KEPL
2.	No.of stages	7	7	22
3.	Capacity (KW)	3000	6000	12000
4.	Speed (RPM)	6400	6400	7500
5.	Steam pressure Kg/cm²			
	i) Inlet pressure	45.0	45.0	85.0
	ii) Outlet pressure	1.5	1.5	DEC-

D) State No. of Electric generators stating for each A.C. or D.C.

Sr No	Set	I	II	III	IV	V	VI
1.	Working on	Diesel	Diesel	Diesel	Turbine	Turbine	Turbine
2.	A.C/D.C	A.C.	A.C.	A.C	A.C.	A.C.	A.C
3.	Make	KEC	KEC	Stamford	BHEL	BHEL	T.D.Power
4.	Voltage	415	415	415	415	11000	11000
5.	Output (KW)	128	380 KVA	750 x2 KVA	3000	6000	12000
6.	**Purpose**	Used for light & development of power in factory & Co-gen.					
7.	IFAC P.F. & Freq.	0.9	0.9	0.9	0.9	0.9	0.9
8.	Maxi. Demand in season		380 KVA	750 KVA	3000 KW	2300 KW 3700 KW Co-Gen.	1500 KW 10500 KW co-Gen
9.	Max.Demand in off-season		380 KVA				

GENERAL :

1) Name of the Plant State Name of Maker or Principal maker of the Machinery — M/S. RICHARDSON & CRUDDAS LTD. Mumbai.

b) a) Final molasses weighing arrangement — One No. Automatic Weighing Scale of cap. 1.00 MT

b) **Final molasses storage tank.** — Four Nos. M.S. constructed tanks.

State No. Capacity and type

Particulars	No.1	2	3	4
Capacity	3000	3000	3000	4500
Diameter	20.0 M	20.0	20.0	24.0
Height	9.75 M	9.75	9.75	9.75

Sugar Godown State No and Capacity	Total – 7 Nos 1 No to 5 No. – 1,00,000 Quintal Capacity (Each) 6 Nos – 85,000 Quintal Capacity 7 Nos – 1,30,000 Quintal Capacity
III) a) Service Water Tank.	2 Nos 1) For Karkhana 6 m. x 6 m. x 4.3 m. Ht. Cap - 150 m3 2) For Colony 6 m x 6 m x 2.3 m. Ht. Cap - 80 m3
b) Reservoir Tank	2 Nos Size – 23 m x 23 m x 3 m Cap - 1500 m^3 (each) 1 No. Size- 46 M x 25 M x 3.7 M Cap. 4200 m^3
EFFLUENT DISPOSAL : Give particulars of equipment provided for disposal of factory effluent	Effluent Treatment Plant consist of Oil and grease separator. Three clarifiers and three aeration Unit. All the provisions as per M.P.C.B. regulations are made. Plant Capacity - 500 m^3/day Final discharge from E.T.P. is used for own agriculture purpose.
Air Pollution Control – Give particulars of equipment provided for disposal of fly ash from Boiler.	1. Wet Type Scrubber to remove ash Particulate : 2 Nos.
SAMPLING EQUIPMENT: Give particulars of equipment provided for sampling various Juice, bagasse and other material for analysis.	Manual Sampling.
CONTROL INSTRUMENT: Specification.	1) Vacuum Gauge 2) Pressure Gauge 3) Temperature, regulator cum recorder for reducing station on exhaust line.

DETAILS OF MACHINERY

OF WORK SHOP: -

a) State No. of Lathes and their Size — Four Nos.

Sr. No	Make	Nos	Bed Length Size
1.	BIMPEX	1	18" x 12 Ft.
2.	MYSORE KIRLOSKAR	1	9.25" X 10 FT.
3.	SHIMOGA Type No.3	1	9.25" X 10 FT.
4.	I.M.T. Kamala	1	24" x 22 Ft.

b) No. of Shaping machine — Two Nos

One No :

Make – BIMPEX

Stroke - mini./maxi. 1" /24"

One No:

Make – BIMPEX

Stroke - mini./maxi. 2" /42"

c) Drilling Machine — Two Nos –

A) Make – BIMPEX

Type - Piller drilling machine Size - 2" Cap.

B) Make –Multitech

Type -Radial Size - 2" Cap.

d) Planning and their sizes — Nil

e) Other smaller Item in workshop: — Hacksaw machine – One No

Make - BIMPEX

Size - 10"

I/We hereby declare that all details given in this return are true to the best of my knowledge and belief.

Boiler Technical specification and Design Data

Technical Specification – Design Data

Sr.No	Particular	Boiler No MR.12942 & MR 13071	Boiler No MR 15448
1	Pressure (kg/cm2)	45	86
2	Evaporation M.C.R.(T/hr)	35	70
3	Peak load for half an hour (T/hr)	38.50	77
4	S.H.Outlet Pressure(kg/cm2)	45	86
5	S.H.Outlet Temp. 0c	440 +/- 5	515 +/- 5
6	Design Pressure (kg/cm2)	53.5	100.4
7	Hydraulic test pressure at side (kg/cm2)	80.25	
8	Total heating surface of boiler excluding S. H. coil (m^2)	1144	1535
9	H.S.of boiler bank (m2)	857	593
10	H.S.of Furnace (m2)	287	942
11	H.S.of economizer (m2)	382	1780
12	H.S.of Super Heater (m2)	150	707.67
13	H.S.of air heater (m2)	1000	3171.13
14	Furnace grate area (m2)	20.46	23.80

CHIEF ENGINEER **CHIEF CHEMIST** **MANAGING DIRECTOR**

Shri Vighnahar Sahakari Sakhar Karkhana Ltd.

Junnar / Ambegaon

FORM – I [i] /SA-3

FOR CENTRAL SUGAR FACTORIES SCHEDULE OF 12 MW CO-GENERATION PLANT MACHINERY

- **NAME OF THE FACTORY**

SHRI VIGHNAHAR SAHAKARI SAKHAR KARKHANA LTD. JUNNAR/AMBEGAON, AT NIVRITTINAGAR (DHALEWADI), PO. SHIROLI BK., TAL JUNNAR, DIST PUNE (MAHARASHTRA)
PIN – 410 511

PHONE NO. 02132 – 280261,280264, 278282

FAX NO. 02132-245476

- **CO- GEN PLANT CAPACITY**

12 MW

BOILER

	Sr.No	Particulars	
A) State No. type and make of boilers its working pressure in kg/cm^2 Heating Surface in m^2. Grate area for bagasse and coal in m^2. Super Heater surface and degree of super Head and details of soot blower.	1.	No. of Boiler	1
	2.	Type of Boiler	Water Tube Boiler
	3.	Make	IJT
	4.	Capacity (MT/hr)	70
	5.	Working pressure Kg/cm^2	86
	6.	Heating surface (m^2)	4022
	7.	Grate Area (m^2.)	23.80
	8.	H.S. of super heater (m^2.)	707.67
	9.	Degree of superheat(°C)	515+/-5
	10	Soot blowers (Nos)	8
	11	H.S. of Economizer (m^2)	1780
	12	H.S. of Primary air heater	
	13	H.S. of Secondary air heater	

Feed Water Treatment Plant

B) Give particulars of arrangement if any for softening or otherwise treating the feed water entering Boiler.	Thermax make Demineralization (D.M.) plant. HRSCC (125 m³/hr) – CLEAR WATER (125 m³/hr) – DMF (125 m³/hr) – ACF (125m³) – SAC (52 m³/hr) – DGT –WBA (52 m³/hr) –SBA (52 m³/hr) –MB (52 m³/hr) –UF (48 m³/hr) – Ph Correction Flow rate : 52m³./hr BR : 1040 m³ Cycle Time : 20 Hrs Running The Raw water analysis Turbidity : 5 NTU Total hardness - (as Caco3) : 1 Mg/L Chlorides (as Cl) : 26 Mg/L Sulphates (as SO 4) : 36 mg/L Silica (as Si O2) : 48 mg/L TDS : 292 PPM PH : 7.8 Nitrate (as NO 3) : 7 mg/L BOD : < 20 mg/L COD : – 26 mg/L
Fecl 3 Dosing –	On time dosing capacity 40Lit/hr, 500 Ltrs storage tank.
Chlorination –	Sodium hypochlorite on time dosing max cap. 30 Lit/hr 30 Litrs storage tank.
Filtration –	Removal of suspended solids, Thermax dual media filter of 125m³/hr capacity
Activated carbon filter –	To remove the organic, colours and odour of water.

Activated Carbon filter –	To remove the dead organic, colous and odour of water

D.M. Plant have max. flow rate of 52³/hr & will produce 1040m³ of D.M. water between one regeneration.

Treated water quality before PH correction.

1)	Electrical conductivity -	:	< 0.2 us/cm
2)	TDS	:	< 0.1 PPM
3)	Silica -	:	< 0.02 PPM
4)	PH –	:	6.5 to 7.5
5)	Hardness –	:	NIL

C) Feed Water Pump

1) Feed Pump	:	3 Nos. Make – KSB Pumps ltd. Model – HGB 2/16 Head – 1200mmWC ,Dish – 45 m^3/hr, RPM -2980, KW – 250 (VFD) Section pressure – 1.65 kg/cm^2
2) Transfer Pump	:	2 Nos Make – Kirloskar Brothers Ltd., Type – Horizontal Centrifugal Model /Size – KPD 65/26 Pump Speed – 3000 RPM Flow – 90 m³/hr

D) Feed Water Tank

1)	Feed water storage tank	capacity- 60 m^3 Tank size ID 3000 x 7800 x 10mm tk.
2)	Deaerator	Type-spray cum Tray capacity - 86.5 TPH, heating steam quantity- 7.5 MT/hr Tank size-ID 2000 x 2200 x 10mm tk
3)	Deaerator storage Tank	capacity - 55.12 m^3 Tank size- ID 3200 x 9500 x 10mm tk.

E) DM Water and Condensate Water Storage Tank

	DM water Storage Tank	Condensate Water Storage Tank
Height	10 Mtr	10 Mtr
Diameter	8 Mtr	5 Mtr
Volume	500 m³	200 m³
Water handling pump	2 Nos (1 + 1)	2 Nos (1 + 1)
Type	KPD 65/32	KPD 65/32
Capacity , Head	50 m³/hr, 30 Mtr	50 m³/hr, 30 Mtr
HP	15	15
RPM	1450	1450

F) Boiler Dosing

Sr. No.	Particular	LP Dosing	HP Dosing
1.	Make	Positive metering	Sys. XI-36, MIDC Ambad, Nashik
2.	Model	PL 2017	PL 3530
3.	Pump capacity	0-20 LPH	0-30 LPH
4.	Pump working pr.	6.5 kg/cm²	125 kg/cm²
5.	Tank capacity	250 lit	250 lit
6.	CDSNO	74 / 10-11	75/10-11
7.	PRV set pr.	8 kg/cm²	156 kg/cm²
8.	Pump Sr. No.	12105921/ 22	12105923/24

G) HP Heater

Sr. No.	Particular	Unit		
1.	Type		Surface U tube	
2.	Arrangement		Horizontal	
3.	Feed water quantity season	Kg/hr	79200	
4.	Feed water inlet / outlet Temp.	°C	105 / 165	
5.	Steam quality	Kg/hr	8745	
6.	Steam inlet pressure	ATA	8	
7.	Steam inlet temp.	°C	180	
8.	Drain outlet temp.	°C	115	
9.	Surface area required & provided	m²	76/92	
10.	Size of tube – OD x thick x length		5/8" OD x 18 SWG x 8500 mm	
11.	No of U tube	Nos	110 U	
			Shell Side	Tube Side
12.	Design pressure	kg/cm²	12 & FV	126.5
13.	Fluid		Steam	Water
14.	Design Temp.	°C	200	200
15.	Corrosion allowance	Mm	3.2	3.2
16.	Hydro test pressure	Kg/cm²	18	189.95
17.	Shell ID x thk.	mm	600 x 10	
18.	Tube sheet OD x thk.	Mm	620 x 85 with 7 mm overlay	
19.	Empty weight	Kgs	5500	
	MFG – C Doctor India Pvt. Ltd., 3607 to 3608 GIDC Estate, Phase 4th, Vatva, Ahmadabad – 382445			

H) Economizer

Economizer :- Give particulars stating type and heating surface	Sr.No	Particulars	
	1.	Design pressure (Kg/cm²)	104
	2.	Hydraulic pressure (Kg/cm²)	**156**
	3.	Design Temp. (°C)	309
	4.	Heating surface (sq.mtr.)	1780
	5.	Tube size (O.D.)	38 x 4mm tk
	6.	No.of tubes.	64
	7	Type	Drainable

I) Air Pre-heater

Air Pre- heater Give particulars stating type and heating surface	Sr.No	Particulars	
	1.	No. of Blocks	4
	2.	Effective Tube Height	Primary Air heater = 2580 Secondary Air heater =1720
	3.	Tube size	Ø 63.5 x 2.3 mm thk & Ø 76.1 x 2.3 mm thk (Corten steel)
	4.	No. of Tube for Cold air entry block Plain Tube Stay tube	 (1282 + 231) / Block Plain + corten for FD & SA (248 + 45) / Block Plain + corten for FD & SA
	5.	Other block Plain Tube Stay Tube	1538/ Block 298/ Block
	6.	Pitch along / across air flow	140 / 90 mm
	7	Total no of tubes	
	8	Tube plate thickness	Top – 16 mm Bottom – 25 mm

J) Electrostatic Precipitator (ESP)

Make	- HIMENVRO
Gas flow rate at ESP exist	- at 110% MCR 67.54 m^3/s
Gas Temp. at ESP exist	- 150°C
Inlet flue fan suction pressure	- 160 mmwc
Gas velocity at electrode zone on total area	- 1.0 m/sec
Dust concentration at ESP exit	- 115 mg/nm^3
ESP collecting area	- 3150 m^2
No of working field	- 2 Nos
Length & height & working field	- 5000 x 10500 mm

K) Chimney

Construction	- RCC constructed
Top dia	- ID 2330 mm, OD – 3230 mm
Bottom dia.	- ID 2100 mm, OD – 3230 mm
Height	- 76000 mm

L) Drafts system. : - I.D. Fan – Qty. 2 Nos, I.D. Fan – Qty. 2 Nos, S.A. Fan – Qty. 2 Nos
C.R. Fan – Qty. 2 Nos

Sr. No.	Particulars	Unit	FD Fan	I.D. Fan	S.A. Fan	C.R. Fan
1.	Make		Airochem Industrial fan	Airochem Industrial fan	Airochem Industrial fan	Airochem Industrial fan
2.	Capacity	m^3/sec	13	42	8.3	1.5
3.	Head	mmwc	199.09	270	685	416.72
4.	Speed	rpm	960	750	1440	2980
5.	AC motor KW	kw	37	160	90	15
6.	Impeller Type		Centrifugal backward curved direct coupled	Centrifugal backward curved direct	Centrifugal backward curved direct	Centrifugal backward curved direct
7.	Bearing		22218 CK	22228 CK	22218 CK	2309 CK

M) Bagasse Feeding Arrangement:-

	Screw Feeder	**Extractors**
Nos	3	3
Capacity	14000 kg/hr each	14000 kg/hr each
Motor	ABB make	ABB make
RPM	1450	1450
HP	7.5	7.5
Gear box		
Model	Premium Durodrive SP218/26.5 /SISO	310 L4 451 PC V 01 BE
Make	Premium Transmission Ltd.	Transmital Bonfiglioli
Ratio	26.5	1:451

N) Bagasse Silo Gate Gear Motor

Make -- Power Built Ltd., Gujrat
Type -- AMF 200 S
KW -- 0.75
Ratio -- 196.9
Output Torque – 89.3 Kgf.m

O) Soot Blowers **Long Retractable motorized soot blower** **- 2 Nos**

Make	Siston India Pvt Ltd., Dombivali
Location	Super heater zone
Type	LRSB
Stock length	4664 mm
Working pressure	23.5 kg/cm²
Temp.	380°C
Rotary speed	8.4 rpm
Motor	1.0 HP / 1400 rpm

P) Rotary soot blowers(RSB) – Qty. 6 Nos

Location	Bank & economizer zone
Working pressure	23.5 kg/cm²
Working Temp.	380°C
Rotary speed	3 rpm
Motor make	Rajendra electrical (Geared motor)
Lance length	4938 mm (2 nos bank zone)
Lance length	3820 mm (4 nos economizer zone)

Q) Travelling Great

Grate Area	5104 (w) x 4664 (D) x 17500 (H) in mm
Travelling grate Type	Continuous Ash discharge traveling grate spreader stoker

Drive Details

Make	Mega Torque Pvt. Ltd.,
Type	Planetary Helical Gear Motor
Size -	3000 M4
I/P Power	1.5 MW
O/P Speed	0.2 rpm
Sr. No.	02060033211
T2 (nom)	71625 NM
Mounting	Horizontal shaft mounting with torque arm

R) Rotary Air Lock Feeder

	For Boiler Bank	Air pre-heater , Economizer
Make	M/s Rajdeep Engg. System Pvt. Ltd.,	M/s Rajdeep Engg. System Pvt. Ltd.,
No. of Feeder	4	4 + 2
Differential pressure	400 mmwg	mmwg
Temperature	480	270
Size	Ø 200 x 325	Ø 200 x 325
Geared motor rating	0.5 HP and 40 RPM	0.5 HP and 40 RPM
Bearing	Out boared deep groove ball bearing	Out boared deep groove ball bearing

S) Instrument Air Compressor for Boiler & Turbine – Qty. 3 Nos

Sr. No.	Particular	Unit	2 Nos	1 No
1.	Make		Ingersoll Rand	Atlas Copco Ltd
2.	Type		Reciprocating compressor	Screw Type
3.	Size		IS1 20H	GA 22 FM FF
4.	Speed	rpm	445	
5.	Discharge pressure	PSIG	125	9.75 bar
6.	Motor	HP	20	25

Ingersoll Rand Heat Exchanger

	Particular	Design Pr. Kg/cm²	Design Temp. °C	Test pressure Kg/cm²
1.	Shell side	6.33	65.55	9.14
2.	Tube side	9.85	228.66	13.71
3.	Serial no.	AEH 06089/131		
4.	Date of test	28.04.2010		

Ingersoll Rand Air Compressor Receiver

Sr. No.	Particular	Unit	
1.	Capacity	m³	0.54
2.	Shell thickness	mm	6
3.	Dis. thickness	mm	6
4.	Max. working pr.	Kg/cm²	10.5
5.	Hydraulic test pr.	Kg/cm²	17.90
6.	Temp. range	°C	0-150
7.	Serial no.	--	P4814
8.	Manufacture by	--	80/258
9.	Motor power	hp	20

Dryer

1.	Make		Dry-tech Engineers
2.	Unit		Heat less
3.	Model		HD004
4.	Working pressure	kg/cm²	8
5.	Capacity	CFM	127
6.	Oper- temp.	°C	40

Main Air Receiver

1.	Make		Ingersoll Rand
2.	Shell thickness	mm	10
3.	Dis. thickness	mm	10
4.	Max. working pressure	kg/cm²	12-30
5.	Hydraulic test pressure	kg/cm²	20-50
6.	Temp.	°C	0-150

T) Ash Handling System (Furnace)

i) Submerged Ash Handling System :-

Sr. No.	Particular	Unit	
1.	Make	--	U-tech
2.	Type	--	Belt conveyor
3.	Speed	m/sec	0.17
4.	Belt centre to centre distance	mm	16930
5.	Belt width	mm	1000
6.	Conveyor capacity	TPH	8

7.	Drive	--	Electric motor
8.	Make	--	Kirloskar
9.	Capacity	HP	7.5
10.	Speed reduction	rpm	1440
11.	Make		Planetary gear box kavitsu
12.	Model		
13.	Ratio		
14.	HP		
15.	Torque		
16.	Gear box coupling I/P, O/P		

ii) Dense phase Ash Handling system for ESP, Economizer, Air heater

Sr. No.	Particular	Unit	
1.	Make	--	Harells – Lafert
2.	Drive	--	Electric Drive 3 Phase Induction Motor
3.	Capacity	kw/hp	1.5 / 2
4.	Speed	rpm	1400
5.	Speed reduction		Planetary gear box
6.	Type		A MEO 45 S
7.	Capacity	kw	1.5
8.	Speed	rpm	1450
9.	Actual ratio		47.3
10.	o/p Torque	Kg f.m	42.9

Silo Details

1.	Capacity	m^3	50
2.	Diameter	mm	3500
3.	Height	mm	4800
4.	Cone height	mm	3022
5.	Cone bottom diameter	mm	1500
6.	Screw conveyor		
7.	Make		PBLC (Power Build Ltd.,)
8.	Type		Screw Conveyor
9.	Drive		Electric Motor
10.	Capacity	kw/hp	3.7 / 5.0
11.	Speed	rpm	1440
12.	Speed reduction		Planetary gear box
13.	Type		73P – 112 M4
14.	Sr.No.		16520
15.	Speed	rpm	35.3
16.	HP	hp	5

U) Ash handling compressor – Qty. 2 Nos

Sr. No.	Particular	Unit	
1.	Make		Chicago pneumatic
2.	Product type		CP B 25
3.	Max. final pressure	Kg/cm^2	8.1
4.	Free air delivery	cfm	105
5.	Motor power	hp	25

Air receiver

6.	Max. working pressure	Kg/cm^2	7
7.	Design pressure	Kg/cm^2	7.7
8.	Test pressure	Kg/cm^2	11.53
9.	Temp.	° C	60
10.	Design Temp.	° C	100
11.	Serial no.		11072910
12.	Date		22-7-11
13.	Vendor code		2606

V) Bagasse Handling System:-

U-Tech Engineering Ltd., Pune

Sr. No.	Particulars	EL1	RC1	BC1	BC2	BC3	BC4	BC5	BC6
1.	Type	Chain Rake Type	Chain Rake Type	Belt conveyor (plan)	Belt conveyor (plan)	Belt conveyor (cleated)	Belt conveyor (plan)	Belt conveyor (plan)	Belt conveyor (plan)
2.	Chain pitch	150 mm	150 mm	--	--	--	--	--	--
3.	Rake No. & length								
4.	Size (centre distance)	42000 mm	41000 mm	50000 mm	60000 mm	47410 mm	29175 mm	35000 mm	35000 mm
5.	Speed (Belt)	23 m/min	23 m/min	1.0 m/sec	1.0 m/sec	1.0 m/sec	1.0 m/sec	1.0 m/sec	1.0 m/sec
6.	Capacity	55 TPH	55 TPH	55 TPH	55 TPH	55 TPH	55 TPH	20 TPH	20 TPH
7.	Drive	Electric motor	Electric motor	Electric motor	Electric motor	Electric motor	Electric motor	Electric motor	Electric motor
8.	HP/KW	60/45	40/30	15/11	9.3/12.5	25/18.5	7.5/5.5	7.5/5.5	7.5/5.5
9.	Speed	1480 RPM	1470 RPM	1460 RPM	1460 RPM	1460 RPM	1450 RPM	1460 RPM	1450 RPM
10.	Speed Reduction	Planetary Gear box	Planetary Gear box	Planetary Gear box	Planetary Gear box	Planetary Gear box	Planetary Gear box	Planetary Gear box	Planetary Gear box
11.	Make	Kavitus	Kavitus	Kavitus	Kavitus	Kavitus	Kavitus	Kavitus	Kavitus
12.	Model	3 KT 15 X	3 KT 14	2 KT 10	2 KT 10	2 KT 11 X	2 KT 08	2 KT 08	2 KT 08
13.	Ratio	130.62:1	123.77:1	36.33:1	36.33:1	37.87:1	42.92:1	29.17:1	29.17:1
14.	Torque Nm	35220	22249	2395	2025	4198	1414	961	961

15.	Gear box coupling In/Out	Fluid coupling	Fluid coupling	F-70/ FGC-5	F-70/ FGC-5	F-85 / FGC-5	F- 60 / FGC-4	F- 60 / FGC-3	F- 60 / FGC-3
16.	Trash belt width	1500	1500	1200	1200	1200	1200	800	800
17.	Drive Elevation Levels	+24.500	+26.350	+9.000	+5.750	+29.400	+9.000	+3.500	+3.500

	BC 7	BC 8
Make	Crystal Engineering, A.nagar	Crystal Engineering, A.Nagar
Type	Belt type	Belt type
Size (Center distance)	25 Mtr	22.7 Mtr
Speed (Belt)	1 m/sec	1 m/sec
Capacity	20 T/hr	20 T/hr
Drive	Electric motor	Electric motor
KW/ RPM	3.7 / 1430	3.7 / 1430
Speed reduction	Reduction gear box	Reduction gear box
Make	Premium Transmission	Premium Transmission
Type	U 400	U 400
Ratio	40:1	40:1
Belt width	800 mm	800 mm

Bale Breaker – 1 No

	Bale Breaker	Graber
Qty.	1 No.	3 Nos
Make	- Crystal Engineering, Ahmednagar	- Crystal Engineering, Ahmednagar
Capacity	- 20 T/hr	- 20 T/hr
Motor make	- Kirloskar Electric co.	- Kirloskar Electric co.
KW/RPM	- 15 / 1450	- 7.5 / 1450

POWER PLANT

State No. of Prime mover	: 1 No.
A) The purpose for which used its Make. Cylinder diameter, stroke RPM and normal IHP or BHP	1) Two nos DG set for Cogeneration & used for power while starting of Cogeneration plant during off season & cleaning days Make – Cummins India ltd ; 750 KVA, 1500 rpm , 415 volt.
B) If any turbine is also used state its type No. of stages system conditions of outlet.	One No. Double Extraction condensing Turbine.

Sr.No	Particulars	Turbine
1.	Make	KEPL
2.	No.of stages	22
3.	Capacity (KW)	12000
4.	Speed (RPM)	7500
5.	Steam pressure Kg/cm²	
	i) Inlet pressure	85.0
	ii) Outlet pressure	DEC-

C) State No. of Electric generators stating for each A.C. or D.C.	Sr.No	Set	I	II
	1.	Working on	Diesel	Turbine
	2.	A.C/D.C	A.C	A.C
	3.	Make	Stamford	T.D.Power
	4.	Voltage	415	11000
	5.	Output (KW)	750 x 2 KVA	12000
	6.	Purpose	Used for light & development of power in factory & Co-gen.	
	7.	IFAC P.F. & Freq.	0.9	0.9
	8.	Maxi. Demand in season	750 KVA	1500 KW 10500 KW co-Gen
	9.	Max.Demand in off-season	400	

D) Gear Box

Make	Triveni Engineering Works
Type	N2519C
Speed at inlet	7551 rpm
Speed at outlet	1500 min.-1
Speed ratio	5.034:1
Mechanical rate of efficiency	98.5%
Oil consumption	270 Liter / min
Service pressure of oil	1.5-2.0 bar (g)
Abstracted heat	139794 Kcal/hr
Turbine /Gearbox coupling	
Make	Euroflex transmission (India)
Type	8GH -200 – S Multiplate type
Speed	7551 RPM
Torque	15.99 KNm
Gearbox /Generator Coupling	
Make	Euroflex transmission (India)
Type	10GBH -315 – S Multiplate type
Speed	1500 RPM
Torque	78.76 KNm
Main oil pump	
Make	David Brown UK
Capacity	700 LPM
Pressure	7 Bar

E) Condenser

Make	GE Godavari Engineering Ltd.,
Steam Quantity	40 TPH
Pressure	0.1 Ata
Cooling Water Inlet/Outlet Temperature	32/40°C
Water Quantity	2550 m^3/hr
Velocity of cooling water through tubes	2.13 m/Sec.
Enthalpy of condensing steam	554.85 kcal/kg
Surface area	833 m^2
Total no . of tubes	2838
Tube size	19.05 x 20 BWG x 5000 mm long
Hotwell capacity	1.33 m^3

F) Ejector System

	Unit	Startup	Main
Make		Mazda Ltd., Ahemedabad	Mazda Ltd., Ahemedabad
Capacity	Kg/hr	22.45W.V. /10.2Air	22.45W.V. /10.2Air
Motive steam pressure	Ata	8	8
Motive steam Temp.	°C	230/270	230/270
Steam consumption	Kg/hr	335	335
Evacuation time	Min	20	--

G) Condensate Extraction Pump – 3 Nos

Make	Sulzer pumps India Ltd.,
Type	Horizontal centrifugal
Model	CZ 50-250
Capacity	44 m^3/hr
Head	70 M
RPM/KW	2900 / 18.5

H) Lubrication Oil System

Make	Enpro Industries Pvt Ltd.,
Type of lubrication	Forced
Oil pressure	1.5-3.0 bar
Normal flow	649 LPM
Tank capacity	9000 Lit
AOP Capacity	713 LPM
EOP capacity	4000 LPM
Oil Cooler	Shell and tube type, duplex/ 3000 KW
Type of oil	VG 46
EOHT Capacity	3000 Lit

I) Control Oil System

Make	Argo –Hytos Protech S.R.O. Ostrava CZ
Type of oil	Quintolubric 888-68
Oil pressure	200 bar
Normal flow	8 LPM
Tank capacity	160 Lit

J) Gland Vent Condenser

Make	ESKAY Heat Transfer Pvt. Ltd.,
Type	Shell and fix tube with AC motor driven exhaust fan
Cooling media	Condensate water
Cooling water flow	15 m^3/hr
Blower capacity	650 CFM of air @ 2" water column

K) Governor

Make	Woodward
Type	Digital
Model	505
Nema	Class 'D'

L) Oil Centrifuge

Make	Alpha Laval
Capacity	1000 LPH
Type of oil	VG 46
Model	MAB 103

M) Turbine Control panel

Make	Fox control
Model	Simatic S7-300 (Siemens)

N) Electrical Panel

Make	Sequent System Integrators Pvt Ltd.,
Panels	HT breaker /TGMCC/LAVT /GCP/DC battery

O) Generator Transformer

Make	Universal
KVA	17500
Specification ref	IS-2026
Application	Outdoor
Cooling	ONAN
Vector group ref	YNd1
Core and winding	19800 kgs
Tank and fitting	11000 kgs
Oil	12920 Lit
Total weight	42300 kgs
Type of oil	IS – 335

P) Distribution Transformer

Make	Universal
KVA	4000
Specification ref.	IS -2026
Application	outdoor
Cooling	ONAN
Vector group ref.	DYn11
Core and winding	3990 kgs
Tank and fitting	2755 kgs
Oil	3080
Total weigh	8930 Kgs
Type of oil	IS 335

Cooling Tower

A)

1. Cooling Tower capacity --3600m³/hr
2. No. of cells -- 2
3. Capacity of each cell --1800m³/hr
4. Cooling water supply temp. -- 42°C
5. Cooling water return temp. -- 32°C
6. Basin size -- 12.5 x 25.5
7. Fill type -- Film flow
8. Filled depth -- 1.22 Mtrs
9. Spray nozzle type -- Non clogging
10. No. of nozzle per cell -- 450 Nos

B) Cooling Tower Pumps

Data	Main cooling pump	Auxiliary Pump
Quantity	3 Nos	3 Nos
Pump Type	Centrifugal Axially split casing	Centrifugal End suction
Fluid Handled	Row water	Row water
Rated flow rate	1800 m³/hr	300 m³/hr
Head	25 MWC	35 MWC
KW / HP (VFD Drive)	275 / 370	75 / 100
RPM	990	1480

C) Cooling Fans – 2 Nos (One for each cell)

Open type, axial flow multi-blade contraction

Make -- Dew pond
No. of blade -- 8 Nos
Fan Diameter -- 6500 mm
Fan speed -- 176 RPM
Gear box type -- Bevel Helical
Reduction ratio -- 8.4:1
Motor KW/HP (VFD Drive) -- 55 /75
Make -- Crompton Graves
RPM -- 1475

Wet Pressurized Ventilation System

Make		-	Airstream system Private Limited, Banglore	
i)	**Blowers**	-	02 Nos	
	Model	-	ALB -2-8-BD-C3	
	Blower type	-	DIDW limit load type suitable for belt drive	
	Air quantity	-	1,00,000 m^3/hr each	
	Blower speed	-	About 659 RPM	
ii)	**Primary Filter**			
	Type	-	HFPE panel type filter – 80 Nos	
	Capacity	-	4250 m^3/hr	
	Efficiency	-	20 microns	
	Area of filtration	-	About 24 sq. mtr	
	Size	-	610 x 610 x 50	
iii)	**Secondary Filter**			
	Type	-	HFPE panel type filter – 80 Nos	
	Capacity	-	3400 m^3/hr	
	Efficiency	-	10 microns	
	Area of filtration	-	About 24 sq. mtr	
	Size	-	610 x 610 x 100	
iv)	**Supply of Air Duct**			
	Type	-	Rectangular / Square	
	Material	-	G.I. steel sheets & M.S. supports	
v)	**Evaporation cooling system (ECV)**			
	Make	-	Airstream – 02 Nos	
	Panel construction & support	-	Stainless steel	
vi)	**Tube Axial Fans**			
	Make	-	Airstream	Airstream
	Model	-	AAF -1-60-D	AAF-1-55-D
	Qty.	-	02 Nos	02 Nos
	Size	-	Ø 600 mm	Ø 550 mm
	Capacity	-	8500 m^3/hr	7500 m^3/hr
	Fan speed	-	1380 RPM	1400 RPM
vii)	**Air Conditioner**		**03 Nos**	
	Make	-	Voltas, Thane	
	Capacity	-	11 TR, W.C. PAC	
	Model	-	DPU WSC – 110	
	No. of compressor	-	02 Nos	
	No. of Fans	-	02 Nos	

B.B. Shinde
Chief Engineer

R.V.Jangale
Managing Director

		Pump				Motor			Price
Sr.No.	Pump Name	SR.NO.	HR	RPM	MAKE	KW (HP)	Bearing No	RPM	
1	Cooling Water Pump	1782504034	40	2900	KIRLOSKAR	37 (50)	6312 ZZ	2955	
2	Fermenter Cooling	1800104003	10	1450	KIRLOSKAR	15 (20)	6309 / 6209 ZZ	1460	
3	Process WATER PUMP	10202040086	35.6	2900	KIRLOSKAR	3.7 (5)	6206 / 6205 ZZ	2875	
4	Fermenter Discharge	1310704048	48	2900	KIRLOSKAR	11 (15)	6309 / 6209 ZZ	2920	
5	Deyeasted Wash Transfer	1370304074	50	2900	KIRLOSKAR	9.3 (12.5)	6308 / 6208 ZZ	2890	
6	CIP	13700604017	34	2900	KIRLOSKAR	7.5 (10)	6308 / 6208 ZZ	2890	
7	YBP	1774204065	22	2900	KIRLOSKAR	2 3 (3)	6205 ZZ	2830	
8	Reboiler spent wash	150/32QFHKPD	22	1450	KIRLOSKAR	30 (40)	6312 ZZ	1450	
9	Week bear (Recycle)					3.7 (5)	6206 ZZ	2850	
10	Service Water Pump					9.3 (12.5)	6309 ZZ	1450	
11	RS Transfer					3.7 (5)	6206 ZZ	2850	
12	Molasses Transfer Feed	1672				5.5 (7.5)	6308 / 6208 ZZ	1450	
13	Molasses Transfer Feed	1672				0	0	0	
14	Blower					30 (40)	6312 ZZ	1475	
15	Cooling Tower fan					18.5 (25)	6310 / 6210 ZZ	1460	
16	Air Compressor					9.3 (12.5)	6309 / 6209 ZZ	1460	
17	Fire fighter								
				ETHANOL PLANT					
1	Cooling Water Pump	VS04AL-2					6310 ZZ		
2	RS Feed Pump						6309 - 6209 ZZ		
3	Regenration Pump						6309 ZZ		
4	De Super heater Pump								
5	Vaccume Pump						6308 / 6208 ZZ		
6	Cooling Tower fan					5.5 (7.5)	6208 / 6207 ZZ	1460	

Guru

Separetor Baring No.

Verticale - 6213 M/C3 , 6014 M/C3 , 6015 M/C3 , 2308 EM , 225147 M
Horizontal - 6211 , 6306 , 6305 , 6206 **Oil Seal No** - 40 X 62 X 7

Cooling Tower Rs - Model - 457 - 201
Serial No - B04 - 2 - 0029A
Gare Box - Model No - P82 - 474
Serial No - US04C175
Series - 22.2
Ratio - 5.5 / 1

Ethanol Cooling Tower Model No - 361 - 101 DF
Serial No - B04 - 2 - 0029B
Gare Box - Series - 10P
Ratio - 2.615 / 1
Model No. - P - 82 - 449

FERMENTATION PUMP & MOTOR

SR.NO.	LOCATION/NAME		SR. NO.	HR	RPM	MAKE	MACH. NO.	KW	HP	RPM	AMP.	MAKE
1	FERMENTER NO. 01 Circulation pump & motor		29402	140	1450	SINTECH	15KP4	15	20	1465	27.0 delta	APLEX
2	FERMENTER NO. 02 Circulation pump & motor		29401	140	1450	SINTECH	15KP5	15	20	1465	27.0 delta	APLEX
3	FERMENTER NO. 03 Circulation pump & motor		29400	140	1450	SINTECH	15KP6	15	20	1465	27.0 delta	APLEX
4	FERMENTER NO. 04 Circulation pump & motor		29399	140	1450	SINTECH	15KP7	15	20	1465	27.0 delta	APLEX
5	Pre fermenter no. 01 Circulation pump & motor		29397	40	2900	SINTECH	5.50kp2	5.5	7.5	2900	9.8 delta	APLEX
6	Pre fermenter no. 02 Circulation pump & motor		29398	40	2900	SINTECH	5.50kp3	5.5	7.5	2900	9.8 delta	APLEX
7	Beerwell circulation pump	A	29408	30	2900	SINTECH	15KP2	15	20	2920	26.0 delta	APLEX
8		B	29407	30	2900	SINTECH	15KP3	15	20	2920	26.0 delta	APLEX
9	Anti Foaming dosig pump	A	29408	2	2900	SINTECH	1.50KP2	1.5	2	2860	2.88star	APLEX
10		B	29409	2.6	2900	SINTECH	1.50KP3	1.5	2	2860	2.88star	APLEX
11	Conc. Acid dosing pump	A	29412	3	2900	SINTECH	2.20KP2	2.2	3	2850	4.4STAR	APLEX
12		B	29413	3	2900	SINTECH	2.20KP3	2.2	3	2850	4.4STAR	APLEX
13	Dil. Acid dosing pump	A	36301	2	2500	SINTECH	1.5kp2	1.15	2	2860	2.88star	APLEX
14		B	36300	2	2500	SINTECH	1.5kp3	1.15	2	2860	2.88star	APLEX
15	Sludge transfer	A	29404	5	2900	SINTECH	2.2kp2	2.2	3	2850	4.4star	APLEX
16		B	29407	5	2900	SINTECH	2.2kp3	2.2	3	2850	4.4star	APLEX
17	sludge setting tansfer	A	29373	5	2900	SINTECH	2.20kp2	2.2	3	2850	4.4star	APLEX
18	molasess weighting pump	A	17540	7.5	310	rotomac	5.50kp4flg	5.5	7.5	1460	11.0delta	APLEX
19		B	17539	7.5	310	rotomac	5.50kp4flg	5.5	7.5	1460	11.0delta	APLEX
20	molasess weighting gear box	A	M352304	7.37	367	POWER BUILD						APLEX
21		B	M352306	7.37	330	POWER BUILD						APLEX
22	Molasses day tank pump	A	17535	7.37	350	rotomac	5.5kp4flg	5.5	7.5	1460	11.0delta	APLEX
23		B	17534	7.37		rotomac	5.5kp4flg	5.5	7.5	1460	11.0delta	APLEX
24	Molasses day tank gear box	A	M352307	7.37	330	POWER BUILD						APLEX
25		B	M3523305	7.37	330	POWER BUILD						APLEX
26	CIP	A	29414	28	2900	SINTECH	15KP2	15	20	2920	26.0 delta	APLEX
27		B	29415	28	2900	SINTECH	15KP3	15	20	2920	26.0 delta	APLEX
28	Nutrient dosing pump	A	29410	3	2900	SINTECH	1.1KP2	1	1.5	2870	2.15STAR	APLEX
29		B		3	2900	SINTECH	1.1KP3	1	1.5	2870	2.15STAR	APLEX
30	AIR BLOWER	A	BWSK200A	25	1440	PPIS	30KP4	30	40	1470	53.0DELTA	APLEX
31		B	BWSK200B	25	1440	PPIS	30KP5	30	40	1470	53.0DELTA	APLEX
32	FERMENTER SEALING PUMP	A	29416	4	2900	SINTECH	3.70KP2	3.7	5	2875	6.7DELTA	APLEX
33		B	29417	4	2900	SINTECH	3.70KP3	3.7	5	2875	6.7DELTA	APLEX
34	FERMENTER 01 AGITATOR		1277	3.7	2830	GALAXY	3.70PK2FLG	3.7	5	2875	6.7DELTA	
35	FERMENTER 02 AGITATOR		1277	3.7	2830	GALAXY	3.70PK2FLG	3.7	5	2875	6.7DELTA	
36	FERMENTER 03 AGITATOR		1277	3.7	2830	GALAXY	3.70PK2FLG	3.7	5	2875	6.7DELTA	
37	FERMENTER 04 AGITATOR		1277	3.7	2830	GALAXY	3.70PK2FLG	3.7	5	2875	6.7DELTA	
38	AIR COMPRESSER	A	PE2233687						20			
39		B	PE2253513						20			

COOLING TOWERPUMP & MOTOR

SR.NO.	NAME		SR. NO.	HR	RPM	MAKE	MECH NO.	KW	HP	AMP.	RPM	MAKE
1	RS COOLING TOWER	A	29279	400	1450	SINTECH	55KP4	55	75	96 DELTA	1460	APLEX
		B	29278	400	1450	SINTECH	55KP4	55	75	96 DELTA	1460	APLEX
		C	29278	400	1450	SINTECH	55KP4	55	75	96 DELTA	1460	APLEX
2	FERMENTER	A	29276	400	1450	SINTECH	45KP4	45	60	96 DELTA	1475	APLEX
		B	29277	400	1450	SINTECH	45KP4	45	60	96 DELTA	1475	APLEX
3	ETHONAL	A	29280	300	1450	SINTECH	18.5KP4	18.5	25	34 DELTA	1470	APLEX
		B	29281	300	1450	SINTECH	18.5KP4	18.5	25	34 DELTA	1470	APLEX

DISTILLATION PUMP AND MOTOR

SR.NO.	LOCATION/NAME		SR. NO.	HR	RPM	MAKE	MECH. NO.	KW	HP	RPM	MAKE
1	RS FEED PUMP	A	29427	4	2900	SINTECH	3.70PF2	3.7	5	2890	APEX
2		B	29428	4	2900	SINTECH	3.70PF2	3.7	5	2890	APEX
3	PRODUCT TANK PUMP	A	29449	4	2900	SINTECH	220PF2	2.2	3	2910	APEX
4		B	29450	4	2900	SINTECH	220PF2	2.2	3	2910	APEX
5	REGERATION TANK	A	29447	38	2900	SINTECH	30PF2	30	40	2945	APEX
6		B	29448	38	2900	SINTECH	30PF2	30	40	2945	APEX
7	ANALYSER BOTTOM	A	29421	60	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
8		B	29422	60	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
9	RC BOTTOM PUMP	A	29429	22	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
10		B	29430	22	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
11	ED BOTTOM	A	29433	22	2900	SINTECH	7.5PF2	7.5	10	2920	APEX
12		B	29434	22	2900	SINTECH	7.5PF2	7.5	10	2920	APEX
13	VACCUM SEALING	A	29443	55	2900	SINTECH	3.7PF2	3.7	5	2890	APEX
14		B	29444	55	2900	SINTECH	3.7PF2	3.7	5	2890	APEX
15	VACCUM VWS	A		20	1440	SINTECH	15PF4	15	20	1456	APEX
16		B		20	1440	SINTECH	15PF4	15	20	1456	APEX
17	RECOVERY FEED	A	29439	3	2900	SINTECH	2.2PF2	2.2	3	2810	APEX
18		B	29440	3	2900	SINTECH	2.2PF2	2.2	3	2810	APEX
19	RECOVERY REFLUX	A	29437	3	2900	SINTECH	2.2PF2	2.2	3	2910	APEX
20		B	29438	3	2900	SINTECH	2.2PF2	2.2	3	2910	APEX
21	FO WASHING PUMP	A	29425	3	2900	SINTECH	1.10PF2	1.1	1.5	2890	APEX
22		B	29426	3	2900	SINTECH	1.10PF2	1.1	1.5	2890	APEX
23	ANALYSER CONDENSATE	A	29431	10	2900	SINTECH	7.5PF2	7.5	10	2820	APEX
24		B	29432	10	2900	SINTECH	7.5PF2	7.5	10	2820	APEX
25	ED REFLUX PUMP	A	29851	3	2900	SINTECH	3.7PF2	3.7	5	2890	APEX
26		B	29852	3	2900	SINTECH	3.7PF2	3.7	5	2890	APEX
27	RECTIFER REFLUX	A	29435	15	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
28		B	29436	15	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
29	FLASH TANK PUMP	A	29423	30	2900	SINTECH	7.5PF2	7.5	10	2920	APEX
30		B	23424	30	2900	SINTECH	7.5PF2	7.5	10	2920	APEX
31	STEM CONDANSATE	A	79427	10	2900	SINTECH					APEX
32		B	79428	10	2900	SINTECH					APEX
33	D SEALING PUMP	A	29445	9	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
34		B	29446	9	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
35	F OIL PUMP	A	29457	10	2900	SINTECH	5.7PF2	3.7	5	2890	APEX
36		B	29458	10	2900	SINTECH	5.7PF2	3.7	5	2890	APEX
37	RS PUMP	A	29451	30	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
38		B	29452	30	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
39	ETHNOL PUMP	A	29453	30	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
40		B	29454	30	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX
41	IS PUMP	A	29455	30	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX

42		B	29456	30	2900	SINTECH	5.5PF2	5.5	7.5	2925	APEX

EVP PUMP & MOTOR

SR.NO.	LOCATION/NAME		SR. NO.	HR	RPM	MAKE	KW	HP	RPM	MAKE
1	FEED TANK	A	21.06684	30	2900	SPX FLOW	7.5	10	2885	APLEX
2	FEED TANK	B	21.06685	30	2900	SPX FLOW	7.5	10	2885	APLEX
3	PRODUCT TANK	A	22.080185	25	2900	SPX FLOW	3.7	5	2875	APLEX
4	PRODUCT TANK	B	22.080186	25	2900	SPX FLOW	3.7	5	2875	APLEX
5	STEAM CONDENSATE TANK	A	22.075711	35	2900	SPX FLOW	2.2	3	2800	APLEX
6	STEAM CONDENSATE TANK	B	22.075899	35	2900	SPX FLOW	2.2	3	2800	APLEX
7	CIP TANK	A	21.067201	15	2900	SPX FLOW	1.5	2	2840	APLEX
8	CIP TANK	B	21.067203	15	2900	SPX FLOW	1.5	2	2840	APLEX
9	PC COLLECTION TANK	A	21.042026	22	2960	SPX FLOW	3.7	5	1430	APLEX
10	PC COLLECTION TANK	B	21.042027	22	2960	SPX FLOW	3.7	5	1430	APLEX
13	PC STORAGE TANK	A	21.063535	30	2900	SPX FLOW	37	5	2875	APLEX
14	PC STORAGE TANK	B	21.063536	30	2900	SPX FLOW	37	5	2875	APLEX
15	COOLING TOWER PUMP	A	1022920261	300	1475	SPX FLOW	45	60	1475	APLEX
16	COOLING TOWER PUMP	B	1022920260	300	1475	SPX FLOW	45	60	1475	APLEX
17	SEALING WATER TANK	A	22.04589	25	2900	SPX FLOW	1.5	2	2840	APLEX
18	SEALING WATER TANK	B	220.074538	25	2900	SPX FLOW	1.5	2	2840	APLEX
19	SEALING WATER TO VACCUM	A	22.074541	25	2900	SPX FLOW	1.5	2	2840	APLEX
20	SEALING WATER TO VACCUM	B	22.053599	25	2900	SPX FLOW	1.5	2	2840	APLEX
21	VACCUM PUMP	A	1009109	30	1440	SPX FLOW	22	30	1470	APLEX
22	VACCUM PUMP	B	1009109	30	1440	SPX FLOW	22	30	1470	APLEX
23	FC PUMP	A	22.091153	22	1480	SPX FLOW	125	167	1485	APLEX
24	FC PUMP	B	22.091154	22	1480	SPX FLOW	125	167	1485	APLEX
25	FC TRANSFER PUMP	A	21.067204	15	2900	SPX FLOW	1.5	2	2840	APLEX
26	FC TRANSFER PUMP	B	21.067202	15	2900	SPX FLOW	1.5	2	2840	APLEX
27	FC TRANSFER PUMP	A	22.10396	15	2900	SPX FLOW	2.2	3	2850	APLEX
28	FC TRANSFER PUMP	B	22.103961	15	2900	SPX FLOW	2.2	3	2850	APLEX
29	FF CRICULATION PUMP	A	22.087601	15	1465	SPX FLOW	15	20	1465	APLEX
30	FF CRICULATION PUMP	B	22.087815	15	1450	SPX FLOW	15	20	1465	APLEX
31	FF CRICULATION PUMP	C	22.087816	20	14550	SPX FLOW	15	20	1465	APLEX
32	FF CRICULATION PUMP	D	22.087603	20	14550	SPX FLOW	15	20	1465	APLEX

WARE HOUSE PUMP & MOTOR

SR.NO.	LOCATION/NAME		SR. NO.	HR	RPM	MAKE	KW	HP	RPM	AMP.	MAKE.
1	IS PUMP	A	29455	30	2900	SINTECH	5.5	7.5	2925	9.8	FLAME PROOF INDOSER
	IS PUMP	B	29456	30	2900	SINTECH	5.5	7.5	2925	9.8	FLAME PROOF INDOSER
2	AAR PUMP	A	29453	30	2900	SINTECH	5.5	7.5	2925	9.8	FLAME PROOF INDOSER
	AAR PUMP	B	29454	30	2900	SINTECH	5.5	7.5	2925	9.8	FLAME PROOF INDOSER
3	RS PUMP	A	29451	30	2900	SINTECH	5.5	7.5	2925	9.8	FLAME PROOF INDOSER
	RS PUMP	B	29452	30	2900	SINTECH	5.5	7.5	2925	9.8	FLAME PROOF INDOSER
4	FUSL OIL	A	29457	10	2900	SINTECH	3.7	5	2890	6.9	FLAME PROOF INDOSER
	FUSL OIL	B	29458	10	2900	SINTECH	3.7	5	2890	6.9	FLAME PROOF INDOSER
5	ETHNOL PESO	A	E111109093	25	2900	SPEX FLOW	2.2	3	2900		APEX
		B	D111574044	25	2900	SPEX FLOW	2.2	3	2900		APEX
OLD PLANT											
1	IS RECIVER	A	422006		2865	ALFA LAVEL	3.7	5	2850		CROMPTON GREAVES
	IS RECIVER	B	422005		2865	ALFA LAVEL	3.7	5	2850		CROMPTON GREAVES
2	AA RECIVER	A	422004		2865	ALFA LAVEL	3.7	5	2850		CROMPTON GREAVES
	AA RECIVER	B	422007		2865	ALFA LAVEL	3.7	5	2850		CROMPTON GREAVES
3	RS RICIVER A		422002		2865	ALFA LAVEL	3.7	5	2850		CROMPTON GREAVES
	RS RICIVER A	B	422009		2865	ALFA LAVEL	3.7	5	2850		CROMPTON GREAVES
4	RS FEED	A	17B93040B5	2.5	2900	KIRLOSKAR	9.3	12.5	2920		CROMPTON GREAVES
	RS FEED	B	17B93040B4	2.5	2900	KIRLOSKAR	9.3	12.5	2920		CROMPTON GREAVES
5	DENATURENT PUM	A	422008		2865	ALAFA LEVEL	3.7	5	2850		CROMPTON GREAVES

WTP PUMP & MOTOR

SR.NO.	LOCATION/NAME		SR. NO.	HR	RPM	MAKE	MECH. NO.	KW	HP	RPM	AMP.	MAKE.
1	S.F FEED PUMP	A	A23ZKC000014	35	2880	KIRLOSKAR		11	15	2880	21.5	KIRSLOSAR
2		B	A23ZKC000013									
3	PROCESS WATER TRANSFER PUMP	A	29283	150	2900	SINTECH	30KP2	30	40	2955	50	APEX
4		B	29284									
5	BACK WASH PUMP	A	1373221054	948PL	1480	KIRLOSKAR	TEFSI/XV202	30	40	1475	50	KIRSLOSAR
6	UF FEED PUMP	A	A23ZCS000014	42.5	2900	KIRLOSKAR		5.5	7.5	2900	11.4	KIRSLOSAR
7		B	A23ZCS000013									
8	SOFTENER FEED PUMP	A	A23ZCS000004	38	2870	KIRLOSKAR		3.7	5	28701	8	KIRSLOSAR
9		B	A23ZCS000003									
10	R.O CIP PUMP	A	36299	20	2900	SINTECH	1945958	3.7	5	2890	6.84	BHARAT BIJLEE
11	BLOWER PUMP	A	23965	22.5	1575	ROOTS BLOWER	ILE75011CB235AA4	7.5	10	1455	15	SIMENEE
12	UF BLACK WASH	A	A23ZJL000003	32/49	2900	KIRLOSKAR		7.5	10	2900	15	KIRSLOSAR
13		B	A23ZJL000004									
14	R.O FEED PUMP	A	A23ZCA000015	38	2870	KIRLOSKAR		3.7	5	2870	8	KIRSOLKAR
15		B	A23ZCA000021									
16	SOFTENER WATER TRANSFER PUMP	A	29285	20	2900	SINTECH	3.70KP2	3.7	5	2875	6.7	APEX
17		B	29286									
18	R.O TRANSFER PUMP	A	29288	10	2900	SINTECH	5.50KP2	5.5	7.5	2900	9.8	APEX
19		B	29287	10								
20	R.O HIGH PRESURE PUMP	A	A9650051410000491	21	2924	GROUND FOSX	MG160MB42FF000H3	11				GROUND FOSX
21		B	A9650051410000493									
22	R.O DOSING PUMP	A	230112284		0.7 L/HR						0.25	PROMIMENT
		B	230122845		0.7 L/HR						0.25	PROMIMENT
		C	2211121936		7 L/HR						0.25	PROMIMENT
		D	2207118780		7 L/HR						0.25	PROMIMENT
		E	2211121934		6.3 L/HR						0.25	PROMIMENT
		F	2211121935		6.3 L/HR						0.25	PROMIMENT
		G	2211121931		6.3 L/HR						0.25	PROMIMENT
		H	2211121933		6.3 L/HR						0.25	PROMIMENT
23	UF DOSING PUMP	A	2211121939			WHP	1001259330	0.18	0.25	1325	0.6	WHP
		B	2211121940			WHP	1001259315	0.18	0.25	1325	0.6	WHP
		C	2211121957			WHP	10012593326	0.18	0.25	1325	0.6	WHP
		D	2211121950			WHP	1001260022	0.18	0.25	1325	0.6	WHP
		E	2211121914			WHP	1001261254	0.18	0.25	1325	0.6	WHP
		F	2211121938			WHP	1001261251	0.18	0.25	1325	0.6	WHP
24	SOFTENER AGITATOR PUMP	A	HFM128527			A.L.T.R.A	0.10KNV4FLG	1.1	1.5	1415	2.61	CG POWER
25	HYPO DOSING PUMP	A	2207118734		6.3L/HR						0.25	PROMIMENT
		B	2211121932		7 L/HR						0.25	PROMIMENT
26	HRCC GEAR BOX	A					0.75KEG4FZG	0.75	1	1390	1.7	APEX
27	HRCC CLARIFR	A	WSP57127			PREMIUM	0.37KEG6FLG	0.37	0.5	945	1.46	APEX
28	POLY AGITATOR	A	21084644			ALTRA	0.75KEG4FZG	0.75	1	1410	1.82	CG POWER

29	FLERIC AGITATOR	A	21084654			ALTRA	0.75KEG4FZG	0.75	1	1410	1.82	CG POWER
30	LIME AGITATOR	A	21084659			ALTRA	0.75KEG4FZG	0.75	1	1410	1.82	CG POWER
31	HRCC DOSING PUMP	A	2211121943			WHP	1001259300	0.18	0.25	13254	0.6	WHP
		B	2211121941			WHP	1001259311	0.18	0.25	13254	0.6	WHP
		C	2211121946			WHP	1001259301	0.18	0.25	13254	0.6	WHP
		D	2211151949			WHP	1001260025	0.18	0.25	13254	0.6	WHP
		E	2211121948			WHP	1001261004	0.18	0.25	13254	0.6	WHP
		F	2211121947			WHP	1001259303	0.18	0.25	13254	0.6	WHP

CPU PUMP & MOTOR

Sr.No.	Pump & MOTOR Name		SR.No.	Head	RPM	MAKE	SR. NO./MECH. NO	KW(HP)	RPM	MAKE
1	Raw Effluent transfer pump	A	H24RRE000002	14	1450	KIRLOSKAR	U24VAED00029	3.7(5)	1420	KIRLOSKAR
		B	H23RRE000018	14	1450	KIRLOSKAR	U23VAED00029	3.7(5)	1420	KIRLOSKAR
2	UASB Feed pump	A	A24DSY000001	19	1450	KIRLOSKAR	U23EANC00227	15(20)	1450	KIRLOSKAR
		B	A24DSY000001	19	1450	KIRLOSKAR	U23EANC00224	15(20)	1450	KIRLOSKAR
3	Sludge recirulation pump clarifier - I	A	A24DTH000002	24	2900	KIRLOSKAR	5.50KNE2	5.50(7.5)	2905	KIRLOSKAR
		B	A23DTH000002	24	2900	KIRLOSKAR	5.50KNE2	5.50(7.5)	2905	KIRLOSKAR
4	Sludge recirulation pump clarifier - II	A	A23DTH000016	24	2900	KIRLOSKAR	1.50KNE2	1.5(2)	2840	KIRLOSKAR
		B	A23DTH000017	24	2900	KIRLOSKAR	1.50KNE2	1.5(2)	2840	KIRLOSKAR
5	Filter feed pump	A	IA710230075	35	2890	KIRLOSKAR	7.50KNE2	7.5(10)	2885	CG Power
		B	IA710230729	35	2890	KIRLOSKAR	7.50KNE2	7.5(10)	2885	CG Power
6	UF Feed pump	A	IA706230459	25	2890	KIRLOSKAR	5.50KNE2	5.5(7.5)	2905	CG Power
		B	IA706230461	25	2890	KIRLOSKAR	5.50KNE2	5.5(7.5)	2905	CG Power
7	Filter transfer pump	A	1370619173	33	2890	KIRLOSKAR	5.50KNE2	5.5(7.5)	2860	CG Power
		B	1370619172	33	2890	KIRLOSKAR	5.50KNE2	5.5(7.5)	2860	CG Power
8	UF Backwash pump	A	1374323018	60	2890	KIRLOSKAR	U23EACA00405	3.7(5)	2860	CG Power
		B	1374323017	60	2890	KIRLOSKAR	U23EACA00426	3.7(5)	2860	CG Power
9	Dewatering polydosing tank pump	A	1374123073	23	2840	KIRLOSKAR	U23EAC00448	3.7(5)	2860	CG Power
		B	1374123074	23	2840	KIRLOSKAR	U23EAF00159	3.7(5)	2860	CG Power
10	UF CIP PUMP			30m3	2870	KIRLOSKAR	3.70kne2	3.70(5.0)	2875	CG Power

SR. NO.	BLOWER PUMP & MOTOR		SR. NO.	RPM	AIR FLOW	MAKE	MECH. NO.	HP/KW	AMP	MAKE
1	Equilitation blower	A	28202	2008	170m3/hr	KBT	5.50EN4	5.50/7.5	11.2 DELTA	CG
		B	28202	2008	170m3/hr	KBT	5.50EN4	5.50/7.5	11.2 DELTA	CG
2	Areation blower-I	A	28207	2089	650m3/hr	KBT	18.5KE4TOP	18.5	34 DELTA	CG
		B	28208	2089	650m3/hr	KBT	18.5KE4TOP	18.5	34 DELTA	CG
3	Areation blower-II	A	28206	2266	2500m3/hr	KBT	75KE4	75.0/1000	126 DELTA	CG
		B	28206	2266	2500m3/hr	KBT	75KE4	75.0/1000	126 DELTA	CG

SR.NO	DOSING PUMP & MOTOR		SR.NO.	CAPACITY	PRESSURE	MAKE	SR.NO.	KW/HP	RPM	MAKE
1	SODA ASH DOSING PUMP	A	23/11/16/82	240LPH	2KG	SR	WJBM4289	0.37/0.50	1400	CG POWER
		B	23/11/16/83	240LPH	2KG	SR	WJBM4309	0.37/0.50	1400	CG POWER
2	CAUSTIC DOSING PUMP	A	23/11/16/84	240LPH	2KG	SR	WJBM4277	0.37/0.50	1400	CG POWER
		B	23/11/16/85	240LPH	2KG	SR	WJBM4262	0.37/0.50	1400	CG POWER
3	UREA	A	23/11/16/87	240LPH	2KG	SR	WJBM4168	0.37/0.50	1400	CG POWER
		B	23/11/16/88	240LPH	2KG	SR	WJBM4308	0.37/0.50	1400	CG POWER
4	DAP	A	23/11/16/91	240LPH	2KG	SR	WJBM4261	0.37/0.50	1400	CG POWER
		B	23/11/16/92	240LPH	2KG	SR	WJBM1507	0.37/0.50	1400	CG POWER
5	POLY	A	23/11/16/89	240LPH	2KG	SR	WJBM4261	0.37/0.50	1400	CG POWER
		B	23/11/16/90	240LPH	2KG	SR	WJBM1537	0.37/0.50	1400	CG POWER