

UTTAM SUGAR MILLS LTD, UNIT – LIBBERHERI
(Distillery Division)
Form I (1)
For Central Sugar Factories
Schedule of Machinery

Name of unit :- Uttam Sugar Mill Ltd. Unit, Libberheri , (Distillery Division), Roorkee)
Capacity Licensed : 18000 KL/ANNUM

50 KLPD Distillation Plant

Sr. No	Equipment Name	Technical Specifications
1	Mash Column	Diameter : 2150 mm No. of trays : 20 Tray Type : Grid Type Tray Spacing : 750 mm Material : SS 304 Thickness : 4 mm
2	Degasifying Column	Diameter : 1050 mm No. of trays : 06 Tray Type : Sieve Type Tray Spacing : 750 mm Material : SS 304 Thickness : 4 mm
3	Pre Rectifier cum Stripping Column	Diameter : 1650 mm No. of trays : 64 Tray Type : Bubble Cap Tray Spacing : 250 mm Material : SS 304 Thickness : 4 mm

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REBOILERS			
Sr. No	Equipment Name	Technical Specifications	Quantity
1.	Mash Column Reboiler	HTA : 500 m ² Type : Shell & Tube Material: SS304 Thickness : 5 mm	1+1
2.	RS rectifying Reboiler	HTA : 175 m ² Type : Shell & Tube Material: SS304 Thickness : 4 mm	1

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CONDENSERS & COOLERS			
Sr. No	Equipment Name	Technical Specifications	Quantity
1	Degasser column Condenser I	HTA : 15 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1
2	Degasser column Condenser II	HTA : 5 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1
3	Primary column Vent condenser	HTA : 20 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1
4	Pre-Rectifying column Vent condenser – I	HTA : 25 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1
5	Pre-Rectifying column PCV condenser	HTA : 5 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1
6	RS Product Cooler	HTA : 45 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1
7	TA Cooler	HTA : 2 m ² Type : Shell &Tube Material: SS304 Thickness : 3 mm	1

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8	Fusel Oil Cooler	HTA : 1 m ² Type : Shell & Tube Material: SS304 Thickness : 3 mm	2
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ETHANOL DEHYDRATION SECTION

Sr. No	Equipment Name	Technical Specifications	Quantity
1	Super-heater	HTA : 35 m ² Type : Shell & Tube Material: SS304 Thickness : 3 mm	1
2	Anhydrous Ethanol Condenser	HTA : 40 m ² Type : Shell & Tube Material: SS304 Thickness : 3 mm	1
3	Molecular Sieve Drums	Type : Cylindrical/Vertical Material: SS 304 Capacity: 7.0 m ³ Thickness: 4/5 mm	2
4	Molecular Sieves	Type : 3A Type/Zeochem	10 MT
5	Supporting Media	Type : Ceramic Balls Size : 10 & 25 mm	Lot
6	Product Cooler	HTA : 43 m ² Type : Shell & Tube Material: SS304 Thickness : 3 mm	1
7	Weak Alcohol Condenser	HTA : 47 m ² Type : Shell & Tube Material: SS304 Thickness : 3 mm	1

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8	Weak Alcohol Re-circulation Cooler	HTA : 43 m ² Type : Shell & Tube Material: SS304 Thickness : 3 mm	1
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ETHANOL DEHYDRATION SECTION

Sr. No	Equipment Name	Technical Specifications	Quantity
9	Vacuum Drum	Type : Cylindrical/Vertical Material: SS 304 Capacity: 1 m ³ Thickness: 3 mm	1
10	Weak Alcohol Tank	Type : Cylindrical/Vertical Material: SS 304 Capacity: 2 m ³ Thickness: 3 mm	1
11	Weak Alcohol Re-circulation Cooler pump	Type : Centrifugal Material: Wetted Parts SS 316 Capacity: Suitable	1+1
12	Vacuum Pump	Type : Water Ring Type Material: SS Internals	1+1

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INTEGRATED EVAPORATION PLANT (up to 30% w/w)

1	System offered	3 effect Falling film Evaporation Section +1 effect Falling film Evaporation Section Stand by
2	Operating hours	24
3	Feed Composition	Spent wash 13.06 % w/w solid.
4	Feed Rate to Evaporator	Total Evaporation Feed 587 Tons/day (537 Tons/day Spent Wash @ 14 % w/w solid. + 50 Tons/Day CIP Water @ 3% w/w solids)
5	Product Rate from Evaporator	332 tons/day @ 30.0 % w/w solid.
6	Evaporation capacity	255 tons/day
7	Heating medium	Alcohol Vapors @ 72 deg C
8	Material of construction	Shell SS 304 for calendria, SS 304 tubes

Sr.No	Name Of Equipment	Technical Specifications	Quantity
1	Feed Tank	Type : Cylindrical/Vertical Material: SS 304 Capacity: 25 m ³ Thickness: 3 mm	1
2	Feed Pump	Type : Centrifugal Material: Wetted Parts SS 316 Capacity: 25m ³ /hr	1+1
3	Evaporator	HTA : 450 m ² Type : Falling Film Material: SS 304 Thickness: 5 mm	3+1

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4	Vapor Liquid Separator	Type : Material: Thickness:	Gas Liquid Separator SS 304 5 mm	3+1
5	Recirculation Pump-Falling Film	Type : Material:	Centrifugal Wetted Parts SS 316	3+1
6	Surface Condenser	HTA : Type : Material: Thickness:	450 m ² Shell & Tube SS 304 5 mm	1
7	Vacuum pump	Type : Material: Capacity: Vacuum:	Water Ring type SS Internals 1400 m ³ /hr 710 mm Hg	1+1
8	Process Condensate Tank	Type : Material: Capacity: Thickness:	Cylindrical/Vertical SS 304 2 m ³ 3 mm	1
9	Process Condensate Pump	Type : Material: Capacity:	Centrifugal Wetted Parts SS 316 21m3/hr	1+1
10	Sealing water Tank	Type : Material: Capacity: Thickness:	Cylindrical/Vertical SS 304 1 m ³ 3 mm	1
11	Sealing water Pump	Type : Material: Capacity:	Centrifugal Wetted Parts SS 316 10 m3/hr	1+1
12	Sealing water PHE	Type : Material:	PHE Wetted Parts SS 316	1

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STAND ALONE EVAPORATION PLANT (up to 58 to 60% w/w)

1	System offered	3 effect of Forced Circulation + 1 Forced Circulation Standby
2	Operating hours	24
3	Feed Composition	Spent wash with 30 % w/w solids
4	Feed Rate to Evaporator	332 tons/day @ 30 % w/w solids
5	Product Rate from Evaporator	127 tons/day @60 % w/w solid.
6	Evaporation capacity	205 tons/day
7	Heating medium	Steam @ 1.5 kg/cm ² (g) 127 deg C
8	Material of construction	Shell SS 304 for calendria, SS 316 tubes

Sr.No	Name Of Equipment	Technical Specifications	Quantity
1	Evaporator – Forced Circulation	HTA : 150 m ² Type : Forced Circulation Material: SS304 Shell SS316 Tubes Thickness: 4 mm	3+1 Floating body
2	Vapour Liquid Separator for Forced Circulation Evaporator	Type : Gas Liquid Separator Material: SS 304 Thickness: 4 mm	3+1 Floating body
3	Recirculation Pump- for Forced Circulation Evaporator	Type : Centrifugal Material: Wetted Parts SS 316	3+1 Floating body

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4	Product Tank	Type : Material: Capacity: Thickness:	Cylindrical/Vertical SS 304 2 m ³ 3 mm	1
5	Product transfer Pump	Type : Material: Capacity:	Centrifugal Wetted Parts SS 316 7 m ³ /hr	1+1

UTILITIES SECTION

Boiler -	Concentrated spent wash (Slop) fired traveling grad boiler 20TPH Bagasses – 113TPD with Slop –169TPD @60 Brix
	Stack Height of – 70 Mtr. (MOC- RCC)
Turbine -	3.0MW , 10kg. BACK PRESSURE & TEMP.-440 ⁰ C
Co2 Plant -	24 TON PER DAY
CT Specification	DISTILLATION COOLING TOWER 600m ³ /hr. -02 NOS
	ENA COOLING TOWER 300m ³ /hr. -02 NOS
	FERMENTATION COOLING TOWER 400m ³ /hr. -02 NOS
AIR COMPRESSURE	Atlas Copco. Capacity 60 CFM, Working Pressure 7.25 bar
AIR BOWLER	PPI-150CS

NAME OF APPLICATION			KW	CAPCITY IN M3/HR	RPM	MAKE	NOS.
COLLING TOWER			110	600	1458	Bharatbijlee	2
ENA COLLING TOWER			55	300	1482	Bharatbijlee	2
FARMENTOR RCLIR PUMP			55	400	1482	Bharatbijlee	2
MOLASSES FEED PUMP			15	60	970	Bharatbijlee	4
WASH CHARGER			18.5	60	2920	Bharatbijlee	2

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FIREHYDRANT							
FIRE HYDRANT PUMP			18.5	200	2850	SIEMENS	1
FIRE HYDRANT PUMP (D)			32	60	2940	KIRLOSKER	1

RECEIVER SECTION

S.NO.	EQUIPMENT LIST	NOMENCULATURE	CAPACITY (Liters.)
1	Technical Alcohol, Receiver NO-1	TA-1	12552
2	Technical Alcohol, Receiver NO-2	TA-2	12469
3	Technical Alcohol, Storage Tank	TAR-1	100081
4	ENA ISSUE,TANK NO -1	TAR-2	56962
5	ENA STORAGE, TANK NO - 1	ENAST	1010104
6	ENA RECEIVER, TANK NO -1	ENART-1	56754
7	ENA RECEIVER, TANK NO -2	ENART-2	56967
8	ENA RECEIVER, TANK NO-3	ENART-3	56779
9	ETHANOL ISSUE, TANK NO-1	EIT-1	49957
10	ETHANOL ISSUE, TANK NO-2	EIT-2	50074
11	ETHANOL RECEIVER, TANK NO-1	ERT-1	56937
12	ETHANOL RECEIVER, TANK NO-2	ERT-2	56886
13	ETHANOL RECEIVER, TANK NO-3	ERT-3	56726
14	ETHANOL STORAGE, TANK No-1	EST-1	411814
15	ETHANOL STORAGE, TANK NO-2	EST-2	410392
16	ETHANOL STORAGE,TANK NO-3	EST-3	410440
17	ETHANOL STORAGE, TANK NO-4	EST-4	408895
18	Fuse Oil Tank	FO Tank	30655

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FERMENTATION SECTION

SL No	Equipement Name	NOMENCULATURE	CAPACITY (Liters.)
1	MOLASSES RECEIVER, TANK NO-1	MRT-1	21953
2	MOLASSES RECEIVER, TANK NO-2	MRT-2	21953
3	Cv1	Cv1	118
4	Cv2	Cv2	1187
4	Cv3	Cv3	6079
5	PRE FERMENTOR NO-1	PF-1	38720
6	PRE FERMENTOR NO-2	PF-2	38514
7	FERMENTOR NO-1	F-1	261317
8	FERMENTOR NO-2	F-2	263003
9	FERMENTOR NO-3	F-3	262600
10	FERMENTOR NO-4	F-4	261173
11	Wash Settling Tank	WST	140540
12	Wash Holding Tank	WHT	259878

50 KLPD MOLASSES SECTION

TANKS FOR FERMENTATION Molasses					
SL No	Equipment Name	Qty.	Capacity	Height	Dia
1	Molasses tanker unloading Tank	1	22.55M ³	2.91	3.1
2	Molasses tanker unloading Tank-2	1	22.55M ³	2.91	3.1
3	Bulk Molasses Storage Tank-1	1	100000 Qtls	10.50 MTR	29 MTRS.
4	Bulk Molasses Storage Tank-2	1	50000 Qtls	11MTR.	20 MTRS.