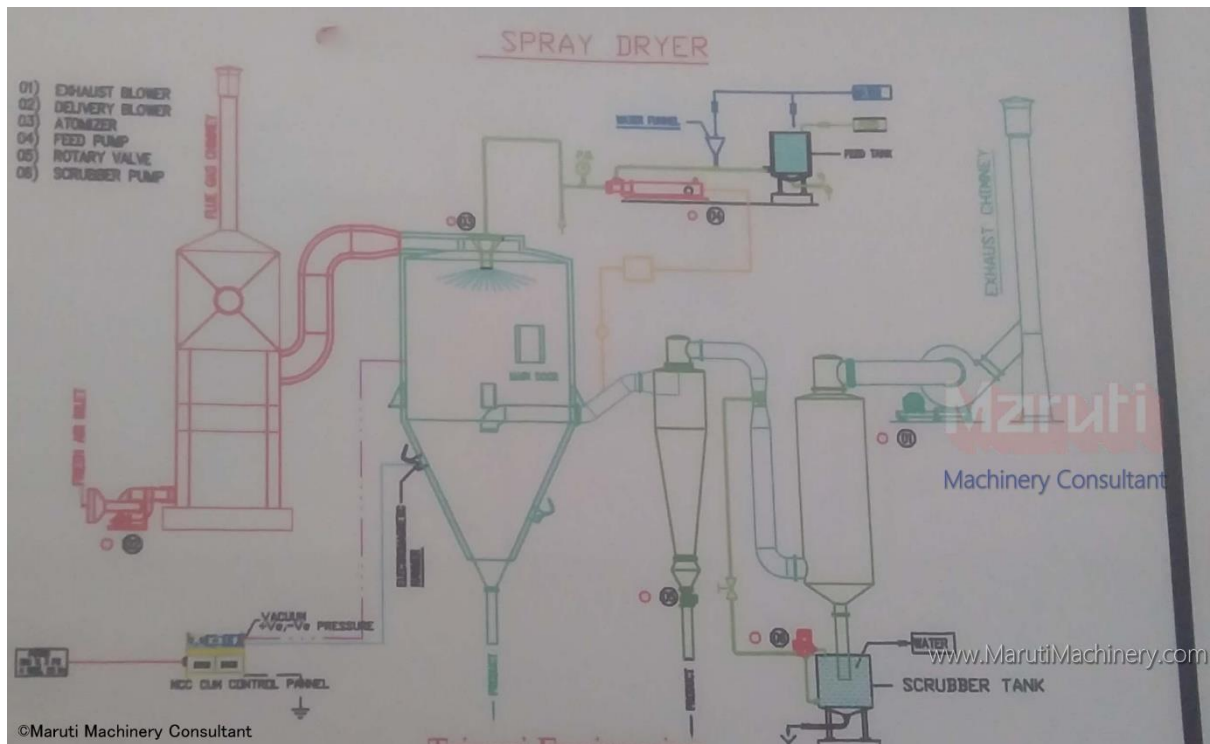
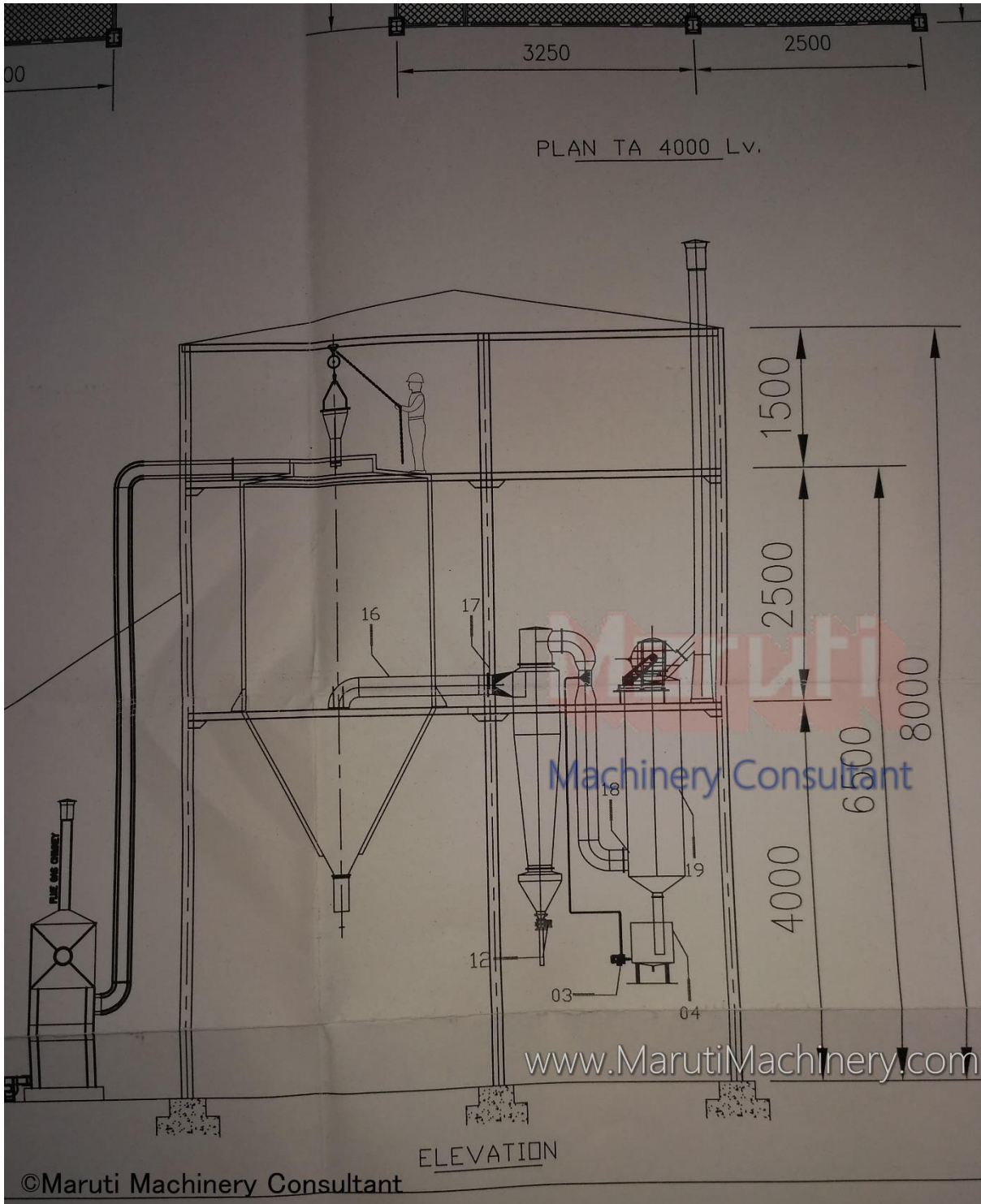
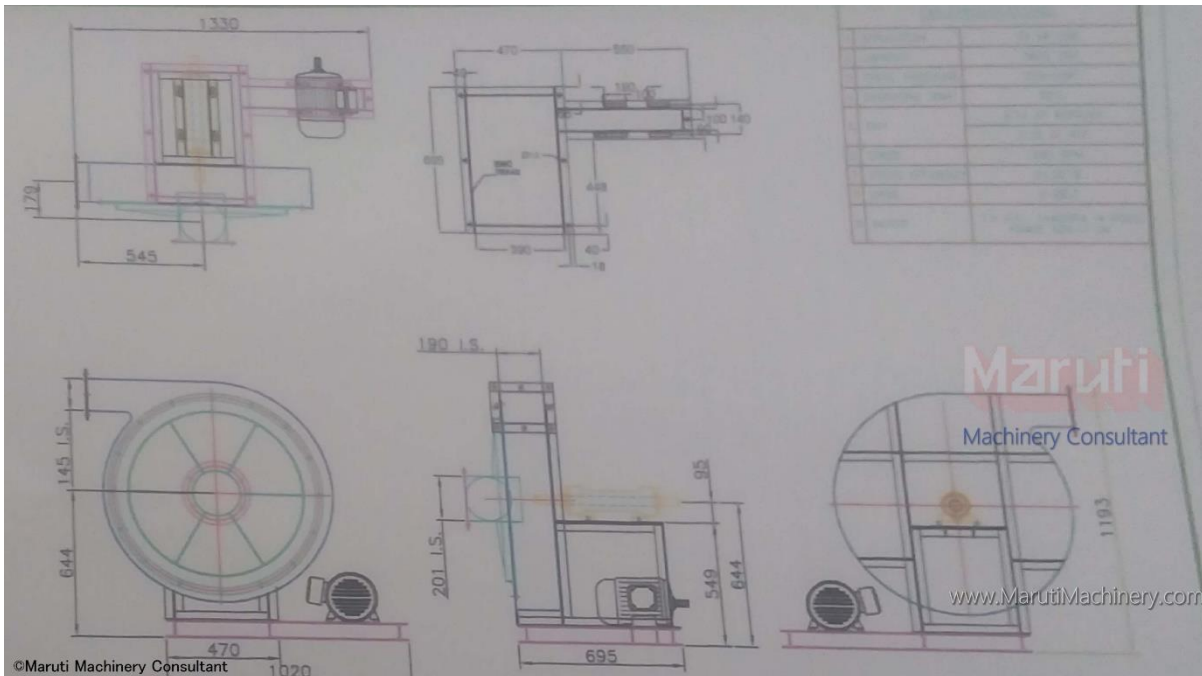
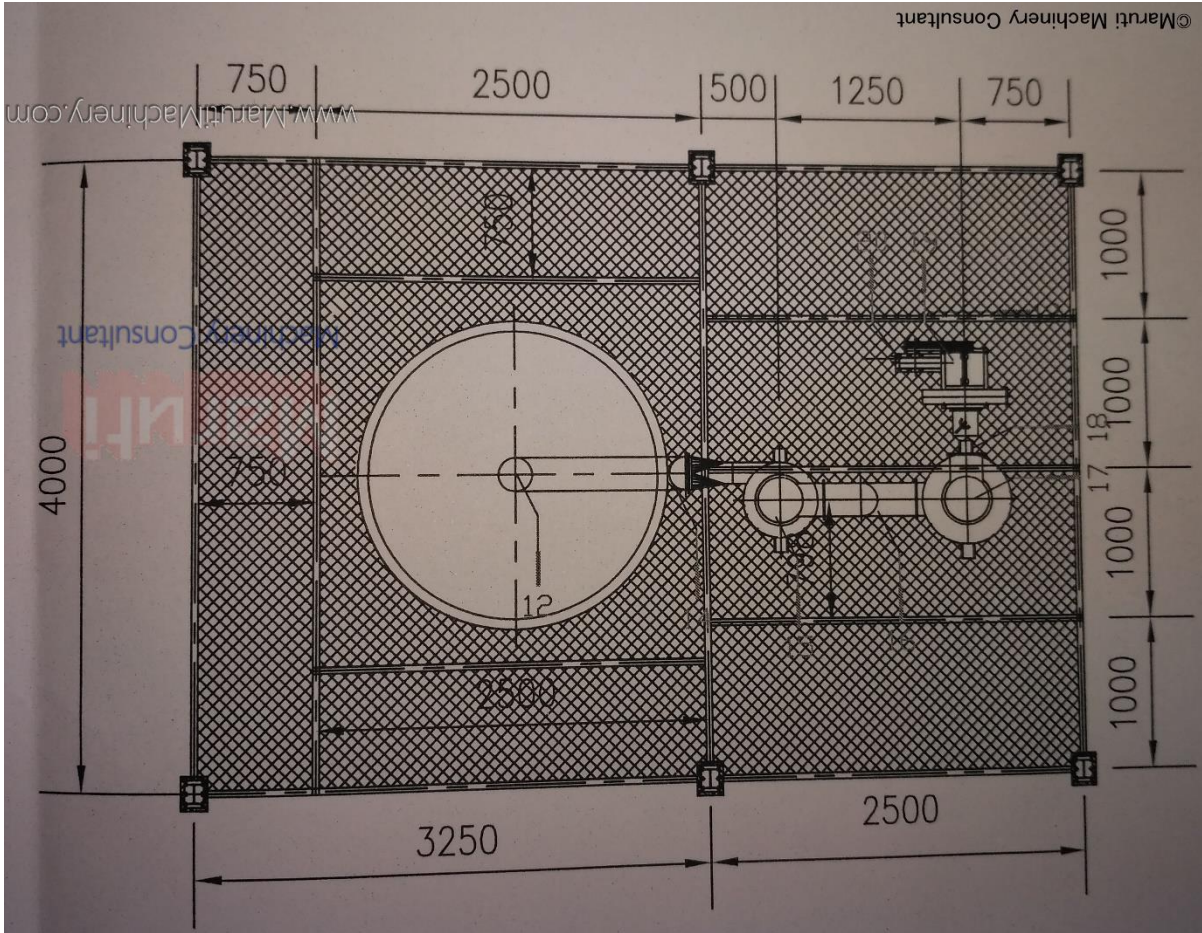
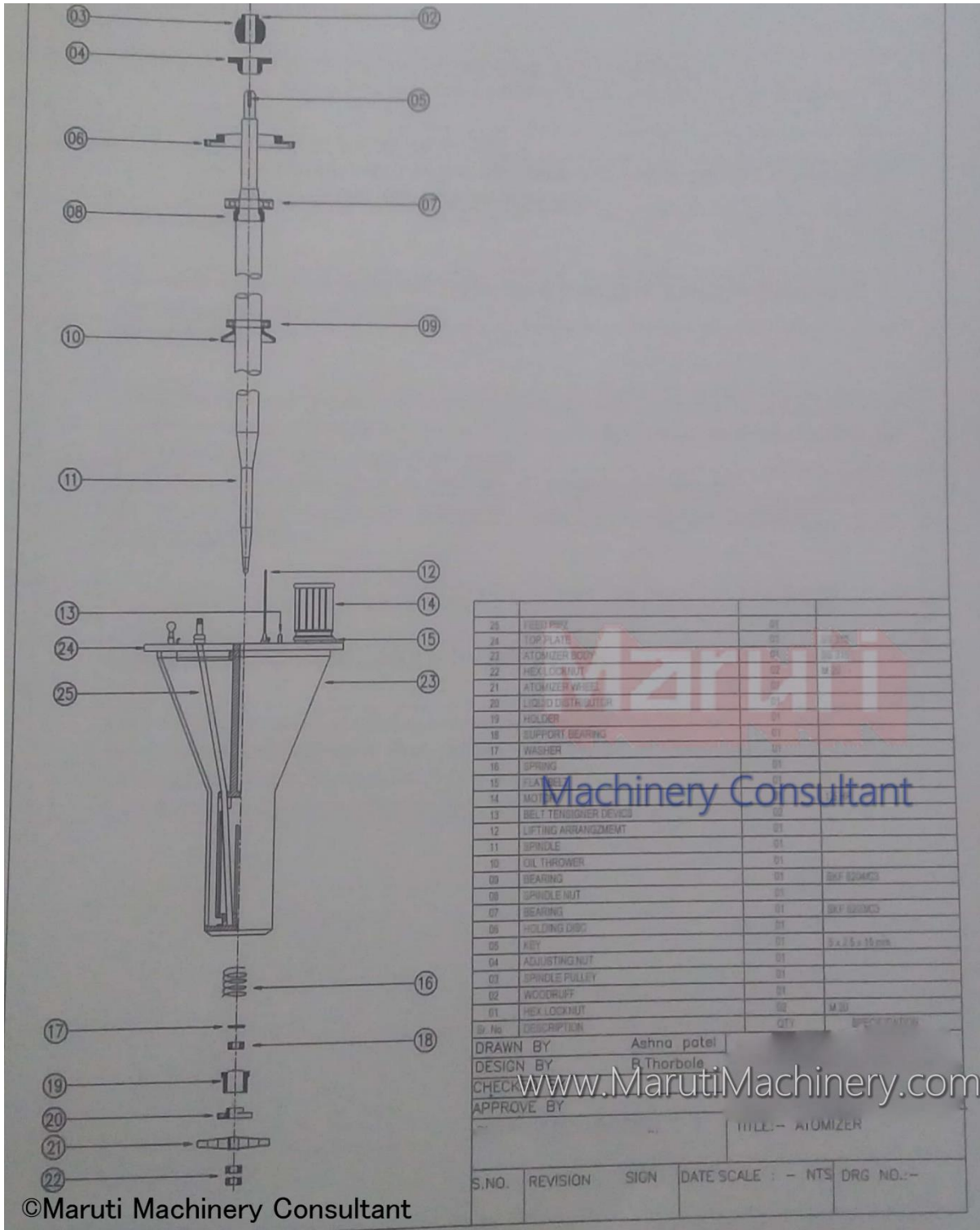


## Technical Sheet









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TECHNICAL SPECIFICATIONS		
<b>PHYSICAL PROPERTIES</b>		
FEED TEMPERATURE	:	80° C
SOLID CONTENT	:	25-30 % w/v
FINAL MOISTURE	:	1-2 %
<b>TECHNICAL PARAMETERS &amp; OPERATING DATA</b>		
FEED RATE	:	50 KG/HR.
AIR INLET TEMP.	:	250° C
AIR OUTLET TEMP	:	100° C
AMBIENT AIR TEMP	:	30° C

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TECHNICAL DATA - SCRUBBER PUMP		
MAKE	:	PROPER FLOW CONTROL PUMP
TYPE	:	MONO VERTICAL MECHANICAL SEAL PUMP
MODEL	:	PFCP- 25
MOC	:	P.P.
CAPACITY	:	5000 LPH
SPEED	:	2900 RPM
SUCTION	:	1 NOS.
DELIVERT	:	10 MTR
MOTOR MAKE	:	
MOTOR CONNECTED	:	1.0 HP
MECHANICAL SEAL	:	

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TECHNICAL DATA - SCREW FED PUMP		
MODEL	:	TE20
MOC	:	SS 316
TYPE	:	POSITIVE DIAPLACEMENT SINGLE
CAPACITY	:	800 LPH
Discharge Pressure	:	1.5 Kg / cm <sup>2</sup>
Pump Speed	:	250 RPM
Motor	:	2.0 HP
Motor make	:	Crompton Greaves
Sealing type	:	Gland Packing
Rotation from drive end	:	Anticlockwise
Bearing type	:	Deep Groove Ball Bearing
Pump pulley	:	4" x 1 x A
Motor pulley	:	10" x 1 x A
Belt type	:	V - belt
Belt Size	:	
Accessories	:	Base frame, belt guard

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TECHNICAL DATA - F.D. BLOWER		
MAKE	:	TRIVENI ENGINEERING
TYPE	:	Centrifugal
Capacity	:	3000 m <sup>3</sup> / Hr.
Speed	:	2880 RPM
St. Pressure	:	
Operating temp.	:	40° C
Type of drive	:	Direct drive
Motor	:	5.0 HP 2880 RPM
Motor make	:	Crompton Greaves
Material of Construction	:	
Casing	:	CS
Impeller	:	CS
Shaft	:	CS
ACCESSORIES	:	
Cleaning Door	:	1 no.
Drain plug	:	1 no.
Double Base Frame	:	1 no.
Metallic cushy foot	:	5 nos.
Vibration Isolator	:	PP CLOTH BELLOW

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TECHNICAL DATA - I.D. BLOWER		
MAKE	:	TRIVENI ENGINEERING
TYPE	:	Centrifugal
Capacity	:	3800 CHM
Speed	:	1680 RPM
St. Pressure	:	350 MM WC"
Operating temp.	:	90° C
Type of drive	:	V - Belt
Motor	:	7.5 HP 1440 RPM
Motor make	:	Crompton Greaves
Bearing nos.	:	2 nos.
Material of Construction	:	
Casing	:	SS316
Impeller	:	SS316
Shaft	:	EN-8
ACCESSORIES	:	
Fan pulley	:	6 "
Motor pulley	:	7 "
Safe guard	:	1 no.
Cleaning Door	:	1 no.
Drain plug	:	1 no.
Double Base Frame	:	1 no.
Metallic cushy foot	:	5 nos.
V - Belt	:	
Vibration Isolator	:	PP CLOTH BELLOW

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SPECIFICATIONS FOR ELECTROMAGNETIC HAMMER		
MAKE	:	TRIVENI ENGINEERING
TYPE	:	ELECTOMAGNETIC
MODEL	:	TEH50
DUTY	:	DISLODGING POWDER FORM CHAMBER WALL
OPERATION	:	THEOUGH SEQUENTIAL TIMER
RATED VOLT	:	440 V/ AC / 50 Hz
QUANTITY	:	4 NOS.
CURRENT	:	7.5 AMP
IMPACT FORCE	:	70 kgf ( min)
LWEIGHT	:	15 KG

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TECHNICAL DATA - ROTARY AIR LOCK VALVE		
ITEM	:	ROTARY AIR LOCK VALVE
MAKE	:	TRIVENI ENGINEERING
MODEL	:	TE100
GEARED MOTOR	:	0.5 HP
GEARED MOTOR MAKE	:	ROTOMOTIVE
OUTPUT RPM	:	28
BEARING	:	SKF 6203/ZZ
BEARING NOS	:	2 NOS.
	:	
	:	

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SPECIFICATION FOR CENTRIFUGAL DISC ATOMIZER	
MODEL	: TE 100
MOC	: Product contact parts are of SS 316
Drive	: Flange mounted motor drive through nylon flat belt.
Atomizer Wheel	: Specially designed atomizer wheel of SS 316 construction
Lubrication System	: Gravity Wick lubrication system.
Speed	: 8000 TO 18000 RPM
Motor	: 1.5 HP Flange mounted
Motor make	: Crompton Greaves
Motor	
Motor pulley	: Ø 130 mm
Shaft pulley	: Ø 32 mm
Wheel Size	: Ø 100 mm
Bearing Size	: 6204/C3 - 6203/C3
Belt type	: Nylon Sandwich
Belt Size	: 25" x 30"
Oil Consumption	:
Grade	: 20/40
Accessories	: Stand & Pulley, Spanner.

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UTILITY SPECIFICATONS		
<b>POWER</b>	:	440 V/3 Phase /4 Wire /50 Hz
<b>Connected Load</b>	:	
<b>Consumed Power</b>	:	
<b>WOOD Consumption</b>	:	30 kg
<b>Process water</b>	:	Clean filtered water at 2 Kg /cm <sup>2</sup> pressure ( For Start Up, Shut Down and Cleaning)
BATTERY LIMITS		
<b>A MATERIAL</b>		
Feed slurry	:	Filtered feed solution at the fed tank.
Product	:	Below Chamber & Cyclone Rotary Valves
<b>B PROCESS AIR</b>		
Incoming	:	Atmosphere through Air Filter
Outgoing	:	Vented to atmosphere from exhaust gas Chimney above the roof level.
<b>C UTILITIES</b>		
Power	:	3 Phase/50 Hz to the MCC Instrument Panel
Earthing	:	At necessary points.
Process Water	:	At water funnel / scrubbing tank / CIP tank
Washing Water	:	At all elevations, for chamber ,cyclone, feed Tank etc...
fuel	:	Wood
Lubrication Oil	:	For Atomizer
Instrument Air	:	At Rotary Air Lock Valve.
<b>LOCAL INSTRUMENTS:</b>		
The temperature and pressure indicators are placed to indicate the various parameters.		
The various locally mounted instruments are :		
1.	RTD Sensor	
	a. Inlet of Chamber	: 1 no.
	b. Inlet of Cyclone	: 1 no.
2.	Hour meter mounted on Control panel to record the Time cycle of fed pump	: 1 no.
3.	Glass tube Manometer Mounted on panel to indicate Chamber vacuum	: 1 no.
4.	Sequential controller Mounted on control panel to Adjust the time interval of magnetic hammers	: 1 no.

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COMPONENTS FOR SPRAY DRYER		
I	AIR FILTER	Contains filter elements, which filters the Atmospheric air further used for drying.
II	DILIVERY FAN	This Blower sucks the Air from the Atmosphere through Air Filter and delivers In to the drying chamber through Wood fair Hot Air Generator. Quantity of Air is controlled by Butterfly Valve.
III	HOT AIR GENRATOR	Indirect Hot Air Generator with CS body is Provided for Air Heating up to the desired temperature and the hot air is entering into the drying chamber.
IV	HOT AIR DUCT	Hot Air Duct is used for passing hot air form Air Heater to Air Distributor.
V	AIR DISTRIBUTOR	Vertex type air distributor used for mixing The drying air with the feed spray mounted on the top of the chamber ensures proper Distribution of air.
VI	FEED BALANCE TANK	Feed to be dried is taken from this day tank For spraying through feed pump
VII	FEED PUMP	IT is a Screw Pump which pumps the slurry To the drying Chamber to Atomizer at a rated Capacity
VIII	CENTRIFUGAL DISC ATOMIZER	It is being used to atomize the feed spray in the Drying Chamber to fine droplets
IX	DRYINEG CHAMBER	It is flat used top, conical bottom , jacketed Chamber in which the drying process takes place
X	ROTARY AIR LOCK VALVE	It is used for continuous discharge of powder From the bottom of Cyclone Separator.
XI	EXHAUST BLOWER	It is used to exhaust the drying air as well as The evaporated eater vapor to the atmosphere Through Exhaust Chimney.
XII	ELECTRO MAGNETIC HAMMER	It is used dislodge the deposited powder Particles from the chamber wall.
XIII	MCC & INSTRUMENT CONTOL PANEL	The Complete Spray Dryer System be operated and controlled from this panel board which comprises MCC and Instrument control Board whit the facility of date acquisition.

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PROCESS DESCRIPTION	
SPRAY DRYER	
	SPRAY DRYING PLANT is custom built drying system used for continuous Transformation of liquid feed into a dried solid product by spraying the feed into a Stream of hot drying air.
	The feed slurry is pumped in controlled rate by Screw Pump and sprayed into the Spray Dryer chamber through Centrifugal Disc Atomizer, provided at the flat top Of the drying chamber. The spray is co-current to the drying hot air which is Produced by a filtered atmospheric air through the jacket of chamber in Hot Air Generator entering form the top of the drying chamber through air distributor. The Heat transfer takes place, when the hot air comes in contact with the spray and Evaporation takes place, the dried particulates thus produced having desired Moisture Content is collected from the bottom of the chamber through Discharge Valve. Further, the residual moisture of the dried product can be controlled by Varying the feed rate to the system.
	The exhaust air is treated for product recovery by Cyclone Separator and Wet Scrubbing System and the clean air is vented out by Exhaust Blower to the Atmosphere through exhaust chimney.
	Adequate instrumentation is provided along with MCC panel and Instrumentation System.

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NORMAL START UP PROCEDURE ( other than at commissioning period)	
	Now the plant can be started
	Start up the plant in the following sequence
1.	Start I.D. blower
2.	Start F.D. Blower
3.	Start Wood fair hot air generator
4.	Start Atomizer
5.	Temperature starts rising and allow it to rise till you have the defined temperature At the inlet.
6.	Check the vacuum in the chamber; minimum vacuum required is 5 - 10 mm WG Some fine - tuning in the damper settings may be required to adjust the vacuum
7.	In case the outlet temperature exceeds the defined temperature limit; water Pumping may be started by starting the feed pump and adjusting the water valve to Allow water pumping. Ensure funnel is always full of water to prevent pump Cavitations.
8.	Once the temperature at the inlet and outlet are set at the defined limits fed slurry Can be started by opening the feed tank valve and drying process starts.
9.	Start rotary air lock valves.
10.	Check the vacuum level in the drying chamber through the draft gauge. Some Damper adjustment may be warranted to keep it marginal vacuum of around 5 - 10 Mm WG.
11.	The evaporation of water takes place and the dry powder is collected in the Cyclone separator.
12.	Collect some powder and test for the quality analysis. In case of any deviations Recheck the drying temperatures and quantity of feed going in the system / solid Content of the feed.
13.	Check drying chamber vacuum levels, some fine tuning may be warranted.
	Now the system is stabilized and the balance parameters are automatically Controlled by the automatic loops available to control the rate of feeding and Maintaining the required temperature of the inlet air to the drying chamber. There would not be a wide variation in the product quality unless there is Variation in the feed consistency.

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