

OUR VISION INDUSTRIALISING AFRICA



CUSTOMIZED PLANTS



/trbprojects



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projet clé en main



■ Usines de recyclage de plastique et d'acier

- Plantes de fabrication de PVC / HDPE / PET / bouteille
- Barres TMT, laminage à chaud, laminage à froid, usines de ferraille
- Usine de tubes, CRS, CTL

■ Centrales solaires

- Solaire ON / OFF Grid Plants (1-20MW)
- Planules solaires, modules et tableaux
- Batteries & Inverseurs
- Lampadaire solaire, lanternes
- Système de pompage solaire



■ Plantes personnalisées

- Usines de fabrication de tôles ondulées
- Usines de recyclage et de retrait de pneus usés
- Sac en papier, fabrication de tasse
- Poissons, aviculture et plantes agricoles
- TSR Caoutchouc naturel
- Usines de savon et de savon de toilette

■ Alimentation et boissons

- Plantes d'eau minérale
- Bière & Boissons gazéifiées Plantes
- Usines de transformation des tomates
- Biscuits, Plats à Pain
- Cubes de glace
- Emballages et usines de transformation des aliments
- Usines de jus de pulpe de fruits



■ Usines d'expulsion d'huile comestible

- Huile de cacahuète, palmier et palmier
- Graines de coton, cacao, sésame, huile de Moringa
- Usines de raffinage d'huile comestibles
- Usines d'extraction de solvant
- Plantes de remplissage d'huile
- Aliments pour bétail

INTRODUCTION

“TRB GROUP” is in the business for more than 50 years and growing its presence globally. **TRBEX IMPEX PVT. LTD.** is a flagship company of the TRB group which was established under the dynamic leadership of our Late Chairman Sh. Ved Prakash Aggarwal and his legacy is being carried forward by our current Chairman Sh. Rajesh Aggarwal.

PIONEER AND VISION

Sh. Rajesh Aggarwal, a modest man who made a humble beginning with a grand vision, has come a long way in 25 years, but if something has not changed along the way. It is his modesty and his vision “To provide products rich in quality and goodness across an ever growing network of consumers, with a motto of **‘Everyday Everywhere’** making our products an essential part of the life for every individual”.



Rajesh Aggarwal
Managing Director

“From Humble Past to Glorious Present”

“ The journey of a thousand miles is made up of a million steps , but the most important one is always the first step”.

QUALITY POLICY

Quality is about trust. Each and every one of us has the power to influence this trust through our dedication towards our passion and leadership. “We are committed to manufacture and supply quality products which exceed customer satisfaction and market requirements”. TRB has served Africa with wide variety of product and services. It has been in the business of accomplishing Turnkey Projects from past 10 years in different countries of African continent. Our Quality Policy summarizes the essential elements of our commitment for excellence.

TRB is a responsible group with a vision of understanding the consumer’s need, quality, distribution, business acumen and above all, a constant drive to keep bettering ourselves.

We believe that with our continued commitment to excellence in every aspect of whole some production and distribution. We are going to keep discovering newer, bigger and brighter horizons for ourselves , our partners , and above all , the most valued – our consumers.



TURNKEY PROJECTS

■ Customized Plants (Duty Saving Projects)

- TSR Natural Rubber Plant
- Soap Manufacturing Line
- Detergent Manufacturing Line
- Waste Tyre Recycling Plant



TSR Natural Rubber Plant

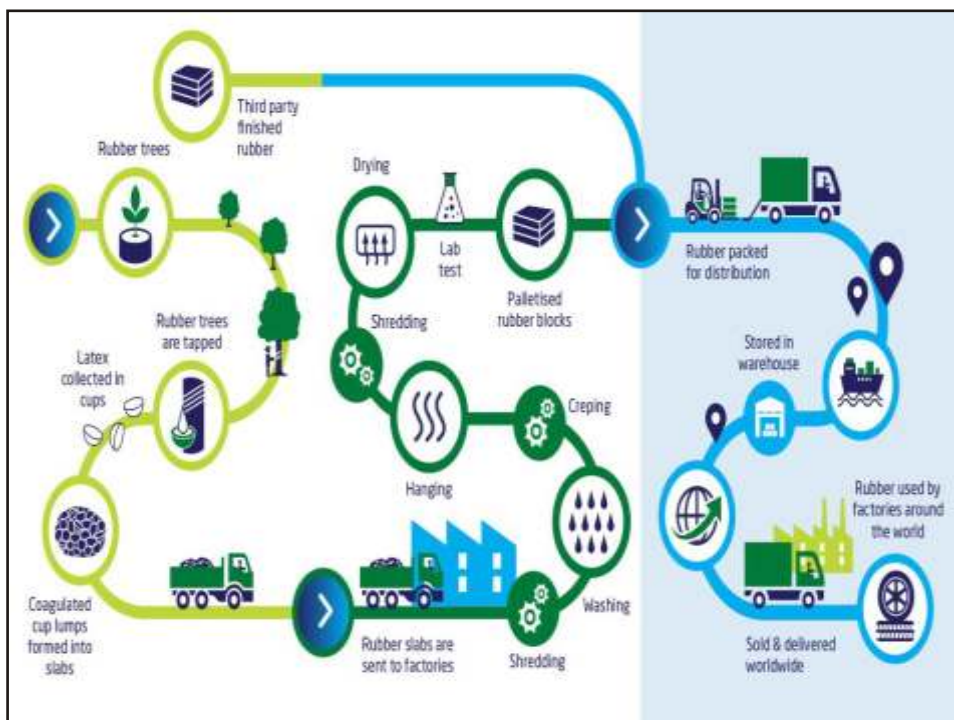
By the early 1970s, TSR rubber was introduced into the market. Originally, most of the solid rubber used was in the form of ribbed smoked sheets or RSS rubber.

TSR which is also known as block rubber is graded according to precise technical parameters such as dirt content, ash content, nitrogen content, volatile matter and properties of the rubber such as its Wallace Plasticity (PO) and its Plasticity Retention Index (PRI).

The TSR grades most widely used by the tyre and rubber industry are the TSR -20 and TSR -10 grades. Block rubber can be produced both from field latex as well as from latex coagulum or what is commonly known as cup- lump.



PLANT LAYOUT



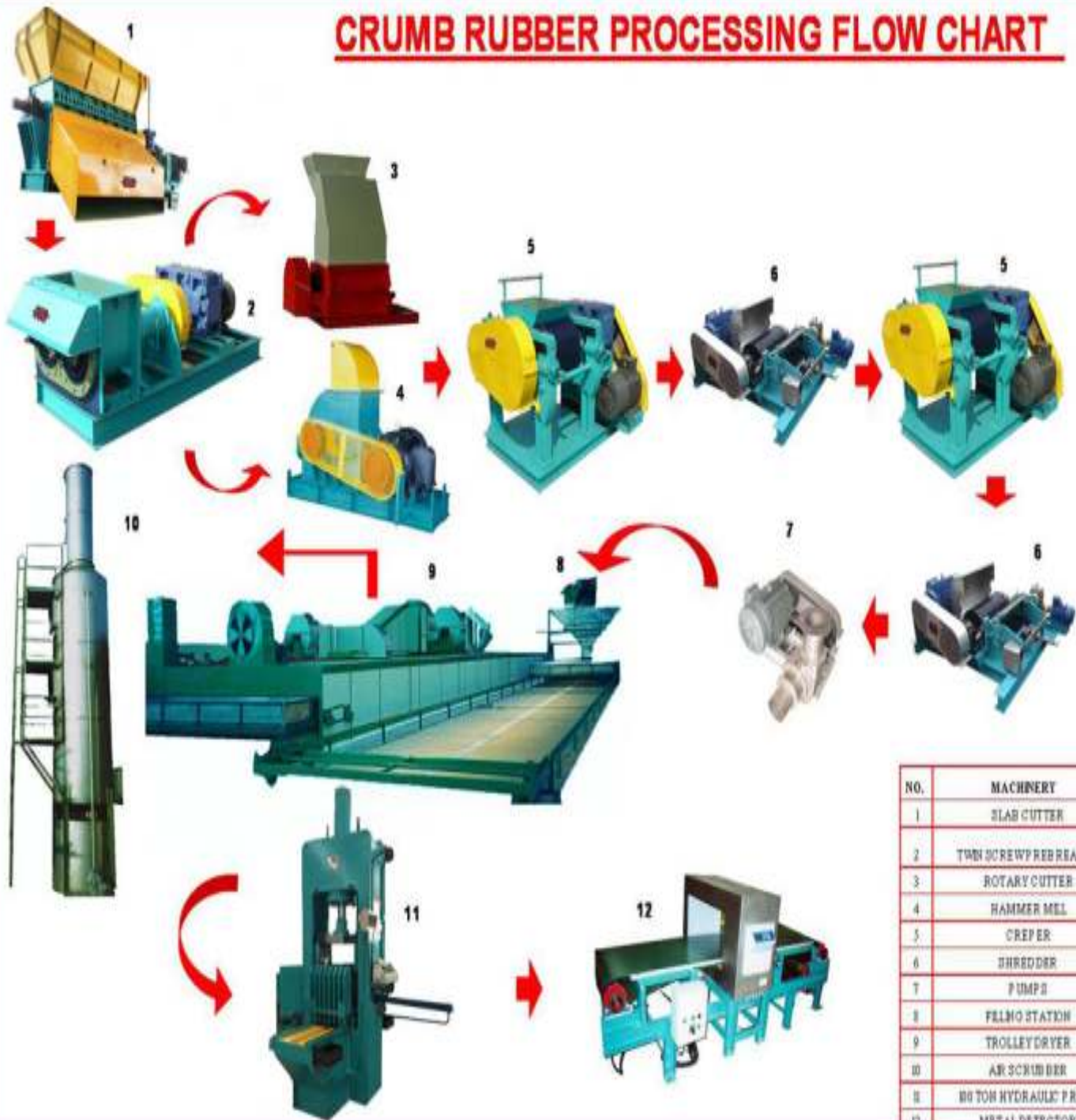
Product Details

PRODUCT	TSR 10/20
Tree	Hevea-brasiliensis
Processing	Ta ping
Tree spot	Bark
Schedule	Alternate days or every after two days
Tree provides latex	4 hours a day
Raw product	Latex
Coagulated product	Cup lump
Immature phase	7 years
Productive phase	25 years
Annual production	2T dry rubber / hect. annually
Packaging	33.5 kg bale
Dirt content % max	0.08/0.16
Ash content % max	0.75/1
Major producer africa	côte d'ivoire/cameroon
Application	Making tyres, tubes, rubber mats, raincoat proofing's, conveyor belts, foot wear and various other rubber products.



Plant & Machineries

CRUMB RUBBER PROCESSING FLOW CHART



NO.	MACHINERY
1	SLAB CUTTER
2	TWIN SCREW PREBREAKER
3	ROTARY CUTTER
4	HAMMER MILL
5	CREPER
6	SHREDDER
7	PUMPS
8	FILMO STATION
9	TROLLEY DRYER
10	AIR SCRUBBER
11	80 TON HYDRAULIC PRESS
12	METAL DETECTOR

Slab Cutter

This is the first machine in the process line. This machine is used for initial breakup of cup lump and rubber blocks.

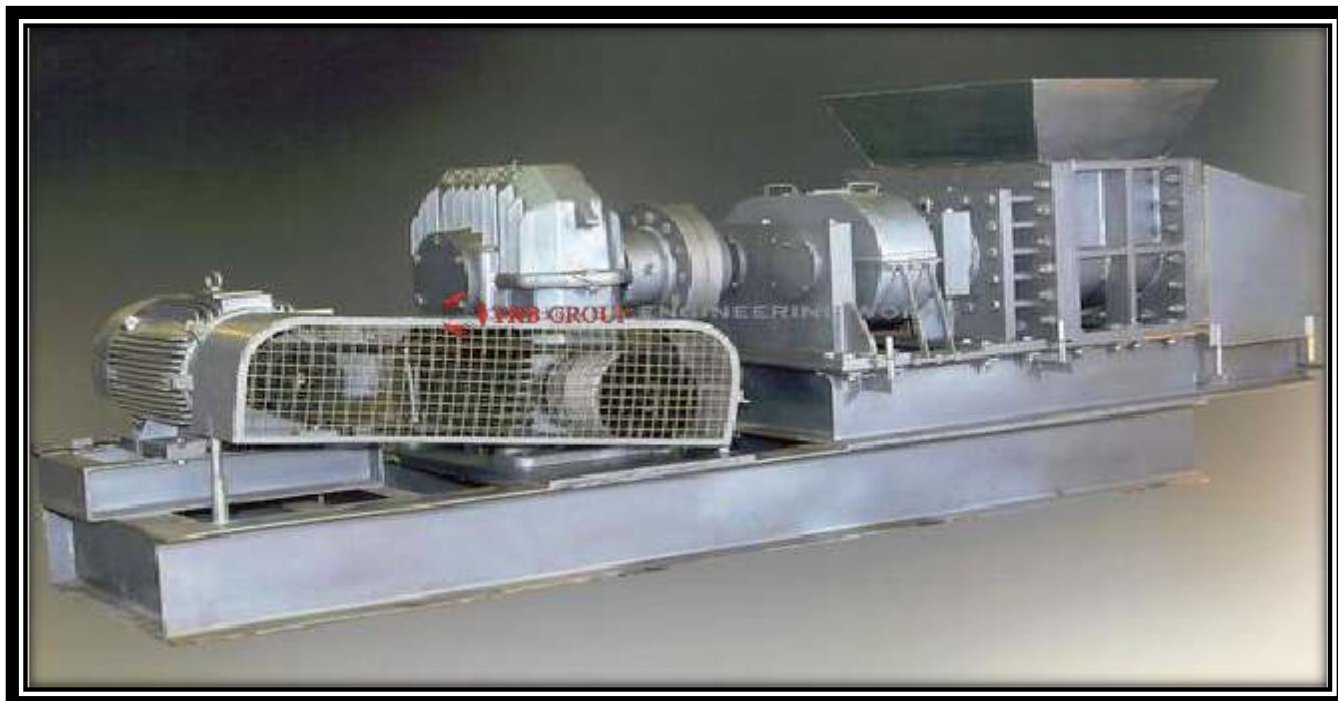
Capacity Various models available with capacity ranging from 1 T/Hr to 3 T/Hr.



	Material Specifications
Base Frame	Fabricated with ISMB 250 or equivalent
Chamber	Fabricated with MS Plates
Fixed Cutter	Mild Steel casting
Hinged Cutter	Fabricated from MS Plates with hard faced cutting edge
Rotating Cutter	Mild Steel Casting with hard faced cutting edge
Bearing	Spherical Roller Bearings with Adapter Sleeve
Gear Box	Worm/Helical Reduction Gear Box
Motor	Squirrel cage Induction Motor

Pre Breaker

This machine is used for size reduction in the initial stage
Capacity : Various models available with capacity ranging from 1 T/Hr to 3 T/Hr.

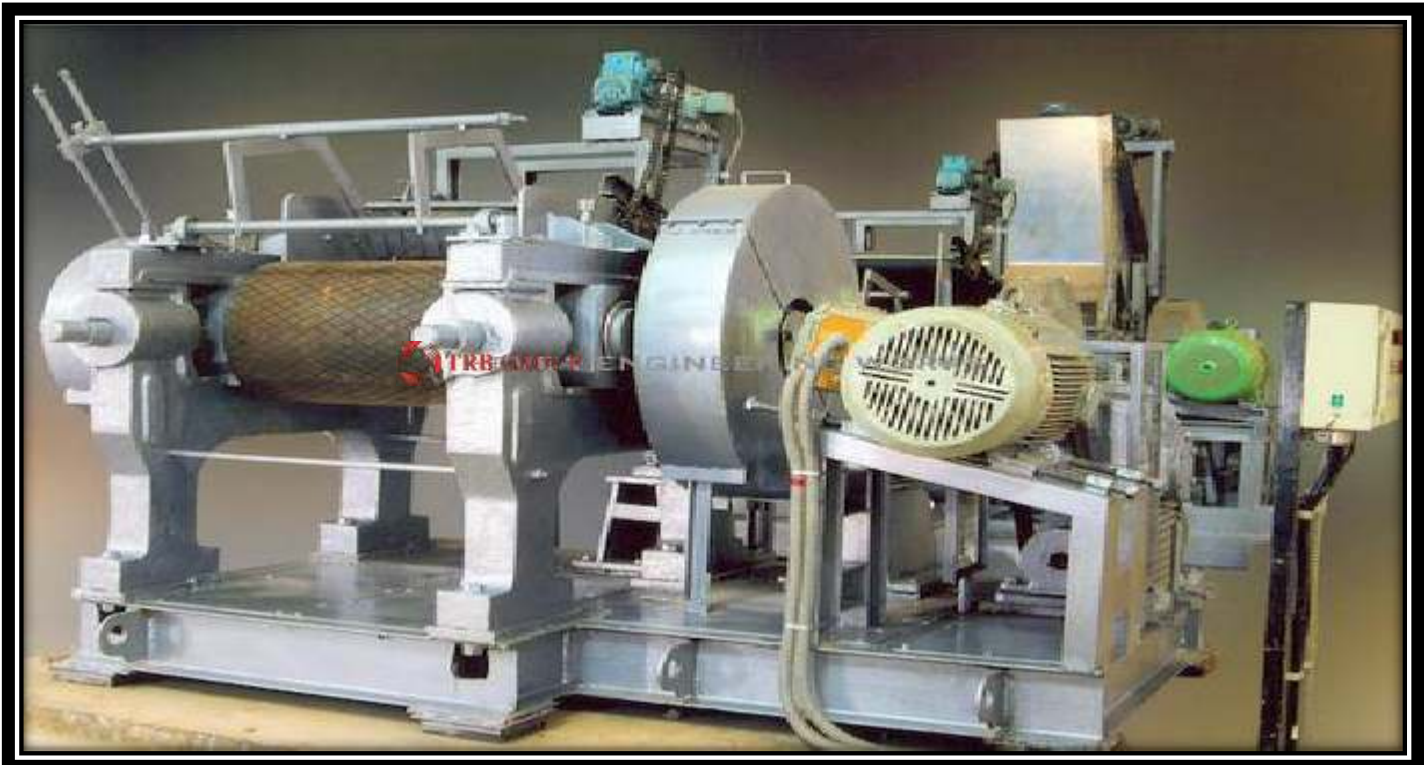


Material Specifications	
Base Frame	Fabricated with ISMB 300 and ISMB 250 or equivalent
Chamber	Fabricated with MS Plates
Bearing Housing	Fabricated with MS Plates
Scroll	Mild Steel Casting with hard faced cutting edge.
Gear	EN 24
Bearings	Spherical roller and Thrust Bearings
Gear Box	Worm/Helical reduction gear box
Motor	Squirrel cage Induction Motor

Creper

This machine is used to cut and shear the rubber after pre cleaning.

Capacity: Various models available with capacity ranging from 0.5 T/Hr to 2 T/Hr.

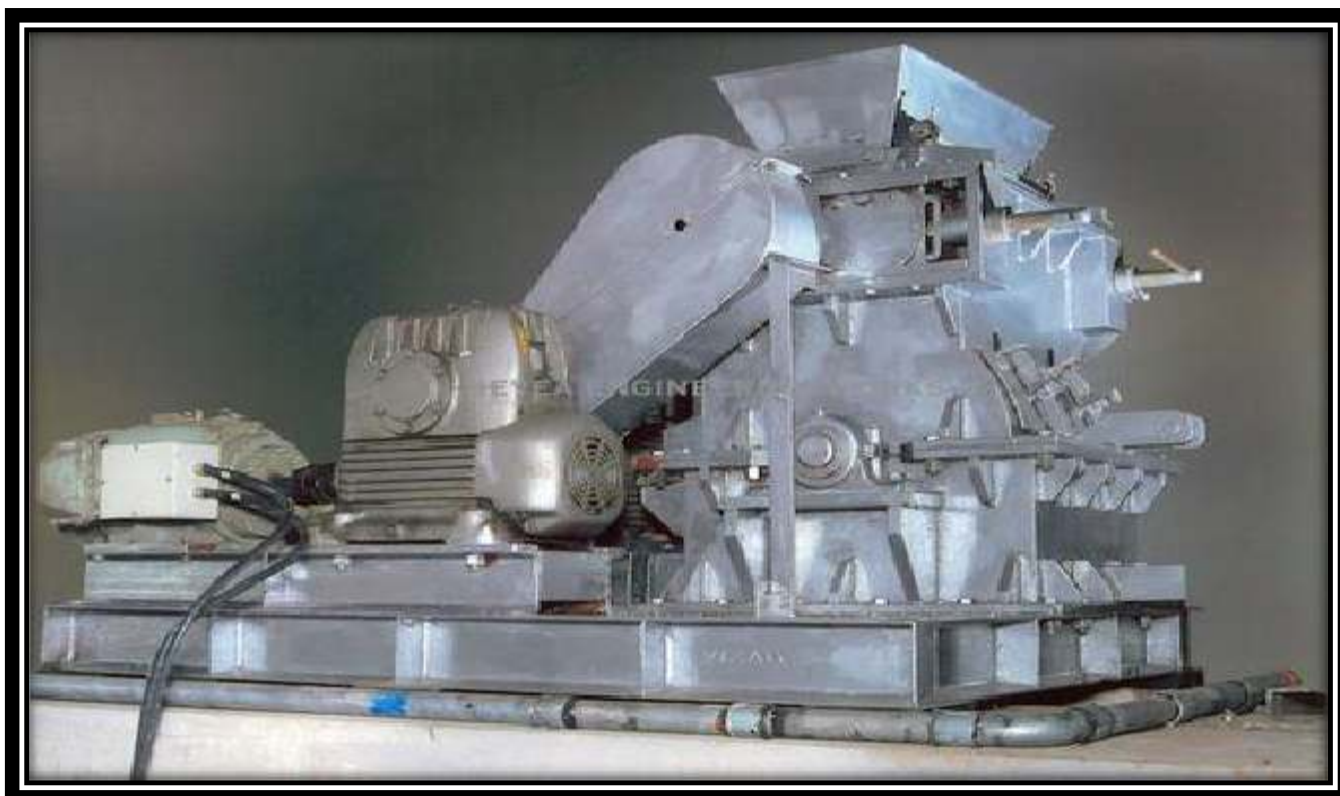


Material Specifications	
Base Frame	Fabricated with ISMB 200 or equivalent
Stand and Block	Grey Cast Iron
Bearing	Phosphor Bronze Bush or Spherical roller bearing
Roller	Graded Cast Iron
Gear Box	Worm/Helical/Shaft mounted reduction gear box
Motor	Squirrel cage Induction Motor

Hammer Mill

Hammer mill is used to cut and clean the rubber in the intermediate stage/final stage.

Capacity: Various models available with capacity ranging from 1 T/Hr to 2 T/Hr.



Material Specifications	
Base Frame	Fabricated with ISMB 200 or equivalent
Chamber	Fabricated with MS Plate
Screen	MS Plate
Hammers	OHNS
Rotor Disc	MS Plate
Bearings	Spherical roller bearing with adaptor sleeve
Hopper	Fabricated with MS Plate
Motor	Squirrel cage Induction Motor

Shredder

This machine is used for size reduction in intermediate/final stage.
Capacity: Various models available with capacity ranging from 1 T/Hr to 3 T/Hr.

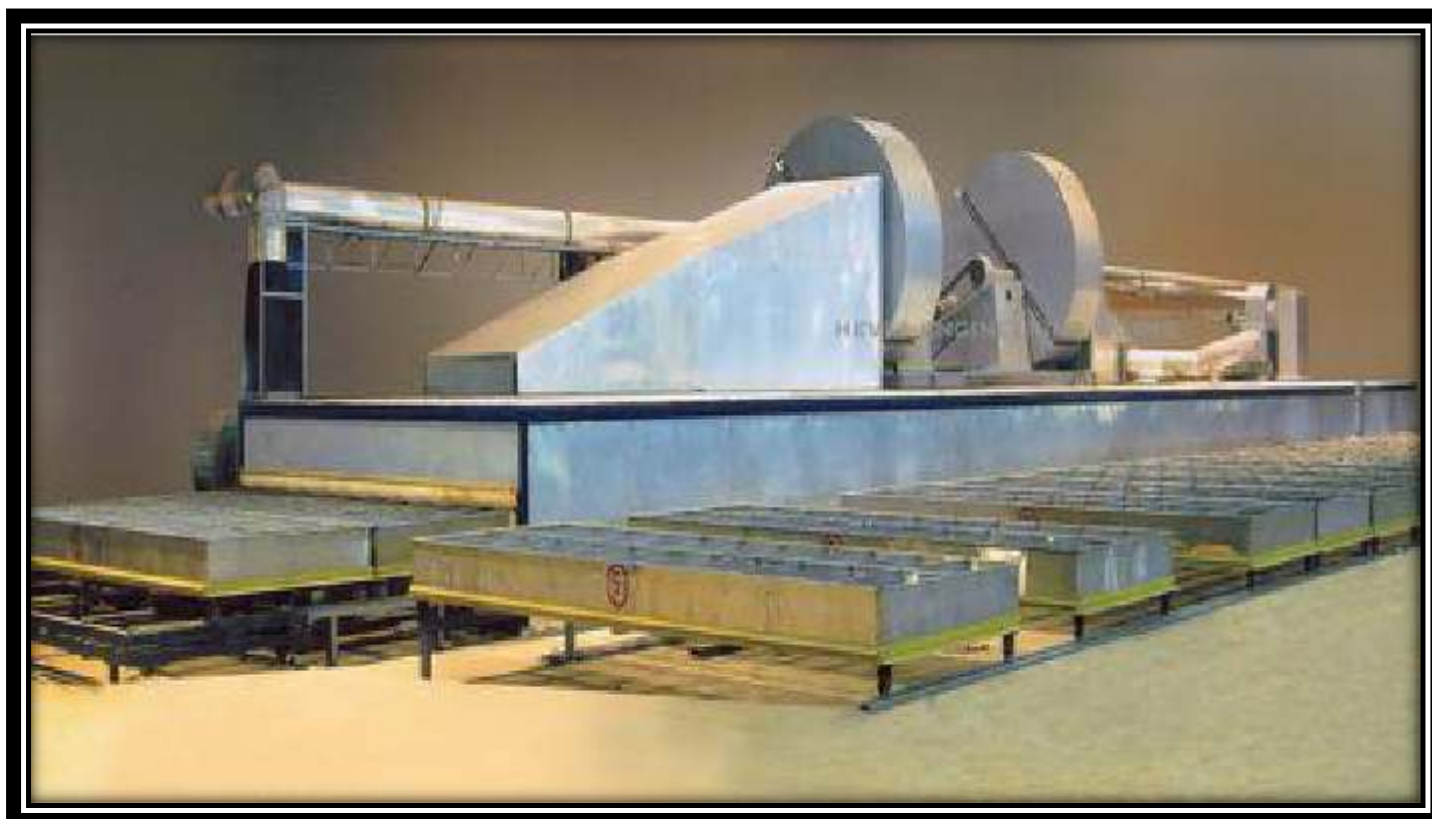


Material Specifications	
Base Frame	Fabricated with ISMB 200 and MS Plate
Main Roller	Graded cast iron
Feed Roller	Stainless steel 304 grade
Cutting Blade	Grey Cast Iron
Bearings	Spherical Roller bearing with adaptor sleeve
Gear Box	Worm/Helical reduction gear box
Motor	Squirrel cage Induction Motor

Dryer

For drying the final rubber granules.

Capacity: Various models available with capacity ranging from 0.5 T/Hr to 3 T/Hr.



Material Specifications	
Tunnel	Fabricated with channels, angles and /Stainless sheets with 100 Aluminium MM thick insulation
Drier boxes	Fabricated with Stainless Steel sheets and MS fabricated trolley
Hot Air Blower	Fabricated with MS /SS sheets
Exhaust Blower	Fabricated with Stainless sheet
Motor	Squirrel cage Induction Motor

Hydraulic Press

The dried rubber is pressed into blocks in this machine.

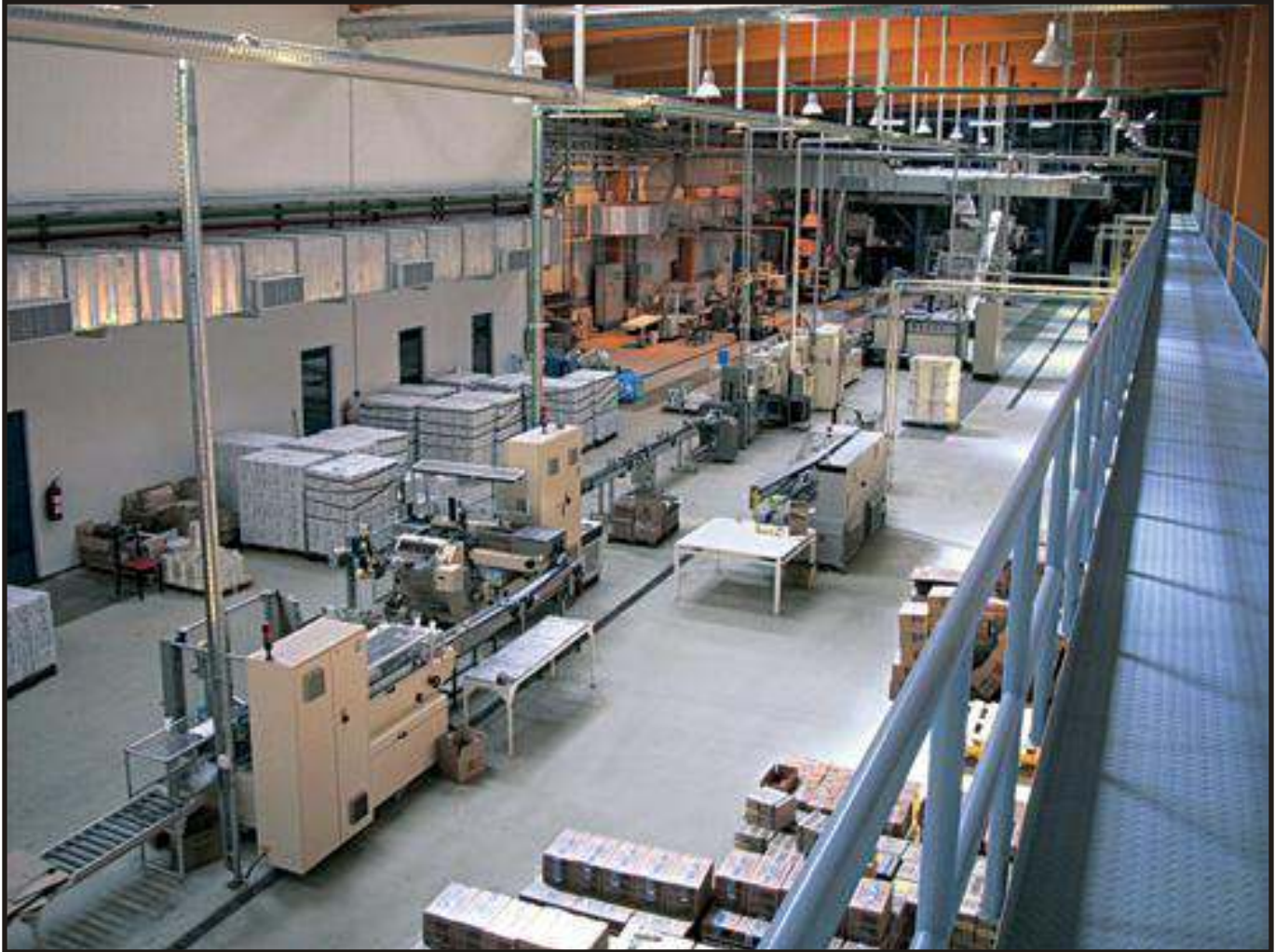
Capacity: 100 T, with output of 40 to 50 Bale/Hr. (Single chamber)



Material Specifications	
Chamber	Mild Steel casting/fabricated with MS Plate
Hydraulic Cylinder	Fabricated with seamless tube and hard chromium plated EN 8 rod
Power pack	Fabricated with MS Plates. Fully assembled with directional control valves, pressure controls and all standard accessories.
Control Panel	Fully automatic panel for manual and automatic operations.



SOAP MANUFACTURING LINE



We manufacture soap making machine, toilet soap & bar soap making plant in India. We offer the complete Plant on turnkey basis along with the Know-How to make the soap either from Soap Noodles, Palm Oil, Fatty Acid etc.

Plants and machines manufactured by us are based on proven technologies presently operating successfully, in India and Overseas. Hence, there is no delay in commissioning of plants & machinery manufactured by us. We guarantee 100% hassle free production, from day one of commissioning.

Equipment for 20Ton / HR

TRB	MAIN EQUIPMENTS		
SR. NO.	DESCRIPTION	QTY	REMARKS
1	SOAP CRUTCHER	1	
2	SOAP FEED TANK	1	
3	SOAP FLACKER	1	
4	BELT CONVEYOR	2	
5	TRIPPLE ROLL MILL MACHINE	1	
6	DUPLEX TWIN WORM VACUUM PLODDER	1	
7	SOAP PNEUMATIC BAR CUTTER WITH	2	
8	AIR COMPRESSOR	1	
9	SOAP CAKE CUTTING & STAMPING MACHINE	1	
10	SOAP NOODELS MAKING MACHINE	1	
11	ELECTRICAL PANEL	1	
12	ALL STEEL STAGING STRUCTURES INLCUDING PLATFORM	1	
13	PIPES, FITTING, VALVES AND PUMPS	1	
14	LUBRCANTS FOR GEAR BOXES	1	
15	WATER CHILLER WITH COOLING TOWER	1	

S.No.	Name of Equipment	Description	Specification & Size	
1	SOAP CRUTCHER	Soap Crutcher is the Robust Machine designed for mixing of the reactants. It is the Double Jacketed Vessel with inside Helical Worm fitted on Heavy Duty Shaft. Helical Worm is responsible to Eliminate any Un sponified element. Steam stirs in Outer jacket for heating.	Quantity	1 No.
			Capacity/Volume	4000 Kg/Batch.
			Contact part	IS 2062 Carbon Steel
			Jacket	IS 2062 Carbon Steel
			Flanges	IS 2062 Carbon Steel
			Nozzles	IS 1239/ SS 304
			Fasteners	IS 1364
			Soap Outlet Nozzle Size	150 mm Nb
			Shell I.D.	1800 mm
			Shell Thickness	12 mm
			Jacket I.D.	1920 mm
			Jacket Thickness	6 mm
			Jacket Pressure Test at	2 Bar G
			Operational Jacket Pressure	1.5 Bar G
			Bottom Dishes Thickness	14 mm & 12 mm
			G/ Box	V – 800
			Motor	30 H.P.
			Overall length	2800 mm
			Agitation RPM	100
			Gaskets	IS 2712



S.No	Name of Equipment	Description	Specification & Size	
2	SOAP FEED TANK	As its name shows, This is a Cylindrical Tank having Conical Bottom, with Heating Jacket, fitted at the Down side of Crutcher. The main function of this tank is to receive Hot Molten Soap from Crutcher via Gravity, so that We can take another New Batch in Crutcher.	Quantity	1 No.
			Capacity/Volume	4000Kg/Batch.
			Contact part	IS 2062 Carbon Steel
			Jacket	IS 2062 Carbon Steel



Flanges	IS 2062 Carbon Steel
Nozzles	IS 1239/ SS 304
Fasteners	IS 1364
Soap Outlet Nozzle Size	75 mm Nb
Shell I.D.	1800 mm
Shell Thickness	8 mm
Jacket I.D.	1920 mm
Jacket Thickness	6 mm
Jacket Pressure Test at	3 Bar G
Operational Jacket Pressure	1.5 Bar G
Top Cover thick	3 mm
Overall length	2800 mm
Gaskets	IS 2712

S.No.	Name of Equipment	Description	Specification & Size	
			Quantity	1 No.
3	SOAP FLACKER	<p>This is a Vital Machine, which performs the major function to make Hot Liquid Molten Soap in Solid & Cold Form, At A Time Continuously.</p> <p>In the Flacker there are Two Drums One is Big, and other is Small. Small Drum is fitted on the upper Side of Big Drum. Inside the Big Drum, Chilled Water of 5 Degree Celsius is circulated to Cold & Solid the Hot Liquid Molten Soap & in the Small Drum, Steam is circulated to evaporate the excess Moisture which is inside the Soap during reaction takes place in the Crutcher.</p>	Size	2000 mm x 3000 mm
			Shell Thickness	12 mm after Turning.
			Capacity	2000 Kg/ Hr.
			Contact part	IS 2062
			Other Part	IS 2062 Carbon Steel /
			Flanges	IS 2062
			Nozzles	IS 1239
			Fasteners	IS 1364
			Design Pressure of Shell	5 Bar.
			Operational Pressure	3 Bar G
			Design Temperature of Shell	-5 to +10 Degree Celsius
			Overall Length (mm)	1800(W)x2000(H) x4000(L)
			Gear Box	U – 600 (Greaves/Elecon)
			Motor	7.5 H.P.
				(BBL / C.G /Siemens)



S.No.	Name of Equipment	Description	Specification & Size	
4	BELT CONVEYOR	Belt Conveyor is used to carry Soap Flakes coming out from the Flacker to the Tripple Roll Mill. It also performs the function to carry the Chips from the Tripple Roll Mill to Duplex Twin Worm Vacuum Plodder.	Quantity	2 nos.
			Size	12 inch x 5 Mtr. (L)
			Capacity	2000 Kg /hr.
			Contact Part	IS 2062 / IS 808
			Other Part	Carbon Steel
			Main Drums	6 inch Pipe IS 2062
				Carbon Steel
			Flanges	IS 2062 Carbon Steel
			Fasteners	IS 1364
			Gaskets	IS 2712
			Overall Length	5500mm
			Gear Box	U – 300 (Greaves/Elecon)
			Motor	2 H.P.



S.No	Name of Equipment	Description	Specification & Size	
			Quantity	1 nos.
5	TRIPPLE ROLL MILL	Tripple Roll Mill is used to Remove Grainy Particles from the Soap. This Machine plays the Vital Role to make the Soap Translucent. In this machine Three Rolls are moving at Double the speed from one to other, which Mash the Soap by Rubbing Action & also Carries Soap from One Roll to Other. Soap after passing from this Machine comes out in the form of Very Thin Layer of Translucent Chips Continuously. Water circulation is also provided in Each & Every Roll of Machine, so that when it performs the rubbing action the Temperature of Rolls does not exceed from their Limits.	Size	15 inch x 40 inch
			Capacity	2000 Kg /hr.
			Contact Part of Rolls	Chill
			Other Part	Carbon Steel
			Scrapping Blade	High Carbon Steel
			Water Circulation in Rolls	Open Body System with Pump.
			Fasteners	IS 1364
			Types of Rolls	Shrink Fitted.
			Gear Box	U – 900 (Greaves/Elecon)
			Motor	25 HP.
				(BBL / C.G /Siemens)



S.No.	Name of Equipment	Description	Specification and Size	
6	DUPLEX TWIN WORM VACUUM PLODDER	<p>The Duplex Twin Worm Vacuum Plodder is suitable to carry out the Refining & Extrusion of Laundry Soap Noodles & Bar. .</p> <p>The Components of Plodder are:-</p> <p>1. <u>Extrusion Barrels</u> :</p> <p>Extrusion Barrels are made of Seamless Grade Tubes. Outer Double Jacket is fitted for cooling of the Plodder, by a forced water flow circulation.</p> <p>The Inside Water circuit is Pre Mounted.</p> <p>2. <u>Extrusion</u> :</p> <p>Worms are fabricated on Hollow Heavy Duty Tubes. These Worms are Highly Glossy Polished. Being a low weight it will consume lesser electric power & higher extrusion rate. The worms are supported by the Spider Wheels with Teflon Bushes.</p> <p>3. <u>Bearing Housing Unit or Thrust Unit</u> :</p> <p>In this Unit Thrust Bearings are installed outside the Gear Boxes in an Independent Group, with the combination, Three (3) Bearings are fitted in sequence with Lubrication Ports.</p> <p>4. <u>Refining Head</u> :</p> <p>Hinged Round Hole Drilled Plate duly fitted with Rotary Knife System that ensures the best Refining & Cutting of the Noodles to Standard Size.</p>	Quantity	1 No.
			Capacity	2000Kg/Hr
			Contact part	AISI S.S 304
			Other Part	IS 2062 Carbon Steel / IS 808
			Flanges	IS 2062
			Nozzles	IS 1239
			Fasteners	IS 1364
			Barrel Tube I.D.	250 mm
			Barrel Tube Length	1250 mm
			Barrel Tube Thickness	20 mm
			Design Pressure of Barrel Jacket	4.5 Bar G
			Operational Pressure of Barrel Jacket	3 Bar G
			Noodle Plate	Hole Dia 10mm
			Gear Box	U – 900 & U - 1000 (Greaves/Elec on)
			Electric Power	20+25 H.P.
			Overall length	4000 mm
			Gaskets	IS 2712

S.No.	Name of Equipment	Description	Specification & Size	
7	SOAP PNEUMATIC BAR CUTTER	Pneumatic Bar Cutter is used to Cut the appropriate Size of Bars coming out from the Die Mouth of the Plodder. Air Pressure from Compressor is required to run Pneumatic Bar Cutter, it only works by sensing the Bar coming from Plodder & then immediately cut it.	Quantity	2 Nos.
			Air Compressor	3 H.P. (Double Stage)
			(Qty. One No.)	(Crompton Greaves)
			Capacity	Acc. To
				Production of Plodder.
			Contact Part of Rolls	AISI S.S 304
			Other Part	Carbon Steel
			Bar Cutting Blade	High Carbon Steel
			Fasteners	IS 1364
			Overall Dimension (mm)	500(L)x500(W) x1000(H)



S.No.	Name of Equipment	Description	Specification & Size	
8	SOAP CAKE, CUTTING AND STAMPING	This Machine is used to Cut Bar into appropriate Size of Cakes & to Stamp the Cutted Cakes at Same Time. A Steel Wire Frame is used in this Machine to Cut the Bar into Cakes. Only a Wire Frame is to be Changed, if We wants Variation in Weight & Size of Soap Cake.	Quantity	1 nos.
			Shape	Rectangular
			Capacity	2000 Kg /hr.
			Contact Part	AISI S.S 304
			Other Part	Carbon Steel
			Cutting Wire	AISI 304 / 22 No Wire
			Special Bearings	Linear Motion Bearing
				L.M. Series (Japan/Korea)
			Fasteners	IS 1364
			Overall Dimension (mm)	1500(L)x1000(W)x1000(H)
			Gear Box	U – 300 (Greaves/Elecon)
			Motor	1 HP.





DETERGENT MANUFACTURING LINE



This Project envisages the establishment of a plant for the production of detergent powder with a capacity of 3000-4000 tons per annum. The major use of detergent powders is in households for washing clothes and utensils. They are suitable for hand washing and also for machine washing in laundries and dish washers.

A detergent powder is a surfactant or a mixture of surfactants with "cleaning properties in dilute solutions. These substances are usually alkyl benzene sulfonates, a family of compounds that are similar to soap but are more soluble in hard water, because the polar sulfonate (of detergents) is less likely than the polar carboxyl (of soap) to bind to calcium and other ions found in hard water.

Powder detergents work because they are amphiphilic—partly hydrophilic (polar) and partly hydrophobic (non polar). Their dual nature facilitates the mixture of hydrophobic compounds (like oil and grease) with water.

Detergent powder falls into four major groups:

- Heavy duty detergents (high and low foaming),
- Light duty detergents,
- Soap powders, and
- Soda products

Detergent formulations essentially consists of : Active ingredients

- STTP
- Filler (Sodium Sulphate)
- Silicate

The major use of detergent powders is in households for washing clothes and utensils. They are suitable for hand washing and also for machine washing in laundries and dish washers.

RAW AND AUXILIARY MATERIALS

The major raw materials used to produce detergent powder are Alkyl benzene sulphonic acid, sodium tri polyphosphate, sodium sulphate, sodium silicate, and caustic soda. Caustic soda can be obtained locally while the other raw materials are supposed to be imported. However, there is a possibility to manufacture sodium sulphate and sodium silicate locally as the starting materials for these chemicals are locally available. Auxiliary material i.e. printed polyethylene is necessary as packing materials.



Production Process

Standard detergent powder manufacturing plant consists of mixing, drying, after drying, packing and antipollution units. These units are briefly described as follows:

Mixing unit: Linear alkyl benzene sulphonate paste is metered into a slurry preparation tank together with metered sodium silicate solution, and solid phosphates, sulphates and additives. The slurry preparation tank acts as a coarse mixer. Here lumps are broken down and air pockets are eliminated. Materials after blending are conveyed to an ageing vessel.

Mixing is carefully controlled to prevent aeration of the slurry. Feed slurry passes through a coarse filter, homogenizer and fine filter. Deaeration of product is carried out if necessary. The slurry of constant solid content and viscosity is ready for spray drying. This detergent slurry is heated and transferred to the top of the spray drying tower by high pressure pump.

Drying unit: - Free flowing, non dusty, non caking detergent products in bead form are produced by Spray Drying mostly in counter current flow using pressure nozzle atomization. The mixed slurry is sprayed through nozzles (under pressure) to create small droplets. Inlet temperatures vary according to product and up to 400°C inlet temperatures are used for some detergents. Hot air from direct fired air heaters is used for Spray Drying. Exhaust high efficiency cyclones / bag houses are used to control emissions and maximize product recovery are part of the spray drying plant. The dried detergent powder is taken out at the bottom of the tower, and is transferred to the sieve by belt conveyor and air lift equipment.

After drying unit: - The dried detergent powder collected from the bottom of the spray tower is pneumatically conveyed to the product silos after sieving. Here filtered atmospheric air is used as the cooling & conveying media. Dense phase conveying systems are normally preferred.

After the granules have been cooled, heat sensitive ingredients, which are not compatible with the spray drying temperatures (like bleach, enzymes and fragrance), are added.

Packing unit: - The final product is packed here. Detergent powder is fed into the packing machine from baggies.

Slurry Preparation

In detergent processing plant, the detergent powder are normally produced batchwise or continuously.

The plant layout for detergent formulations consists of a feed-preparation section (automatic feeding, proportioning and mixing) feed pumping to the nozzle atomizer, dried- powder conveying and dosing, followed by thorough blending, screening and packaging.



Linear alkyl benzene sulphonate paste, is metered into a slurry preparation tank together with metered sodium silicate solution, and solid phosphates, sulphates and additives. The slurry preparation tank acts as a coarse mixer. Here lumps are broken down and air pockets are eliminated. Materials after blending are conveyed to an ageing vessel.

Mixing is carefully controlled to prevent aeration of the slurry. Feed slurry passes through a coarse filter, homogenizer and fine filter. Deaeration of product is carried out if necessary. The slurry of constant solid content and viscosity is ready for spray drying. The handling of product in the feed treatment section plays a large role in the quality of the dried product (e.g. granulation, degree of fines, etc.)

Detergent Spray Drying

The plant layout for detergent formulations consists of a feed-preparation section (automatic feeding, proportioning and mixing) feed pumping to the nozzle atomizer, dried- powder conveying and dosing, followed by thorough blending, screening and packaging.

Linear alkyl benzene sulphonate paste, is metered into a slurry preparation tank together with metered sodium silicate solution, and solid phosphates, sulphates and additives.



The slurry preparation tank acts as a coarse mixer. Here lumps are broken down and air pockets are eliminated. Materials after blending are conveyed to an ageing vessel.

Mixing is carefully controlled to prevent aeration of the slurry. Feed slurry passes through a coarse filter, homogenizer (colloid mill) and fine filter. Deaeration of product is carried out if necessary. The slurry of constant solid content and viscosity is ready for spray drying. The handling of product in the feed treatment section plays a large role in the quality of the dried product (e.g. granulation, degree of fines, etc.)

The slurry (50 - 80°C, 120 - 180°F) is fed to the spray dryer by a high-pressure pump. Counter -current product-air flows are mainly used. A counter-current unit with multiple nozzles has been claimed to be of special merit, Counter -current systems give high product bulk densities 0.3 - 0.4 g/cm³ and moisture content 6 - 15%. Co-current systems give low bulk densities 0.1 - 0.3 g/cm³ with moisture content 3 - 8%.

The main product is belt conveyed to an air lift. Any after-drying dosing is carried out on the belt. This can be organic foam boosters (lauryl alcohol), enzymes (proteolytic) and sodium perborate.

The air lift raises the powder to a storage hopper from where gravity feed takes the product through screens and a perfuming chamber to packing machines.

Pneumatic Conveying, Perfuming & Packing

The dried detergent powder is pneumatically conveyed from the Spray Dryer to the product silos after sieving. Here filtered atmospheric air is used as the cooling & conveying media. Dense phase conveying systems are normally preferred.

The detergent product from the silo is then blended along with the perfume in a continuous mixer after which it is packed.



Machine Description & Area for 10 Ton Per 8 Hour Shift

Machines For Detergent Manufacturing capacity 10 Ton/Shift (8 Hrs)	
Machines	Technical Specifications
Mixer	<p>Blade mixing machine, mainly used to add chemicals & perfume.</p> <p>Shell size ... 36 inch x 70 cm x 24 inch</p> <p>Shell thickness: 5 mm side plate 8 mm shell plate</p> <p>Overall length: 915 mm</p> <p>Gearbox: Helical type</p> <p>Motor: 10 hp (havell / abb)</p> <p>Cap: 300 kg per batch</p> <p>Per 8 hrs shift: more than 10 MT.</p>
Bucket elevator	<p>Used to carry det powder from mixer to cage mill.</p> <p>Size: 20 feet x 4 feet</p> <p>Bucket type: plastic</p> <p>Motor: 2 hp</p>
Cage mill	<p>used to break the lumps of Wet powder.</p> <p>Size: 30 inch x 36 inch</p> <p>Motor: 5 hp</p>
Vibrosieve	<p>used to sieve powder into very fine quality.</p> <p>Motor: 2 hp</p>

For installing all these machineries we require approx 45 feet x 20 feet area.

Detergent Powder Packing Machine

Pouch Filling and Sealing Machines made available by us are of prime importance in controlling packing processes that are involved in different industrial units. Designed to bring effective control in involved filling, sealing, weighing or other packaging processes, these successfully handle packaging of specified material using well defined steps and can pack products in granular, powder and other finish forms.

Offering easy operating interface, these precision designed machines also require less maintenance in comparison to other machinery brands available in market.

SPECIFICATIONS	
Filling System	Adjustable telescopic Disc Volumetric Cup Filler
Filling Accuracy	± 1 to 1.5% Depend upon Nature of Product
Type of Seal	3 Side/4 Side Centre or Back Seal
Filling Range	0.100 – 20 Kgs
Packed Material	Sticky Powder & Granules

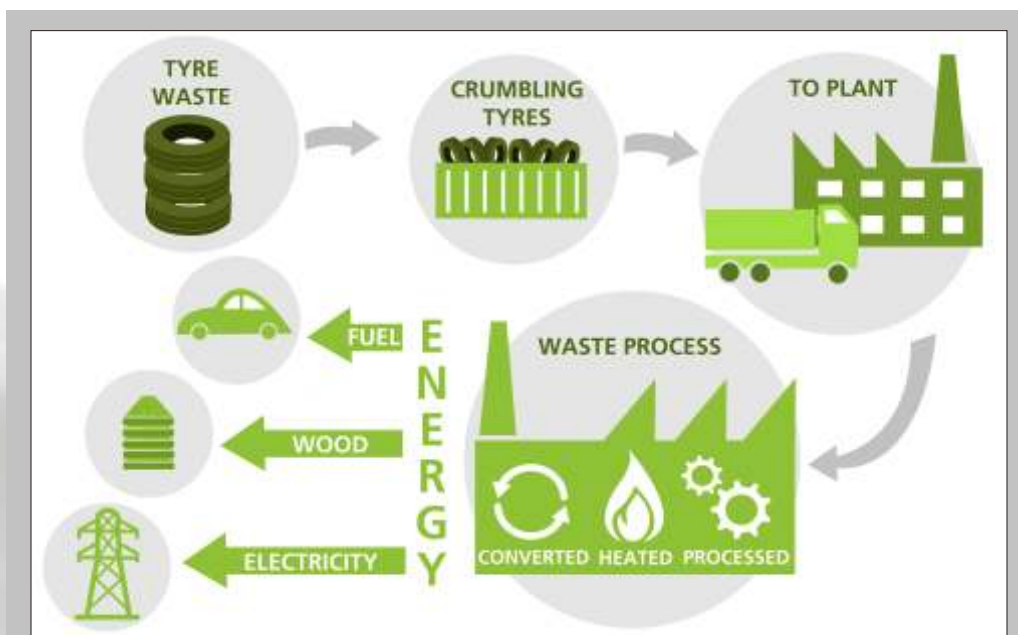


Waste Tyre Recycling Plant



Pyrolysis Process

- Pyrolysis is the chemical decomposition of organic materials by heating in the absence of oxygen or any other reagents, except possibly steam.
- Pyrolysis can be used to reprocess the tyres into fuel oil, fuel gas, solid residue (steelwire) and carbon black.
- The waste tyres are mainly composed of long chain of C-H molecules.
- Under normal process conditions the heat transfer will be done by radiation.
- The technology of pyrolysis, cracking, and monomerisation of used tyres is always a hot topic.



Variety of polymer waste material is suitable as a raw material. Given below is the list of suitable raw materials for pyrolysis:

- Waste tyres
- Rubber or rubber parts from vehicles
- Electronics scrap
- Mixed (HDPE, LDPE, PE, PP, Nylon, Teflon, PS, ABS, FRP etc)
- Multi layered
- Plastic disposable bottle
- The choice of feedstock and process (mainly operating temperature) can affect the value of the finished products.

Type of Material	Total Quantity	Finish quantity
Nylon scrap tyres	1000 kgs	-550 to 600 liter of Pyrolysis oil -50 to 80 kg of Hydrocarbon Gas -300 to 350 kg of Carbon Black
Radial scrap tyres	1000 kgs	-400 to 450 of Pyrolysis oil -50 to 80 kg of Hydrocarbon Gas -300 to 350 kg of Carbon Black -150 to 200 kgs of Mild steel tyre scrap

Yield of pyrolysis process:

★ **Pyrolysis oil (Fuel oil)**

- The essential product of tyre pyrolysis process is pyrolysis oil referred as fuel oil (40 to 45 % of total quantity feed) which is used as a fuel component for heating in fire chamber. Pyrolysis oil has flash Point between 60 to 93.3 °C.
- Purest quality of pyrolysis oil comparable to industrial diesel: selling price comparable to industrial diesel LDO (light diesel oil)

★ **Carbon Black**

- The vital product of pyrolysis plant is carbon black referred as "charcoal" (30 to 35% of total quantity feed). Carbon black has Industrial and commercial use.

★ **Steel wire**

- For instance, whole tyres contain fibers and steel. Shredded tyres have most of the steel and sometimes most of the fiber removed.
- The steel wire (15 to 20%) can be removed from the carbon black with magnets for recycling after pyrolysis process & sold to the steel dealer

★ **Hydrocarbon Gas**

The smaller molecules eventually vaporize and exit from the reactor. These vapors can be burned directly to produce power or condensed into an oily type liquid, generally used as a fuel. Some molecules are too small to condense. They remain as a gas (5 to 8% of total quantity feed) which can be burned as fuel.

Pyrolysis Plant

Pyrolysis plant is renewable energy generation system. Pyrolysis plants are designed to generate quality fuel from polymer waste. Pyrolysis system or pyrolysis plant is an industry for conversion of waste and tyre into usable products like:

- Pyrolysisoil (Fueloil)
- Carbon black
- Steel wire
- Hydrocarbon gas

★ Advantages of pyrolysis plants

- Purestquality of pyrolysis oil as finished product.
- Use of green technology to achieve environmentfriendly processes.
- Automatic safely valve (pressureand temperaturevalve) use to improve safely, profitability & ease of operation.
- Industry is energy self-sufficient.
- No external fuel required for heating.

★ Benefits of pyrolysis plant

- Recoverenergy and value from waste in form of fuel, steelwire and charcoal.
- Reducetyre land pollution.
- Eco-friendlyrecycling of tyre.
- Commercially viable process.
- Product is used as substituteto LDO/furnace oil.
- Perfectsolution for polymer waste management.
- Raw material available.

★ Basic function of pyrolysis plant is to achieve following process conditions:

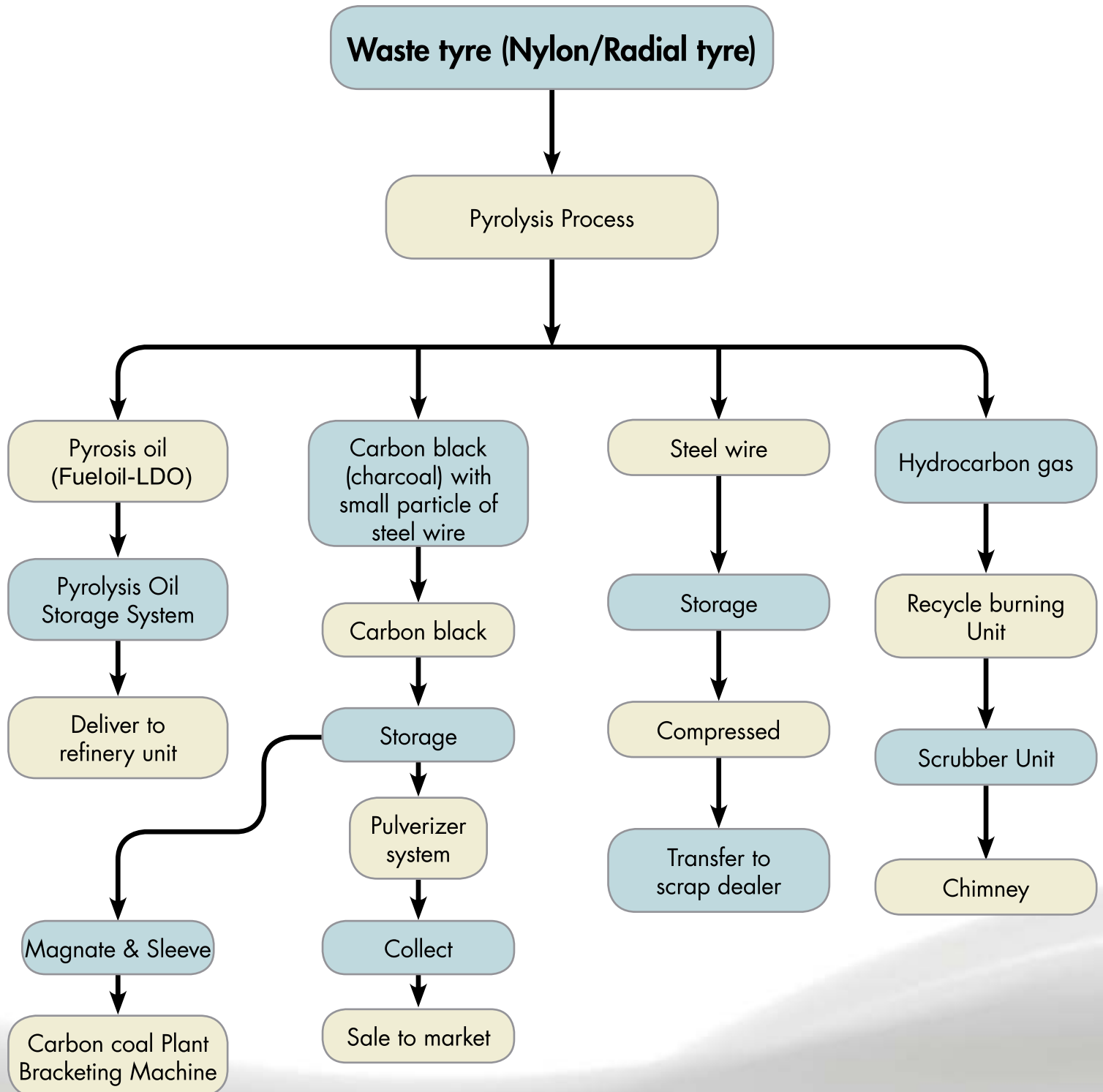
- Operating temperatureof Reactoris between 300 to 350 degree c.
- Duration period of pyrolysis batch is between 10 to 12 hours.
- Pyrolysisof tyre is done in the absence of oxygen.
- Scrubbing of pyrolysis oil, hydrocarbon gases and fuel gases to prevent pollution.

★ Pyrolysis plant needs following machinery & equipment:

- Raw material handing section.
- Pyrolysisreactor
- Hydraulic cutter.
- Hydraulic auto feeder.
- Condensation system.
- Scrubbing system.
- Hydrocarbon gas cleaning & storage system.
- Pyrolysisoil storage system.
- Cooling tower.
- Control panel and alarm systems.
- Equipmentline in commercial pyrolysis plants is further modified to suite customer's requirements.



Flowchart for pyrolysis Process



Technical Detail of 12 Ton Pyrolysis Plant

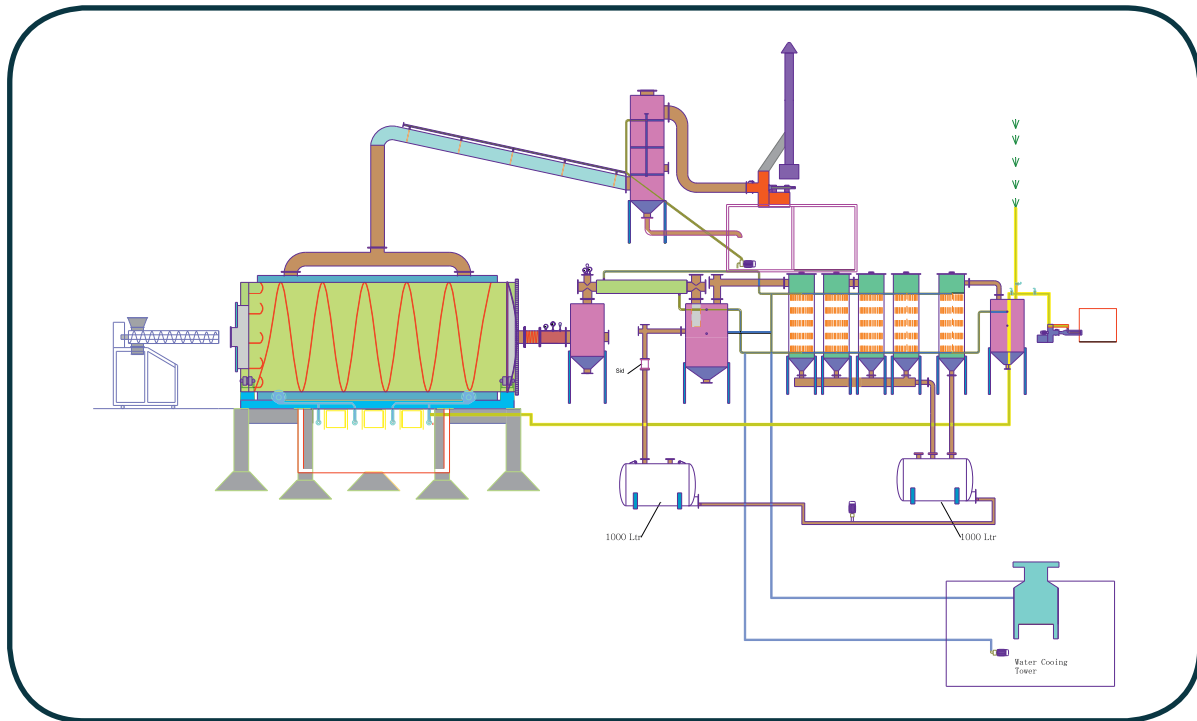
S.N	Item	Contraction	Description
1	Main Reactor-12 ton	16 mm BQ Plate Capsule Type (FI-RC-12)	6.6 Meter(l) x 2.8 Meter(w), Plate Thickness-16 mm
2	Reactor cover	Insulated with Cerawool	Capacity of Cerawool 1260 Degree Celsius with 25 mm Two Layer
3	Pipe condenser	Electric Resistance Welded Pipe (ERW) – MS	6" Pipe 24 Nos condenser with carbon Holding Tank - 3 Nos (150 Liter capacity)
4	Insulation tank	5 mm MS Plate	800 mm x 1550 mm
5	Heavy Oil Tank	5 mm MS Plate	500 mm x 1250 mm - 250 Liter
6	Water seal tank	5 mm MS Plate	1200 mm x 2000 mm With 4" Water Jacket
7	Gas tank	5 mm MS Plate	800 mm x 1550 mm
8	Oil Tank	5 mm MS Plate	1470 x 3000 (5.0 KL) 2 Nos.
9	Water coolant pipe	C Class Pipe - 5 mm MS Pipe	(15'X8" & 12'X16") [15 Feet], jacketed pipe
10	Scrubber Reactor Top Pipe	Electric Resistance Welded Pipe (ERW) – MS	Top Pipe 12" X 23 Feet
11	Scrubber Fan Pipe	Electric Resistance Welded Pipe (ERW) – MS	12" X 10 Feet
12	Scrubber Joint Pipe	Electric Resistance Welded Pipe (ERW) – MS	12" x 10 Feet
13	Scrubber Coolant Pipe	Electric Resistance Welded Pipe (ERW) – MS	12" X 15 Feet
14	Scrubber Tank (Dust Tank)	Electric Resistance Welded Pipe (ERW) – MS	1000 mm x 2800 mm with Water Spray Pipe
15	High Pressure Vacuum Blower (Dust Blower)	5 mm MS Plate	5 HP 1440 RPM ABB MOTOR

Technical Detail of 12 Ton Pyrolysis Plant

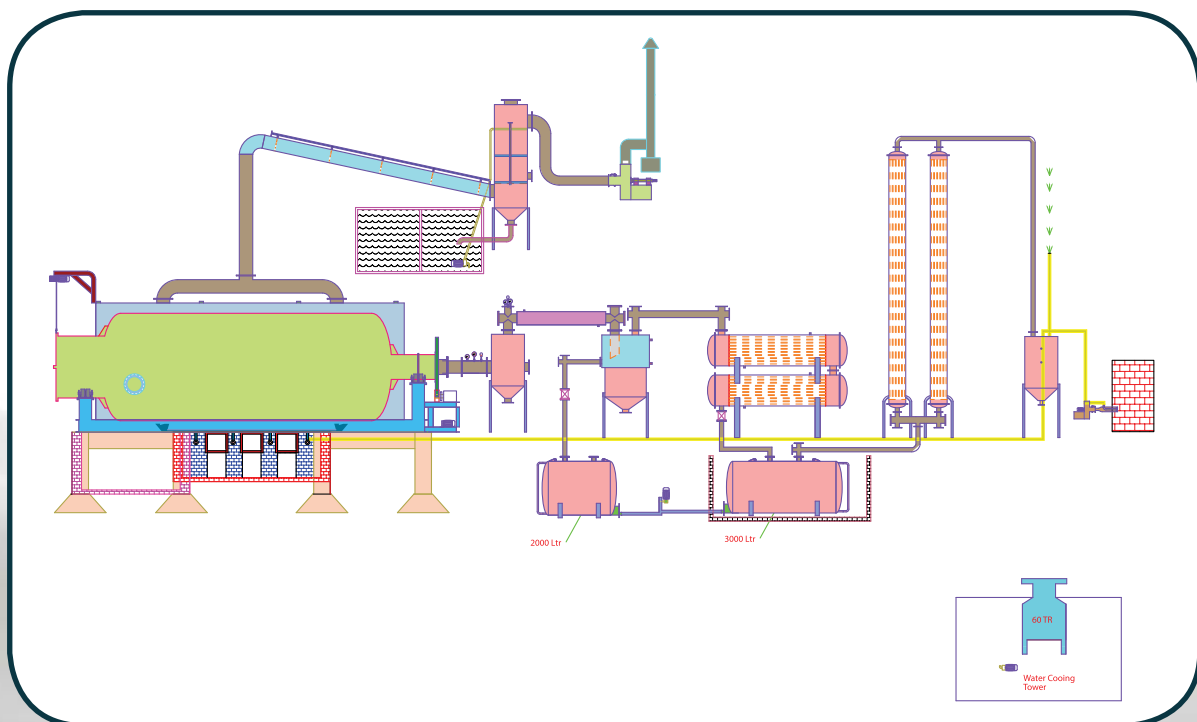
16	Centrifugal Cooling Blower	5 mm MS Plate	5 HP 1440 RPM ABB MOTOR
17	Hoist	5 mm MS Fabricated	5" Gear Box With 5 HP ABB Motor With Wire Roap 100 Feet(L), 10mm(T)
18	Chain block	2 Tons Chain block	2 Tons chain block with 10 Feet chain for reactor door
19	Penal board	Reactor Penal board With Dual Motor Arrangement	Total motor Controller, Temp. Indicator & controller with hooter System, Pressure Indication
20	Submersible Water pump	Pump Atlas brand	5 HP 3 Phase Electric Motor for cold water supply in condenser
21	Gear pump	Pump Atlas brand	3 HP 3 Phase ABB Motor for oil transfer
22	Mud pump	Pump Atlas brand	3 HP 3 Phase ABB Motor for scrubber systems
23	Chimney	Electric Resistance Welded Pipe (ERW) – MS	60 Feet- Chimney
24	Gas Blower	1 Nos Gas Blower 0.5 HP	0.5 HP Motor 3 Phase for Extra Gas Burning
25	Gas Burner	Electric Resistance Welded Pipe (ERW) – MS	100x450 mm for Extra Gas Burning Situated at Extra 0.5 HP Blower
26	Fire Chamber with 3 HP Blower & Gas Burner	Electric Resistance Welded Pipe (ERW) – MS	3 HP 1440 RPM ABB Motor, 100x450 mm
27	Cooling tower	Capacity 80 TR	3 HP 2880 RPM Motor
28	Hardware	As per annexure I	Hardware for reactor pipe and pipe fitting
29	Electric Motor	Standard make	As per annexure II
30	Foundation	As per drawing	Price not including in basic Price
31	Reactor Gear box	Shricon Brand with Casting Body	180 Center with 4 Reduction Helical Gear Box
32	Fire Brick & Cast able cement	550 Nos Fire Brick and Castable Cement - 5+5 bags	For fire system

Assembly Drawing for Pyrolysis Plant

FI-RC-10 TPD 4th Generation Model 4 + 1 Ver. Condenser



FI - RC - 10 TPD 5th Generation Model 2 Hori. + 1 Ver. Condenser



Minimum Land Requirement for Plant : 50' X 120'(Feet)

Total Land Requirement for Plant : 90' x 120'(Feet)

Foundation drawing will be send by us

Technical Parameter

Sr No	Item	Model	Model	Model
1	Equipment type	FI - RF-5	FI - RC-10	FI-RC-12
2	Raw material	Nylon / Radial Tyre	Nylon / Radial Tyre	Nylon / Radial Tyre
3	Structural form	Horizontal rotation	Horizontal rotation	Horizontal rotation
			8.5 ton	10.5 ton
5		1.72 ton	3.8 ton	
6		0.86 ton	1.7 ton	1.6 ton
7		1.29 ton	2.5 ton	3.6 ton
8	Operating pressure	Normal (0.1 To 0.3 Kg)	Normal (0.1 To 0.3 Kg)	Normal (0.1 To 0.3 Kg)
9	Material of Reactor	B.Q.Plates SA 516 Gr.70	B.Q.Plate SA 516 Gr.70	B.Q.Plate SA 516 Gr.70
10	Thickness of Reactor	12 mm		16 mm
11	Rotate speed of Reactor	0.3turn/minute	0.3turn/minute	0.3turn/minute
12	Total power	20KW	25KW	33KW
13	Mode of Water cooling	Circular cooling	Circular cooling	Circular cooling
	Cooling area of condenser	20 Sq.Meter	51 Sq.Meter	77 Sq.Meter
15	Kind of transmission	Dual Motor Arrangement	Dual Motor Arrangement	Dual Motor Arrangement
16	Noise dB(A)	85	85	85
17		2.2x6.0 Mt.	2.6x6.6 Mt.	2.8 x 6.6 Mt.
18	Working form	Intermittent operation	Intermittent operation	Intermittent operation
19		10,800 Sq Feet.	10,800 SqFeet.	15,000 SqFeet.
20	Delivery time	10 Days	10 Days	10 Days
21	Installation Time	15 To 20 Day	15 To 20 Day	15 To 20 Day
22	Training Time	5 Days	5 Days	5 Days

Waste Tyre Pyrolysis Plant - Model List

Sr. No.	Model (Tons)	Capacity in Kilo Liter	Size in Meter (D x L)	Plate Thickness (MM)	Model Name	Coolant Area Sq.Mtr.
1	5		2.2x6.0	12	FI-RC-5 Ton (2 Vertical Condenser + 1 Horizontal Condenser)	20
2	7.5	30	2.2x7.5		FI-RC-7.5 Ton (3 Vertical Condenser - 1 Horizontal Condenser)	25
3	10	37	2.6x6.6			31
	10	37	2.6x6.6			51
5	10	37	2.6x6.6		FI-RC-10 Tons 5 th Generation - 2 Horizontal+ 2 Vertical	39
6	10	37	2.6x6.6	16		
7	12	43	2.8x6.6	16	FI-RC-12 Tons Pipe -(Pipe Condenser- 6"-24 pipe)	77
8	15		3.0x7.1	18	FI-RF-15 Tons Pipe - (Pipe Condenser- 6"- 32 pipe)	102

Abbreviation

RF = Reactor Flat Type

RC = Reactor Capsule Type

Auxiliary Equipment

1.Tyre Steel Wire Remover Machine	1. Carbon Screw 18 Feet
2. Hydraulic Tyre Cutter	2. Carbon Vaccum System
3. Tyre Sidewall Cutter	
5 . Tyre Block Cutting Machine	5. Carbon Briquetting Machine
1. Hydraulic Auto Feeder Machine	1. Oil Water Separater System with Waste Water Evoparating System.
1. Centrifugal Cooling Blower	3. Hydrocarbon Gas storage device (balloon)
	5. Auto Ignition System for 100 Feet Chimney





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