



## TURNKEY projects

## STEEL & PLASTIC PLANTS



## CUSTOMIZED ENGINEERING SOLUTIONS

- Plastic & Steel Recycling Plants
- Edible Oil Expelling & Refining Plants
- Food & Beverages Plants
- Solar Power Plants
- Customized Plants



# **TURNKEY PROJECTS**

## Plastic & Steel Recycling Plants

PVC/HDPE/PET/Bottle Manufacturing Plants
TMT Bar, Hot Rolling, Cold Rolling, Metal Scrap Plants
Tube Mill, CRS, CTL Plants





## **Customized Plants**

- Corrugated Sheet Forming Plants
- Waste Tyre Recycling and Retreading Plants
- Paper Bag, Cup Making Plants
- Fish, Poultry Feed & Farming Plants
- TSR Natural Rubber Plants
- Laundry and Toilet Soap Plants



## Edible Oil Expelling & Refining Plants

- Peanut, Palm & Palm Kernel oil Plants
- Cottonseed, Cocoa, Sesame, Moringa oil Plants
- Oil Refinery Plants
- Solvent Extraction Plants
- Oil Filling Plants
- Cattle Feed Plants

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Solar Power Plants

ON/OFF Grid Plants (1-20MW
 Solar Planels, Modules & Arrays
 Batteries & Invertors
 Solar Street Light, Lanterns
 Solar Pumping System



## Food & Beverages Plants

- Mineral Water Plants
- Beer & Carbonated Beverages Plants
- Tomato Processing Plants
- Biscuits, Bread Plants
- Ice Cube Making Plants
- Food Packaging & Processing Plants
- Fruit Pulp Juice Plants







# 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





### 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

Usines de fabrication de tôles ondulées

Usines de savon et de savon de toilette

Sac en papier, fabrication de tasse Poissons, aviculture et plantes agricoles

**TSR** Caoutchouc naturel

Usines de recyclage et de retrait de pneus usés

- 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





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# TURNKEY PROJECTS

## Steel & Plastic Plants

- STEEL TUBE / PIPE MAKING MACHINE
- FORKLIFT
- WEIGHING SCALE
- EOT CRANES
- SLITTING MACHINE
- TMT ROLLING MILL PLANT
- CUT TO LENGTH MACHINE
- ROLL FORMING MACHINE
- LPG CYLINDER MANUFACTURING UNIT
- ALUMINIUM FOIL MANUFACTURING UNIT
- PPR / U PVC PIPE MANUFACTURING PLANT
- PET RECYCLING PLANT
- LEAD BATTERY RECYCLING UNIT
- PAPER BAG MAKING MACHINE
- EQUIPMENT PHOTOS
- INJECTION MOLDING LINE
- ROTOMOULDING MACHINE UNIT

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#### **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.



## **STEEL TUBE / PIPE MAKING MACHINE**



Electric Resistance Welded Pipe that is also known as ERW pipe and it is made of strips of steel that is hot rolled and passed through forming rolls and finally welded together. It is used for usually high diameter. ERW steel pipes and tubes are used in various engineering purposes, fencing, scaffolding, line pipes etc. ERW steel tubes are comparatively economical and possess high dimensional accuracy, and can also be produced with thinner wall thicknesses. Owing to these advantages, use of ERW steel tubes had risen steadily in recent years.

MODELS	Outside Dia	ameter (MM)	Wall Thick	mess (MM)	Square S	Size (MM)	Diameter of Shaft (MM)
CSTM-OD-01	9.5	25 A	0.3	1.0	10 x 10	19 v 19	30
CSTM-OD-02	12.7	31.8	0.35	1.6	15 x 15	25 x 25	40
CSTM-OD-03	12.7	38.1	0.5	2.0	15 x 15	30 x 30	45
CSTM-OD-04	15.88	50.8	0.6	2.0	15 x 15	35 x 35	50
CSTM-OD-05	19.05	60.8	0.75	2.5	20 x 20	40 x 40	60
CSTM-OD-06	19.05	76.2	1.0	3.0	20 x 20	60 x 60	70
CSTM-OD-07	33.4	88.9	1.2	4.8	25 x 25	70 x 70	80
CSTM-OD-08	38.1	114.9	1.2	5.6	30 x 30	90 x 90	90
CSTM-OD-09	63.5	168.3	1.5	7.1	50 x 50	130 x 130	115
CSTM-OD-10	88.9	219.1	1.6	8.1	70 x 70	175 x 175	120
CSTM-OD-11	114.3	323.8	2.0	9.5	90 x 90	250 x 250	140

#### **CARBON/ MILD STEEL TUBE / PIPE MAKING MACHINE**





## **OD-SERIES STAINLESS STEEL TUBE / PIPE MAKING MACHINE**

MODELS	Diameter of Shaft of Power Stands(mm)	Diameter of Shaft of Idle Slide(mm)	Diameter Range (mm)	Thickness (mm)	Size of Machine ( L x W )
SSTM-OD-01	30	25	o6 - o25	0.2 - 0.8	20 x 1.0 m
SSTM-OD-02	40	25	o6 - o32	0.2 - 1.0	20 x 1.0 m
SSTM-OD-03	40	30	09 - 051	0.2 - 1.5	22 x 1.2 m
SSTM-OD-04	40	30	ø12 - ø64	0.3 - 2.0	22 x 1.2 m
SSTM-OD-05	50	40	ø25 + ø76	0.3 - 2.0	24 x 1.5 m
SSTM-OD-06	60	40	038 - 0114	0.4 - 2.5	26 x 1.5 m
SSTM-OD-07	80	50	ø76 - ø168	1.0 - 3.5	32 x 2.5 m
SSTM-OD-08	100	60	0114 - 0219	1.0 - 4.0	36 x 2.5 m







#### WORK ROLLS FOR TUBE / PIPE MAKING MACHINE

#### Work Rolls for Tube / Piepe Making Machine

The Roll sets are manufactured using high quality raw material properly machine according to the profile. The rolls are manufactured for round, sqaure, rectangular and other shapes as per customer requirements.



#### AC / DC DRIVE PANEL



TRB Supplies a wide of Ac / Dc Drive Panel used in Tube / Pipe mills as well other industries. The analog DC drive design is developed in house and is very popular in the industries. The digital DC drives incorporates Siemens controller with high power thyristor units. The drives are synchronized with each other using digital PLC where more than 1 motor is used in the system. Now a days AC Drives is becoming more popular due to its numerous advantages over DC.

TRB keeps stock of spare parts to provide quick service to the customers in case of any breakdown. All spares are provided on very reasonable prices to the customers.

#### SPARE PARTS



Control Card



Mosfets 08 www.trbgroup.in



**Current Transducer** 



Mosfet Drive Card



DC Power Supply



#### **Specification of Tube Mill Line-18 to 60mm**

This offer is for a line for cold forming and welding continuously steel tubes in round, square, rectangular and elliptical shapes from Hot/Cold Rolled Steel Strips and the operational speed of the mill is upto 100 m/min.

#### PRODUCTRANGE; STEELTUBESDIMENSIONS:

O.D. Wall Thickness Tube Length	: 18 mm-60 mm : 0.60 MM to 3.0 MM. : 4 Meter to 7 Meters.
Tube Applications	: For water pipe, furniture, structure, Automotive, general engineering industries
RAWMATERIAL	: Hot/Cold Rolled Steel Strips in coils and weld able grade of steel with max. carbon 0.2%
COILSIZE	
Width O.D. Max. Bore Coil Weight Width Tolerance	<ul> <li>50 MM to 120 mm.</li> <li>1800 mm</li> <li>510 mm.</li> <li>2000 kgs. max.</li> <li>+/- 0.1 mm in one coil</li> </ul>

#### TUBEMILL

Line Speed	: 100 Mtrs. /Min. Max.
Tube Welding	: By 200 KW x 350 K C/S Induction welding

#### PRODUCTIONMETHOD

Tubes are formed with reference to center line of tube :

Pass line height	: 900 mm
Standard Roll Dia.	: 160 mm



## Specification of Tube Mill Line-18 to 60mm

#### **SCOPE OF SUPPLY**

S.No.	DESCRIPTON	QTY
1	Double mandrel Un-coiler.	One
2	Sheer and table with clamps	One set
3	Automatic butt welder	One
4	Accumulator (Horizontal Spiral Accumulator)	One
6	Mill Drive Section	One
7	Cooling Chamber.	One
8	Sizing Mill Stand.	One
9	Turk Head Assembly	Two
10	Section Roll Assembly	One
11	Automatic Flying cut off	One
12	Run-Out table.	One
13	Inspection table & collectors.	One
14	Accessories.	One Set
15	Electrical drives and panels.	One
16	Filtration System	One
17	SPARES	One Set
18	Drawings and manuals	One set



#### **Equipment Specification**

**UNCOILER** : This unit receives coils from coil storage rack and placed in position on the mandrel of un-coiler by a jib crane/plant crane. This unit unwinds the coil for further feeding.

Type :	Double mandrel expandable type.
Coil O.D. :	1800 mm Max.
Coil I.D. :	510-610 mm.
Coil Width :	50-120 mm.
Coil Weight :	2000 Kg. Max.
Drum Expansion :	Wedge type mandrel-Hydraulic
Brake Unit :	Pneumatic disc.
Rotation :	Manual with auto Lock with spring
Coil Guard :	Cone type with slide.

#### SHEAR AND WELDING TABLE

Semi Automatic TIG Welder using manual TIG torch for butt welding of the strip ends. In this unit the trailing end of the proceeding coil and the leading end of the next coil passing through the mill are trimmed parallel by shear and then but welded together. A proper clamping arrangement is made to hold the coil ends for welding.

#### **HORIZONTAL TURNTABLE ACCUMULATOR**

The continuous coil accumulator permits continuous operation of the strip processing lines, thereby reducing costly delays caused by the end of a coil. The operation consists of feeding strip into the horizontal continuous coil accumulator until the desired amount of strip storage is achieved. The turntable consists of roller type round horizontal table, which handles light gauge strips with ease.

During this time, the material is continuously fed into the processing line, when the coil end is reached, the incoming material stops for coil joining in a shear and welder. Two-roll feeding pinch roll assembly, which is driven by variable speed AC motor, and gearbox of suitable capacity do the feeding of the strip. The main turntable assembly, which is storing the strip, is also driven by variable speed AC motor and gear box.



The accumulator allows the strip to be stored in horizontal loops by feeding the strip during running/ non running of the line by feeder pinch roll assembly and its speed is synchronized with the tube mill speed during feeding at high speed. The operation of the accumulator is simplified using Auto-Run and fill mode.

Туре	:	Horizontal continuous coil accumulator.
Strip Width	:	50-120 mm.
Strip Thickness	:	0.50 mm to 2.5 mm.
Strip Storage	:	5-7 minutes

#### FORMING MILL

Forming mill consist of vertical stand and horizontal stands, and used for continuous forming of strip metals into tubular shape. In order to minimize the amount of plastic deformation of the plate (i.e. prevent undulation from appearing at the edges of the plate), the forming method used is center bending, and edge bending, any of which may be used independently or in combination.

Forming Speed : 100 M/Min.

Max. Capacity : 18 mm x 3.0 mm.

The drive to the horizontal rolls is provided through specially designed multi-stage gearbox/worm gearbox. The gearbox is forced cooled using external oil lube and cooling system.

#### WELDING MILL

Welding mill is the important section of the mill and each part must function efficiently for proper welding. It consists of squeeze roll stand in 3 roll type in inverted configuration. Each roll is individually adjustable in forward or reverse direction as well as the whole assembly is also adjustable in upward and downward direction.

Housing is of fabricated steel construction stress relieved and machine finished. Spindles are EN-24 case hardened and ground finished.

**Scarfing** Stand: Twin type stand tool stations for continuous removal of outer bead. Two sections are provided to give time for tool changing. Changing from front to rear or otherwise is selectively manual.

It had V-grooved hardened and ground lower support rolls.

25mm x 200mm, rake angle 15 Deg. (Carbide tipped) tools are to be used. Quick removal of the tool is achieved by the use of pneumatic cylinder which lifts the tool from the contact of tube when there is power failure or mill is stopped due to any reason.

#### **COOLING CHAMBER**

After welding the tube is cooled in this section to room temperature.

Type: Combined shower and pool type.Total Length: 3500 mm.Recommended: 6% concentration mineral soluble oil.

## FORKLIFT



Capacity : 5 tons Engine Power : 79 bhp

High Performance & rugged Forklift Trucks

TRB GROUP

		SPECIFIC	ATIONS	
Model				TRB-FL5
Load Capacity			Kg	5000
Power				Diesel
Tyres		Front / Rear		Pneumatic
Wheel (s)		Front / Rear		2/2
Fork Height (std.)			mm	3000
Fork Size (LxWxT)			mm	1220 x 150 x 60
Tilt Angle			deg	6°-12°
Overall length			mm	4330
Overall Width			mm	1480
Overall Lowered Height			mm	2250
<b>Overall Raised Height</b>			mm	4300
Overhead Guard Clearance			mm	2260
Turning Radius (Outside)	101		mm	2900
	Travel	With Load	Km/h	22
	(Fwd / Rvs)	Without Load	Km/h	25
Speed (e)	Lifting	With Load	mm/s	500
Speed (3)	Linung	Without Load	mm/s	530
	Lowering	With Load	mm/s	350
	Lowering	Without Load	mm/s	340
Gradeability	With / Without	Load	%	27 / 20
Total Weight			Kg	6400
Tyre Sizes		Front		3.00 - 15 - 18PR
Tyre onces		Rear		7.00 - 12 - 12PR
Wheel Base			mm	2000
		Front	mm	1180
Tread		Rear	mm	1190
Brake (s)	Service			Hydraulic-Foot Pedal
Drune (3)	Parking			Mechanical-Hand Lever
Battery	Voltage / Capa	acity	V/AH	2 x 12 / 80
	Model			4108
	Rated Horsep	ower	bhp/r.p.m	79 bhp@ 2400
Engine	Rated Torque		N.m(Kg.m)/r.p.m	270 / 1500
Lighte	Number of Cyl	linders		4
	Displacement		Ltrs.	4.68
	Fuel Tank Cap	pacity	Ltrs.	75
Transmission	Number of Spe	eds		2 (Power Shift)
Operating Pressure	For Attachmer	nt	Kg / cm <sup>2</sup>	195







Model	TRB-FL5		
	mm		
A. Overall height fork raised	4300		
B. Fork height (std.)	3000		
C. Overall height fork lowered	2250		
D. Backrest height (from upper face of forks)	1200		
E. Free lift	150		
F. Fork thickness	60		
G. Min. clearance (bottom of mast)	150		
H. Overall length (with forks)	4330		
I. Overall length (without forks)	3110		
J. Fork length	1220		
K. Fork overhang	560		
L. Wheel base	2000		
M. Rear overhang	550		
N. Coupler height	390		
P. Overall height (overhead guard)	2260		
Q. Overall width	1480		
R. Lateral fork adjustment	300-1380		
S. Tread (front)	1180		
T. Tread (rear)	1190		
U. Fork width	150		
V. Inside turning	220		
W. Outside turning radius	2900		
X. Min. intersecting aisle	2960		
Y. Tilting angles	6° - 12°		

14 RASA = Right Angle Stacking Aisle, a = Clearance, b = Load Length



### **WEIGHING SCALE**



#### **INTRODUCTION**

Weighing capacity from 10T to 100T, accuracy from 5Kg to 50Kg Different platform size 6m x 3m to 18m x 3mHeavy duty load cells and rugged construction for long life and reliable operations Optional Stainless Steel Hermetically Sealed Compression Load Cell with IP68 Environmental Protection corporate latest Microcomputer – technology for accurate weighing Eliminates leavers and knife edges to avoid frequent maintenance Computerized model for effective truck management and report generation on the basis of date, vehicle number, supplier, material, etc., On a printer

#### SPECIFICATIONS

Capacity Accuracy Platform Size No. of Load cells Control Unit Auxiliary Display Power supply (control unit) Power Consumption (control unit) Operating Temperature : 10 ton – 100 ton : 5 kg – 50 kg : 7.5 x 3 m – 18 x 3 m : 4 – 8 Load cells : : Microcontroller based. : 1" LED (optional 4") : 100 - 270 V.AC; 50/60Hz : 50 Watts : 10 deg C to 45 deg C



## EOT CRANES



#### FEATURES:

• Light Weight and compact construction minimizing building loads and space saving

- Suitable for Light and Medium duty workshop applications
- All motors are TEFC with class F insulation
- Heavy duty cast steel rope guide
- Upper and Lower hook travel limit switch
- Additional Counter weight operated over hoist limit switch as option
- VVVF drives are available as an option
- Compact and lightweight festoon cable system`





### **TECHNICAL DATA FOR DOUBLE BEAM E.O.T. CRANES**

Capacity in Tonnes	Span in Metres	Head Room Clearance in men HRC	End Clearance in mm ELS/ERS	Hook approach in mm HALS	Wheel Base in mm	Hook approach in mm HARS	Wheel load of Crane in Tonnes (approx)	*Total Wt. of Crane in Tonnes (approx)
5	10	1600	250	900	3800	800	6.0	10.0
	15	1600	250	900	4000	800	7.0	13.0
	20	1700	250	900	4200	800	8.0	15.0
7.5	10	1600	250	950	3800	850	9.0	13.0
	15	1700	250	950	4000	850	10.0	17.0
	20	1700	250	950	4200	850	10.0	19.0
10	10	1800	250	1000	4800	900	10.0	14.0
	15	1800	250	1000	4900	900	11.0	17.0
	20	1900	250	1000	5000	900	12.0	19.0
15	10	2000	275	1000	5000	900	14.0	19.0
	15	2200	275	1000	5000	900	16.0	22.0
	20	2300	275	1000	5200	900	17.0	25.0
20	15	2400	300	1100	5200	900	19.0	24.0
	20	2500	300	1100	5300	900	20.0	27.5
25	15 20	2600 2800	300 300	1150 1150	5200 5400	1000	22.0 23.0	26.0 30.0
30	15 20	2800 3000	300 300	1200 1200	5200 5400	1000	26.0 28.0	30.0 37.0
35	15	3000	300	1250	5200	1050	30.0	33.0
	20	3100	325	1250	5400	1050	31.0	38.0
40	15	3000	325	1300	5300	1050	32.0	36.0
	20	3200	325	1300	5500	1050	34.0	40.0
50	15	3200	350	1400	5000	1100	32.0	41.0
	20	3500	350	1400	5200	1100	34.0	47.0
60	15	3800	400	1600	5600	1200	38.0	60.0
	20	4000	400	1600	5800	1200	39.0	72.0
80	15	4000	450	1900	5600	1300	39.0	78.0
	20	4200	450	1900	5800	1300	41.0	90.0
100	15	4200	450	1900	5800	1400	50.0	95.0
	20	1500	450	1900	6000	1400	52.0	111.0
125	15 20	4200 4500	450 450	2000	6100 6100	1500 1500	53.0 54.0	120.0 130.0
150	15	4300	450	2000	6200	1500	56.0	145.0
	20	4600	450	2100	6200	1500	58.0	155.0

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#### **SLITTING MACHINE**

Roll slitting is a shearing operation that cuts a large roll of material into narrower rolls. In slitting process the web is unwound and run through the machine, passing through knives or lasers, before being rewound on one or more shafts to form narrower rolls.

#### MACHINERY

For metal coils, the splitter consists of three main parts: an uncoiler, splitter, and recoiler.[3] The material is fed from the uncoiler, through the nip between the two circular cutting wheels (one on top and another underneath), and then re-wound in slit pieces on the recoiler.







MODELS	SL-01	SL-02	SL-03	SL-04	SL-05	SL-06	SL-07
Maximum Width of strips (mm)	100 - 420	150 - 620	150 - 820	300 - 960	400 - 1250	500 - 1600	900 - 2000
Thickness (mm)	0.25 - 1.5	0.25 - 2.0	0.3 - 2.0	0.3 - 2.0	0.3 - 3.0	1.0 - 6.0	2.0 - 8.0
Number of Cuts	3 - 10	3 - 15	3 - 15	3 - 20	3 - 20	3 - 20	3 - 20
Rated Power (kw)	50	80	90	110	250	300	350
Coil Weight (ton)	3	6	8	10	20	25	30
Aprox. Dimension (m)	13 X 4	15 X 4	15 X 4	15 X 4	18 X 7	25 X 8	30 X 9



## **Specification of Slitter Line**

## 1250 MM WITH COMPLETE ELECTRICAL MOTORS AND CABLES AND HYDRAULIC PIPELINES WITH SPACERSAND CUTTERS

SR NO	DESCRIPTION	DETAILS	REMARKS
1	ТҮРЕ	CONSTANT SPEED TYPE	
2	MATERIAL	HOT /COLD ROLLED M.S STRIPS OR COILS HAVING A MAX . YIELD OF 45KG /SQ.MM	
3	STRIP THICKNESS	0.6 ММ ТО ЗММ	
4	COIL WEIGHT	MAX. 15 TONS	
5	OUTSIDE DIAMETER OF COIL	MIN800 MAX 1600MM	
6	COIL BORE	508, 610MM	
7	COIL WIDTH	MIN 500 MAX 1250MM	
8	LINE SPEED	50 ΜΡΜ ΜΑΧ	
9	INCHING SPEED	5 MPM	
10	NUMBER OF CUTS	12 то 32 ситѕ	
11	Ουτρυτ	8 TO 10 COILSPER SHIFT	
12	LINE DRIVE	AC/DCMOTORS	
13	ELECTRICAL SWITCH GEAR	SIEMENS/ ABB	OR AS PER YOUR REQUIREMENT
14	ELECTRIC POWER SUPPLY	415VAC± 5% ,3 PHASE50HZ	AS PER YOUR REQUIREMENT
15	LINE ARRANGMENT	RIGHTTO LEFT	AS PER YOUR REQUIREMENT



## The Line Will Consists of the Following Assemblies

SR NO	EQUIPMENT	DESCRIPTION
1	COILCAR	1 NOS.
	Туре	Coil car, travel & up and down movement
	Capacity	15 Tones max.
	Construction	M.S Fabricated.
	Operation	The coil car moves on guides by AC geared motor.
2	UNCOILERWITHSNUBBER	1 NOS.
	Туре	Double Expandable mandrel
	Construction	M.S Fabricated with M.S Bearing housing
	Drum size	Mandrel to accommodate coil bores of 508/610mm
	Bearings	Antifriction bearings
	Drive	10KW DC motor with suitable output speed
	Operation	The movement of both the mandrels is by hydraulic cylinders.
	Drive	Snubber roll Driven by an hydraulic motor.
	Snubber	UP/DN by hydraulic cylinder
	Peeler	UP/DN forward / reverse by hydraulic cylinder
3	PINCHROLLCUMLEVELLER	1 NOS.
	Туре	Two rolls type and leveler rolls
	Bearings	M.S Fabricated , Chokes M.S
	Adjustment	Antifriction bearings with oil seals. Top pinch roller can be raised / lowered by hydraulic cylinder
4	VERTICALLYENTRY GUIDE	1 NOS.
	Туре	4 Rolls-2 on either side, placed vertically.
	Body	M.S Fabricated
	Construction	The rolls on either side are mounted on sliding blocks with shafts and bearing move in guides.
	Operation	By threaded shaft on both ends to be adjusted manually operative from operation side.



SR NO	EQUIPMENT	DESCRIPTION
5	SLITTERASSEMBLY	1 NOS.
	Туре	Two shaft, Eccentric Housing Type .
	Housing	M.S Fabricated duly stress relieved. Housing on drive side is fixed while front stand can slide in guide for changing the cutter set up .
	Shaft	EN-19, forged and ground with key way
	Slitter shear	Material high carbon , high chromium heat treated and ground to HRC-56-58 ,
	Bearing	Heavy duty antifriction bearings
	Adjustment	Both Shafts move closer or apart simultaneously.
6	SCRAPWINDERS	2 NOS.
	Туре	Spool type
	Construction	M.S Fabricated supporting structure & spool
7	LOOPTABLEWITHLOOP	A loop pit is provided to let the strips fall freely to from a loop before the tensioner. In case of initial starting and inching mode , the loop pit is covered by a loop table.
8	SEPARATORSHAFT	Separator shaft is provided to separate the slitted slits after the loop pit.
9	RECOILERWITH OVER ARM SEPARATOR	1 NOS.
	Туре	Over hung type , drum expanding & collapsing
	Body	M.S Fabricated with bearing housing .
	Pusher plate	Made out of M.S it is guided on two guide rods in G.M bushes. It is operated through central power pack .
	Bearings	Antifriction bearings
	Drive	Heavy duty reduction helical gear box . motor connected to input pinion through flexible coupling & a gear box .
10	EXITCOILCAR	1 NOS.
	Туре	Coil Trolley, similar to entry coil car .
	Capacity	15 Tones max.
	Construction	M.S Fabricated
	Operation	The coil car trolly moves on rail through AC geared motor

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## TMT ROLLING MILL PLANT

TMT bars are widely used in general purpose concrete reinforcement structures, bridges and flyovers, dams, thermal and hydel power plants, industrial structures, highrise buildings, underground platforms in metro railway and rapid transport system.

TMT Bars is an acronym for thermo-mechanical treatment. Thermo Mechanically Treated (TMT) bars are manufactured using the Quenching & Tempering (Q & T) technology. ATMT bar gets its strength properties from quenching and tempering. No mechanical treatment is involved in TMT Bars.

The growth of infrastructures, roads and bridges, civil construction projects, and modern town ship complexes will ensure continued demand of TMT bars. There is a very good scope, market potential and demand for such products and new entrepreneurs should venture into such projects.



#### **Product Range**

The complete plant will be responsible to produce D-Bars as well as TMT Bars from 8mm to 32 mm diameter.



**Overview of TMT Mill** 



#### **TMT Process**

By adopting thermo mechanically treatment process higher strength of TMT bars is obtained. In this process, steel bars get intensive cooling immediately after rolling. When the temperature is suddenly reduced to make surface layer hard, the internal core is hot at the same time.

Due to further cooling in atmosphere and heat from the core, the tempering takes place. This process is expected to improve properties such as yield strength, ductility and toughness of TMT bars. With above properties, TMT steel is highly economical and safe for use. TMT steel bars are more corrosion resistant than Tor steel.

#### **TMT Steel Bar**

The full form of TMT is Thermo Mechanical Treatment; in this the steel bars are passed through a specially designed water-cooling system. After the bars pass, the outer surface of the bars solidifies while the core remains hot. This creates a temperature gradient in the bars. After the intensive cooling, the bar is exposed to air and the core re-heats the quenched surface layer by conduction, therefore tempering the external martensite.

When the bars are taken out of the cooling system, the heat flows from the core to the outer surface, further tempering of the bars, which helps them attain higher yield strength. The resulting heat-treated structure imparts superior strength and toughness to the bars. Cooling process is illustrated below:





After this process of thermo mechanical treatment, a dark etched peripheral rim of tempered martensite and a grey core of ferrite pearlite get formed. The tempered martensite surface layer is very hard while the microstructure of the core is a very fine-grained ferrite and pearlite which is quite soft. The result is a structure with a high yield strength combined with high ductility.

Hence from the above data it is seen that the sudden quenching is the key role in hardening the steel bars. The pressure of the water jets on the hot molten bars determines the thickness of the martensite structure and is controlled for the required hardness.



#### What is Heat treatment:-

Metals can be heat treated to alter the properties of strength, ductility, toughness, hardness or resistance to corrosion. Common heat treatment processes include annealing, precipitation strengthening, quenching, and tempering. The Annealing process softens the metal by allowing recovery of cold work and grain growth. Quenching can be used to harden alloy steels, or in precipitation hardenable alloys, to trap dissolved solute atoms in solution. Tempering will cause the dissolved alloying elements to precipitate, or in the case of quenched steels, improve impact strength and ductile properties.

#### Grades of TMT bars:-

The grades of TMT bars are nothing but the various compositions the TMT bars are made off. These compositions determine the various characteristics of TMT bars such as malleability, hardness, etc. The following chemistry of the steel used for the production of TMT bars:



#### **Advantages of TMT Bars**

**Better Safety** of **structures**: because of higher Strength combined with higher Ductility.

Easy working at **site**: owing to better Ductility and Bendability. Pre-welded meshes can be made to eliminate manual binding at site. Reduces construction and fabrication time.

**Resists fire**: Unlike Tor steel/ CTD Reinforcement bars, TMT bars have high thermal stability. They are the preferred choice when elevated temperatures of 400-6000 C may be encountered (Chimneys, fires).

**Resists corrosion**: The TMT process gives the bar superior strength and anticorrosive properties. Controlled water-cooling prevents the formation of coarse carbides, which has been cited as the main cause for the corrosive nature of common bar.

Another reason for better corrosion resistance is the absence of surface stresses caused by the cold twisting process.

**Formability**: Due to very high elongation values and consistent properties through out the length of bar, TMT re-bars have excellent workability and bendability.

**Earthquake resistance**: The soft ferrite-pearlite core enables the bar to bear dynamic and seismic loading. TMT bars have high fatigue resistance to Dynamic/ Seismic loads due to its higher ductility quality. This makes them most suitable for use in earthquake prone areas.

Malleability: TMT bars are most preferred because of their flexible nature

Fine welding **features**: TMT re-bars (having low carbon content) can be used for butt and other weld joints without reduction in strength at the weld joints.

Bonding **strength**: External ribs running across the entire length of the TMT bar give superior bonding strength between the bar and the concrete. Fulfils Bond requirements as per IS: 456/78 and IS: 1786/85.

**Cost-effective**: A high tensile strength and better elongation value gives you great savings, Reduced Transportation Costs.



Parameter	Fe415	Fe500	Fe550	Fe415D	Fe500D
Carbon (Max)	0.30	0.30	0.30	0.25	0.25
Sulphur (Max)	0.060	0.055	0.055	0.045	0.040
Phosphorus (Max)	0.060	0.055	0.055	0.045	0.040
Sulphur & Phosphorus (Max)	0.110	0.105	0.100	0.085	0.075
CE (Max)	0.42	0.42	0.42	0.42	0.42

In the production of TMT bars the carbon is restricted to below 0.20% for imparting better ductility and bend-ability and to ensure better weld-ability. The carbon equivalent of the steel is controlled by the addition of Manganese (from 0.50% to 1.0% depending on the grade of the TMT bar being produced. In case of production of corrosion resistant TMT bars, corrosion resisting elements are suitably added in the steel.

Re-bar Quality	Grade	Yield Strength Mpa Min.	UTS Mpa Min.	El. (% Min.)	Bend up to (Min.)
ls: 1786	Fe-415	415	485	14.5	3d
Conventional	Fe-500	500	545	12.0	4d
Re-bars	Fe-550	550	585	8.0	5d
	Fe-415	415	500	22.0	2d
TMT Bars	Fe-500	500	580	20.0	2d
	Fe-550	550	630	18.0	2d



#### **General Process Flow**

Steel Scrap

Furnace

Electrical Induction



Rolled Products (Roofings TMT Re-bars

Billets

Caster

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#### TMT Manufacturing Process



These stages adopted here are a universal sequence to manufacture the TMT bars and is followed in general practice. This is the best way to attain the finished products using the equipment efficiently. Now let us briefly explain every stage in the process.

Note that every stage brings the raw material closer to the final product and any miscalculation in any stage or occurrence of breakdown will result in loss of raw materials, wastage of power and delay in production. Hence every process is equally important. Now let us have a brief insight stage wise.



## **CUT TO LENGTH MACHINE**



Cut To Length Lines is used for uncoiling, straightening, gauging, cross-cutting to length and stacking work. It perform a variety of operational functions including cut sheet leveling, edge trim (if required), cut to length and stack sheets and plates. The cut to length line can make sure of accurate feeding and shearing. It can be widely used in cold or hot rolling carbon steel, tinplate, stainless steel and all the other kinds of metal materials with surface coating.

Cut to length line machine is controlled by PLC system or manually as required by the customer. It has PLC controlled single shaft feeder, the information of length, shearing numbers and speed can be input to the HMI. When the need shearing number is reached the line can stop automatically. The line speed can be adjusted. It has a gauge with high precision, and whole line can work automatically and operate easily thereby producing smooth sheets.

Various Components are included in Cut To Length Machines like coil car, de-coiler, entry support device, width adjustor device ,straightening machine, gauge table, shearing machine, run out table, pneumatic discharge and stacker device, unloading table, pneumatic system, Electrical system with computer PLC program control, Hydraulic system etc.



#### Automatic G.I. Sheet Cutting (cut-to-length) Machine

<u>General specifications :</u>

MATERIAL COIL WT. COIL WIDTH SHEET THICKNESS COIL BORE CUTTING LENGTH PACKING WT. NO. OF PERSON REQUIRED G.I. / GALVALUME COIL (FULL HARD) 5,000 KGS. 650 MM. – 1000MM. 0.12 MM. – 0.60 MM. 508MM. 1,800MM. – 3,660 MM. 2.5 TON 3 (MAX)

#### List of Machinery :

- · DECOILE SHAFT
- · PINCH ROLL ASSEMBLY WITH A.C. DRIVE
- · FEEDING ROLL ASSLY WITH A.C. VARIABLE DRIVE
- · SHEAR WITH CLUTCH BRAKE MOTOR
- · PILING TABLE
- · AIR COMPRESSOR
- · ELECTRICAL CONTROL PANEL
- · NO. OF SHEETS PER MIN. FOR SERVO DRIVE: 18 PCS. X 1,830 MM. LONG
- · LENGTH TOLERANCE

± 1.0 MM.

#### **Machines Details**

#### **DECOILER SHAFT**

It is a simple shaft and screw mechanism. The shaft is inserted inside the coil eye hole and tightened by the screw fitted on the shaft. After mounting the coil on the shaft, the shaft is then mounted on the bush block and rotated by the PINCH ROLL unit.

Shaft Material Width of the Coil Wt. of the Coil Shaft Bearing Dia. Adjusting Bolt size : EN-8 : 650 mm. – 1,000mm. : 5,000 Kgs.( max ) : 70 mm. : M-30



#### **Pinch Roll Assembly**

TYPE

PINCH ROLL DIA. BARREL LENGTH ROLL MATERIAL SPECIFICATION OF BEARING UP/DOWN MOVEMENT OF ROLL

CYLINDER BORE & STROKE ELECTRIC MOTOR

- : FIXED SPEED AUTOMATIC START & STOP BY LOOP SENSORS.
- : 150 MM.
- : 1,100 MM.
- : EN-8 ROUND
- : UCP 212 & 6210
- : BY AIR CYLINDER WITH MANUALLY OPERATED DIRECTION CONTROL(DC) VALVE : 100 B X 50 ST
- : 7.5 H.P., A.C, S-4 DUTY MOTOR WITH GEAR BOX

### LOOPING DEVICE

TO ACCOMMODATE QUADRANT ROLLS, SUPPORT ROLLS AND LOOP SENSORS FOR MONITORING AND CONTROL OF THE LOOP.

: 2 : 40 MM. : 1,100 MM. : STEEL PIPE ROLL WITH HARD CHROME : 1 SET

#### **SHEAR**

TYPE OF SHEAR M/C

BODY MATERIAL CUTTING RANGE BLADE SIZE BLADE MATERIAL

- : MECHANICAL DOWN CUT SHEAR ACTUATED BY AIR CYLINDER
- : M.S. PLATE STRUCTURE, FABRICATED
- : .5 MM. X 1,000 MM.(MAX.)
- : 22MM. THICK X 75MM. (W) X 1,100MM.
- : HIGH CARBON HIGH CHROMIUM TOOL STEEL



**Piling Table** 

TYPE
TABLE SIZE
OF THE TABLE

- : STATIONERY TABLE TYPE
- : 1,000MM. X 3,660 MM.(L) CONSTRUCTION

: MADE OF 125X65 CHANNEL

#### FEED ROLL ASSEMBLY

FEED ROLL CUM MEASURING ROLL IS PROVIDED TO FEED THE SHEET ACCORDING TO MEASURMENT PROGRAMMED IN THE CONTROL PANEL .

FEED ROLL SIZE	: 130 MM. DIA. X 1,100 MM. LONG.
TOP ROLLER SIZE	: 130 MM. DIA. X 400 MM.
LONG. MATERIAL OF THE ROLLER	: EN-8 ROUND
MATERIAL OF TOP ROLL	: EN-8 ROUND
DRIVE	: A.C. GEARED MOTOR WITH VARIABLE DRIVE,
MOVEMENT OF TOP ROLL	: BY DOUBLE AIR CYLINDER WITH SOLENOID
OPERATED VALVE.	
CYLINDER BORE & STROKE	: 100 B X 50 ST
HOLDING PAD IS PROVIDED TO HOLD T	THE SHEET WHILE TOP FEED ROLL IS IN UPPER
POSITION.	

VERTICAL MOVEMENT OF HOLDING PAD: BY SINGLE AIR CYLINDER WITH SOLENOID OPERATED VALVE

CYLINDER BORE & STROKE

: 100 B X 50 ST

#### AIR COMPRESSOR

TYPE PRESSURE MOTOR : PORTABLE AIR-COOLED TWO CYLINDER TYPE. : MAX. 6-8 KG/SQ. CM. : 2.2 KW

AIR LINE IS REQUIRED FOR FOLLOWING MACHINERY :

PINCH ROLL ASSLY	:1
HOLDING ROLL UP / DOWN	:1
FEED ROLL UP / DOWN	:2



## **ROLL FORMING MACHINE**





#### **MATERIAL:**

- 1) Coil Width: 1220mm/1450mm
- 2) Suitable Coil Thickness: 0.3 mm -1.0 mm
- 3) Suitable Raw Materials: color steel sheet(PPGI), we test machine as our 1220mm/1450mm width steel coil
- 4) Yield strength of raw material: 235Mpa -550 MPA,

#### MACHINE COMPONENTS:

- (1) Manual decoiler \*1pc (capacity: 5 tons) (2) Guiding Equipment \*2set
- (3) Electric power pre-cutting \* 1 set
- (4) Roll Forming Equipment \*1set (5) Post-cutting Equipment \*1set (6) Hydraulic Station \*1pc
- (7) PLC Control Panel \*1pc
- (8) Supporter Table \*1 set (two pieces, 3m/piece)
- (9) Spare parts: bearing and support box \*2 ,chain \*2 oil pipe \*\*2 button \*4 ,limit switch \*2

#### **WORKING FLOW:**

Decoiling - Feeding -Roll forming - Gutting -Run out table





Hydraulic Oil Tank



Electric power pre-cutting



Run-out table



Film Guard Stand



Delta PLC with touch screen



Manual Decoiler



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Color touching screen



Machine Body Cover



## LPG CYLINDER MANUFACTURING UNIT



#### **INTRODUCTION**

A gas cylinder or tank is a pressure vessel used to store gases at above atmospheric pressure. High pressure gas cylinders are also called bottles. "Bottled gas" is sometimes used in medical supply, especially for portable oxygen tanks and packaged industrial gases are frequently called "cylinder gas".

Design codes and application standards along with the cost of materials dictated the choice of steel with no weldings for most gas cylinders, treated to be anti corrosive.

When gases are supplied in gas cylinders, the cylinders have a stop angle valve at the end on top. Often, gas cylinders are somewhat long and narrow and may stand upright on a flattened bottom at one end with the valve at the top. Gas cylinders are designed and constructed in accordance with standards and specifications approved by the Health & Safety department.





#### **Manufacturing Unit**



#### MANUFACTURING PROCESS

The LPG cylinders are manufactured as per the BIS specification number 4093-1967 with necessary amendment. To manufacture LPG cylinders first sheet is cut to size on cutting machine to make blanks. These blanks are now deep drawn on deep drawing power press to two halves of the cylinder. Other parts such as foot ring, backing strip, top ring and turned components are manufactured separately.

Now both the halves are joined with a backing strip prior to their welding. After welding complete cylinder undergo stress relieving normalizing process in suitable heat treatment furnaces. After stress relieving sand blasting is done. The following tests are carried out during the process of manufacturing of the LPG cylinder:

*Quality checks, visual hydraulic and pneumatic tests for pressure, stretch and bursting etc. are done. Finally, cylinders are marked, cleaned and painted with high gloss corrosion resistant paint/ coating etc.* 

Manufacturing of LPG cylinder does not pose any major problem of pollution. However, it is suggested that due care should be taken in installing suitable air cleaning systems such as exhaust etc. in sufficient numbers particularly in painting area.

Also it could manufacture other higher capacities LPG cylinders like 250kg , 440kg, 500kg, 1000kg, 2000kg etc for use in hotels restaurants, residences, eateries and other small consumption areas.



#### LPG Cylinders Filling Unit



Liquefied petroleum gas or liquid petroleum gas (LPG or LP Gas), also referred to as simply propane or butane, is a flammable mixture of hydrocarbon gases used as a fuel in heating appliances and vehicles. LPG is a mixture of commercial butane and commercial propane having saturated and unsaturated hydrocarbons. The above LPG Cylinder Filling Plant for filling LPG Gas in cylinders of various capacities like 3 kg, 5 kg, 10 kg, 14 kg, & 20 kg, 48 kg etc. This is a custom built ready to install plant. The cylinders may be provided with F type of Self closing valves.

- The unit is easy to install and operate and much cheaper as compared to other plant.
- The unit comes with all safety features as per norms.
- The unit is provided with cylinder evacuation system, cylinder testing system, multi filling points for filling cylinders of various capacities like 3,5,6,12,15,19,35,48kgs at the same time.
- The filling scale comes with auto cut off facility with manual or electronic filling scales.

#### Capacity

- Fully automatic plants for fast filling in huge quantities like 5000 to 10000 cylinders per day using conveyor system
- Semi automatic plants with or without carousel for filling cylinders approx 3000 to 5000 per day
- Manual LPG cylinder filling plants with stationary LPG cylinder filling scales for filling approx 500 to 2000 cylinders per day.

The plants are provided with complete piping, valves, safety equipments, Gas leak detection system, instrumentation, etc for safe and easy executed entire plant including Civil, Mechanical, Piping, Electrical and Instrumentation



## ALUMINIUM FOIL MANUFACTURING UNIT



Aluminium foil is aluminium prepared in thin metal leaves with a thickness less than 0.2 millimetres (8 mils); thinner gauges down to 6 micrometres (0.24 mil) are also commonly used .In the United States, foils are commonly gauged in thousandths of an inch or mils. Standard household foil is typically 0.016 mm (0.63 mil) thick, and heavy duty household foil is typically 0.024 mm (0.94 mil). The foil is pliable, and can be readily bent or wrapped around objects. Thin foils are fragile and are sometimes laminated to other materials such as plastics or paper to make them more useful.

Foils of aluminum are rolled from several different alloys. Because all of the alloys commonly made into foil contain more than 90% aluminum and retain most of its properties, all are correctly called aluminum foil.

Bare (plain), coated, or laminated, aluminum foil is the most effective material for the full range of flexible and other packaging forms employed to protect foods, drugs, cosmetics, and a lengthy list of other items.

The barrier properties and heat reflectivity of aluminium foil are widely used in building panels adding to the insulation performance of modern building systems. Aluminium foil is also used as a skin for heat-insulating and incombustible materials to provide high performance insulation for pipework and ducting.



## **Manufacturing Unit**





Packaging



Insulation



Cooking



FOIL CONTAINERS



PHARMACEUTICAL FOILS



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## Plastic & Steel Recycling Plants

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## PPR / U PVC PIPE MANUFACTURING PLANT

TRB GROUP



#### EXTRUSION LINE FOR THE PRODUCTION OF RIGID PVC PIPES

Material Pipe size range	•	Rigid PVC dry blend. 63 to 200mm outside diameter
Output	:	with pressure calibration system. <b>Upto 170kgs/hour.</b>

The output depends on Compound, The Dimensions And Desired Quality of pipes

**TRB 2-52-25V/4** with 15 KW A.C. motor and Drive , pump for degassing, feeder with AC Drive, connecting head, Temperature controllers and **OPTIMA 7** Touch screen Remote Panel, Temperature Control Panel consisting of PID Temperature Controllers for 10 Zones as follows :

- Extruder :5 Zones
- Die Head : 5 Zones + 1 No Power Controller. Group AC

Frequency Variable Drives for Main motor & Feeder with operation on remote control panel.

Extruder	: Twin Screw	Barrel Zones	:4+1 connecting head
Screw	: Parallel	Heating load	:16.10 KW
Screw diameter	: 52 mm	Vacuum Pump	: 0.75 KW
L/D ratio	: 25 : 1	Oil Pump	: 0.75 KW
Screw movement	: Counter rotating	Barrel cooling blower	:1 No.
Main Drive	:15KW	Screw cooling	: Close loop
AC Feeder Drive	: 1.5 KW AC	Temperature controller	: Digital PID type for
			Individual zonesoup.in 41



#### Die Head PVC 200/400

The spider concept ensures excellent , outstanding & consistent pipe quality due to ideal dwell time of melt throughout the cross section of the die. Homogenous melt distribution with temperature control through number of zones for high throughputs.

Туре	: PVC 200/400
Pipe Size	: 63-200mm
No. Of Zones	: 5 Nos. PID + 1 No Power Controller
Die Heating	: 14.70 KW
Mounting	: Trolley

**Water Spray Bath** The Water Spray Bath –is mounted on rigid fabricated frame on height adjustable track rolls and rails. Frame has Transparent SPVC sheet to contain the spray within the tank mounted on M S tub. Atomized intensive cooling arrangement through optimized positions of spray nozzles. Water pump, DOL starter, Dual filter and piping are included.

Туре	: K – 250 – 6.0W
Pipe Diameter	: 40 - 250mm
Nominal Length	: 6.0 Meters
Tub	: M.S
Top Cover	: S.S.
Front, Middle & Rear	:M.S.
Splash Covers	: Transparent SPVC sheet
Spray Pipes	: G.I Spray
Nozzle	:164 Nos.
Longitudinal Movement	: By pneumatic cylinder
Height Adjustment	: Manual
Motor for water pump	: 5.5Kw

## Haul Off

\* Independent special AC Geared motor

\* AC Drive 2.2 Kw

- \* Pipe range 25 250mm
- \* Contact length 1400mm
- \* Line speed **0.3 10** Mtr./min
- \* Festo Pneumatics

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2 x 1.1 Kw



#### **Cutting Saw With Festo Pneumatics**

The cutting saw has a pneumatically operated saw carriage operating on linear motion bearings mounted on twin hardened shafts mounted on a rigid stand. The saw blade is driven by an electric motor through a control cabinet provided on the stand. The Saw blade movement from bottom to top is through a pneumatically operated saw arm feed, with limit switches.

- Thin Pipe- Carbon Steel :520mm

Туре	: SPR 200 R
Pipe Dia.	: Upto 200 mm
A C Motor Max. Carriage Speed Saw Blades	: 2.25KW : 10MPM
- Thick Pipe –Carbide	:540mm

- Thick Pipe –Carbide

#### **Tripping Chute KR- 250 with Rollers**

The Tripping Chute is made of MS rigid structure consisting of pneumatically operated tilting table with rollers, control cabinet and adjustable limit switches for various pipe cut lengths and pipe stacking stand

Type	: KR 250
Pipe Dia	: 32 – 250 mm
Nominal Length	: 6Meters
Cutting Length	: 3 – 6 Meters
Chilling Plant:	
Heat transfer rate	: 24 000 Kcal /Hr.
Inlet water temperature	: 12 Degree C.
Outlet water temperature	: 15 Degree C.
Air compressor	: 2 HP, 2 cylinders, 500 RPM Tank
Capacity	: 113 litres
Air requirement	: 2000 litres / hour



## PET RECYCLING PLANT



PET is used as a raw material for making packaging materials such as bottles and containers for packaging a wide range of food products and other consumer goods. Examples include soft drinks, alcoholic beverages, detergents, cosmetics, pharmaceutical products and edible oils. PET is one of the most common consumer plastics used.

Bottles made of Polyethylene terephthalate (PET, sometimes PETE) are recycled to reuse the material out of which they are made and to reduce the amount of waste going to landfills. In many countries, PET plastics are coded with the resin identification code number "1" inside the universal recycling symbol, usually located on the bottom of the container.

This plant is used to remove bottle labels, crush bottle into flakes, wash by water, dry flakes, then get the clean and dry bottle flakes.

Safe and Easy to operate and get clean flakes with high capacity, low energy consumption, safety, reliability, etc.



## **Manufacturing Unit**





## LEAD BATTERY RECYCLING UNIT



Lead Battery Recycling has become an essential part of waste management for any country. Battery recycling by definition is, to reuse/regenerate the materials of a scrap battery by recycling process, that would ordinarily be considered as waste. Waste management is an important part of the infrastructure as it ensures the protection of the environment and of human health. Waste management is closely related to a number of issues such as process & resource consumption patterns, technology and other socio-economic factors.

The process of the Lead recovery from automotive or industrial scrap batteries for further refining to get minimum 99.97% purity or making Lead alloy or to use in the production of lead oxides or in the casting of grids/terminals to reuse again in the production of lead acid batteries; involving the following basic operations:

- Collection & safe storage of dry / wet scrap batteries
- Battery cutting / crushing & separation of Lead contents / material & other component along with neutralization of acid / electrolyte
- Smelting in closed compact furnace
- Refining & alloying Process
- Pollution control equipments for effective control of the fumes & gases generated during operation of above furnaces



## Manufacturing Unit



#### EQUIPMENTS OF LEAD BATTERY RECYCLING PLANT

- Battery Cutting Machine OR Battery Breaking System with Acid Treatment Section.
- Rotary Furnace witProllution control Equipments, Fugitive Emission Control System & Motorised Charging Machine.
- Lead Refining Furnace.
- Lead Alloying Furnace.
- Fugitive Emission Control System for Refining & Alloying Furnace.
- Ingot casting machine.
- Plastic Crusher







## PAPER BAG MAKING MACHINE



A paper bag or paper sack is a preformed container made of paper, usually with an opening at one end. It can be one layer of paper or multiple layers of paper and other flexible materials. Paper bags are used for packaging and/or carrying items.

Paper shopping bags, brown paper bags, grocery bags, paper bread bags and other light duty bags have a single layer of paper. A variety of constructions and designs are available. Many are printed with the names of stores and brands. Paper bags are not waterproof. Types of paper bag are: laminated, twisted, flat tap. The laminated bag, whilst not totally waterproof, has a laminate that protects the outside to some degree.







Twisted Kraft Paper Bags



Kraft Paper Babewith Self



#### Manufacturing Machine



#### **FEATURES**

- Automatic lubrication system
- Color mark error stopping system
- Suited for 60-180gsm roll sheet paper.
- PLC programmable servo motor control system
- Equipped with an accurate photocell system for printed mark tracking
- Controls bag length through the human-machine touch screen interface

#### **SPECIFICATIONS**

- Material specification : Max diameter 900mm, Max.width of Roll material 700mm
- Product specification: Bag width 60-250mm Length 150-350mm
- Machine size: 7500(L)x 2000(W) x 1400(H)mm
- Speed: 100-260pcs/min



## **BLOW MOLDING LINE**



Blow molding is a manufacturing process by which hollow plastic parts are formed. In general, there are three main types of blow molding: extrusion blow molding, injection blow molding, and injection stretch blow molding.

The blow molding process begins with melting down the plastic and forming it into a parison or in the case of injection and injection stretch blow moulding (ISB) a preform. The parison is a tube-like piece of plastic with a hole in one end through which compressed air can pass.

The parison is then clamped into a mold and air is blown into it. The air pressure then pushes the plastic out to match the mold. Once the plastic has cooled and hardened the mold opens up and the part is ejected.011



## **Technical Specification 20 LTR.**

MACHINE CAPACITY	UNIT	TRB20M				
EXTRUDER :						
Screw Diameter	mm	90				
Length Diameter Ratio	L/D	28				
Maximum plasticizing capacity	Kg/hr	180 – 200				
Extruder Motor (Variable)	Нр	75				
Heating Load	kw	28				
Maximum Screw Speed	rpm	56				
ACCUMULATOR- Head						
Accumulator Capacity	Kg	3				
Heating Load	kw	13				
Parison Control cylinder	Dia	6″				
Die core size (min. /max.)	mm	80 / 200				
MOULD CLAMPING UNIT						
Maximum opening	mm	900				
Minimum opening	mm	400				
Maximum Mould size	W x H mm	610 X 560				
Mould Clamping Force	Tone	20				
HYDRAULIC SYSTEM						
Hydraulic Drive Motor	Нр	23				
Oil Tank Capacity	Litre	700				
PRODUCTION RATE	No/Hr	90-100				
TOTAL POWER	Hp / kw	153/114				
MACHINE INSTALLATION						
Machine Dimensions (L x W x H)	Feet	21 X 25 X 13				
Panel Dimensions (L x W x H)	Inch	75 X 18 X 80				
Machine Weight (Approx.)	Tons	18				



## **EQUIPMENT PHOTOS**











## Application















## INJECTION MOLDING LINE

#### STANDARD FEATURES

CLAMP UNIT

- 5 point double toggle system
  Mechanical and electrical safety devices
- Low pressure mould protection
- Multi-stage control of pressure, speed and position of mold open/close
- Fast mould clamping with differential device
- Robust casting construction with strengthened tie bar for
- maximum service life and best moulding results
- Automatic mould height adjustment
- Variable mode of ejector movement
- Automatic central lubrication

HYDRAULIC SYSTEM

- Efficient and sound reduced hydraulic pump
  Hydraulic proportional control
  Hydraulic elements by well-known brand, with high reliability and long service life
- Oil temperature alarm

INJECTION UNIT

- Two drive cylinder for screw injection
- · Multi stage of injection pressure, speed and position
- Multi stage of holding pressure, speed and time
- Multi stage of charging speed, position and time
- PID barrel temperature control
- Screw Plasticizing back pressure control
- Suck back function
- Plasticizing cold start prevention
- Screw speed inspection
- Self purging functionEfficient plasticizing device with strong torque motor

CONTROL UNIT • With LCD Screen

- Mold data storage
  Linear transducer for clamping / injection / ejection control
- English, Spanish, Portuguese and other language options



Mould platens have been designed using FINITE ELEMENT ANALYSIS for optimum rigidity.



The energy saving hydraulics are made of high-quality components. They allow much greater forces to be transferred and enable very uniform and precision movements of the www.trbgroup.in



Automatic mould height adjustment ensure

the time and cost saving during the mould

locking time and high opening force.



Controller with

LCD colour screen

in a state of the

The 5-point double toggle provides short





#### **OPTIONS**

- Servo motor system
- Special screw for PET/PC/PA/PMMA •
- Unscrew device •
- Additional core pulling
- Air blow device . Shut-off nozzle •
- By-pass filter •
- Euromap-12 robot interface
- •
- T slot platen •
- Variable pump system •
- Sandwich/interval injection system
- Accumulator assisted injection system • Auxiliary machine (hopper dryer, auto loader, • belt conveyer dehumidifier, mould temperature controller, granulator, mixer chiller, cooling
- tower, robot)



Variable pump system



Accumulator assisted injection



Sandwich/interval injection



## **Technical Parameter For Plastic Injection Moulding Machine - NS Series**

SPECIFICATION	1	TRE	BEX N	S 50	TRE	BEX NS	S 70	TRB	EX NS	100	TRB	EX NS	130	TRBEX NS 160		160	TRBEX NS 220			TRBEX NS 270					
270 INJECTION UNIT																									
		А	В	С	А	В	С	А	В	С	А	В	С	А	В	С	А	В	С	А	В	С			
Screw Diameter	mm	25	28	30	30	32	35	32	36	40	40	42	45	42	45	48	45	50	55	55	60	65			
Screw L/D Ratio		22.4	20	18.6	23.4	22	20	24	21.5	19	22	21	19.5	22.5	21	19.7	23.2	21	19.1	21.5	19.7	18.2			
Short Volume (Theoretical)	cm3	48	60	69	84	96	115	150	189	234	248	273	313	312	358	407	412	508	615	707	841	987			
Injection Weight(PS)	g	38	54	62	76	88	104	136	172	213	225	248	285	280	322	366	370	458	554	636	756	888			
Injection pressure	Мра	204	163	142	214	188	157	232	183	149	202	183	159	203	177	156	240	195	160	216	182	155			
Screw stroke	mm		100			140			175			195			245			275			310				
Screw Speed	r/min		210			210			210			210			200		180				180				
CLAMPING UNIT																									
Clamp Tonnage	KN		500			700			1000			1300		1600			1600			2200			2700		
Toggle Stroke	mm		255			270			340			380		430				470			550				
Space Between Tie Bars	mm	2	80X26	0	Э	815X315	5	3	875X375	5	4	25X405	5	4	60X460	)	5	510X510			580X580				
Max. Mold Height	mm		340			320			400			450			500		530			620					
Min. Mold Height	mm		120			125			160			170		180			200			220					
Ejector Stroke	mm		65			80			95		120		130			130			145						
Ejector Tonnage	KN		25			27			30		33			45			70				70				
Ejector No.	рс		1			1			5			5			5			9		9					
OTHER																									
Max. Pump Pressure	Мра		16			16			16			16			16			16			16				
Pump Motor Power	KW		5.6			7.5			11			15			15			18.5			22				
Heater Power	KW		4.9			6.2			6.5	5.5		9			9.5			14			15.5				
Machine Dimension (LXWXH)	m	3.2	2X1.1X	1.5	3.8	X1.15X	1.6	4.2	2X1.2X1	.7	4.5	5X1.3X1	.8	5X1.35X1.9		.9	5.8X1.5X2		2.1	I 6.1X1.7		.2			
Machine Weight	t		1.5			2.6			3.2			3.8			5			6.9		8.5					
Oil Tank Capacity	L		140			160			210			260			280		420			560					

SPECIFICATION		TRB	EX NS	360	TRI	BEX	NS 3	90	TRB	EX NS	520	TR	BEX	NS 6	20	TRBEX NS 730		TRBEX NS 880				TRBEX NS 1100					
INJECTION UNIT										·																	
		А	В	С	А	В	С	D	А	В	С	А	В	С	D	А	В	С	D	А	В	С	D	А	В	С	D
Screw Diameter	mm	60	65	70	65	70	75	80	80	85	90	85	90	95	100	80	90	100	110	90	100	110	120	110	115	120	125
Screw L/D Ratio		22.8	21	19.5	22	20.4	19	18	22.3	21	19.8	22.3	21	19.9	18.9	24.8	22	19.8	18	24.4	22	20	18.3	21.5	20	19.2	18.4
Short Volume (Theoretical)	cm3	895	1050	1218	1210	1403	1610	1832	2141	2418	2710	2298	2576	2870	3181	2161	2736	3377	4086	2900	3581	4334	5157	4430	4850	5251	5706
Injection Weight(PS)	g	805	945	1097	1089	1262	1450	1650	1948	2200	2466	2091	2344	2611	2895	1967	2489	3073	3719	2639	3258	3944	4693	4031	4413	4778	5241
Injection pressure	Мра	213	182	157	236	203	177	156	188	167	149	206	184	164	149	224	177	143	118	228	184	152	128	186	170	156	144
Screw stroke	mm		340			39	95			440			45	50			43	80			45	55			46	55	
Screw Speed	r/mn		180			16	55			150			12	25			0-1	30			0-1	10			0-1	00	
CLAMPING UNIT																											
Clamp Tonnage	KN		3600			39	00			5200			62	00			73	00			88	00			108	300	
Toggle Stroke	mm		650			70	0			820 870		70		930			980			1100							
Space Between Tie Bars	mm	(	560X66	0		720>	(720		810X810			850X850					910>	(910		980X980				1100X1100			,
Max. Mold Height	mm		700			82	20			820		900				95	50			1000				11	50		
Min. Mold Height	mm		230			28	30			350		350			380			400				520					
Ejector Stroke	mm		150			18	30			210		260			260			280			320						
Ejector Tonnage	KN		120			12	.6			150			20	00			18	31			21	12			23	35	
Ejector No.	рс		13			1.	3			13			1	7			1	7			2	1			2	1	
OTHER																											
Max. Pump Pres- sure	Мра		16			1	6			16			1	6			1	6			1	6			1	6	
Pump Motor Power	KW		30			3	7			55			5	5			30+	-30			37-	⊦45			45-	-45	
Heater Power	KW		20			22	.5			33			37	.5			47	.5			60	).3			7	0	
Machine Dimension (LXWXH)	m	6.	6X1.8X2	2.5	7	.1X2.	1X2.9	)	8.4X2.2X2.6		g	9.3X2.3X3.7		9.5X2.45X3.7			10.2X2.9X3.3			3	12.3X2.9X3.3		3				
Machine Weight	t		11			13	.5			23			3	1			3	8			45			60			
Oil Tank Capacity	L		630			90	00			1000			12	00		1600				1700				17	50		

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## **Technical Parameter For Plastic Injection Moulding Machine - ES Series**

SPECIFICATION	TR	BEX ES 1	00	TF	BEX ES 1	30	Т	RBEX ES	160	TRBEX ES 220			
220 INJECTION UNIT													
	Unit	А	В	С	А	В	С	А	В	С	А	В	С
Screw Diameter	mm	32	35	38	38	42	45	45	50	55	50	55	60
Screw L/D Ratio	L/D	22	20.1	18.5	22.1	20	18.6	20	18	16.3	24.2	22	20.2
Short Volume (Theoretical)	cm3	133	158	187	193	235	270	334	412	499	455	550	655
Injection Weight (PS)	g	121	144	170	176	216	246	301	372	449	416	503	600
Plasticizing Capacity	g/s	81	97	115	94	115	132	120	148	179	187	227	270
Injection Pressure	Мра	203	170	144	205	170	147	207	168	138	205	169	142
Screw Speed	r/min		240			190			180			180	
CLAMPING UNIT													
Clamping Force	KN		1000			1300			1600			2200	
Toggle Stroke	mm		360			435		475				540	
Space Between Tie-Bars	mm		420 X 380			480 X 480			530 X 530			580 X 580	
Max. Mold Height	mm		420		520			530				550	
Min. Mold Height	mm		150		180			200			200		
Ejector Stroke	mm		120			135		140			150		
Ejector Tonnage/ Force	KN		40		50				70		70		
OTHER													
Max. Pump Pressure	Мра		16			16			16			16	
Pump Motor Power	KW		11			15			15			22	
Heater Power	KW	7.5				9			12			15	
Machine Dimension (LXWXH)	m	4.4 X 1.36 X 1.8			5.16 X 1.45 X 2.12			5.9	2 X 1.55 2	.14	6.14 X 1.65 X 2.25		
Machine Weight	t		3.8			6.3			7.3			9	
Oil Tank Capacity	L		210			270			300		380		

SPECIFICATION		TRI	BEX ES	270	TRE	BEX ES	360	TRB	EX ES 4	20	TRBEX ES 500			TRBEX ES 650				
650 INJECTION UNIT	50 INJECTION UNIT																	
	Unit	А	В	С	А	В	С	А	В	С	А	В	С	А	В	С	D	
Screw Diameter	mm	55	60	65	65	70	75	70	75	80	75	80	85	90	95	100	105	
Screw L/D Ratio	L/D	22.9	21	19.3	23	23 22 20.5			22	20.6	22.7	21	20	23.7	22	20.7	19.5	
Short Volume (Theoretical)	cm3	641	763	895	1181	1289	1480	1500	1723	1960	1727	1965	2218	2544	2835	3140	3461	
Injection Weight (PS)	g	589	702	823	1076	1175	1349	1365	1567	1784	1560	1788	2018	2315	2580	2858	314	
Plasticizing Capacity	g/s	201	230	259	337	368	422	344	395	449	386	442	499	552	612	679	748	
Injection Pressure	Мра	169	142	121	186	170	148	199	173	152	191	168	148	184	165	149	135	
Screw Speed	r/min		165						160			130		150				
CLAMPING UNIT																		
Clamping Force	KN		2700			3600			4200			5000			68	00		
Toggle Stroke	mm		660			700		740			770				92	20		
Space Between Tie-Bars	mm	6	580 X 68	0	7	25 X 72	5	760 X 760			830 X 830				920>	(920		
Max. Mold Height	mm		720			780		810			850			920				
Min. Mold Height	mm		250			280		300			330			350				
Ejector Stroke	mm		160			180			200		240			250				
Ejector Tonnage/ Force	KN		70			126			110			150			15	50		
OTHER																		
Max. Pump Pressure	Мра		16			16			16			16			1	6		
Pump Motor Power	KW		30		37				45			55			30 -	- 30		
Heater Power	KW		21		23.5				29.3			31.4			4	7		
Machine Dimension (LXWXH)	m	7.21	X 1.99 X	(2.34	8.1 X 2.1 X 2.9			7.46 X 1.84 X 2.43			8.4 x 1.92 X 2.76			10.65 x 2.25 x 2.61				
Machine Weight	t		12.8			15			16		21				3	0		
Oil Tank Capacity	L		620			650			890		900			1100				



#### **Machine Performance**



HIGHLY ENERGY EFFICIENT

## **Major Application**

#### SERVO SYSTEM

Advanced SVP system saves energy. The energy saving is more observed during pressure holding and cooling stage. It has faster response speed. It needs 30 milli seconds to achieve the maximum flow rate. This effectively shortens the cycle time and thus improves efficiency. The servomotor gives better part quality and dimensional stability.

Armour series of machine achieves more than 50% energy saving compared to conventional hydraulic machine with fix pump. In armour machines, function wise energy consumption is displayed on screen which helps in optimizing the machine cycle for lower energy demand.

ENERGY CONSUMPTION







## **ROTOMOULDING MACHINE UNIT**



Rotational Molding involves heated hollow mold which is filled with a chargeor shot weight of material. It is then slowly rotated (usually around two perpendicularaxes) causing the softened material to disperse and stick to the walls of the mold. In order to maintain even thickness throughout the part, the mold continues to rotate at all times during the heating phase and to avoid sagging or deformational soduring the cooling phase.

Rotational molding offers design advantagesover other molding processes With proper design, Parts assembled from several pieces can be molded as one part, eliminating high fabrication costs

#### SALIENT FEATURES

Low Capital Investments Versatile And Highly Productive Low Power Requirement Less Installation Area Ideal Machine For Big Tanks And Containers Cooling Station With Efficient Blower Complete Electric Panel Board





Toys Fuel Cells Portable Barriers Tanks and containers: fuel, water, industrial, recovery Corner Protection Carts and carriers Recreational Playground Equipment Sporting Goods Water treatment and containment

#### **Range of Products**

## ROTOMOULDING MACHINERY

TRB GROUP

Bi-Axial Extruder Pulveriser Three Arm Fixed Turret Fixed Oven High Speed Mixer Scrap Grinder Shuttle Machine Moulds Rock N Roll





## **Plastic Recycling**



**Plastic** recycling is the process of recovering scrap or waste plastic and reprocessing the material into useful products, sometimes completely different in form from their original state. Plastics are also recycled/reprocessed during the manufacturing process of plastic goods such as polyethylene film and bags.





## **Table Scrap Cutter**

It is used for cutting of big plastic material into small ones to enter inside grinder.

*Cutter machine complete with main motor of 2 HP* 



## **Plastic Scrap Grinder**

It's a heavy duty scrap grinder is made out from MS body & having one piece solid rotor bar.

Capacity : - 500-600 Kgs/hr. (Depend up on Materials)



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Motor	: - 30 H.P. (CROMPTON MAKE)	
Blade	: - Three blades are running & two blades	are fixing.
Blade size	: - 26" (inch)	

Model	TRB-600						
Length of Blades	660 mm						
No. of Blades	14						
Throat Size	600 x 560 mm						
Grinding Capacity	500 Kgs/Hr.						
Power Required	30 HP (22.25 KW)						
Screen Area	4500 sq.cm.						
Floor Space (L&W) in mm	2000 x 1850						
Suitable for grinding	Molding waste, runners .pet ,lumps bags,cup.crate						



## Scrap Washer



It is used to wash the plastic to remove unwanted substances such as oil or dirt frim the material Washer motor Cap.10 HP

#### **Technical Details**

## Extruder Base

Dryer



It is used to remove the water from material after washing. Dryer motor Capacity: 2 HP

#### **High Speed Mixture**



**Mixture Base** The Base is fabricated from Heavy Channels & mild steel Plates, The Top of the base is machined to mount hopper block and barrel support bracket.

The base us fabricated out of mild steel plates, Channels, The Top of the base is machined to mount hopper block and barrel support bracket. The AC induction motor and Helical Gearbox are accommodated on the base.

#### Screw & Barrel

The Screw and Barrel are made from special alloy steel. Barrel and screw are nitride hardened, fine polished and chrome plated. The function of the screw is to carry the material from hopper to die with homogeneous melt. For precise control of temperature the barrel is divided in to equivalent zones.

Thermocouples fitted on the barrel and Pyrometers on control panel are for monitoring and controlling of the temperatures in each zone. Die zone is mounted on die head for precise control of temperature of die head. Watercooling jacket is provided in hopper block. Water circulation in the jacket is necessary, for the safety of thrust bearings PACKING

FINAL PRODUCT





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## **Technical Data for Palletizing Line**

MODEL	: TRB-120
SCREW SIZE	: 125 M.M
L/D Ratio	: 26:1
Material	: En 41-B
Made Process	: Nitride polished special heat treatment
	120 h\r H.R.C 65~68⁰
BARREL SIZE	: 190 M.M
Material	: En-41-B
Made Process	: Nitride polished special heat treatment
	120 h\r H.R.C 68~70
DEGASIFICATION ZONE	: 6 Zone
Barrel Heating Load per Zone	:2 Kw
Die heating Load	:1.5 Kw
GEAR BOX	: Helical(Inbuilt Thrust Housing)
Gear material	: 20 MN CR 5,60±2 HRC
Made process	: Profile hardened,grinding,60±H.R.C
Gear box Body	: Casting Body
MAIN DRIVE	: 75 H.P A.C Motor
PALLETIZER	
Blade Size	: 150 mm
Rotating Blade	: 16 No.
Fix Blade	: 1 No.
Elec. Motor	: 5 HP A.C.Motor
PANEL BOARD	: 6 Zone
POWER REQURED	: 100 KW (Approx.)

PRODUCTION CAPACITY (KGS./HR.): 150 KG/HR

## **INSTALLÉ AVEC SUCCÈS**

**PROJETS EN AFRIQUE OCCIDENTALE ET CENTRALE** 

Tube Mill Plants

**Rolling Mill Plants** 

Corrugated Sheet Forming Plants

Cut to Length & Slitting Lines

Cattle Feed Plants

**Poultry Farms** 

Blow Moulding Roto Moulding & Injection Units **Mineral Water Plants** 

Solar on/off Grid Plants

Plastic Recycling Plants & Packaging Units

*	*	*
BURKINA FASO	GHANA	CAMEROON
	*	
NIGERIA	SENEGAL	MALI
		*
BENIN	GABON	TOGO
0		
MALAWI	IVORY COAST	GAMBIA





GUINEA BISSAU EQUATORIAL GUINEA









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