

TYRE RETRADING

1. INTRODUCTION:

Tyre Retreading is a new technology, where the old tyres are made serviceable by removing worn out and damaged treads and replacing it with new treads. New treads are available in the market in form of rolls and inbred if, in can be put on old tyre and cured with the help of steam. Similar to the new tyres, the treated tyres can be very well used on all vehicles, irrespective of light or heavy vehicles. With a safe and new technology, which is being adopted now-a-days, it will be more easy and economical to produce tyres. Retreading of damaged tyre is done by conventional hot matrix curing in most cases. But recently a new technology has been developed called "Pre-cured Tread Rubber Retreading Process" which is commonly known as "Cold Process Retreading". In this process, the Pre-cured Tread Rubber already has a tread pattern on it eliminating the need for a tread matrix at vulcanizing stage. Tread Rubber is pre-cured along with other raw materials and manufactured in the factory under controlled conditions and given a well-researched pattern ensuring that the transporter gets a reliable perfectly finish product. Retreading Tyre by pre-cured method gives 50% more mileage than the tyre retreaded by conventional process.

2. PRODUCT & ITS APPLICATION:

Tread assumes importance in either technology, hot or cold. It is that portion of the tyre, which is in contact with the road surface. It comprises of 20-25 per cent of the whole tyre body. The tyre body commands 75 to 80 per cent of the manufacturing cost of a tyre. Applying a new tread on the body of a worn tyre, gives it a fresh life. This fresh life, estimate industry experts, comes at half the price of a new tyre. An important criteria for retreading is however the quality of the fabric. If the core fabric of the tread is too damaged or already over used, retreading may not be possible. There are thus technological limitations too.

However, if the core fabric is in a good condition, the tyre is identified for potential retreading. Retreading is done either through a conventional method or a pre-cure method. The conventional method is sometimes referred to as the mould cure or hot cure process. An un-vulcanized rubber strip, after going through the process of vulcanization adapts to the mould, is applied to the buffed casing of the tyre. However, modern day processes have adopted to a pre-cure method. This modern method, also referred to as cold cure, has the strip already pressed while it is applied to the casing. The strip is stuck to the casing by a layer of compounded un-cured rubber also known as cushion or bonding gum. The un-cured rubber is vulcanized by applying heat and pressure. As of current, the patterns of retreading in India are 50 per cent pre-cured and 50 per cent conventional. Modern processing technology has enabled the process to run smoothly and seamlessly

3. DESIRED QUALIFICATIONS FOR PROMOTER:

Graduate in any discipline.

4. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY:

As day by day, more and more vehicles are running on roads, hence more tyres are required for replacement. With further growth of economy, there will be an increase in transport as well as passenger vehicles and hence more tyres will be required. Hence, there is a very wide scope for retread tyres as an original replacement. Retreading of tyres in the commercial vehicle segment is poised for growth. The biggest driver for growth will be the rising use of radial truck and bus tyres. The other drivers will include the rise in multi-axle trucks, road infrastructure and highway connectivity. It is the operational savings that have led to the rise in popularity of tyre retreading in India. In the commercial vehicle segment especially. No section in the commercial vehicle industry is immune to retreading. May it be a 49-tonne tractor-trailer or a 1-tonne mini truck. Retreading of tyres is catching up. A retreaded tyre costs around 30 per cent less than a new tyre. At the other end, a retreaded tyre performs up to 80 per cent of a new tyre under similar operating conditions. It is the value for money a retreaded tyre offers, which has made it a favorite of a transporter.

5. RAW MATERIAL REQUIREMENTS:

Raw Material (per month)

Particular	Qty.	Unit	Price(Rs.)/Unit	Total (In Rs.)
For Retreading 200 LCV Tyre in Procured System				
Precured Tread Rubber	1000	Kg	110	110000
Cushion Compound	100	Ltr	100	10000
Vulcanizing Solution	60	Ltr	90	5400
Envelope	200	Nos	10	2000
Total				127400
For Retreading 300 Passenger Car Tyre in Precured System				
Precured Tread Rubber	900	kg	110	99000
Cushion Compound	105	Ltr	100	10500
Vulcanizing Solution	75	Ltr	90	6750
Envelope	300	Nos	10	3000
Curing Bag	300	Nos	8	2400
Total				121650
For Retreading 250 Nos. Truck Tyre in Precured System				
Precured Tread Rubber	2375	kg	110	261250
Cushion Compound	252	Ltr	100	25200
Vulcanizing Solution	250	Ltr	90	22500
Envelope	250	Nos	10	2500
Curing Bags	250	Nos	8	2000
Total				313450
Total Raw Material				562500

6. MANUFACTURING PROCESS:

The manufacturing of retreading rubber is done in the following stages: I) Compounding: Removing unwanted materials such as nails, rivets etc. ii) Mixing: Reclaimed rubber and oils; iii) Extruding: The mixture of rubber so obtained is put into extruder to form rubber sheets. iv) Retreading: Before retreading tyre is buffed and it is allowed to stick properly. Tyres are buffed properly to remove all undesired rubber and to clean surface. The retreading rubber is now put on its outer surface with an adhesive solution.

The tyre coming from the customers is cleaned dully. Dust and mud are removed. The casing is inspected for cuts, ply section, condition of beads etc., and based on the condition of the casing, the tyre is selected or rejected. Under inflated conditions the selected tyre's crown area is buffed to the required texture and contour. This is for better bonding of procured rubber to the casing. The buffed casing is mounted on the tread building machine. Cushion compound is applied on the buffed tread area over which the procured tread rubber is applied and stickled using rollers. The joint portion of the procured tread rubber is stepped to avoid possible opening during curing of the tyre. The buildup of the tyre is covered by a rubber envelope and placed in the "bonder" and the bonder steam is passed at specific temperature, which cures the cushion compound to complete the bonding of the tread on the casing.

7. MANPOWER REQUIREMENT:

Designation	No.	Salary (Rs.)	Amount (In Rs.)
Manager	1	15000	15000
Supervisor (Technical)	1	10000	10000
Skilled Workers	5	7000	35000
Semi-skilled Workers	6	5000	30000
Un-skilled Workers/ Helper	3	3000	9000
Clerk cum Typist	1	6000	6000
Salesman	1	8000	8000
Office Assistant- cum-peon	1	3000	3000
Watchman	1	3000	3000
Total	20		1E+05

8. IMPLEMENTATION SCHEDULE:

The project can be implemented in 3 months' time as detailed below:

Sr. No.	Activity	Time Required (<i>in months</i>)
1	Acquisition of premises	1.00
2	Construction (if applicable)	2.00
3	Procurement & installation of Plant & Machinery	2.00
4	Arrangement of Finance	2.00
5	Recruitment of required manpower	1.00
	Total time required (<i>some activities shall run concurrently</i>)	4.00

9. COST OF PROJECT:

Sr. No.	Particulars	₹ in Lacs
1	Land	18.00
2	Building	20.75
3	Plant & Machinery	13.30
4	Furniture, Electrical Installations	4.13
5	Other Assets including Preliminary / Pre-operative expenses	0.50
6	Working Capital	15.85
	Total	72.53

10. MEANS OF FINANCE:

Bank term loans are assumed @ 75 % of fixed assets. The proposed funding pattern is as under:

Sr. No.	Particulars	₹ in Lacs
1	Promoter's contribution	20.00
2	Bank Finance	52.53
	Total	72.53

11. WORKING CAPITAL CALCULATION

WORKING CAPITAL CALCULATION:	(In Rs.)
Power @ Rs. 5.5 for 3600 units	19800
Fuel for Boiler	30000
Total	49800

<i>Other Contingent Expenses</i>	(In Rs.)
Postage and Stationery	3000
Insurance and Taxes	4000
Telephone	3000
Repair and Maintenance	5000
Publicity and Advertisement	10000
Travelling and Transport	15000
Renewal and Replacement	5000
Other Miscellaneous Expenses	15000
Total	60000
(v) Total Recurring Expenses	(In Rs.)
Staff and Labour	119000
Raw Material	562500
Utilities	49800
Other Contingent Expenses	60000
Total	791300
(vi) Total Working Capital for 2 Months	
Rs. 791300 x 2 =	1582600

12. LIST OF MACHINERY REQUIRED:

A detail of important machinery is given below: It requires only 15 HP power connection.

Particular	Ind. / Imp.	Qty. Nos.	Price(Rs.)	Total (In Rs.)
Buffing machine with dust collector builder tyre truck bonder/three tyre LCV/Passenger bonder with curing rims and Electric hoist	Ind	1	750000	750000
Work bench Envelope/Tyre stand Gantry	Ind.	1	60000	60000
Boiler cap. 300 kg/hrs.	do	1	400000	400000
100 Ibs working pressure Air compressor fitted with 5 H P Motor	do	1	70000	70000
Air conditioner	do	1	50000	50000
Total				1330000
Electrification and Installation at 10% of the above cost				133000
Office Equipments and Furniture.				80000
Cost of Auxiliary items. i.e. pipe erection Electric fittings, Retreading, Tools, Mechanical Hoist with Trolley etc.				200000
Total				1743000
(iii) Pre-operative Expenses				50000
Total Fixed Capital Requirement (i)+(ii)+(iii)				5668000

13. PROFITABILITY CALCULATIONS:

LCV Tyre Retreading Size-700×15-2400 Nos.

Passenger Car Tyre Retreading Size-590×15-3600 Nos.

Truck Tyre Retreading Size 300x20-3000

Value: Rs. 124.8 Lakhs

Sr. No.	Particulars	UOM	Year-1	Year-2	Year-3	Year-4	Year-5
1	Capacity Utilization	%	70%	80%	90%	90%	90%
2	Sales	₹. In Lacs	87.36	99.84	112.32	112.32	112.32
3	Raw Materials & Other direct inputs	₹. In Lacs	66.46	75.96	85.45	85.45	85.45
4	Gross Margin	₹. In Lacs	20.90	23.88	26.87	26.87	26.87
5	Overheads except interest	₹. In Lacs	7.50	8.00	8.80	9.50	11.00
6	Interest @ 10% on 52.53	₹. In Lacs	5.25	5.25	4.50	3.65	2.50
7	Depreciation of 57.53	₹. In Lacs	8.62	7.33	6.23	5.29	4.40
8	Net Profit before tax	₹. In Lacs	-00.47	3.33	7.34	8.43	8.97

14. BREAKEVEN ANALYSIS:

The project shall reach cash break-even at 78.73 % of projected capacity as detailed below:

Sr. No.	Particulars	UOM	Value
1	Sales at full capacity	₹. In Lacs	124.80
2	Variable costs	₹. In Lacs	94.94
3	Fixed costs incl. interest	₹. In Lacs	23.51
4	BEP = $FC / (SR - VC) \times 100 =$	% of capacity	78.73