

**PROJECT PROFILE
ON
RADIATOR HOSES**

**MONTH & YEAR
JULY 2011**

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RADIATOR HOSES

INTRODUCTION

The function of Radiator hose in a vehicle is to provide a flexible connection between the engine block and radiator. This is used for the efficient cooling of automobile engines. The Hose must permit carrying of water at a high temperature and must be flexible in order to avoid transmission of any distorting loads to the radiator tank, and not be too soft as to result in collapse and throttle of water supply. These hoses are shaped hoses and the size of the hose varies for different vehicles such as buses, Lorries, trucks, cars, jeeps, tractors etc.

MARKET

A huge domestic market growing furiously because of the huge production of passenger and commercial vehicles ensures a better future for consumption of rubber products. As 65% of the rubber goes into automobiles for various usages, the Indian Rubber Industry is set to grow at a fast pace.

The Indian rubber industry has been growing in strength and importance, as a part of India's burgeoning role in the global economy. India is the world's largest producer and the third largest consumer of natural rubber and India is also one of the fastest growing economy globally. With a stable annual growth rate of 8-9%, rising foreign exchange reserves, rapid expansion in the capital markets and FDI inflow, India proudly stakes its claim as the second fastest growing major economy in the world. These factors along with high concentration of automobile production and the presence of large and medium industries in South India, Chennai is the perfect place for the event India Rubber Expo-2011.

The Indian Rubber Expo 2011 is a testament to the confidence and relevance of India's largest rubber body the All India Rubber Industries Association AIRIA,

the organiser of the India Rubber Expos. AIRIA, established in 1945 is comprised of over 1200 members and is headquartered in Mumbai.

It is considered to be one of the key players in global rubber business. Rapid progress in made in the production of natural rubber. India is home to some of the world's largest rubber enterprises through direct investment and technical collaboration.

There is no doubt that with rubber consumption stagnating in various Western countries and the shift in consumption of rubber to the Asia Pacific region, the focal country for this decade is India. There exists a huge scope for expansion causing import of machinery, technology, raw materials and export Rubber goods. There are 5000 units comprising 30 large scale, 300 medium scale and around 4600 small scale and tiny sectors in India.

These units are manufacturing more than 35000 rubber products, employing close to four hundred thousand people, which includes technically qualified support personnel's contributing Rs 40 Billion to the National Exchequer.

Natural rubber production in the country rose 3.7 per cent during 2010-11 against the previous year.

Domestic production stood at 8,31,400 tonnes in 2009-10 and 8,61,950 tonnes in 2010-11,as per the Rubber Board. The Rubber Board Chair anticipates the production for 2011-12 was 9,02,000 tonnes. Domestic consumption also increased by 2 per cent in 2010-11.

During 2010-11, growth in tyre production in the automotive sector grew by 23 per cent. Export of tyres also increased by 20 per cent. However, truck and bus tyre exports declined by five per cent.

The projected rubber consumption in 2011-12 is 9,77,000 tonnes.

During 2010-11 fiscal, exports stood at 28,424 tonnes compared with 25,090 tonnes in the previous fiscal. Imports accounted for 1,77,482 tonnes, 73 per cent of which was through duty free channels.

The chairperson said there would not be any shortage as the opening stock of rubber in 2011-12 was relatively high at 2,77,095 tonnes against 2,11,290 tonnes in 2010-11.

According to the International Rubber Study Group report, global rubber production-consumption balance in 2010 and 2011 showed deficits of 380,000 tonnes and 234,000 tonnes, respectively.

Automobile Industry and Rubber

India produces millions of passenger cars every year such as BMW, Nissan, Mitsubishi, Volvo, Toyota, Ford, Caparo, Swaraj Mazda, Fiat, Ford GM, Honda, Volvo Yamaha, Hyundai, Daimler, and Ranault in addition to the Indian manufacturers such as Ashok Leyland, TVS, Hindustan Motors, Bajaj Auto, Hero Honda, Tata Motors Royal Enfield and Tafe Tractors have all set their manufacturing base in India. Together they have during the last decade set a great pace of growth to the rubber industry as well.

Tyre Companies running operations in India are MRF Ltd, TVS Sri Chakra Tyres, Apollo Tyres, Emerald Tyres, Michelin, Goodyear, JK Tyres Kumho Tyres ETC. India exports to over 85 countries including USA, Germany, France U.K, Italy, UAE, Saudi Arabia , Africa and Bangladesh.

The automobile production in the country is showing remarkable progress and any ancillary products such as rubber products which are used in automobiles. The growth in automobile production in the past can be seen from the following figures.

AUTOMOBILE PRODUCTION TRENDS

No of vehicles

Category	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Passenger Vehicles	1,209,876	1,309,300	1,545,223	1,777,583	1,838,593	2,357,411	2,987,296
Commercial Vehicles	353,703	391,083	519,982	549,006	416,870	567,556	752,735
Three Wheelers	374,445	434,423	556,126	500,660	497,020	619,194	799,553
Two Wheelers	6,529,829	7,608,697	8,466,666	8,026,681	8,419,792	10,512,903	13,376,451
Grand Total	8,467,853	9,743,503	11,087,997	10,853,930	11,172,275	14,057,064	17,916,035

Source: Society of Indian Automobile Manufacturers (SIAM)

INSTALLED CAPACITY

Product	Installed capacity per hour	No of working hours per day	Capacity per day	Capacity per annum 300 days per annum
Radiator hoses	37.5 Nos	8	300 Nos	90000 Nos

PLANT AND MACHINERY

Sl. No	Description	Qty	Value
1.	(i) Production machinery, Tools & Equipments consisting of the following : Mixing mill of size 14" x 36" with reduction gear, 40 HP motor & accessories.	Whole Plant 1 No	2800000
2.	High speed mixer 250 litres capacity with 10 HP motor with Inverter control.	1 No	
3.	Extruder 75 mm. dia Screw with 15 HP motor	1 No	

	& accessories.		
4.	Spreading machine (60" x 18") with 5 HP motor & accessories.	1 No	
5.	Steam Vulcaniser 4' dia. and 10' long with trolley arrangement.	1 No	
6.	Wrapping Machine	1 No	
7.	Baby boiler- oil fired 200 Kg/hr steam capacity with all pumps, motors, gauges and accessories.	1 No	
8.	Building rollers, Buiding table, Consolidation rollers & mandrels		
9.	Miscellaneous equipments like pump(3 HP), Compressor(100 Psi) etc.		
10.	Weighing Scale: Platform type (100 Kg) Single Pan type (10 Kg) Digital type	1 No 1 No	
	(ii.) Material handling equipment		170000
	(iii.) Testing and Inspection equipments, tools and apparatus		230000
	TOTAL		3200000

MANUFACTURING PROCESS

The radiator hose consists of three basic components, viz.,

- (a) The Inner Tube (b) The Reinforcing Fibre and (c) The Rubber Cover

The rubber lining is compounded to withstand the service temperature of hot water and cover compound to function effectively under the operating environment. The reinforcing fabric provides strength to withstand external and internal pressures.

Typical formulations are as follows :

The tube and cover compounds are first prepared in the mixing mill and allowed to mature for about 24 hours. The cover compound is sheeted out of the mill. The tube compound is pre-warmed in a mixing mill and fed into the extruder to produce tubing of required cross section.

A solution of the spread compound is prepared in a churning mill and is then applied to the fabric using a spreader. The spread fabric is dried, wound up on rolls and is cut to required size. The extruded tube is cut into specified lengths and blown onto the mandrel of appropriate shape, using compressed air. The required plies of fabric are then applied over the tube followed by the rubber cover. The whole assembly is finally wrapped with a wet cloth tape and placed over mandrels in an autoclave for vulcanisation. After curing, the hoses are removed from the mandrels and the cloth tape wrappings are removed. The finished hoses are inspected for defects and packed for storage and despatch.

RAW MATERIALS

For-nos	90000		
	Qty-kgs	Rate/kg	Value Rs lakhs
Nitrile Rubber	2808	207.00	5.81
Zinc Oxide	1296	120.00	1.56
Stearic acid	486	75.00	0.36
SRF Black	10800	52.00	5.62
Hard clay	8100	7.00	0.57
Calcium carbonate	1080	20.00	0.22
Process oil	270	40.00	0.11
Pine tar	540	45.00	0.24

Sulphur	540	15.00	0.08
Vulcanox SP	43	150.00	0.06
Pilcure TMT	594	130.00	0.77
Pilnox TDQ	216	150.00	0.32
Solvent oil	13500	42.00	5.67
Cotton fabric 50" wide	13500	50.00	6.75
Miscellaneous Chemicals like talc etc			1.20
Total			29.34
Packing materials	90000	0.75	0.68

LOCATION LAND AND BUILDING

Built up area-Sq.ft	2500
Rent p.m.-Rs per 10 per sq.ft	25000
Advance-10 months.Rs	250000

UTILITIES

Three phase- KW	60.00
Power charges Rs.lakhs p.a	7.92
Fuel-Rs 15000 p.m	1.80
Power & fuel	9.72
For process-Litres per day	2000
For human consumption-litres/day	200

MANPOWER

	Nos	Monthly wages	Total
Supervisor	1	9000	9000
Skilled	3	7000	21000
Unskilled	6	5000	30000
Accounts Assistant	1	6000	6000
Sales Executive	1	7000	7000
Security	2	5000	10000
sub total			83000
Add benefits		20%	16600
Total per month			99600
TOTAL PER ANNUM-Rs. lakhs			11.95

COST OF PRODUCTION AND PROFITABILITY

Assumptions

Installed capacity	90000 nos. of Radiator Hoses per annum
Capacity utilisation	Year-1 -60% Year -2 -70% Year-3 onwards- 80%
Selling price	Rs.92.00 per piece
Raw materials	As per the details given above
Packing materials	As per details given above
Power & Fuel	Rs.9.72 lakh per annum at 100%
Wages and salaries	Rs. 11.95 lakhs with increase 5% every year.
Repairs and Maintenance	Rs.0.60 lakh per annum
Depreciation	Written down value method -15 % on machinery
Selling general and administrative expenses	Rs.30000 per month
Interest on Term loan	14% per annum
Interest on working capital	14 % per annum
Income tax	34 % on profits

MACHINERY SUPPLIERS

(a) Rubber Processing Machinery

1. M/s. INDIAN EXPPELLER WORKS PRIVATE LTD, A-4, Naroda Industrial Estate Ahmedabad - 382 330

2. M/s. MATHARU ENGINEERING WORKS, Plot No.1, Unit No.4

Opp. Tatwagyan Vidyapeeth, Ghodbunder Road, Chitalsar, Thane - 400 607

3. M/s. MODERN RUBBER MACHINERY MANUFACTURERS PVT. LTD,

310, Jogani Industrial Estate, 541, Senapati Bapat Marg, Dadar, Mumbai - 400 028

4. M/s. EMSON INDUSTRIES, 6-A, Shri Ram Industrial Estate, Kaley Marg, Bail Bazar, Kurla, Mumbai - 400 070

5. M/s. MODERN HYDRAULICS, 5, Italian Building(Ground Floor),381, Sane Gruji Marg Agripada, Near I.T.I., Mumbai - 400 011.

6. M/s. PERUMACHERIL CASTING INDUSTRIES, Market landing, Kottayam - 686 001, Kerala.

7. M/s. HIND HYDRAULICS & ENGINEERS, E-43/1, Okhla Industrial Area Phase-II New Delhi - 110 0020

8. M/s. MICROMERTICS ENGINEERS (P) LTD, 298, 4th Floor, Khaleel Shiraji Estate Fountain Plaza, Pantheon Road, Egmore, Chennai - 600 028

9. M/s. ANANT ENGINEERING WORKS, Bassi Road, Sirihind(N.Rly), Punjab - 140 406

10. M/s. SANTOSH INDUSTRIES, A-1, Sone Udyog, Parsi Panchayat Marg Andheri(East), Mumbai - 400 069.

(b) Steam Boilers

1. M/s. THERMAX LTD, 610, Anna Salai, Chennai -600 006

2. M/s. MAXIMA BOILERS PVT LTD, 574/80,Mount Road, Congress building, Teynampet, Chennai-600 006

3. M/s. FIRETECH BOILERS PVT.LTD, No.211, 2nd. Cross, 38th Main, BTM Layout, 2nd. Stage, Bangalore - 560 068

4. M/s. MAXTHERM, K3, Ambattur Industrial Estate, Ambattur, Chennai - 600 058

5. M/s. SOUTHERN BOILERS & EQUIPMENTS PVT.LTD, Y-169, Ist. Street Anna Nagar, Chennai- 600 040.

(c) Weighing Machines & Balances

1. M/s. GIRI BROTHERS PRIVATE LTD, P.B.No. 1646, No. 51, Rajaji Salai
Chennai - 600 001
2. M/s. TAMILNADU SCALE INDUSTRIES, 166, Broadway, Chennai -600 108

(d) Testing & Measuring Instruments

1. M/s. P.B. SHAH & CO, 182, Linghi Chetty Street, Chennai - 600 001
2. M/s. BLUE STAR LTD, 620, Anna Salai, Chennai - 600 006
3. M/s. MADRAS METALLURGICAL SERVICES, 5, Lalithapuram Street
Royapettah, Chennai - 600 014
4. M/s. PRESTO STANTEST PVT. LTD, C-117, F.F. Complex, Okhla Industrial
Area
New Delhi - 110 020
5. M/s. PROLIFIC ENGINEERS, D-91, Sector -2, Noida -201 301,
6. M/s. A B S INSTRUMENTS PVT. LTD, 22, Electronics Complex, Guindy
Chennai - 600 032

SUPPLIERS OF RAW MATERIALS

(a) Rubber

1. M/s. VIRAJ RUBBERS PRIVATE LTD, 2-A, GNT Road, Ponniannanmedu,
Madhavaram Post, Chennai - 600 110
2. M/s. SILPRO TRADING CO, 8, Venkataratnam Road, Teynampet
Chennai - 600 018
3. M/s. ARASU RUBBER CORPORATION LTD, 259, Anna Salai, Chennai - 600
006
4. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600
001
5. M/s. AVT RUBBER PRODUCTS LTD, 22, Marshells Road, Egmore, Chennai-
600 008
6. M/s. GOODLUCK RUBBER HOUSE, Apnagar, 103 Marshells Road,
Egmore

Chennai- 600 008.

7. M/s.KURIAN ABRAHAM LTD,13/1, 423 MS Road, Parvathipuram, Nagercoil-629 001

8. M/s. COCHIN MALABAR ESTATES, AND INDS.LTD, 6/117, Race Course Road,
Coimbatore- 641 018

(b) Rubber Chemicals

1. M/s. BAYER INDIA LTD, 749, Anna Salai, Chennai - 600 002

2. M/s. NATIONAL ORGANIC CHEMICAL INDUSTRIES LTD, 8, Haddows Road
Chennai - 600 006

3. M/s. A.V. THOMAS & CO (INDIA) LTD, 22, Marshalls Road, Egmore
Chennai - 600 008

4. M/s. DUJODWALA INDUSTRIES, 43, Armenian Street, Chennai - 600 001

5. M/s. BHARAT CARBON INDUSTRIES, 43, Buxipur Industrial Area
Gorakhpur -273 001, U.P.

6. M/s. RUBO-CHEM INDUSTRIES(P) LTD, 403/404, Laxmi Commercial
Complex
Senapati Bapat Marg, Mumbai - 400 028

7. M/s. I.C.I. INDIA LTD, Rubber Chemicals Divn., 149, Montieth Road,
Chennai - 600 008

8. M/s. MONSANTO CHEMICALS OF INDIA LTD, F-4, Third Phase
Thiru Vi Ka Industrial Estate, Chennai - 600 097

9. M/s. PHILIPS CARBON BLACK LTD, 22, Marshalls Road, Egmore
Chennai - 600 008

10. M/s. R.K. POLYMER, 196/5, Govindappa Naicken Street, Chennai - 600
001

11. M/s. SOUTH INDIA RUBBER & CHEMICALS, C-4, Ram Square, No.2,
Village Road
Nungambakkam, Chennai - 600 034

12. M/s. MANICKAVELU CORPORATION, Plot No. W-300, 19th Street, Sector
-C Anna Nagar western Extn., Chennai - 600 101

FINANCIAL ASPECTS

1. COST OF PROJECT

	[Rs.lakhs]
Land & Building (Advance)	2.50
Plant & Machinery	32.00
Other Misc. assets	2.00
Pre-Operative expenses	3.00
Margin for WC	1.14
	<u>40.64</u>

2. MEANS OF FINANCE

Capital	16.64
Term Loan	24.00
	<u>40.64</u>

3. COST OF PRODUCTION & PROFITABILITY STATEMENT

	[Rs.lakhs]				
Years	1	2	3	4	5
Installed Capacity-Nos	90000	90000	90000	90000	90000
Utilisation	60%	70%	80%	80%	80%
Production/Sales-Nos	54000	63000	72000	72000	72000
Selling Price per piece -Rs.	92.00				
Sales Value (Rs.lakhs)	49.68	57.96	66.24	66.24	66.24
Raw Materials	17.61	20.54	23.48	23.48	23.48
Packing Materials	0.41	0.47	0.54	0.54	0.54

Power& fuel	5.83	6.80	7.78	7.78	7.78
Wages & Salaries	11.95	12.55	13.18	13.84	14.53
Repairs & Maintenance	0.60	0.66	0.73	0.80	0.88
Depreciation	4.80	4.08	3.47	2.95	2.51
Cost of Production	41.20	45.10	49.18	49.39	49.72
Selling, Admin, & General exp	3.60	3.78	3.97	4.17	4.38
Interest on Term Loan	3.36	2.94	2.10	1.26	0.42
Interest on Working Capital	0.53	0.53	0.53	0.53	0.53
Total	48.69	52.35	55.78	55.35	55.05
Profit Before Tax	0.99	5.61	10.46	10.89	11.19
Provision for tax	0.00	1.91	3.56	3.70	3.81
Profit After Tax	0.99	3.70	6.90	7.19	7.38
Add: Depreciation	4.80	4.08	3.47	2.95	2.51
Cash Accruals	5.79	7.78	10.37	10.14	9.89
Repayment of Term loan	0.00	6.00	6.00	6.00	6.00

4. WORKING CAPITAL:

	Months	Values	%	Margin Amount	Bank Finance
	Consumptions				
Raw Materials	0.50	0.73	25%	0.18	0.55
Consumables	2.00	0.07	25%	0.02	0.05
Finished goods	0.50	1.72	25%	0.43	1.29
Debtors	0.50	2.07	10%	0.21	1.86
Expenses	1.00	0.30	100%	0.30	0.00
		4.89		1.14	3.75

5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

$$\frac{\text{Profit after Tax}}{\text{Sales}} = \frac{6.90}{66.24} \quad 10\%$$

$$\frac{\text{Profit before Interest and Tax}}{\text{Total Investment}} = \frac{13.09}{44.39} \quad 29\%$$

$$\frac{\text{Profit after Tax}}{\text{Promoters Capital}} = \frac{6.90}{16.64} \quad 41\%$$

6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	13.18
Repairs & Maintenance	0.73
Depreciation	3.47
Admin. & General expenses	3.97
Interest on TL	2.10
	<u>23.45</u>

Profit Before Tax (P) 10.46

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{23.45}{33.91} \times \frac{80}{100} \times 100$$

55% of installed capacity