

AUTOMOBILE BODY BUILDING (BUS – LCV – CAR)



1. INTRODUCTION:

Automobile body building is an important activity, as it facilitates the development of specialized utility vehicles to suit specific purposes viz buses for inter and within city transport, services like fire, ambulance, road cleaning, garbage handling, goods and liquid transport, airport services etc.

The chassis are supplied by Automobile manufacturers, and body is built by automobile body builders as per the requirements and specifications of the different utility services as desired by the customer viz Utility services and Transporters etc.

2. PRODUCT & ITS APPLICATION:

Various products are emerging in this sector for variety of applications. Entrepreneur can look at popular products on internet produced by leading units all over the world to narrow down his product selection. It is essential to have standard design some are listed below

Passenger Transport – State and interstate long haul Travel Buses, City Transport, tourist buses, Airport transport, etc.

Material transport – Packaged goods vans, bulk and liquid tankers, Refrigerated goods, vehicle transport, heavy material multi axle transport trucks, Trucks with cranes etc.

Utility Vehicles – Ambulances, Airport utility, electric repair trucks, sewage cleaners, road sweepers, etc.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

The promoter with experience in sheet metal fabrication and innovative interior designs will be able to be able to manage the project well.

4. INDUSTRY OUTLOOK/TREND

The bus and truck segment in India is poised for substantial growth. According to industry representatives and analysts, the sector is yet to reach its full potential and the current scenario in India's automobile market offers it the chance to do so. According to industry estimates, with 15 lakh buses in private sector and 1.5 lakh buses in public sector, India has about 16.5 lakh buses. But most of these are old and outdated vehicles, with those aged less than ten years comprising lesser than one-third of the total number (4-4.5 lakh units). This, when compared to nations like China, is a lot lower. India, analysts say, needs many more buses for a population of its size.

For a population of 1.37 billion, China has about 6,80,000 buses. For a population of 1.3 billion India has only about 4,10,000 buses. Every year 50,000 new buses are being sold but soon, this figure will double as the industry is yet to achieve its full potential and even electric buses are expected to make an entry into market in the near future.

Several private bus operators have been successfully operating in the industry by catering to public, corporate, government, tourism and other segments. Both sectors are now expected to drive up demand for buses every year. Ashok Leyland accounts for about 40 percent bus business in the country. There are more than 30 fabricating shops for body and truck body building operating in country. However the HCV and LCV manufacturers are now joining the auto body building sector. Major units are Tata Motors, Volvo and Scania in the Indian bus market.

5. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:

Most of the demand is for buses and passenger transport, from city, local, state government bodies. However the intercity and tourist buses are also in huge demand.

India's passenger vehicles of around 29 million during 2015 are expected to grow to more than 48 million vehicles by 2020. Also, domestic sales of commercial vehicles are expected to grow at a CAGR of 11.6% from 0.6 million in 2015 to more than 2 million by 2026. With the increasing automobile demand, the country is also proportionately expected to witness a surge in sheet metal products used to manufacture these vehicles.

The bus industry is currently growing at the rate of 6 to 8 per cent every year, adding 50,000 buses per annum. Buses are going to be the future of public transportation in India, being cheaper and more convenient than both rail and air travel. While China has 6 buses per 1,000 persons, we have just 1.5 buses per 1,000 persons. The share of state road transport undertakings (SRTUs) in buses is very low as of now. Buses being the vehicle for the common man, many STRUs are planning to increase the number of buses, which will ultimately lead to growth in the number and the size of bus industry," said PS Ananda Rao, Association of State Road Transport Undertakings.

Especially the modern specialized vehicle body building is now coming of age as can be seen from the integrated bus manufacturers viz VOLVO, Mercedes Benz, Scania etc. in this sector.

Besides there is huge potential for Specialized Vehicles like fire trucks, ambulance, road cleaning, garbage handling, refrigerated Vans, goods and liquid transport, airport services etc. The unit can develop designs to meet these specialty vehicle needs and prepare detailed engineered systems on various vehicle platforms to offer to customers.

6. RAW MATERIAL REQUIREMENTS:

MS and SS steel sections, square and round tubes, sheets and fasteners, welding electrodes and prefabricated seats, upholstery foam, PU leather etc., Plastic components, Glass windows etc., fans, air conditioning plant lighting fixtures etc. are used for the body building of buses. In

addition the specialized vehicles may require, blowers, pumps, piping hydraulic lifting cylinders, springs etc. as per design. The ambulances may require fitments of cardiac monitors, oxygen etc. supply units stretchers etc.

7. MANUFACTURING PROCESS:

The main activity of the unit is fabrication as per the design and fitments of selected optional fitments. Fabrication process includes cutting and welding of main structure of vehicle with MS/ SS tubes and sections of sizes viz 25×25×2 mm, 40×40×3 mm, 100×50×4 angles and square tubes, 75×40×4 mm channels, SS or MS sheets of various thickness etc.

The main structure, roof structure and side panels are prefabricated and treated for rust prevention etc. before assembly on vehicle chassis. Once the structure is in place. The fitment of interior starts with electrical wiring, piping and air ducting, seat frames, etc. There after the equipments as per the design are installed and tested, Lastly the upholstered seats and cushions, and trimming etc. are placed to give finishing touch to the vehicle.

8. MANPOWER REQUIREMENT:

The unit shall require highly skilled service persons. The unit can start from 23 employees initially and increase to 60 or more depending on business volume.

Sr. No.	Type of Employees	Monthly Salary	No of Employees				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Skilled Operators	25000	10	14	16	18	20
2	Semi-Skilled/ Helpers	8000	8	10	20	30	30
3	Supervisor/ Manager	35000	1	1	2	2	2
4	Accounts/ Marketing	18000	2	4	4	6	6
5	Other Staff	7000	2	2	2	2	2
	TOTAL		23	31	44	58	60

9. IMPLEMENTATION SCHEDULE:

The unit can be implemented within 7 months from the serious initiation of project work.

The unit is based on selection of location preferably near a semi urban area or highways.

Sr. No.	Activities	Time Required in Months
1	Acquisition of Premises	2
2	Construction (if Applicable)	2
3	Procurement and Installation of Plant and Machinery	2
4	Arrangement of Finance	2
5	Manpower Recruitment and start up	2
	Total Time Required (Some Activities run concurrently)	7

10. COST OF PROJECT:

The unit will require total project cost of Rs 243.17 lakhs as shown below:

Sr. No.	Particulars	In Lakhs
1	Land	30.00
2	Building	50.00
3	Plant and Machinery	66.25
4	Fixtures and Electrical Installation	13.10
5	Other Assets/ Preliminary and Preoperative Expenses	4.00
6	Margin for working Capital	79.82
	TOTAL PROJECT COST	243.17

11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 128.83 lakhs and seek bank loans of Rs 114.35 lakhs based on 70% loan on fixed assets.

Sr. No.	Particulars	In Lakhs
1	Promoters Contribution	128.83
2	Loan Finance	114.35
	TOTAL :	243.17

12. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

(Rs.lakh)

Sr. No.	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	56.40	40	22.56	33.84
2	Receivables	45.00	50	22.50	22.50
3	Overheads	4.68	100	4.68	0.00
4	Creditors	75.20	40	30.08	45.12
	TOTAL	181.28		79.82	101.46

13. LIST OF MACHINERY REQUIRED:

The layout of unit suitable for different activities are planned to ensure smooth material and product flow.

(Rs.)

Sr. No.	Particulars	UOM	Quantity	Rate	Total Value
	Main Machines/ Equipment				
1	Guillotine Shearing machine 2500x6 mm	Nos.	1	450000	450000
2	Press Brake with bending capacity 2500 × 4 mm	Nos.	1	650000	650000
3	MIG Welding machine 300 with manipulator	Nos.	2	300000	600000
4	TIG Welding machine	Nos.	2	170000	340000
5	Gas Welding machine	Nos.	2	150000	300000
6	Solid state Arc welding Transformers	Nos.	4	80000	320000
7	Paint shop complete with air compressor, powder/ liquid paint spray system, curing oven for frames and assemblies etc.	Nos.	1	650000	650000
8	Metal cutting band-saw machines	Nos.	3	60000	180000
9	PU foam insulation system	Nos.	1	120000	120000

Sr. No.	Particulars	UOM	Quantity	Rate	Total Value
10	Tube and section bending machines	Nos.	3	120000	360000
11	Sheet bending/ rolling machine	Nos.	1	150000	150000
12	Pillar drilling machine	Nos.	2	80000	160000
13	Lathe 6' ft. bed	Nos.	2	60000	120000
14	Milling machine	Nos.	1	300000	300000
	subtotal :				4700000
1	Tools and Ancillaries				
2	Pneumatic/Elect portable Drills, riveting and screwing machines	LS	1	250000	250000
3	Jigs and fixtures for sub-assemblies	LS	1	300000	300000
4	Hoists/ jib crane	LS	5	35000	175000
5	OHT Crane 3~5 T capacity	LS	1	700000	700000
6	Gauges and tools	LS	1	200000	200000
7	Misc. Gauges and Tools	LS	1	300000	300000
	subtotal :				1925000
	Fixtures and Elect Installation				
	Storage racks	LS	1	150000	150000
	Air handling/ exhaust system		1	350000	350000
	Other Furniture	LS	1	50000	50000
	Telephones/ Computer	LS	2	30000	60000
	Electrical Installation	LS	1	700000	700000
	subtotal :				1310000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	400000	400000
	TOTAL PLANT MACHINERY COST				8335000

All the machines and equipments are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of dies and tooling to have modern and flexible utensil designs. It may be worthwhile to look at reconditioned imported machines, dies and toolings. Some of the machinery and dies and toolings suppliers are listed here below:

1. PMT MACHINES LTD.
Behind PCMC Building, Mumbai-Pune Road, Pimpri,
Pune 411 018. Maharashtra, India.
2. Machineries and Spares
Ranjit Chawla (Director)201, Karmastambh, LBS Marg, Vikhroli West
Mumbai - 400083, Maharashtra, India
2. Pacific Engineering Corporation
A-297, MIDC-Mahape, Near Mahape Bus Depot,
Anthony Garage, Thane-Belapur Road, MahapeMidc,
Navi Mumbai-400710, Maharashtra, India
3. Face Automation
D215A, Ghatkopar Industrial Estate,
Agra Road Industrial Premises Co Operative Society Limited,
LBS Marg, Ghatkopar West, Mumbai- 400086, Maharashtra, India
4. Other well-known machine manufacturers can be searched from directories/ internet are:
 - Acme Toolings, D-67, Phase 1, Ida Jeedimetla, Hyderabad – 500055,
 - Ace Manufacturing Systems Ltd.,
 - Batliboi Ltd. Mumbai,
 - Bharat Fritz Werner Ltd. ,
 - Hmt Machine Tools Ltd.,
 - Advani Oerlikon Ltd, Bombay,
 - Lakshmi Machine Works Ltd.,
 - Tal Manufacturing Solutions Ltd.,
 - Vigel Manufacturing Technologies (P) Ltd,
 - Lokesh Machines Ltd.,
 - Praga Tools Ltd. ,
 - Toolcraft Systems Pvt. Ltd. ,
 - Vaddigiri Factory Automation Pvt Ltd

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year Wise estimates				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Capacity Utilization	%	30	40	50	60	70
2	Sales	Rs Lakhs	540.00	720.00	900.00	1080.00	1260.00
3	Raw Materials & Other Direct Inputs	Rs Lakhs	451.22	601.63	752.04	902.44	1052.85
4	Gross Margin	Rs Lakhs	88.78	118.37	147.97	177.56	207.15
5	Overheads Except Interest	Rs Lakhs	42.42	42.42	42.42	42.42	42.42
6	Interest	Rs Lakhs	13.72	13.72	13.72	13.72	13.72
7	Depreciation	Rs Lakhs	16.00	16.00	16.00	16.00	16.00
8	Net Profit Before Tax	Rs Lakhs	16.64	46.23	75.82	105.41	135.01

The basis of profitability calculation:

The Unit will have capacity of 300 HCV/LCV and small vehicles work including modification/small repair work for vehicles like vans Jeeps/ SUV etc. will have annual capacity of 500 vehicles. The body building designs considered shall be in line with the current trend in passenger viz. Chair car to sleeping buses, goods carriers, refrigerated carriers, Air conditioned buses, ambulances etc. The prevailing costs of body building of HCV range from Rs 2.50 lakhs to 20 lakhs for a standard stretched chassis Heavy vehicles depending in the designs and interiors chosen. Body building costs for LCVs and Jeeps/ large SUV/pick up vans etc. ranges from 1.25 lakhs to 10.0 lakhs.

The material requirements are considered based on the STRU designs for structures. The costs for MS angles and sections is taken at Rs 45 per Kg. Stainless steel sheets are taken at 130 ~ 150 per Kg. Aluminum sheets, chequered plates, Al. extruded sections, pipes etc. have cost range from Rs 150 to 200 per Kg. The windows/ glass panes, interior lining, decoration of wall, carpeting, chairs/ seats and lighting wiring etc. cost ranges from Rs 50000 to 250000 per vehicle. wastage/ scrap to be sold at @ Rs 20 ~ 80 per Kg depending on type and the income of same is added. Consumables costs also considered based on prevailing rate.

Energy Costs are considered at Rs 7 per Kwh. The depreciation of plant is taken at 10 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAK EVEN ANALYSIS

The project is can reach break-even capacity at 24.38 % of the installed capacity as depicted here-below:

Sr. No.	Particulars	UOM	Value
1	Sales at Full Capacity	Rs Lakhs	1800.00
2	Variable Costs	Rs Lakhs	1504.07
3	Fixed Cost incl. Interest	Rs Lakhs	72.14
4	Break Even Capacity	% of Inst Capacity	24.38

16. STATUTORY/ GOVERNMENT APPROVALS

The unit shall have to get local state industrial unit registration, IEC Code for Export and local authority clearance. The industry registration and approval for factory plan, safety for Fire requirement, registration as per Labour laws ESI, PF etc. shall be required as per rules and applicability. Before starting the unit will also need GST registration for procurement of materials as also for sale of goods. The unit will have welding and paint shop where safe environment shall be required. As such there is no pollution control requirements, while unit will have to ensure solid waste/ scrap disposal in proper manner.

17. BACKWARD AND FORWARD INTEGRATION

The machines and equipments offer scope for diversification in to producing other consumer and industrial systems/ parts/ components by using the spare capacities and machine capabilities which may be attempted. As such there is not much scope for organic backward or forward integration.

18. TRAINING CENTERS/COURSES

There are no specific training centers for bus building design or production technology. However there are international associations offering basic guideline and specifications for safety etc. The dies, fixtures, Tools development courses run by several centers of excellence viz Indo German Tool Room at Ahmedabad, Rajkot, Chennai, and CTTC Bhubaneshwaretc. shall be helpful. The

unit shall have to offer designs with sufficient road safety features and designs shall have to meet or exceed the specified designs of SRTUs - state road transport undertaking organization.

The most important scope of learning is in new product design and development by associating with institutes like NID etc. Entrepreneur may also study the new designs, product range, features and specifications of leading of Brands / competitors across the world by scanning the Internet and downloading data of North American, Europe, China etc. markets.

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for hand-holding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.