

PROJECT PROFILE

ON

ANODISING

Month & Year
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**PREPARED BY
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ANODISING

A. INTRODUCTION

The chemistry of aluminium (and its alloys) is interesting. Given that it's a reactive metal (more so than iron) one would expect it to naturally corrode more rapidly than it actually does. The reason it doesn't is that the initial formation of an oxide layer on the surface protects the base metal underneath. Aluminium oxide is a tough material (its crystallised form is used as an abrasive – Allox), but normally its formation in air results in an amorphous layer with little mechanical strength, it's a white powder that can easily be scraped off leading to further oxidation.

Anodising is an electro chemical terms which refers to anodic oxidation of a metal. Anodising is generally referred to for aluminium and is well understood by every one as an aluminium finishing.

B. PRODUCT USES & SPECIFICATION

Anodising on the other hand, is a process which forms a particularly structured and dense oxide layer which resists abrasion and thus protects the underlying metal. This layer is colourless, but it's possible to introduce a dye at one stage in the process to permanently colour the surface. Not all aluminium alloys can be easily anodised, cast aluminium (with a high silica content) is particularly difficult.

Although coating Thickness and colour specifications are to be determined according to the end products the standard specifications like IS, BS, or ASTM are available. The specifications quoted in ASTM, B580 is as follows.

Type A: 50 Micron Coating thickness– Hard Coating for Engineering Applications

Type B: 18 Micron Coating thickness –Architectural Class I applications

Type C: 10 Micron Coating thickness –Architectural Class II applications

Type D: 8 Micron Coating thickness– Automotive exterior applications

Type E: 5 Micron Coating thickness –interior moderate abrasion applications

Type F: 3 Micron Coating thickness– Interior limited application

Type G: 1 Micron Coating thickness– Chromic acid based electrolytes for aircraft applications as well as base for painting

C. MARKET POTENTIAL

The product to be manufactured belongs to the engineering sector and the general engineering sector has been growing well all these years at faster rate. There is continuous demand for this product as it is consumed in all engineering workshops.

A strong engineering base exists in the state of Tamilnadu involving products ranging from automobiles, bicycles, castings and forgings, to textile machines, electrical and non–electrical machinery, pumps and transportation equipment.

Engineering ancillary industries are concentrated in Chennai, Coimbatore, Salem, etc.

Tamil Nadu has witnessed a robust growth in its economy over the past few years and has emerged as an economic powerhouse of India. The outlook for the State remains buoyant with a number of industries expected to power the growth. The key sectors contributing to Tamil Nadu's economy are Manufacturing (Textiles, Auto/Light engineering, Leather, Chemicals, Food processing), IT/ITeS, Construction, Banking and Finance. These sectors contribute to 45% to 50% of the economy. Tamil Nadu is one of the fast growing State economies (current economic size is USD 55 billion) and is the third largest in India. Current state GDP is over 8% at constant prices and over 12% at current prices. The State's exports of USD 18 billion is contributed mainly by Textiles (24%) Electronic software and hardware (22%), Automobiles and Autoparts/Engineering goods (15%), Agro products (12%) and Leather products (8%).

Auto majors, both domestic and MNC in the state include *TVS, Ashok Leyland, TAFE, Royal Enfield, HVF, ICF, BMW, Hyundai, Ford, Caterpillar, Mahindra, Nissan Renault, Visteon, Delphi, Saint Gobain, Mitsubishi, TRW* besides a host of Taiwan and Korean auto component vendors. By 2009, over USD 3 billion is reported as invested in Chennai for car manufacturing facilities alone. As per *Confederation of Indian Industry (CII)* Study report, the projected size of the industry in 2015 in the state is USD 15 to 20 billion – a potential six to seven

fold increase. The Auto sector is a manpower intensive sector and the growth of this sector will generate accelerated manpower requirements. Light Engineering industry with a CAGR of 12 to 15% is also projected to be USD 3 to 4 billion industry by 2015.

D. TECHNICAL ASPECTS

1. Installed capacity

The installed capacity is Anodising of 2000 Square Feet of Aluminum per day of two shifts, 8 hours per shift. Based on this the annual capacity is 600 000 sq.ft of Anodising per annum.

2. Plant and Machinery

The machinery list is given below:

Description	Qty. (Nos.)	Value (Rs.lakhs)
Mechanical Polishing	1	0.15
Degreasing Tank	1	6.50
Alkaline Swill Tank.	1	
D.E.Swill Dipping Tank	1	
Water Swill tank	1	
Anodising Tank	1	
D.M.Swill tank	1	
Sealing tank	1	
Anodising 1	Rectifier	3.50
Chilling 1	Unit	1.25

Titanium Coil Chilling anodes, SS Anodes, Bus bar	3.80
Filter	0.80
Total	16.00

3. Manufacturing Process

The process of anodizing is as follows:



D.M.Water swill(for Cold sealing) `

4. Raw Materials

The materials required for the anodizing are various chemicals for anodizing. The main materials are ATN 100, UF-9, H₂ So₄ (Sulphuric Acid) Caustic Soda, HNO₃ (Nitric Acid), Stannous Sulphate, Cold Sealing and Nickel Acetate. These are available from the chemical dealers.

5. Land & Building

A Built up area of 4000 sqft. is required this may be taken on rental basis Rs.40000 per month. Advance Rs.400 000.

6. Utilities

Power:

A power load of 70 HP is sufficient for the operation of the M/c.

Water:

Water is required for human consumption.

Man Power:

Supervisor	2	8000	16000
Skilled	2	6000	12000
Unskilled	6	4000	24000
Assistants	2	5000	10000
Security	2	4000	8000
			<hr/>
			70000
Add : Benefits	20%		<hr/>
			14000
Total wages per month			<hr/>
			84000

Total wages per annum [Rs.lakhs] Rs.10.08

7. Implementation Schedule

As the machines and materials are available indigenously, the project can be implemented within 3 months period if financial arrangements are made.

8. ASSUMPTION

Installed Capacity per annum	Anodising 600 000 Sq.ft p.a.
Capacity utilization - Year 1	60%
- Year 2	70%
- Year 3	80%
Selling price	Anodising Rs.10.50 Per Sq ft

Consumables(For 50 000Sq.ft Anodising)	Qty	Rate/MT	Value (Rs.)
ATN-100	10 lt	180	1800
UF-9	10 lt	110	1100
H2 So4-Sulphuric Acid	1500 Kgs	6	9000
Caustic Soda	200 kgs	25	5000
Nitric Acid	200 kgs	15	3000
Stannous Sulphate	50 kgs	675	33750
Cold Sealing	10 kgs	1750	17500
Nickel Acetate	10 kgs	575	5750
			76900
Add 25 % for Loss			19225
		Total	96125
	Cost Per Sq ft		1.93

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Power & Fuel at 100% (Rs. lakhs)	Rs16.20 lakhs
Wages & Salaries (Rs. lakhs)	Rs.10.08 lakhs
Repairs & Maintenance per month	Rs.5 000 p.m
Depreciation	WDV method - 15%
Administrative & General expenses p.m.	Rs.30,000
Selling expenses	3%
Interest on Term loan and Working capital finance	13%
Income tax provision	34%

LIST OF MACHINERY SUPPLIERS

1. Sri Ganesh Electrical Works
27. Alandur road
Saidapet
Chennai-60 015
2. Plating products co
New no 15, west coat road
Royapetah
Chennai-600 014
3. New Potentials
17, Alandur road
Chennai 600 015
4. Chamanlal Baldevdas
New 31, Venkatachala Mudali Street
Chennai 600 003

LIST OF RAW MATERIAL SUPPLIERS

1. Plating chemicals

49, Venkatachala Mudali Street
Park town
Chennai-600 003

2. Srinivasa industries
15/2 -6th Street
Kumaran Colony
Chennai-600 026

3. Vaishnavi Metals
116, Egmore High Road
Chennai-600 008

ANODISING

1. COST OF PROJECT	[Rs.lakhs]
Land & Building (Advance)	4.00
Plant & Machinery	16.00
Other Misc. assets	1.00
Pre-Operative expenses	2.00
Margin for WC	0.99
	<u>23.99</u>
2. MEANS OF FINANCE	
Capital	11.99
Term Loan	12.00
	<u>23.99</u>

3. COST OF PRODUCTION & PROFITABILITY STATEMENTS

Years	1	2	3
Installed Capacity (Sq.ft.)	600000	600000	600000
Utilisation	60%	70%	80%
Production/Sales (Sq.ft.)	360000	420000	480000
Anodising rate/sq.ft. (Rs.)	10.5 per sq.ft.		

Sales Value	37.80	44.10	50.40
Raw Materials	0.00	0.00	0.00
Consumables	7.99	9.32	10.66
Power	9.72	11.34	12.96
Wages & Salaries	10.08	10.58	11.11
Repairs & Maintenance	0.60	0.63	0.66
Depreciation	2.40	2.04	1.73
Cost of Production	30.79	33.91	37.12
Admin, & General expenses	3.60	3.78	3.97
Selling expenses	1.13	1.32	1.51
Interest on Term Loan	1.56	1.37	0.98
Interest on Working Capital	0.31	0.31	0.31
Total	37.39	40.69	43.89
Profit Before Tax	0.41	3.41	6.51
Provision for tax	0.14	1.16	2.21
Profit After Tax	0.27	2.25	4.30
Add: Depreciation	2.40	2.04	1.73
Cash Accruals	2.67	4.29	6.03

4. WORKING CAPITAL:

	Months	Values	%	Margin	Bank
	Consumption			Amount	Finance
Raw Materials	0.75	0.00	25%	0.00	0.00
Consumables	1.00	0.67	25%	0.17	0.50
Finished goods	0.25	0.64	25%	0.16	0.48
Debtors	0.50	1.58	10%	0.16	1.42
Expenses	1.00	0.50	100%	0.50	0.00
		<u>3.39</u>		<u>0.99</u>	<u>2.40</u>

5. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	<u>4.30</u>	
Sales	50.40	9%
<u>Profit before Interest and Tax</u>	<u>7.80</u>	
Total Investment	26.39	30%
<u>Profit after Tax</u>	<u>4.30</u>	
Promoters' Capital	11.99	36%

6. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	11.11
Repairs & Maintenance	0.66
Depreciation	1.73
Admin. & General expenses	3.97
Interest on TL	0.98
	<u>18.45</u>

Profit Before Tax (P) 6.51

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{18.45}{24.96} \times \frac{80}{100} \times 100$$

59% of installed capacity