

PROJECT PROFILE

ON

ELECTRO COATING

Month & Year
December 2009

**PREPARED BY
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Supported by

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STIFTUNG **FÜR DIE FREIHEIT**

ELECTRO COATING

A. INTRODUCTION

Electro Coating is a method of giving a metal an organic finish by using electrical current to deposit the paint. The process works on the principle of ‘opposites attract’. An electro coat system applies a DC charge to a metal part immersed in a belt of oppositely charged paint articles. The paint articles are drawn to the metal part and paint is deposited on the part forming an even continuous film over every surface, in every crevice and corner until the coating attains the desired thickness. At that thickness the film insulates the part and the attraction of paint particle stops and electro coating is complete. Electro coating could be projective decorative and may combine the properties of both depending upon the end use.

B. PRODUCT USES

APPLICATIONS OF ELECTRO COATING IN THE INDUSTRIES

END USE	ELECTRO COATING BENEFITS
Agricultural Equipment	High Gloss, Resistance, Colour Control, Weatherability, Corrosion resistance.
Appliances	Corrosion and Stain Resistance, Colour control in recessed areas.
Automobiles	Corrosion and Chip resistance, Weatherability

Brass, Gold, Nickel, Aluminium	Aesthetic quality and Corrosion Resistance
Can(containers)	Barrier and Chemical Resistance
Electrical switch Gear	Corrosion Resistance and UL approval
Fasteners	Corrosion and Edge cover
Heating, Ventilation and cooling	Corrosion Resistance, colour control & weatherability
Laboratory Furniture	Chemical, stain and corrosion resistance colour control
Lawn and gardens	Corrosion resistance and weatherability
Printed circuit Boards	Edge coverage and Hardness
Shelving and Furniture	Colour control hardness and stain resistance
Wheels	Corrosion and chip resistance, weatherability

C. MARKET POTENTIAL

The main advantages of Electro coating are:

- High corrosion protection property
- Coating of complex parts
- High transfer efficiency
- Very low incidence of rejects
- Much higher productivity
- Much better quality
- Ease in handling

Electro coat is utilized in a variety of industrial market segments. Each of these markets has specific performance requirements, leading to the development of a number of electro coat technologies to meet their needs. Electro coat has also become an accepted finishing method for new applications such as:

- Speciality clear finishes over Aluminium, Brass and Zinc plate
- Extremely low gloss coating for military and photographic applications.
- Chemical resistant coating
- Transparent metallic -type finishes over Nickel or Zinc plating.
- Uniform coating

The electro coat is used in all automobile and engineering components. The growth of these sectors had been substantial all over these years.

D. TECHNICAL ASPECTS

1. Installed capacity

The installed capacity of the plant is 1.39 sq.metres of coating per 3 minutes. On this basis the installed capacity is 444.8 sq.metres in 16 hours. The annual capacity is 133440 sq.metres. After applying the efficiency factor of 90% the installed capacity works out to 120000 sq.metres.

2. Plant & Machinery

The machinery items consists of the following

Particulars	Qty (Nos.)	Value (Rs.Lakhs)
Pre-treatment Line-seven Tank process	1	3.50

Electro coat system	1	20.50
Baking Oven	1	4.00
Total		28.00

3. Manufacturing Process

The process of Electro coating has the following sequence of operation.

Pre-treatment-where the metal surface is cleaned

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Electro coating in electro coat bath& ancillary equipment

(Electro coat bath consists of 80-90%de ionized water 10-20% paint solids. The de ionized water acts as a carrier for the paint solids that are under constant agitation. The paint solids consist of resin and pigment.)

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Rinsing (During electro coat process paint is applied to a part to be coated at a controlled film thickness regulated by the voltage applied. Once the coating reaches the desired thickness the part gets insulated and the coating process slows down. As the part remains in the bath for a few seconds after the coating before it is lifted liquid paint clings on to the surface and have to be rinsed off to maintain efficiency and aesthetics.)

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Baking in oven (After rinsing the coated part enters the bake oven. The bake oven cross links and cures the paint film to assure the maximum performance properties. Baking time and temperature would differ according to the weight of the coated part on the one hand and the desired gloss on the other)

4. Raw Materials

The raw materials required for the process are phosphating chemicals for pre-treatment and coating media. The coat media is epoxy and other related chemicals which are being supplied by M/s Asian PPG, Chennai who are leading suppliers of these items the phosphating chemicals can be procured from the local dealers.

5. Land and Building

Built up area required –1000 sq.ft .This can be arranged on lease basis. Rent assumed Rs.5000 and Advance Rs 50000

6. Utilities

Power:

The total power requirement of the unit will be 52 HP

Water:

Water requirement is about 500 litres per day (ionized water) which can be purchased

Man power.

Category	Nos.	Monthly Salary	Total monthly Salary
Supervisor	1	8000	8000
Helpers	8	6000	48000
Security	1	4000	4000
			<u>60000</u>

Add : Benefits	20%	<u>12000</u>
Total wages per month		<u>72000.00</u>
Total wages per annum [Rs.lakhs]		Rs.8.64 lakhs

7. Implementation Schedule

If financing arrangements is made available the project can be implemented within three months period.

8. ASSUMPTIONS

Installed capacity per annum	Electro Coating - 1,20,000 sq.mtr.
Capacity utilization- Year -1	60%
Year -2	70%
Year -3	80%
Selling price per unit	Electro Coating - Rs.70 /Sq.Mtr.

Consumables cost at 100%	Qty (including wastage)	Rate/kg.	Value (Rs.lakhs)
Coating chemicals and Phosphating chemicals	9230.4 kg	Rs.250	23.08
			3.60
Total			26.68

Power and Fuel-100% (Rs.lakhs)	Rs.9.81 lakhs
Wages & salaries-100% (Rs.lakhs)	Rs.8.64 lakhs
Repairs & Maintenance per month	Rs.10000/-
Depreciation	Written down value
General & administration Expenses per month	Rs.50000/-
Interest on term loan and Working capital finance	13% p.a

Income tax provision	34% on profit
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LIST OF MACHINERY SUPPLIERS

1. COATEC INDIA F-79 Industrial Area -Phase 7
Sahibzada Ajit Singh Nagar
Chandigarh 160 055
Punjab

There is no other Machinery supplier for this project according to the information available.

LIST OF RAW MATERIAL SUPPLIERS

1. Chennai Asian PPG Industries Ltd., (Asian Paints India Ltd.)
1/103, Poonamallee High Road,
Vanagaram
Chennai 600 095.

1. COST OF PROJECT

	[Rs.lakhs]
Building (Advance)	1.00
Equipments	28.00
Other Misc. assets	1.00
Pre-Operative expenses	2.00
Working Capital	2.50
	<u>34.50</u>

2. MEANS OF FINANCE

Capital	13.50
Term Loan	21.00
	<u>34.50</u>

3. COST OF SERVICE & PROFITABILITY STATEMENTS

Years	1	2	3
Annual Income /Job Work Income			
Installed Capacity(sq.Metres)	120000	120000	120000
Capacity Utilisation	60%	70%	80%
Production Sq. Metres	72000	84000	96000
Rate Per Sq.Metre	Rs.70		
Annual Income Rs.Lakhs	50.40	58.80	67.20
Expenditures			
Raw Materials	0.00	0.00	0.00
Consumables	16.01	18.67	21.34
Power	5.89	6.87	7.85
Salaries	8.64	9.07	9.52
Repairs & Maintenance	1.20	1.26	1.32
Depreciation	4.50	3.83	3.25
Admin, & General expenses	6.00	6.30	6.62
Interest on Term Loan	2.73	2.39	1.71
Interest on Working Capital	0.33	0.39	0.45
Total expenses	<u>45.30</u>	<u>48.78</u>	<u>52.06</u>

Profit Before Tax	5.10	10.02	15.14
Provision for tax	1.73	3.41	5.15
Profit After Tax	3.37	6.61	9.99
Add: Depreciation	4.50	3.83	3.25
Cash Accruals	7.87	10.44	13.24

4. PROFITABILITY RATIOS BASED ON 80% UTILISATION

<u>Profit after Tax</u>	<u>9.99</u>	
Income	67.20	15%
<u>Profit before Interest and Tax</u>	<u>16.85</u>	
Total Investment	34.50	49%
<u>Profit after Tax</u>	<u>9.99</u>	
Promoters Capital	13.50	74%

5. BREAK EVEN LEVEL

Fixed Cost (FC):

	[Rs.lakhs]
Wages & Salaries	9.52
Electricity	21.34
Depreciation	3.25
Admin. & General expenses	6.62
Interest on TL	1.71
Interest on Working Capital	0.45
	<u>42.89</u>

Profit Before Tax (P) 15.14

$$\text{BEL} = \frac{\text{FC} \times 100}{\text{FC} + \text{P}} = \frac{42.89}{58.03} \times \frac{80}{100} \times 100$$

59% of installed capacity