

Hot Dip Galvanizing (HDG) Plant

Hot-Dip galvanization, Corrosion Prevention, Metal plating, Coatings, Electro galvanization, Zinc

Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue, Plant Economics, Production Schedule, Working Capital Requirement, Plant Layout, Process Flow Sheet, Cost of Project, Projected Balance Sheets, Profitability Ratios, Break Even Analysis

Introduction

Galvanized coatings are applied to iron and steel primarily to provide protection against corrosion of the basis metal. Hot Dip Galvanizing is a process in which an adherent, protective coating of zinc and zinc compounds is developed on the surfaces of iron and steel products by immersing them in a bath of molten zinc. The protective coatings usually consist of several layers.

Those closest to the basis metal are composed of iron-zinc compounds these in turn are covered by an outer layer consisting almost entirely of zinc.

The complex structure of layers that comprise a galvanized coating varies greatly in chemical composition and physical and mechanical properties, being affected by chemical activity, diffusion, and subsequent cooling.

Small differences in coating composition, bath temperature, time of immersion, and rate of cooling or subsequent reheating can result in significant changes in the appearance and properties of the coating.

Hot dip galvanized coatings are produced on a variety of steel mill products, using fully mechanized and mass production methods.

Hot dip galvanized zinc coatings have their longest life expectancy in rural areas where sulfur dioxide and other industrial pollutant concentrations are low. These coatings also give satisfactory service in most marine environments. Although the life expectancy of hot dip galvanized coatings in more severe industrial environments is not as long as for less aggressive environments,

the coatings are still used extensively in those exposures, because in general, no more effective and economical method of protection is available. India's steel pipe industry is primarily engaged in manufacturing seamless or welded steel pipes or tubes or ferrous metal pipes or tube fittings. Steel pipes are primarily of two types, seamless and welded.

Other specific types extend the basic classification to include: (a) cast iron pipes, (b) stainless steel tubes, (c) ERW (electric resistance welding) steel pipes, (d) galvanized pipes, (e) API pipes, (f) SAW (submerged arc welded) pipes, and (g) spun pipes.

Welded steel pipes include a wide variety of pipes and tubes. Welded pipes are normally manufactured from HR and CR coils by ERW.

Galvanized pipes are zinc-coated to prevent corrosion. ERW tubes are meant for high performance applications, such as trusses and columns in housing, industrial and construction sectors, chassis for two-wheelers and light commercial vehicles, propeller shafts and axles. According to observation of engineering goods statistics, we can conclude about the essentiality of the galvanizing process as company's work or on the job work base.

It can be concluded that galvanization process is partially proportional to the increase of demand of the engineering goods or most or ancillary item production the steel base.

It can be concluded that demand of galvanizing industries will be increased 10% per annum. On that base it can be predicted that there is good scope for galvanizing industries as job work base.

Important use of hot dip galvanised steel is in immersed condition. The life of galvanised coating on steel in structures which are permanently immersed in liquid depends on the corrosion properties of the liquid and the thickness of galvanising coating used in the structure. Hot dip galvanising can be effectively used for protecting diesel and petrol tanks & for storing honey and fish before canning.

Hot dip galvanised coating of about 100 mm thickness

provides 10 years of maintenance free life if it is totally immersed in sea water. Magnesium chloride present in sea water acts as an inhibitor to prevent the aggressive attack from sodium chloride.

When immersed in water, hot dip galvanising steel's ability to form a protective scale depends on three factors namely dissolved oxygen, calcium content and the alkalinity of water. These factors determine the rate at which the zinc coating is consumed.

Benefits of Hot Dip Galvanizing

- **Lower first cost:** Hot dip galvanizing generally has the lowest first cost when compared to other commonly specified comparable protective coatings for steel. The application cost of labour intensive coatings such as painting has risen far more than the cost of factory applied hot dip galvanizing.
- **Lower maintenance / lower long term cost:** Even in cases where the initial cost of hot dip galvanizing is higher than alternative coatings, galvanizing is invariably more cost effective, due to lower maintenance costs during a longer service life. Maintenance is even more costly when structures are located in remote areas. Maintenance programmes also invariably have a negative impact on productivity.

- **Long life:** The life expectancy of hot dip galvanized coatings on structural members is in excess of 50 years in most rural environments, and between 10 to 30 years in most corrosive urban and coastal environments.
- **Surface preparation:** Immersion in acid ensures uniform cleaning of the steel surfaces, in contrast organic coatings must be applied on abrasive blast cleaned surfaces (generally to ISO 8501 – 1 to SA 2) and verified by third party inspection. Additionally, the application of organic coatings is limited in terms of prevailing ambient temperature and relative humidity. This adds to the cost of applying a heavy duty paint system.
- In hot dip galvanizing, all surfaces receive equally good coatings.

- **Speed of coating application:** A full protective coating can be applied in minutes, a comparable multicoat paint system, may require up to a week. The effective application of a hot dip galvanized coating is not influenced by weather conditions.
- **Reliability:** Hot dip galvanizing is required to conform to the ISO 1461 specification. The coating thicknesses specified are related to steel thickness. Coating life is reliable and predictable.
- **Ease of Inspection:** Hot dip galvanized coatings are readily assessed visually. Simple non-destructive testing methods are used to determine coating thickness. Inspection of organic coatings is necessary after surface preparation and each stage of coating application thereafter.

Few Indian Major Players are as under

- **A P L Apollo Tubes Ltd.**
- **Apollo Metalex Pvt. Ltd.**
- **Arun Pipes Ltd.**
- **Electrometal Ltd.**
- **J T L Infra Ltd.**
- **Kadevi Industries Ltd.**
- **Precimax Engineers Ltd.**
- **Premier Tubes Ltd.**
- **Samana Steels Ltd.**
- **Sarigam Seamless Pipes Ltd.**
- **Shilpa Steel & Power Ltd.**
- **Shri Bankey Bihari Pipes Ltd.**
- **Shri Lakshmi Metal Udyog Ltd.**
- **Steelite Engineering Ltd.**
- **Transasia Tubes & Inds. Ltd.**

Project at a Glance

Capacity	:	3600 MT/Annum
Plant & Machinery	:	102 Lakhs
Cost of Project	:	378 Lakhs
Rate of Return	:	44%
Break Even Point	:	54%



Major Queries/Questions Answered in the Report?

1. **What is Hot Dip Galvanizing Plant ?**
2. **How has the Hot Dip Galvanizing industry performed so far and how will it perform in the coming years ?**
3. **What is the Project Feasibility of a Hot Dip Galvanizing Plant ?**
4. **What are the requirements of Working Capital for setting up a Hot Dip Galvanizing plant ?**
5. **What is the structure of the Hot Dip Galvanizing Business and who are the key/major players ?**

- 6. What is the total project cost for setting up Hot Dip Galvanizing plant ?**
- 7. What are the operating costs for setting up a Hot Dip Galvanizing plant ?**
- 8. What are the machinery and equipment requirements for setting up a Hot Dip Galvanizing plant ?**
- 9. Who are the Suppliers and Manufacturers of Plant & Machinery for setting up a Hot Dip Galvanizing Project ?**
- 10. What are the requirements of raw material for setting up a Hot Dip Galvanizing Project ?**

- 11. Who are the Suppliers and Manufacturers of Raw materials for setting up a Hot Dip Galvanizing plant ?**
- 12. What is the Manufacturing Process and Formulations of a Hot Dip Galvanizing plant ?**
- 13. What is the total size of land required for setting up a Hot Dip Galvanizing plant ?**
- 14. What will be the income and expenditures for a Hot Dip Galvanizing plant ?**
- 15. What are the Projected Balance Sheets of a Hot Dip Galvanizing Industry ?**

- 16. What are the requirement of utilities and overheads for setting up a Hot Dip Galvanizing Industry?**
- 17. What is the Built up Area Requirement and cost for setting up a Hot Dip Galvanizing Business?**
- 18. What are the Personnel (Manpower) Requirements for setting up a Hot Dip Galvanizing Business?**
- 19. What are Statistics of Import & Export for Hot Dip Galvanizing ?**
- 20. What is the time required to break-even?**

- 21. What is the Break-Even Analysis of a Hot Dip Galvanizing plant?**
- 22. What are the Project financials of a Hot Dip Galvanizing project?**
- 23. What are the Profitability Ratios of a Hot Dip Galvanizing project?**
- 24. What is the Sensitivity Analysis-Price/Volume of a Hot Dip Galvanizing plant?**
- 25. What are the Projected Pay-Back Period and IRR of a Hot Dip Galvanizing plant?**

- 26. What is the Process Flow Sheet Diagram of a Hot Dip Galvanizing project?**
- 27. What are the Market Opportunities for setting up a Hot Dip Galvanizing project?**
- 28. What is the Market Study and Assessment for setting up a Hot Dip Galvanizing plant?**
- 29. What is the Plant Layout for setting up a Hot Dip Galvanizing Business?**

Table of Contents of the Project Report



1. Project Location

1.1. District Profile & Geotechnical Site Characterization

1.1.1. General

1.1.2. Location & Geographical Area

1.1.3. Topography

1.1.4. Administrative set up

1.1.5. Map

1.1.6. Industry at a Glance

2. Introduction

3. Applications

4. B.I.S. Specifications

5. Market Survey

6. Financials & Comparison Of Major Indian Players/Companies

- 6.1. About Financial Statements of CMIE Database**
- 6.2. Profits & Appropriations**
- 6.3. Total Liabilities**
- 6.4. Total Assets**
- 6.5. Net Cash Flow from Operating Activities**
- 6.6. Section – I**
 - 6.6.1. Name of Company with Contact Details**
 - 6.6.2. Name of Director(S)**
 - 6.6.3. Plant Capacity**
 - 6.6.4. Location of Plant**

6.6.5. Capital Expenditure Projects

6.6.6. Name of Raw Material(S) Consumed With Quantity &

Cost

6.7. Section – II

6.7.1. Assets

6.7.2. Cash Flow

6.7.3. Cost as % Ge of Sales

6.7.4. Forex Transaction

6.7.5. Growth in Assets & Liabilities

6.7.6. Growth in Income & Expenditure

6.7.7. Income & Expenditure

6.7.8. Liabilities

6.7.9. Liquidity Ratios

6.7.10. Profitability Ratio

6.7.11. Profits

6.7.12. Return Ratios

6.7.13. Structure of Assets & Liabilities (%)

6.7.14. Working Capital & Turnover Ratios

- 7. Export & Import Statistics Data Of India**
 - 7.1. Export Statistics Data on Hot Dip Galvanised**
 - 7.2. Import Statistics Data on Hot Dip Galvanised**

- 8. Present Manufacturers**

- 9. Cleaning Before Galvanizing**
 - 9.1. Degreasing**
 - 9.2. Acid Pickling**
 - 9.3. Abrasive Cleaning**

- 10. Galvanizing Procedure**

- 11. Process Flow Diagram**
- 12. Suppliers Of Plant & Machinery**
- 13. Suppliers Of Raw Material**
- 14. Machinery, Raw Material & Product Photographs**
 - 14.1. Machinery Photographs**
 - 14.2. Raw Material Photographs**
 - 14.3. Product Photographs**
- 15. Plant Layout**

Project Financials

• Project at a Glance	Annexure
• Assumptions for Profitability workings	1
• Plant Economics.....	2
• Production Schedule.....	3
• Land & Building.....	4
Factory Land & Building	
Site Development Expenses	

- **Plant & Machinery.....5**
 - Indigenous Machineries**
 - Other Machineries (Miscellaneous, Laboratory etc.)**

- **Other Fixed Assets.....6**
 - Furniture & Fixtures**
 - Pre-operative and Preliminary Expenses**
 - Technical Knowhow**
 - Provision of Contingencies**

- **Working Capital Requirement Per Month.....7**
 - Raw Material**
 - Packing Material**
 - Lab & ETP Chemical Cost**
 - Consumable Store**

- **Overheads Required Per Month and Per Annum.....8**
Utilities & Overheads (Power, Water and Fuel Expenses etc.)
Royalty and Other Charges
Selling and Distribution Expenses

- **Salary and Wages9**

- **Turnover Per Annum10**

- **Share Capital.....11**
Equity Capital
Preference Share Capital



- **Annexure 1 :: Cost of Project and Means of Finance**
- **Annexure 2 :: Profitability and Net Cash Accruals**
 - **Revenue/Income/Realisation**
 - **Expenses/Cost of Products/Services/Items**
 - **Gross Profit**
 - **Financial Charges**
 - **Total Cost of Sales**
 - **Net Profit After Taxes**
 - **Net Cash Accruals**

- **Annexure 3 :: Assessment of Working Capital requirements**

- **Current Assets**
- **Gross Working Capital**
- **Current Liabilities**
- **Net Working Capital**
- **Working Note for Calculation of Work-in-process**

- **Annexure 4 :: Sources and Disposition of Funds**

- **Annexure 5 :: Projected Balance Sheets**

- **ROI (Average of Fixed Assets)**
- **RONW (Average of Share Capital)**
- **ROI (Average of Total Assets)**

- **Annexure 6 :: Profitability Ratios**

- **D.S.C.R**
- **Earnings Per Share (EPS)**
- **Debt Equity Ratio**

• **Annexure 7 :: Break-Even Analysis**

- **Variable Cost & Expenses**
- **Semi-Variable/Semi-Fixed Expenses**
- **Profit Volume Ratio (PVR)**
- **Fixed Expenses / Cost**
- **B.E.P**

• **Annexure 8 to 11 :: Sensitivity Analysis-Price/Volume**

- **Resultant N.P.B.T**
- **Resultant D.S.C.R**
- **Resultant PV Ratio**
- **Resultant DER**
- **Resultant ROI**
- **Resultant BEP**

- **Annexure 12 :: Shareholding Pattern and Stake Status**
 - **Equity Capital**
 - **Preference Share Capital**
- **Annexure 13 :: Quantitative Details-Output/Sales/Stocks**
 - **Determined Capacity P.A of Products/Services**
 - **Achievable Efficiency/Yield % of Products/Services/Items**
 - **Net Usable Load/Capacity of Products/Services/Items**
 - **Expected Sales/ Revenue/ Income of Products/ Services/ Items**

- **Annexure 14 :: Product wise Domestic Sales Realisation**
- **Annexure 15 :: Total Raw Material Cost**
- **Annexure 16 :: Raw Material Cost per unit**
- **Annexure 17 :: Total Lab & ETP Chemical Cost**
- **Annexure 18 :: Consumables, Store etc.**
- **Annexure 19 :: Packing Material Cost**
- **Annexure 20 :: Packing Material Cost Per Unit**

- **Annexure 21** :: **Employees Expenses**
- **Annexure 22** :: **Fuel Expenses**
- **Annexure 23** :: **Power/Electricity Expenses**
- **Annexure 24** :: **Royalty & Other Charges**
- **Annexure 25** :: **Repairs & Maintenance Expenses**
- **Annexure 26** :: **Other Manufacturing Expenses**
- **Annexure 27** :: **Administration Expenses**
- **Annexure 28** :: **Selling Expenses**

- **Annexure 29 :: Depreciation Charges – as per Books (Total)**
- **Annexure 30 :: Depreciation Charges – as per Books (P & M)**
- **Annexure 31 :: Depreciation Charges - as per IT Act WDV (Total)**
- **Annexure 32 :: Depreciation Charges - as per IT Act WDV (P & M)**
- **Annexure 33 :: Interest and Repayment - Term Loans**
- **Annexure 34 :: Tax on Profits**
- **Annexure 35 :: Projected Pay-Back Period and IRR**

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- *We help catalyze business growth by providing distinctive and profound market analysis*
- *We serve a wide array of customers , from individual entrepreneurs to Corporations and Foreign Investors*
- *We use authentic & reliable sources to ensure business precision*



Our Approach

Requirement collection

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

Report Compilation

Who do we serve?

- *Public-sector Companies*
- *Corporates*
- *Government Undertakings*
- *Individual Entrepreneurs*
- *NRI's*
- *Foreign Investors*
- *Non-profit Organizations, NBFC's*
- *Educational Institutions*
- *Embassies & Consulates*
- *Consultancies*
- *Industry / trade associations*



Sectors We Cover

- *Ayurvedic And Herbal Medicines, Herbal Cosmetics*
- *Alcoholic And Non Alcoholic Beverages, Drinks*
- *Adhesives, Industrial Adhesive, Sealants, Glues, Gum & Resin*
- *Activated Carbon & Activated Charcoal*
- *Aluminium And Aluminium Extrusion Profiles & Sections,*
- *Bio-fertilizers And Biotechnology*
- *Breakfast Snacks And Cereal Food*
- *Bicycle Tyres & Tubes, Bicycle Parts, Bicycle Assembling*



- *Bamboo And Cane Based Projects*
- *Building Materials And Construction Projects*
- *Biodegradable & Bioplastic Based Projects*
- *Chemicals (Organic And Inorganic)*
- *Confectionery, Bakery/Baking And Other Food*
- *Cereal Processing*
- *Coconut And Coconut Based Products*
- *Cold Storage For Fruits & Vegetables*
- *Coal & Coal Byproduct*

- *Copper & Copper Based Projects*
- *Dairy/Milk Processing*
- *Disinfectants, Pesticides, Insecticides, Mosquito Repellents,*
- *Electrical, Electronic And Computer based Projects*
- *Essential Oils, Oils & Fats And Allied*
- *Engineering Goods*
- *Fibre Glass & Float Glass*
- *Fast Moving Consumer Goods*
- *Food, Bakery, Agro Processing*

- *Fruits & Vegetables Processing*
- *Ferro Alloys Based Projects*
- *Fertilizers & Biofertilizers*
- *Ginger & Ginger Based Projects*
- *Herbs And Medicinal Cultivation And Jatropha
(Biofuel)*
- *Hotel & Hospitality Projects*
- *Hospital Based Projects*
- *Herbal Based Projects*
- *Inks, Stationery And Export Industries*

- *Infrastructure Projects*
- *Jute & Jute Based Products*
- *Leather And Leather Based Projects*
- *Leisure & Entertainment Based Projects*
- *Livestock Farming Of Birds & Animals*
- *Minerals And Minerals*
- *Maize Processing(Wet Milling) & Maize Based Projects*
- *Medical Plastics, Disposables Plastic Syringe, Blood Bags*
- *Organic Farming, Neem Products Etc.*

- *Paints, Pigments, Varnish & Lacquer*
- *Paper And Paper Board, Paper Recycling Projects*
- *Printing Inks*
- *Packaging Based Projects*
- *Perfumes, Cosmetics And Flavours*
- *Power Generation Based Projects & Renewable Energy Based Projects*
- *Pharmaceuticals And Drugs*
- *Plantations, Farming And Cultivations*
- *Plastic Film, Plastic Waste And Plastic Compounds*
- *Plastic, PVC, PET, HDPE, LDPE Etc.*

- *Potato And Potato Based Projects*
- *Printing And Packaging*
- *Real Estate, Leisure And Hospitality*
- *Rubber And Rubber Products*
- *Soaps And Detergents*
- *Stationary Products*
- *Spices And Snacks Food*
- *Steel & Steel Products*
- *Textile Auxiliary And Chemicals*

- *Township & Residential Complex*
- *Textiles And Readymade Garments*
- *Waste Management & Recycling*
- *Wood & Wood Products*
- *Water Industry(Packaged Drinking Water & Mineral Water)*
- *Wire & Cable*

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