The Complete Technology Book on Electroplating, Phosphating, Powder Coating and Metal Finishing (2nd Revised Edition)

Author:- NIIR Board of Consultants & Engineers
Format: paperback
Code: NI129
Pages: 504
Price: Rs.1675**US$** 150
Publisher: NIIR PROJECT CONSULTANCY SERVICES
Usually ships within **5** days

The Complete Technology Book on Electroplating, Phosphating, Powder Coating and Metal Finishing (2nd Revised Edition)

Electroplating is the process of depositing a metal coating onto the surface of an object through the use of an electrical current. Electroplating has evolved into a highly complex process requiring a high level of precision and expertise. Phosphating is the process of converting a steel surface to iron phosphate. This is mostly used as a pretreatment method in conjunction with another method of corrosion protection.

Powder coating is a finishing process in which a coating is applied electrostatically to a surface as a free-floating, dry powder before heat is used to finalize the coating. The powder can be made of any number of products: polyester, polyurethane, polyester-epoxy, straight epoxy, and acrylics. Metal finishing is the final step in the manufacturing process used to provide aesthetics and environmental protection.

The electroplating market mostly is driven by the electronics and electrical industry and followed by the automotive industry. The demand for electroplating is rising rapidly from the end user industries which propel the growth of the market. The increasing demand for durable metals and growing use of adaptable manufacturing processes for a wide range of applications in the automotive, aerospace & defense, and electrical & electronics industries are likely to boost the demand for electroplating. With the growing demand for high-performance automobile components having excellent resistance to corrosion to enhance the appearance of exterior automobile parts, such as emblems, door handles, hood ornaments, and wheel rims, is driving the demand for electroplating and likely to continue owing to the increasing automobiles production in Asia-Pacific and other emerging economies in the Middle East & Africa. The zinc-nickel electroplating is one of the popular methods of electroplating in the automotive industry.

The book cover various aspects related to different Electroplating, Phosphating, Powder Coating and Metal Finishing with their manufacturing process and also provides contact details of machinery suppliers with equipment photographs and plant layout.

A total guide to manufacturing and entrepreneurial success in one of today’s complete process

of electroplating to metal finishing in industry. This book is one-stop guide to one of the fastest growing electroplating, phosphating, powder coating and metal finishing industry, where opportunities abound for manufacturers, retailers, and entrepreneurs. The book serves up a feast of how-to information, from concept to purchasing equipment.

Contents

1. INTRODUCTION

2. CLEANING, PICKLING AND DIPPING
Routine Operations in Cleaning
Preliminary Cleaning and Degreasing
Solvent Cleaning
Aqueous Neutral Detergent Pre-Cleaners
Mersol Soak Cleaner
Solution Composition
Solution Preparation
Operating Conditions
Operating Procedure
Ultrasonic Cleaning
Alkaline Cleaners
Hot Alkaline Cleaners
Classification of Metal Cleaners
Electrolytic Cleaning
Equipment for Hot Alkaline Cleaners
Barrel Cleaning
Active Cleaner
Equipment
Solution Preparation
Solution Concentration and Operating Conditions
Cleaning of Zinc Base Alloy Die Castings
Barrel Cleaning
Solution Maintenance
Nuvax Cleaner
Equipment
Solution Preparation
Cleaning of Zinc Base Alloy Die Castings
Barrel Cleaning
Solution Concentration and Operating Conditions
Solution Maintenance
Cleaner
Equipment
Solution Preparation
Solution Concentration and Operating Conditions
Solution Maintenance
Multiklense
Equipment
Solution Preparation
Solution Maintenance
Cleaner No. 50
Solution Concentration and Operating Conditions
Solution Composition

Solution Preparation
Operating Conditions
Solution Maintenance
Anozyn
Equipment
Solution Composition
Solution Preparation
Operating Conditions
Solution Maintenance
10-15 Cleaner
Equipment
Solution Concentration and Operating Conditions
Solution Preparation
Solution Maintenance
10-55 Cleaner
Equipment
Solution Preparation
Operating Conditions
Solution Maintenance
Emphax
Equipment
Solution Composition
Operating Conditions
Solution Maintenance
Zonax Metal Cleaner
Solution Concentration and Operating Conditions
Anodax Metal Cleaner
Equipment
Solution Composition
Solution Preparation
Operating Conditions
Solution Maintenance
Alkaline Cleaners for Aluminium
For Cleaning without Etching the Surface
For Light Etch Cleaning of Aluminium
For Frosted Etch Finish
Minco Cleaner
Equipment
Solution Concentration and Operating Conditions
Solution Maintenance
Kelco Cleaner
Equipment
Solution Composition
Solution Preparation
Operating Conditions and Procedure
Solution Maintenance
Maintenance of Metal Cleaners
Additions of Metal Cleaner
Pickling and Dipping
Zonax Dry Acid Salt
Equipment
Solution Concentration and Operating Conditions
Solution Preparation

Sulphuric Acid Pickling
Equipment
Solution Composition
Operating Conditions
Solution Maintenance
Hydrochloric Acid Pickling
Solution Composition
Equipment
Operating Procedure
Skalene Pickle for Iron and Steel
Alkaline Deruster Salts
Additional Uses of Alkaline Deruster Salts
Equipment
Section a—Cyanide-free Solution for Rust Removal
Solution Composition
Solution Preparation
Operating Conditions
Section B.—Cyanide Solution for Rust and Scale Removal
Solution Composition
Operating Conditions
Process Sequence used in Sections A and B
Treatment of High Tensile Steels
Spray Suppression
Effluent Treatment
Solution Maintenance
Hydrofluoric Acid Pickling
Solution Composition
Equipment
Operating Procedure
Pickling of Magnesium Alloys
Pickling of Stainless Steel
Equipment
Operating Procedure
Pickle Aid
For Combined Pickling and Degreasing Solutions
As a Spray Suppressant
Equipment
Concentration
Operating Conditions
Solution Maintenance
Bright Dipping of Copper Alloys
Aqua Fortis Bright Dipping Acid
Solution Composition
Equipment
Bright Dipping Procedure
Chromic Acid Dip for Brass, Copper and its Alloys
Solution Composition
Equipment
Operating Procedure
Nitric Free Bright Dip C22924 for Copper and its Alloys
Solution Composition
Equipment
Operating Procedure

Solution Maintenance
Barrel Pickling
Second Stage or Surface Activation Cleaning
Cyanide Containing Cleaners
Klenewell
Equipment
Solution Composition
Solution Preparation
Operating Conditions
Operating Procedure
Solution Maintenance
Kleenax
Solution Concentration
Operating Conditions
Operating Procedure
Solution Maintenance
Non-Cyanide Cleaners
Activax Cleaner
10-55 Cleaner and Anodax Metal Cleaner
Anozyn
Alkaline Deruster
Emphax Cleaner
Acid Etching
Anodic Sulphuric Acid Etching of Iron and Steel
High Concentration Acid Etch for Steel
Equipment
Solution Composition
Solution Preparation
Operating Conditions
Operating Procedure
Solution Maintenance
Acid Etching of Steel and Iron before Heavy Deposition
Solution Composition
Solution Preparation
Operating Conditions
Solution Maintenance
Pre-Treatment Systems
Pre-Cleaning
Typical Cleaning Cycles
Nickel Plating of Mild Steel
General Method
Where a cyanide-free cleaning line is required
Use of a sulphuric acid etch to ensure maximum adhesion of deposit
D.—Energy Saving Cleaning Line
Cadmium and Zinc Plating of Mild Steel
Rack Plating
Notes
Barrel Plating
Notes
Plating on High Carbon Steel
Plating on Cast Iron and Malleable Castings
Plating on Stainless Steel
Nickel Chloride Strike for Stainless Steel

Nickel Sulphate Strike for Stainless Steel
Nickel Plating of Brass and Other Copper Alloys
General Method
Alternative method where a cyanide-free cleaning line is required
Nickel Plating of Copper
Nickel Plating of Leaded Brass
Copper and Nickel Plating on Zinc Base Alloy Die-Castings
Plating on Aluminium and its Alloys
The Bondal Process
Bondal Cleaner
Equipment
Solution Composition
Solution Preparation
Operating conditions
Solution Maintenance
Bondal Dip
Standard process sequence for electro-plating on Aluminium and its alloys
Modification to the standard process
Articles likely to carry over solution
Articles having unpolished areas
Deposition of metals other than nickel
Jigging
Dips and Rinses
Dilute Acid Dips
Cyanide Dips
Rinsing or Swilling
Rinse-Aid
Scouring

3. ELECTROLYTIC AND CHEMICAL PROCESSES FOR THE POLISHING OF METALS
Electro-polishing Solutions
Aluminium and Aluminium Alloys
Aluminium Electro-polishing Solution
Equipment
Solution Composition
Solution Preparation
Operating Conditions
Operating Procedure
Solution Maintenance
Brytal Process
Equipment
Operating Conditions
Desmutting
Stainless Steels
Canning Stainless Steel Electro-polishing Solution
Solution Composition
Equipment
Operating Conditions
Process Sequence
Solution Maintenance
Copper, Brass and Nickel Silver
Canning Non-Ferrous Electro-polishing Solution

Solution Composition
Equipment
Operating Conditions
Process Sequence
Solution Maintenance
Chemical Polishing of Aluminium
Typical Operating Conditions

4. COPPER PLATING
Properties of Copper
Decorative Applications
Functional Applications
Copper Plating Solutions
Rates of Deposition and Specification Requirements
Cathode Efficiency of Copper Plating Solutions
Rates of Deposition
Deposit Specifications
Equipment
Cyanide Solutions
Anodes
Cyanide Copper Plating Processes
Copper Strikes
PH Control
Cuprax High Efficiency Copper Solution
Anodes
Solution Composition
Operating Conditions
Solution Maintenance
Purification
Analytical Standards
Plating Procedure for Zinc based diecastings
Zonax Copper Solution
Anodes
Solution Composition
Operating Conditions
Maintenance of the Solutions
Low Cyanide Strike Solution for Cast Iron, Lead and Soldered Articles
Analytical Standards
Rochelle Copper Solution
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Acid Copper Plating Processes
Cuprasol Mk 2 Bright Levelling Acid Copper Plating Sollution
Preparation of the Cuprasol Mk. 2 Base Solution
Solution Composition
Operating Conditions
Solution Maintenance
Chloride Content
Visual Control of the Cuprasol Solution
Acid Copper Sulphate Solution
Solution Compositions

Operating Conditions
Solution Maintenance
Correction of Faults in Acid Copper Sulphate Solutions
Copper Pyrophosphate Plating Solution
Super Pyrobrite Copper Pyrophosphate Plating Solution
Solution Composition
Solution Maintenance
Plating Procedure
Neutral Copper Plating Solutions
Solution Composition
Operating Conditions
Plating Procedure
Immersion Plating Without Applied Current
On Steel
Solution Composition
On Brass
Solution for Barrel Copper Plating
Barrel Plating with Zonax Copper Solution
Solution Compositions
Operating Conditions
Maintenance of Solutions
Analytical Standards
Barrel Plating with Cuprax Copper Solution
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
BarRel Plating in Rochelle Copper Solution
Operating Conditions
Analytical Standards
Solutions for Heavy Copper Deposition
Cuprasol Mk. 2 Acid Copper Plating Process for Heavy Deposits
Preparation of the Acid Copper Base Solution
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Copper Fluoborate Solution
Equipment
Operating Conditions
Solution Maintenance
Purification
Analytical Standards
Super Pyrobrite Copper Pyrophosphate Plating Solution
Properties of the deposit
Operating Conditions
Purification
Cuprax Cyanide Copper Solution
Copper Plating Procedure
Cyanide Copper Solutions
Zinc Base Alloy Diecastings
Special Techniques used in Printing Application
Photogravure

Building Up Copper Cylinders
Skin Deposits
Cast Iron and Steel Cylinders
Aluminium Cylinders
Copper Electrotypes
Lithography
Stopping-Off
Methods for Stripping Copper Deposits
From Steel
Universal Stripping Salts for Steel
Alkaline Cyanide Solution
Immersion Process
Sulphuric Acid Etch
From Zinc Alloy Diecastings
5. ELECTROFORMING
Applications of Electroforming
Materials for Electroforming
Nickel Solution
The Watts Solution
The Sulphamate Solution
The Ni-spoed Solution
Zero-stress conditions for the Ni-speed process
Nickel/Cobalt Alloy Solutions
Copper Plating Solution
Throwing power
Sodium High-Sulphate Nickel Solution
Operating Techniques
Mandrels for Electroforms
Permanent Mandrels
Stainless steel
Mild Steel
Copper and Brass
Electroformed Nickel
Rigid Plastic
Collapsible Plastics
Expendable Mandrels
Aluminium
Zinc alloys
Fusible alloys
Plastics
Wax
Other Materials
Post Plating Treatment
Electroforming in Gramophone Record Production
Printing Application
Printing Methods
Electroplating Techniques Special to the Printing Industry
Electroplating Solutions used in the Printing Industry

6. BRASS PLATING
Decorative Brass Plating
Zonax Brass Solution for Decorative and General Plating
Equipment

Solution Composition
Operating Conditions
Solution Maintenance
Colour Consistency and Control
Analytical Standards
Plating Procedure
Brass Plating upon Cast Iron and Lead
Barrel Brass Plating
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Brass Plating for Rubber Adhesion
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Plating Procedure
Correction of Faults in Zonax Brass Plating Solutions.

7. SILVER PLATING
Cyanides Systems
High-Speed Selective Plating
Non-cyanide System
Iodide Solutions
Trimetaphosphate Solution
Thiosulfate Solutions
Succinimide Solutions
Organic Solvent Solutions
Summary
Tin, Lead, and Tin-Lead Plating
Additives
Tin, Lead, and Tin-Lead Plating Baths
Tin Barrel, Still, and High-Speed Baths
Lead Barrel and Still Baths
60 Tin/40 Lead Solder Barrel, Still, and High-Speed Baths
90 Tin/10 Lead Barrel, Still, and High-Speed Baths
93 Lead/7 Tin Barrel and Still Baths
10 Tin/88 Lead/2 Copper Ternary Alloy Barrel and Still Baths
Fluoborate Plating
Methane-Sulfonic-Acid-Based Plating
Tin Plating from Stannate Baths
Anodes in Stannate Baths
Operation of Stannate Baths
Reflowing Tin Deposits
Determination of Acid Neutralization Value

8. GOLD PLATING (GILDING)
Properties of Gold
History of Gold Plating
Applications of Gold Plating
Rates of Deposition and Specification Requirements
Specification Requirements

Undercoats
Corrosion Resistance
Carat Value
Equipment for Gold Plating
Anodes
Effluent Treatment
Gold Deposits and Solutions
Ultra-pure Gold Deposits
Low-Alloy Gold Deposits
High-Alloy Decorative Golds
General Gold Plating Procedure
Plated Undercoats
Barrier Layers
Strike solutions
Post plating treatment
Traditional Gold Plating Practice (Gilding)
Gilding Articles Inside
Immersion Gilding
Stripping Gold Deposits
Electrolytic Process for Stripping Flux and Oxide from Gold

9. CADMIUM PLATING
Properties of Cadmium
Applications and Corrosion Resistance
Cadmium Deposits on Non Ferrous Metals
Passivation Processes
Specification Requirements and Rates of Deposition
Rates of Deposition and Plating Times
Determination of Deposits Thikness
Strip and re-weigh method for average thickness of cadmium deposits
Test for Porosity of Deposit
Cadmium Plating Equipment
Cadmium Plating Solutions
Cadmium Plating Salts
Zonax Candmium Plating Solution
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Kadax Cadmium Solution for Barrel Plating
Solution Composition
Operating Conditions.
Solution Maintenance
Analytical Standards
Kadamax High Speed Bright Cadmium Plating Solution
Equipment
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Cadmium Plating Procedure
Cleaning and Preparation of Work
Removal of Embrittlement

Treatment after Cadmium Plating
Kadip Bright Dip
Equipment
Solution Composition
Operating Conditions
Solution Maintenance
Chromic Acid Dip
Equipment
Solution Composition
Operating Conditions
Stripping Cadmium Deposits
Using Ammonium Nitrate Solution
Using Ammoniacal Persulphate Solution
Using Hydrochloric Acid

10. ZINC PLATING
Properties of Zinc
Applications Corrosion Resistance
Specification Requirements and Rates of Deposition
Thickness Requirements for Zinc Deposits
Determination of Thickness of Zinc Deposit
Rate of Deposition
Zinc Plating Equipment
Cyanide solutions
Zinc Plating Solution
Cyanide Zinc Plating Solutions
Base Solution Composition
Unizin Universal Zinc Brightner
Anodes
Solution Composition
Operating Conditions
Solution Maintenance
Analytical Standards
Purification
Hylite 80 Bright Zinc Solutions
Solution Composition
Operating Conditions
Solution Maintenance
Zinc Oxide
Zinc Cyanide
Purification
Analytical Standards
Treatment after Plating
Cyanide Zinc Plating Procedure
Cleaning and Preparation of Work
Treatment After Zinc Plating
Bright Zinc Plating
Dilute Nitric Acid Bright Dip
Dull Zinc Plating
Correction of Faults In Cyanide Zinc Plating Solutions
Alkaline Non-Cyanide Zinc Solutions
Envirozin 2 Bright Alkaline Non-Cyanide Solution
Solution Composition: Rack

Solution Composition: Barrel
Solution Preparation
Operating Conditions
Rate of Deposition
Solution Maintenance
Analytical Standards
Purification
Alkaline Non-Cyanide Plating Procedure
Acid Zinc Plating Solutions
Zincalux Bright Acid Zinc Solution
Solution Composition
Operating Conditions
Rate of Deposition
Solution Maintenance
Purification
Analytical Standards
Treatment after Plating
Chloride Zinc Plating Solution
Equipment
Solution Composition
Operating Conditions
Rate of Deposition
Solution Maintenance
Treatment of Work after Plating
Acid Zinc Plating Procedure
Stopping-off
Stripping Zinc Deposits
Immersion Process
Correction of Faults in Acid Chloride Zinc Plating Solutions
Electrolytic Process

11. THE PLATING OF PLASTICS AND OTHER NON-METALLIC MATERIALS
Plating-on-Plastics
Applications and Advantages
Properties of Plated Plastics
Moulding for Plating on Plastics
Physical faults and their effects
Faults caused by variations in machine parameters
Simplas Process
Equipment
Swilling or Rinsing
Cleaning
Pre-etch
Hot Alkaline Cleaner
Etching
Etch Composition for ABS Type Polymers
Operating Conditions
Solution Maintenance
Analytical Standards
Etch Composition: For PP co-polymers
†Alternatives:
Operating Conditions

Solution Maintenance
Analytical Standards
Neutralising
Solution Composition
Solution Maintenance
Simplas Neutraliser
Solution Composition
Operating Conditions
Activation
Solution Composition
Operating Conditions
Solution Maintenance
Acceleration
Solution Composition
Operating Conditions
Niplas Electroless Nickel
Equipment
Solution Composition
Operating Conditions
Solution Maintenance
Solution Life
Analytical Standards
Electroplating on Electroless Nickel Plated Surfaces
Plating Jigs
Barrel Plating of Plastics
Barrel Plating Technique
Silvering
Spray Silvering
Solution Composition
Operating Procedure
Sensitiser
Immersion Silvering
Operating Procedure
Electroplating on Silvered Surfaces
Jigging
Special Techniques Used In Printing Applications
Metallising with Copper Bronze Powder
Preparation
Metallising
Electroplating
Polishing with Powered Graphite
Vacuum Evaporation and Electrical Sputtering

12. PHOSPHATING PROCESSES
Applications
Pre-treatment Prior to Organic Coatings
Protection against Corrosion
Anti-wear Coatings
Phosphating as a Production Aid
Types of Phosphate Coating
Iron Phosphate
Zinc Phosphate
Manganese Phosphate

Lead Phosphate
Surfaces To Which Phosphate Coatings May Be Applied
Preparation of Surfaces for Phosphating
Specifications
British Standard 1389: 1973 Phosphate Treatment of Iron and Steel
DEF STAN 03-11/1 Phosphate Treatment of Iron and Steel
Treatment of High Tensile Steels
Equipment for Phosphating
Immersion Phosphating Plant
Spray PhospHating Equipment
Tanks
Solution Heating
Fume Extraction
Sludge Removal
Phosphating Processes
Key to Table
Light Weight Iron Phosphate Processes
Canphos 301
Canphos 304
Equipment
Solution Composition and Operating Conditions
Preparation of the 300 Range Phosphating Solutions
Operating Sequences
Solution Maintenance
Heavy Zinc Phosphate Processes
Equipment
Canphos
Canphos
Solution Composition and Operating Conditions
Preparation of the 400 Range of Phosphating Solutions
Solution Maintenance
Visual Control
Calcium Modified Zinc Phosphate Processes
Canphos
Canphos
Canphos
Equipment
Solution Preparation
Operating Sequences
Solution Maintenance
Addition Rates
Light Weight Zinc Phosphate Processes
Canphos
Canphos
Solution Composition and Operating Conditions
Solution Preparation
Solution Maintenance
Addition Rates
ManganEsE Phosphate Processes
Canphos
Equipment
Solution Composition
Operating Conditions

Solution Preparation
Operating Sequences
Solution Maintenance
Phosphating Process Sequences
Pre-Treatment Processes
Alkaline Cleaners
Equipment
Maintenance
Defoaming
Pickling and Derusting
Conditioning
Post Phosphating Treatments
Sealing Treatment
Chromic Rinse Solution (DEF STAN 03-11/1)
Equipment
Oils and Lubricants
Black Finishes
Sealphos 721 Black Stain
Sealphos 708 Matt Black
Aluminium Pre-Treatment
Alibond 802
Equipment
Solution Composition
Operating Conditions
Operating Sequence
Solution Maintenance
Solution Analysis
General Phosphating Information
Sludge Removal
Control of Solution Composition and Chemical Balance
Effluent Treatment

13. ELECTROPAINTING OF ALUMINIUM
The Process
Principles of Electropainting
Process Details
Jigging
Pre-treatment
Paint Application
4 Rinsing and Ultrafiltration
Stoving
Costs
Conclusion
Developments
The Future

14. POWDER COATING OF ALUMINIUM
Method of Application
Equipment
Electrostatic Generator and Gun
Powder Recovery
Stoving
Powder Coating Production

Colour
Thermoplastic Powder Coatings
Polyethylene (Polythene)
PVC
Nylon
Factors Affecting Use of Thermo-plastic Coatings

15. BRIGHT NICKEL ELECTROPLATING
Brighteners
Levellers
Stress Relievers
Wetting Agents
Properties of electro-deposited bright nickel
Brightness
Reflectivity
Roughness and Pitting
Porosity
Corrosion Resistance
Chromability
Adhesion and Surface Preparation
Ductility
Internal Stress
Hardness
Effect of hydrogen absorption
Properties of Bright Nickel Baths
Stability
Cathode and anode efficiencies
Operating range
Simplicity of operation
Throwing power
The incorporation and effect of organic addition agents
Mechanisms of incorporation of organic compounds in electro-deposits
Cathodic Reduction
Interaction of organic additions
Levelling
Effect of additives on structure
Grain size, orientation and brightness of electro-deposits
Effect of additions on stress, ductility and hardness
Stress first decreases, then rises as concentration is increased.

16. BIS SPECIFICATIONS

17. PHOTOGRAPHS OF MACHINERY WITH SUPPLIER’S CONTACT DETAILS
Electroplating Rectifiers
Electroplating Process Tank
Rotating Barrel
Auto Stat
Automatic Voltage Controller
Automatic Powder Coating Plant
ED Coating Plant / CED Coating Plant
Control panels
Advance Controller
Painting Booth

Metal Finishing Machines
Rotary Dryers
Shot Blasting
Vibratory Finishing Machines
Polyamide (Glide) Coating
Zinc Plating Plants
Material Handling System
Flocking Units
Electric Oven
Industrial Oven
Plating Barrel
Servo Stabilizer

18. PLANT LAYOUT AND PROCESS FLOW SHEETS

About NIIR

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

NIIR PROJECT CONSULTANCY SERVICES, 106-E, Kamla Nagar, New Delhi-110007, India.
Email: npcs.india@gmail.com **Website**: NIIR.org

Fri, 21 Mar 2025 00:15:06 +0000