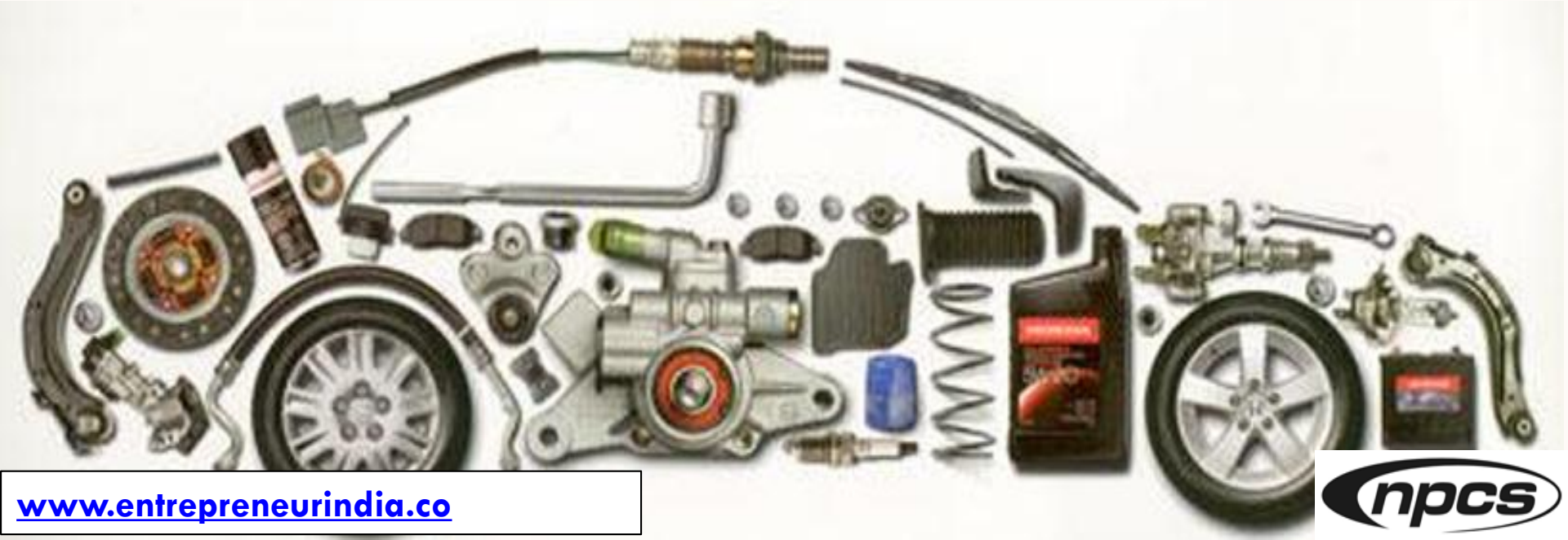
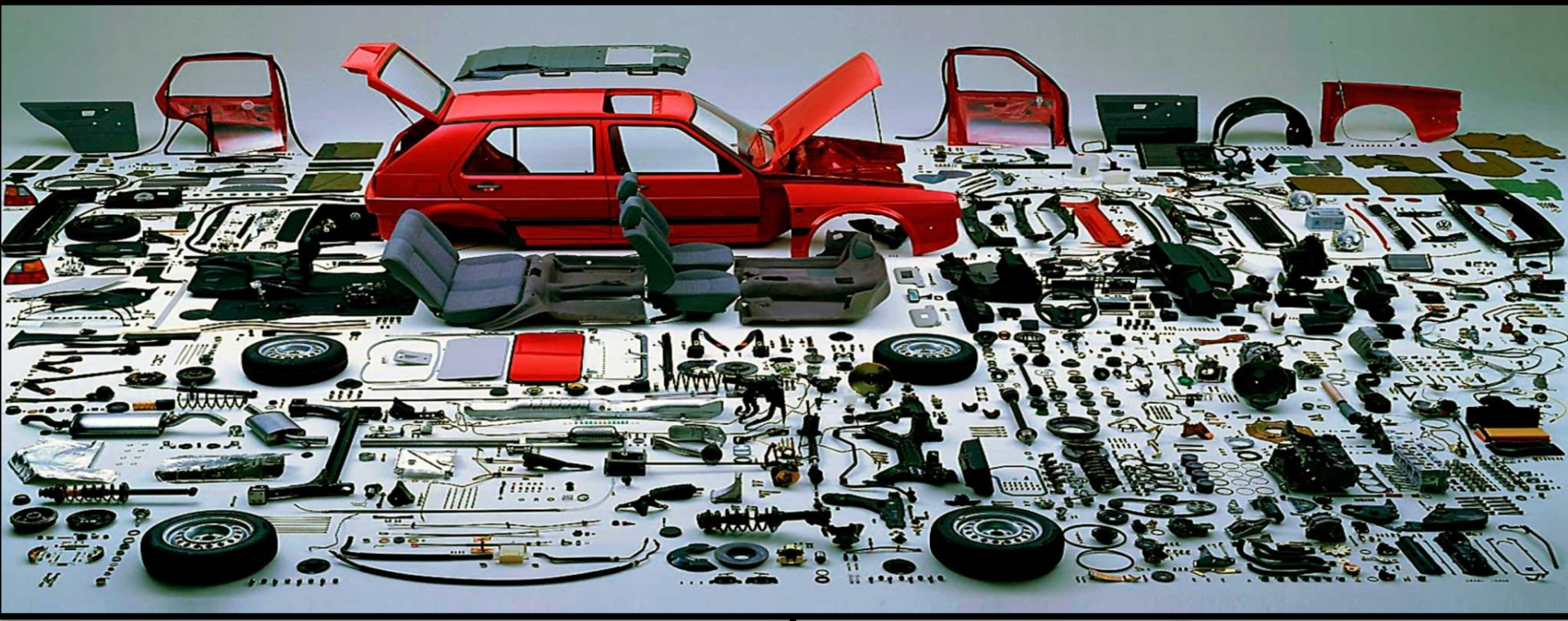
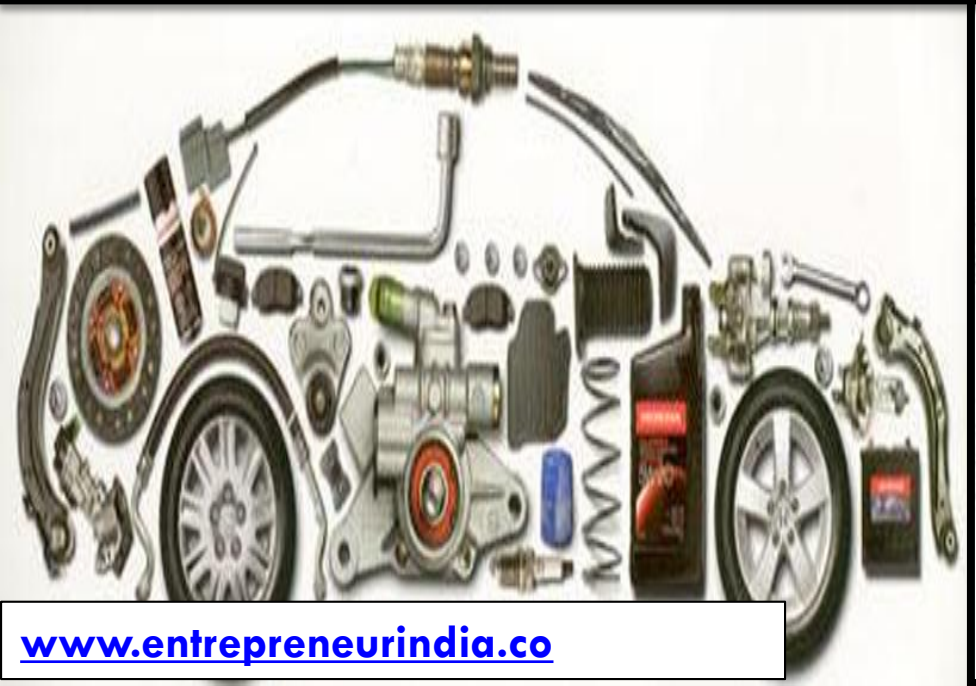
Production of Automobile Components.

Auto Parts Manufacturing Industry.

Manufacturing of Engine Parts, Piston, Pin, Piston Ring, Valve, Control Cable, Engine Mounting, Auto Lock, Disc Brake, Drum, Gear, Leaf Spring, Shock Absorber, Silencer, Chain, Cylinder Block, Chassis, Battery, Tyre & Flaps







www.entrepreneurindia.co

npcs

Introduction

The auto-components industry accounts for almost seven per cent of India's Gross Domestic Product (GDP) and employs as many as 25 million people, both directly and indirectly. The Indian auto-components industry can be broadly classified into the organised and unorganised sectors. The Indian auto-components industry has experienced healthy growth over the last few years. Some of the factors attributable to this include: a buoyant end-user market, improved consumer sentiment and return of adequate liquidity in the financial system.

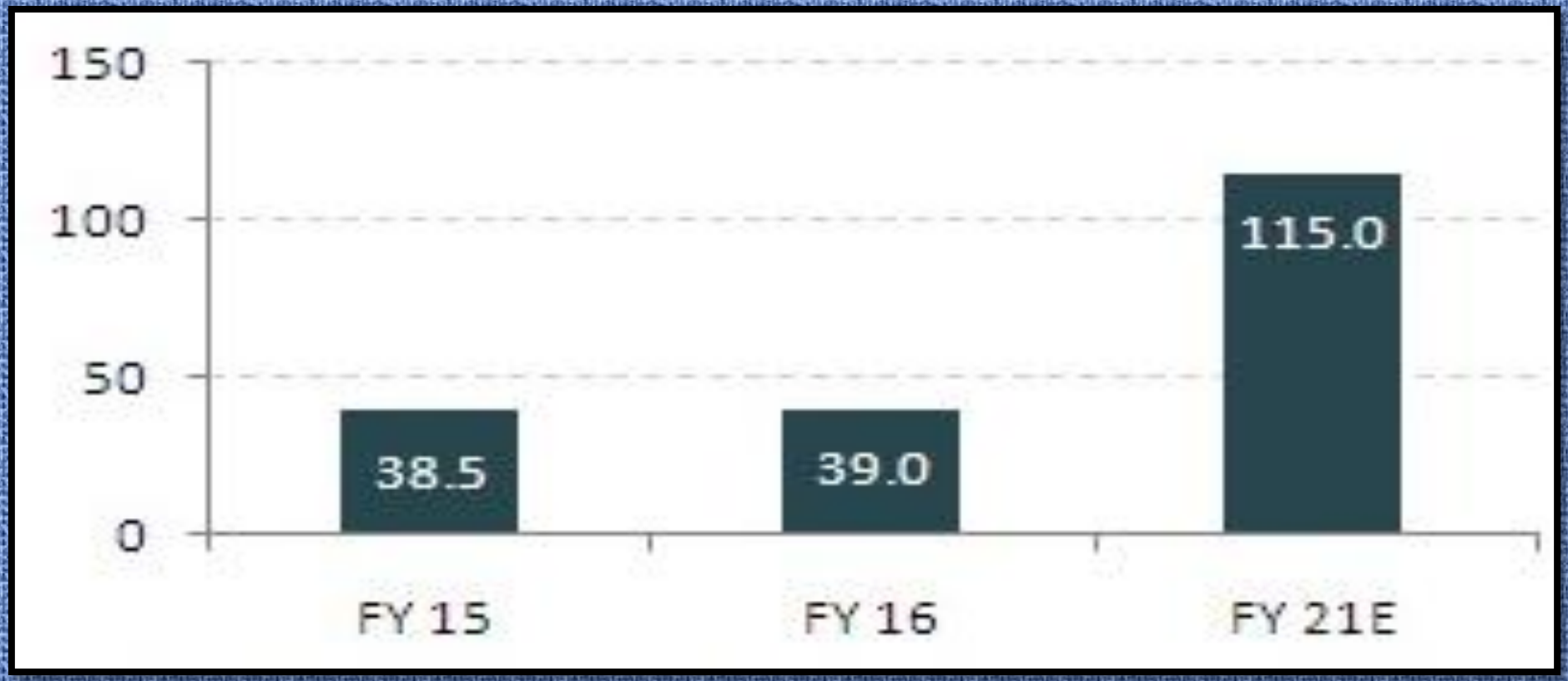
Fastest growing major economy in the world with GDP growth rate of above 7%.A growing working population and an expanding middle-class are expected to remain key demand drivers. The growth of global Original Equipment Manufacturers (OEMs) sourcing from India and the increased indigenization of global OEMs is turning the country into a preferred designing and manufacturing base.

The auto components industry accounts for almost seven per cent of India's gross domestic product (GDP) and employs as many as 19 million people, both directly and indirectly.

A stable government framework, increased purchasing power, large domestic market, and an ever increasing development in infrastructure. India has been an upcoming hub for the auto components industry. The rapidly growing end user market, redesigned consumer sentiment and a clear liquidity in the financial system are said to be the drivers for this.

The Indian auto components industry has been experiencing a healthy growth over the last few decades. Some of the factors attributable to this include: a buoyant end-user market, improved consumer sentiment and return of adequate liquidity in the financial system.

Domestic Market Potential (US$ Billion)



Indian Automobile industry is flourishing its twigs worldwide and is close to a fruition of triumph in the global competition. The spine of the industry is its suppliers of auto components and accessories which is also an exclusive industrial segment. Today auto industry is enjoying the benefits while the auto component sector is in its gloom despite of hard efforts of survival. The domestic automobile component industry is expected to grow by 9-11% during FY18 driven by robust growth in domestic passenger vehicles (PV) and two-wheelers segment as well as stable replacement demand. The revenue growth will be also be supported by steady increase in commodity prices and consequent impact on realization.

The growth in the auto component industry will be relatively higher than the underlying growth in the automotive industry in the medium to long term, due to increasing localization by original equipment manufacturers (OEM) s, higher component content per vehicle and rising exports from India.

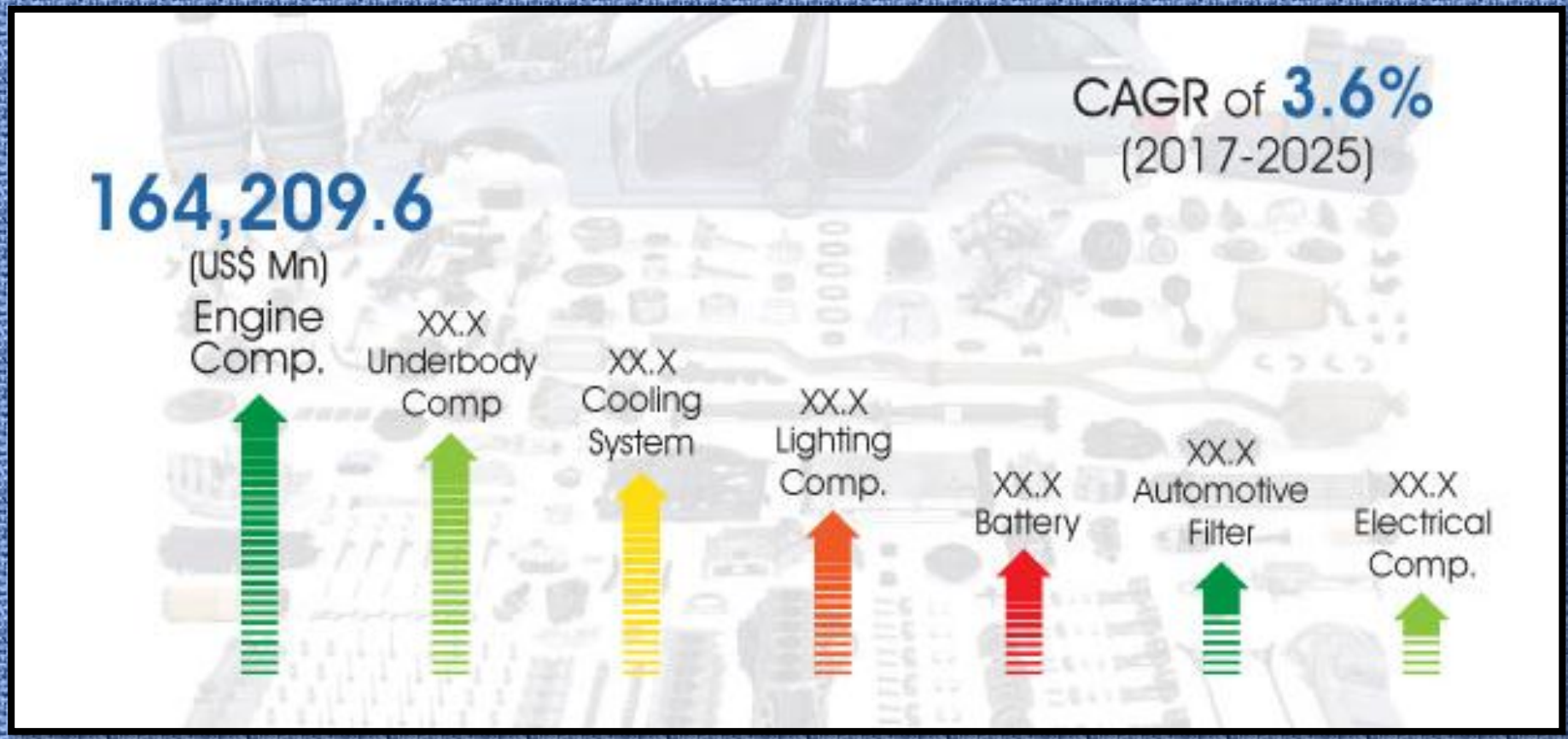
The Automobile market is fast evolving into a competitive and increasingly sophisticated arena. The needs of the customers are being met with greater efficiency and customization. Almost all the major Global players in the Automobile and auto-components industry are setting up manufacturing plants in India to meet the domestic as well as global demand.

The Indian auto-components industry has been experiencing a healthy growth over the last few decades. Some of the factors attributable to this include: a buoyant end-user market, improved consumer sentiment and return of adequate liquidity in the financial system.

Over the last decade, the automotive components industry has scaled three times to US$ 39 billion in 2015-16 while exports have grown ever faster to US$10.8 billion. The Indian auto-components industry is expected to register a turnover of US$ 100 billion by 2020 backed by strong exports ranging between US$ 80- US$ 100 billion by 2026.

The global auto component market experienced moderate growth over the last five years and is expected to continue its growth momentum reaching approximately $730.8 billion in 2017 with a CAGR of 3.2% over next five years (2012-2017).

Global Auto Parts Manufacturing Market Value, By Component Type, 2017 (US$ Mn)



The global auto component market is a highly diversified sector that involves engine and auto component manufacturers, including aftermarket parts manufacturers, suppliers, dealers, and retailers. The manufacturing of auto components is gradually shifting toward Asian countries such as China, India, and others because of higher market potential and the low-cost manufacturing options available. In China and India, OEMs are focused on helping the suppliers improve and grow their businesses. Strong growth in the industry has attracted a pool of companies, including major foreign companies, to operate in China's auto component market. The growing importance of electronics and functional integration of green components and sustainable products will drive growth in the industry.

Component Industry's Performance in FY 2015-16

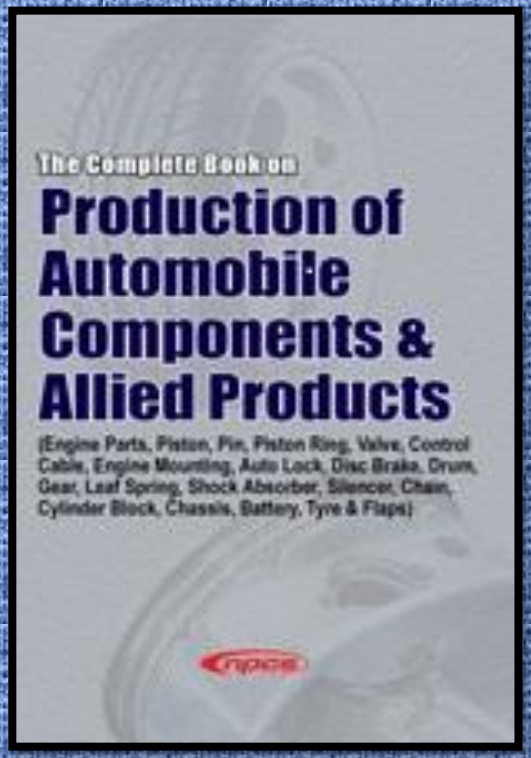
Indian Auto Component industry: 2015-2016	
Turnover	Rs 255,600 crore / US$ 39 billion
Contribution to GDP	2.30%
Foreign Exchange Earnings/ Exports	Rs 70,900 crore/ US$ 10.81 billion
Share of India's Exports	4.00%
Domestic Aftermarket	Rs 44 crore/ US$ 6.8 billion
Investments	US$ 0.44-0.66 billion
Direct Employment	1.5 million

Exports in 2016-17 were at 73,128 crore as against 70,916 crore in the previous year, up 3.1%. Imports decreased by 0.1% to 90,662 crore last fiscal as against 90,571 in 2015-16.

Growing demand for vehicles in the country can be attributed to increasing population base and rising purchasing power of the people. Moreover, India is a prominent exporter of automobiles to various countries across the globe. As a result of rising demand for automobiles from domestic as well as international markets, demand for automotive components in India is expected to grow during the forecast period.

The Complete Book on Production of Automobile Components & Allied Products

(Engine Parts, Piston, Pin, Piston Ring, Valve, Control Cable, Engine Mounting, Auto Lock, Disc Brake, Drum, Gear, Leaf Spring, Shock Absorber, Silencer, Chain, Cylinder Block, Chassis, Battery, Tyre & Flaps)



https://goo.gl/PYBmj5

www.entrepreneurindia.co

npcs

About the Book

Author:	B.P. Bhardwaj
ISBN:	9789381039335
Book Code:	NI262
Pages:	536
Indian Price:	2,275/-
US$:	200-
Publisher:	Niir Project Consultancy Services

The rapid urbanization, coupled with an overwhelming growth in the middle class population, has created a market that is extremely conducive for the automobile industry to flourish. It is inferred from the demand, the investment in the automobile industry is estimated at over hundredths of billions in the vehicles and auto components segment. The auto market is thought to be made primarily of automakers, but auto parts makes up another lucrative sector of the market. The major areas of auto parts manufacturing are: Original Equipment Manufacturers (OEMs) - The big auto manufacturers do produce some of their own parts, but they can't produce every part and component that goes into a new vehicle; Replacement Parts Production and Distribution - These are the parts that are replaced after the purchase of a vehicle.

The book provides a characterization of vehicles, including structure, load, fuel used, requirement of various components, fabrication and so on. It will prove to be a layman's guide and is highly recommended to entrepreneurs, existing units who wants to diversify in production of automobile and allied products, research centers, professionals and libraries, as it contains information related to manufacturing of integral parts of an automobile and practices followed in the finishing of the products.

Table of Contents

Engine or Power Plant
Transmission System (Clutch and Gear Box)
Clutch
Final Drive
Braking System
Gear Box
Steering System
Front Axle
Suspension System

2. MATERIALS USED IN AUTOMOBILES

Introduction
Requirements of the Materials in Automotive
Lightweight
Cost
Safety, Crashworthiness

Crashworthiness Tests
Frontal Offset Crash Test Details
Side Impact Crash Testing/Ratings Criteria
Rollover Evaluations
Recycling and Life Cycle Considerations
Current Materials in Use and Their Future
Metals
Steel
New Grades of Steel and Alloys
a. Duplex Austenitic-ferritic Stainless Steel
b. Austenitic Stainless Steel
Advances in Manufacturing and Joining Technique
Aluminium
Aluminium Alloys for Body-in-white Applications
Aluminium Alloys for Brazing Sheet Applications

Magnesium
Mechanical Properties of Mg Alloys
Technical Problems and Solutions for Use of Magnesium Alloys in Automotive Industry
Plastics and Composites
Fabrication
Cost
Manufacturability
Design Data/Test Methodologies
Joining and Inspection
Renewable Materials, Barriers and Incentives in Use of Biocomposites
Thermoplastic/Thermoset Polymers
Composite Processing

3. MATERIALS AND TECHNOLOGY FOR AUTOMOBILES

Introduction

Steel Sheets

High Strength Steel Sheets

New Precipitation-hardened High Strength Hot Rolled Steel Sheet "NANO-Hiten"

New High Strength Hot Rolled Steel Sheet for Strain Aging Use "BHT"

High Strength Galvannealed Steel Sheets

(1) SFG Hiten

(2) Low Carbon Equivalent Type Hiten

High Formability Ultra-high Strength Cold Rolled steel Sheets

High Carbon Steel Sheets with High Formability

Coated Steel Sheets

Coated Steel Sheets with High Lubrication for Automotive Use

(1) Development of Inorganic Type High Lubrication Galvannealed Steel Sheets
(2) Organic Solid Lubricant Technology
(3) Summary
Hot Dip Galvanized Steel Sheet with Excellent Surface Appearance
(1) Improvement of Surface Appearance
(2) Surface Roughness Transfer Technologies and Frictional Properties
(3) Summary
Evaluation and Application Technologies for Automotive Steel Materials
Tailor Welded Blanks
Application Technologies of Hydroforming
Application Technologies for High Strength Steel Sheets in PressForming

Application of CAD-CAE Systems
High Frequency Electrical Materials for Cars of the Future “Super-Core”
Features of JFE Steel’s Super-Core
JNEX
JNHF
Automotive Applications
Stationary Equipment
Rotating Machinery
Other Electrical Applications
Summary
Ferritic Stainless Steels for Automobile Exhaust System Parts
Steels for Mufflers
Steels for Exhaust Manifolds
Steels for Catalytic Converter Substrate

Steel Tubes
HISTORY Tube
High Formability ERW Tubes for Automotive Use
Stainless Steel Tubes for High Temperature Service in Automotive Exhaust Systems
Bar Products for Automotive Use
Bearing Steels “NKJ”, “KUJ7”
Graphite Steel “HFC1 Steel”
BN Free Cutting Steel “CCBN Steel”
High Surface Durable Carburized Dual-phase Steel
High Toughness Microalloyed Steel for Hot Forging
Warm Compaction Method with Die Wall Lubrication for Iron Powder Metallurgy
Lightweight Composite Material for Automotive Headliner “KP Sheet”

4. USE OF ALUMINIUM IN AUTOMOBILES

Introduction

Aluminium in Automobile

Advantages

Disadvantages

Space Frame Technology

Sand Casting

Al-Si Alloys

Grain Refinement

Modification

Extrusion

Al-Si-Mg Alloys

Moment of Inertia

Heat Treatment

Solutionizing

Aging
Annealing
Exposed Loads on Chassis
Static Loads
Dynamic Loads
Fatigue
Welding
Stress Corrosion Cracking
Sand Casting
Spiral Fluidity Test
Mechanical Properties of A356.0 and Silafont - 36
Mechanical Properties Change with Heat Treatment

5. USE OF PLASTICS IN AUTOMOBILES

Technology Activities and Priorities

6. MANUFACTURING OF ENGINE PARTS

1. Manufacturing of Auto Piston

Introduction

Market Potential

Basis and Presumptions

Implementation Schedule

Preparation of Project Report

Technical Aspects

Process of Manufacture

Quality Control and Standards

Production Capacity

Pollution Control

2. Manufacturing of Pins for Automobiles

Introduction

Market Potential
Production Target (per Annum)
Basic & Presumptions
Implementation Schedule
Technical Aspects

3. Manufacturing of Piston Ring

Introduction
Market Potential
Basis and Presumptions
Implementation Schedule
Technical Aspects
Material
Manufacturing Process
Piston Ring Coatings

Quality Control

Pollution Control

Power Consumption

4. Manufacturing of Lead Storage Battery

Introduction

Market Potential

Basis & Presumptions

Implementation Schedule

Technical Aspects

I. Process of Manufacture

Process Flow Chart

II. Quality Control & Standard

III. Production Capacity (Per Annum)

IV. Motive Power Required

V. Pollution Control Requirements

VI. Energy Conservation

Lighting

Additional Information

5. Manufacturing of Valve and Valve Seat

Introduction

Methodology

Material Selection

Exhaust Valve

Criteria of Exhaust Valve

Chemical Analysis

Mechanical Properties

Physical Properties

Exhaust Valve Seat Insert

Criteria for Material Selection of Engine Valve Seat Insert

Extrusion
Process Selection
Exhaust Valve
Flow Processes
Steps
Forging
Heat Treatment
Advantages
Steps
Stellite Deposition
Advantages
Head Diameter Facing
Groove CNC Turning
Tip Hardening
Advantages

Neck Profile Turning
Seat Grinding
Surface Finishing
Advantages
Alternative Process
Alternative Process
Exhaust Valve Seat Insert
Flow Processes
Investment Casting
Steps
Surface Finishing
Steps
Wear Resistance Treatment
Ferritic Nitrocarborizing

Advantage
Steps

6. Manufacturing of Automobile Silencer

Introduction
Market Potential
Basis and Presumptions
Implementation Schedule
Technical Aspects
Process of Manufacture
Quality Control and Standards
Pollution Control
Energy Conservation

7. Manufacturing of Automobile Chain

Introduction

Market Potential

Basis and Presumptions

Implementation Schedule

Technical Aspects

Process of Manufacture

Quality Control and Standards

Production Capacity (per annum)

Pollution Control

Energy Conservation

8. Manufacturing of Cylinder Block

Introduction

Description of the Product

What is an Engine Block?

Functional Requirements of a Cylinder Block

Required Material Properties

Metals Used in the Manufacture of the Cylinder Blocks

Manufacturing the Cylinder Block

Mechanical Properties of the Alloys

Gray Cast Iron Alloys

Compacted Graphite Cast Iron

Aluminium Alloys

Magnesium Alloys

Casting Processes

Green Sand Molding

Lost Foam Casting
Market Potential
Basis and Presumption
Implementation Schedule
Technical Aspect
Manufacturing Process
Alternate Technology
Production Targets
Quality Control and Standards
Utilities
Energy Conservation
Pollution Control

9. Manufacturing of Cylinder Linear

Introduction

Production Capacity : 45000 Per Annum

Market & Demand Aspects

Manufacturing Process & Source of Technology

Basis of Project Preparation and Technical Aspects

Presumption

Implementation Schedule

Quality Control & Standards

Pollution Control

10. Manufacturing of Automobile Control Cable

Introduction

Market Potential

Basis and Presumptions

Technical Aspects
Process of Manufacture
Implementation Schedule
Process Flow Chart
Quality Control and Standards
Motive Power
Pollution Control

11. Manufacturing of Engine Mounting PAD

Introduction
Market Potential
Basis and Presumptions
Implementation Schedule
Technical Aspects
Process of Manufacture

12. Manufacturing of Auto Locks

Project Profile on Casting for Auto Locks

Part - II

Introduction

Market Potential

Basis & Presumptions

Implementation Schedule

Technical Aspects

Process of Manufacture

Quality Control and Standards

Pollution Control

Energy Conservation

7. MANUFACTURING OF AUTOMOBILE CHASSIS

1. Manufacturing of automobile Body

Automobile Body Manufacturing Processe

BIW Manufacturing Processes
Blanking and Stamping Processes
Subassembly Processes and Major subassemblies of a BIW
Body Framing Process
Door Manufacturing Processes
Rolling and Blanking Processes
Stamping Process
Door Hanging and Fitting Process
Door Hanging Process
Door Fitting
Market Potential
Basis and Presumptions
Implementation Schedule
Technical Aspects
Process of Manufacture

Pollution Control

Energy Conservation

2. Manufacturing of Disc Brake

Introduction

Grey Cast Iron as Material for Production of Disc Brake

Aluminium as the Material for the Holder

Manufacturing Process of DISC Brake and Holder

Cold Chamber

Hot Chamber

Heat Treatment for Holder

i. Cooling Rate

ii. Shrinkage

a. Volumetric Shrinkage

b. Linear Shrinkage

Finishing Process

Driving the Lathe
Holding and Rotating the Work
Holding, Moving and Guiding the Cutting Tool
For Disc Brake
For the Holder
Methodology
Summary

3. Manufacturing of Brake Drum
Introduction
Market Potential
Basis and Presumptions
Implementation Schedule
Technical Aspects
Process of Manufacture

Quality Control and Standards
Production Capacity (per annum)
Pollution Control

4. Manufacturing of Gear Blank
Introduction
Market and Demand Aspects
Raw Materials
Manufacturing Process
The Process of Flow Chart

5. Manufacturing of Gear
Introduction
Materials Used in Gear Manufacturing Process

Classification of Gears

1. Milling Process
2. Gear Planning Process
3. Gear Shapers
4. Gear Hobbing
5. Bevel Gear Generating

Gear Manufacture by Casting Method

Methods of Forming Gears

Roll Forming

Stamping

Powder Metallurgy

Extrusion

Gear Generating Process

Gear Hobbing

Type of Hobbing

Arial Hobbing
Radial Hobbing
Tangential Hobbing
Gear Shaping (The Fellows Process)
Rack - Type Cutter Generating Process
Pinion Type Cutter Generating Process
Advantages
Disadvantages
Gear Cutting by Milling
Disc Type Cutter
End Mill Cutter
Advantage
Used
Bevel Gear Generating
Straight Bevel - Gear Generator

Spiral Bevel - Gear Generator

Gleason Method

Templet Gear Cutting Process

Gear Finishing Process

Gear Shaving

Gear Grindings

Disadvantage

Gear Lopping

Shot Blasting

Phosphate Coating

Gear Planning

The Sunderland Process

The Maag Process

Principal of Gear Planning

6. Manufacturing of Gear Box Housing

Introduction

Market Potential

Basis & Presumptions

Implementation Schedule

Technical Aspects

a. Production Details and Process of Manufacturing

b. Quality Control & Standards

Process Flow Graphic Representation

Pollution Control

Energy Conservation

7. Manufacturing Process of Leaf Spring

Introduction

History of Leaf Spring

Construction of Leaf Spring
Standard Size of Automobile Suspension Spring
Material Used in Leaf Spring
Basic Characteristics of Spring Materials
Mechanical Properties of Leaf Spring
Manufacturing of Leaf Spring
Shearing
Main Eye Rolling
Tapering
Drilling
Hardening
Tempering
Hardness Test
Shot Peening
Market Potential

Implementation Schedule
Technical Aspects
A. Production Details and Process of Manufacture
B. Quality Specification
Process Flow Chart
Pollution Control Measures
Energy Conservation

8. Manufacturing Process of Shock Absorbers
Historical Development of Shock Absorbers
Adoption of Hydraulic Telescopic Dampers
Non-pressurised Twin Tube Telescopic Hydraulic Dampers
Gas Charged Shock Absorbers
i. Mono-tube Shock Absorbers
ii. Twin Tube Pressurised Shock Absorbers

Spring Assisted Dampers
Structure of Industry, Ownership Pattern & Installed Capacity
Geographical Distribution of Shock Absorber Manufacturers
Raw Materials, Semi-finished Components Used & Their Sources of Supply
Major Imports of Raw-materials to Sustain Indigenous Production
Manufacturing Processes & Machines Generally Used

9. Manufacturing Process of Automobiles Tyres

Tyre - Modern Vehicle Design Elements
Front-wheel Drive
Powerful Brakes
Power Steering

‘Hot Hatches’
Diesel Engines
How to Make a Tyre
Raw Material Tyre Components
Chemicals
Textiles
Components
Natural Rubber
Steel
Tyre Construction
The Compound
Primary Processing
Extruding
Coating

Calendering
Stages in Building a Tyre
Stage 1 - Flat Forming
Stage 2 - Shaping
Stage 3 - Moulding the Tyre
Stage 4 - Finishing and Inspection
Tyre Trouble
Problems Caused by Under Inflation
The Dangers of Overloading
The Effects of High Speed Travel
Tyre Technology
Striking the Balance
Better Performance
Correct Tyre Fitment

Fitting the Right Tyre
Specifically for Taxi Tyres
Dunlop Taxi Tyres
Dunlop's Classic Tyre Range
How to Fit Tyres Correctly
Specialist Wheel Types
Valves
Tubes
4 x 4 Tyres
Fitment of Radial Winter Tyres
Retread Tyres
Sidewall Markings
The Meaning of Sidewall Markings
Tyre Construction

Major Components

Cross (Bias) - and Radial-ply Tyre Features

Characteristics

Ride Comfort

Acceleration and Braking

Cornering

Tyre Life

Fuel Consumption

Initial Cost

Tyre Material

Natural and Synthetic Rubbers

Natural Rubber (NR)

Chloroprene (Neoprene) Rubber (CR)

Styrene-butadiene Rubber (SBR)

Polysoprene Rubber (IR)
Ethylene Propylene Rubber (EPR)
Polybutadiene Rubber (BR)
Isobutene-isoprene (Butyl) Rubber (IIR)
Tyre Tread
Tread Bite
Tread Drainage Grooves
Tread Ribs
Tread Blocks
Tread Slits or Sips
Selection of Tread Patterns
Normal Car Tyres
Wet Weather Car Tyres
Truck Tyres

Off on Road Vehicles
Tyre Profile and Aspect Ratio
Tyre Manufacturing
Tyre Sizes and Designations
Construction Type
Speed Marking of Tyres
Size
Casing Profile
Related Topics
Nanotechnology in Automotive Tyres
The Drivers for Better Tyres
What Nano-enabled Functionalities can Offer
Impact

Economic/Industry
Impact on European Citizen
Challenges
Environment, Health & Safety
Transport: Nanotechnology in Automotive Tyres
EU Competitive Position
Summary

10. Manufacturing of Auto Tubes and Flaps

Introduction
Market Potential
Basis and Presumptions
Implementation Schedule
Technical Aspects
Process of Manufacture

8. HEAT TREATMENTS OF AUTOMOBILES

Introduction

Materials Used in Autovehicles

Bake Hardening Steel Sheets

High Tensile Strength Steel Sheets

Corrosion Resistant Coated Steel Sheets

Constructional Steels

Case Hardening Steels

Heat Resistant Steels

Powder Metallurgy Products

Non-ferrous Alloy Powder Metallurgy Products

Copper Alloys

Aluminium Alloys

Magnesium Alloys

Titanium Alloys
Composite Materials
Plastics and Rubber
Glass and Ceramics
Heat Treatment
Types of Heat Treatment
Processing Technology in Heat Treatment
Carburizing and Carbonitriding
Nitro-carburizing
Induction Hardening
Powder Metallurgy and Sintering
Key Issue in Heat Treatment: Atmosphere Control
Carbon Potential Control
Gas Carburizing Processes

Reduced Pressure Carburizing (Vacuum Carburizing)
High Pressure Gas Quenching
Carbonitriding
Low Temperature Nitrocarburizing and Oxy-nitro-carburizing
Surface Modification and Hybrid Heat Treatment
Solid Lubricant Coatings
Emerging Technologies in Materials, Heat Treatment and Surface Engineering
Materials
Carburizing and Carbonitriding
New Nitriding Methods for Aluminium
Nitriding of Stainless and Maraging Steels
Furnaces for Heat Treatment of Fasteners and Automobile Parts

Specifications of the Line
Washing Machine
Hardening Furnace
Quenching Tank
Continuous Hot Blast Tempering Furnace
Double Layer Dyeing Tank
Capacity of the Main Furnace
Crucible Type Annealing Furnaces
Application
Features
Specifications of the Bell Type Furnace
Features
Capacity of the Quenching Tank

Capacity of the Continuous Hot Blast Tempering Furnace
Capacity of the Dyeing Tank

9. FORGING TECHNOLOGY OF AUTOMOBILE PARTS

Introduction
Features of Forgings Peculiar to Automobile
Types of Forging Processes
Open Die Forging Process
Close Die Forging Process
Steps for the Design of Forged Part
Parting Line
Draft Angles
Fillet and Corner Radii
Machining Allowances
Forging Tolerances

Shapes for Forging
Die Design Parafeitrs
Flash Land and Flash Gutter Design
Trimming Die Design
Hot Coining Die Design
Forging Equipments

10. PAINTING TECHNOLOGY OF AUTOMOBILES

Introduction
Spray Priming System
Dip Priming System
Electropriming System
Performance
Pretreatment
Rust Removal
Alkali Degrease

Metal Phosphate (Conversion Coating)

Pretreatment as a Corrosion Inhibitor: Mechanism

Priming

Spray Priming

Dip Priming

Products

Pigmentation

Process

Electropainting

Anodic Electrocoat

Resin Systems

Pigmentation

Practical Considerations

Basic Plant Requirements

Control Methods

Deficiencies of Anodic Electrocoat Primers
Cathodic Electrocoat
Resin System
Pigmentation
Colour
Mechanism of Deposition
Performance Characteristics
Plant Requirements
Dip Rinsing
Ultrafiltration
Control Method
Pretreatment
General Appraisal and Current Developments
Surfacers
Background

Introduction
Product Types and Formulation
Resins Systems
Alkyds
Epoxy Esters
Polyesters
Epoxies: Film Modifiers
Crosslinking Resins
Pigmentation
Prime Pigments
Extenders
Polyurethane-modified polyester surfacer (including ‘colour keyed’ products)
Summary of Basic Parameters
Film Properties (Stoved Film)

Anti-chip Coatings
Background and Resin Types
Pigmentation
Inverted or Reverse Process
Electro Powder Coating (EPC)
Automotive Topcoats
Alkyd or Polyester Finishes
Basic Chemistry
General Properties
Thermosetting Acrylic/NAD Finishes
Basic Chemistry
General Properties
Metallic Appearance
'Sagging'
'Solvent-popping' Resistance
Thermoplastic Acrylic Lacquers

Basic Chemistry
General Properties
Basecoat/clear Technology
Solvent-borne
Basic Chemistry
Application/Process
Colour/Pigmentation
Aluminium Flake Orientation
Undercoats
Performance/Durability
Water-borne
Processing
Characteristics
Pigmentation of Automotive Topcoats
Solid Colours

Durability
Opacity/Gloss
Cost
Bleed
Metamerism
Use of Lead Chromate Pigments
'Single Coat' Metallics
Durability
Opacity/Gloss
Cost
Colour Matching
Choice of Aluminium Flake
Basecoat/Clear Metallics
Opacity
Cost

Colour Matching/Durability
Choice of Aluminium Flake
In-factory Repairs
Thermosetting Finishes (Panel Repairs)
Thermoplastic Acrylic Lacquers (Spot Repair)
Painting of Plastic Body Components
Sheet Moulded Compound (SMC) and Dough Moulded Compound (DMC)
Polyurethane: PU RIM and PU RRIM
Injection Moulded Plastics
Painting Problems
Adhesion
Heat Distortion
Surface Texture
Solvent Sensitivity

Degradation of Mechanical Properties
Paint Processes and Products
On-line
Off-line
'Part-way' Down Paint Line
Spray Application
Air Spray
Spray Losses
Automatic Spray
Low-pressure Hot Spray
Airless Spray
Electrostatic Spray
Electrostatic Spray—Metallic Appearance
Resistivity
'Interior' Application (Electrostatic Spray)

Electrostatic Application of Water-Borne Automotive Coatings
General Plant Design Features
Paint Circulating System for Electrical Insulation
Externally Charged Atomizers
Application Efficiency—Practical Considerations and Processes
Modern Spraybooth Design—Ventilation Modes
Preconditioning the Air
Concentrators
Process Details: Typical Application Parameters—Turbo Bells
Stoving Procedures
Oven Technology
Design Considerations of Convection Ovens
Oven Configuration

Oven Ventilation
Oven Heating
Fresh Air Requirements
Fuel Available/Heating Method
Fume and Odour Emission
Thermal Incineration
Catalytic Combustion
Future Stoving Developments
Performance/Testing
Appearance
Performance
Physical Properties
Chemical Resistance
Test Procedures
Cure (Test for Crosslinking Products)

Sandability (Surfacers)
Adhesion: Crosshatch Test (1.5mm or 2.0mm template)
Hardness
Stone-chip Resistance
Impact Test
Flexibility
Acid Resistance
Alkali Resistance
Acid and Alkali Resistance (Alternative Procedure)
Water Immersion (Continuous)
Humidity Resistance (Continuous)
Scab Corrosion Test
Florida Exposure (5° South)
Peel Resistance: Florida 5° South

Accelerated Weathering
Future Developments
High Solids Technology
High Solids Polyester Topcoats
Higher Solids Basecoats
Ultra High Solids Coatings
Water-Borne Products
Surfacers
Basecoats
Powder Coatings and Aqueous Slurries
Aqueous Powder Slurries
Solid Colour Basecoats
Clearcoats
Pigmentation
Painting of Plastics
Electrodeposition and Spray Application

Tags

Production of Automobile Components, Automobile Components, Auto Components Industry in India, I Want to Start an Auto Component Manufacturing Industry? Automobile Parts Manufacturing Industry, Automotive Component Manufacturing, Automotive Component Manufacture, Automobile Structural Components Manufacturing, Auto Component Production, Components of Automobile, Automobile Parts Manufacturing, Automotive Components Manufacturing in India, Auto Parts Manufacturing Plant, Auto Parts Manufacturing Unit, Manufacturing Process for Automotive Components, Automotive Industry, Automobile Components and Spares Production, Production of Automobile & Auto Components, Automotive Components Production, India's Auto Components Industry, Automotive Equipment Manufacturing, Automobile Industry, Indian Automobile Component Industry, Production Process of Automobile Components, Opportunities in Indian Automotive Components, Automobile Parts Manufacturing Company, Auto Parts & Equipment Manufacturing Industry, Automobile Components and Parts Production, New small scale ideas for Automobile Parts Manufacturing industry, Automotive Components Production Business Ideas you can start on your own,

Indian Automotive Components Production industry, Small scale Automobile Parts Manufacturing, Guide to Starting and Operating a Small Business, Business Ideas for Automobile Parts Manufacturing, How to start an Automotive Components Production business, Starting an Automobile Parts Manufacturing Industry, Start Your Own Automobile Parts Manufacturing Business, Automobile Parts Manufacturing Business Plan, Business plan for Automotive Components Production, Small Scale Industries in India, Automotive Components Production Based Small Business Ideas in India, Small Scale Industry You Can Start on Your Own, Business plan for small scale industries, Set up an Automotive Components Production, Profitable Small Scale Manufacturing, How to Start a Small Business in India, Free Manufacturing Business Plans, Small and Medium Scale Manufacturing, Profitable Small Business Industries Ideas, Business ideas for Startup

See more

https://goo.gl/PYBmj5

https://goo.gl/5a1RyK

https://goo.gl/U6NdFt

Visit us at

www.entrepreneurindia.co

Take a look at
Niir Project Consultancy Services
on #Street View

https://goo.gl/VstWkd

Locate us on

Google Maps

https://goo.gl/maps/BKkUtq9gevT2

www.entrepreneurindia.co

OUR CLIENTS

Our inexhaustible Client list includes public-sector companies, Corporate Houses, Government undertaking, individual entrepreneurs, NRI, Foreign investors, non-profit organizations and educational institutions from all parts of the World. The list is just a glimpse of our esteemed & satisfied Clients.

Click here to take a look

https://goo.gl/G3ICjV

Free Instant Online Project Identification and Selection Service

Our Team has simplified the process for you by providing a "Free Instant Online Project Identification & Selection" search facility to identify projects based on multiple search parameters related to project costs namely: Plant & Machinery Cost, Total Capital Investment, Cost of the project, Rate of Return% (ROR) and Break Even Point % (BEP). You can sort the projects on the basis of mentioned pointers and identify a suitable project matching your investment requisites.....Read more

Download Complete List of Project Reports:

- **Detailed Project Reports**

NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our Market Survey cum Detailed Techno Economic Feasibility Report provides an insight of market in India. The report assesses the market sizing and growth of the Industry. 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.

And before diversifying/venturing into any product, they wish to study the following aspects of the identified product:

- **Good Present/Future Demand**
- **Export-Import Market Potential**
- **Raw Material & Manpower Availability**
- **Project Costs and Payback Period**

The detailed project report covers all aspect of business, from analyzing the market, confirming availability of various necessities such as 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, uses and applications, Plant Layout, Project Financials, Process Flow Sheet, Cost of Project, Projected Balance Sheets, Profitability Ratios, Break Even Analysis. The DPR (Detailed Project Report) is formulated by highly accomplished and experienced consultants and the market research and analysis are supported by a panel of experts and digitalized data bank.

We at NPCS, through our reliable expertise in the project consultancy and market research field, have demystified the situation by putting forward the emerging business opportunity in India along with its business prospects.....Read more

Contact us

NIIR PROJECT CONSULTANCY SERVICES

106-E, Kamla Nagar, Opp. Spark Mall,

New Delhi-110007, India.

Email: npcs.ei@gmail.com , info@entrepreneurindia.co

Tel: +91-11-23843955, 23845654, 23845886, 8800733955

Mobile: +91-9811043595

Fax: +91-11-23845886

Website : www.entrepreneurindia.co , www.niir.org

Take a look at NIIR PROJECT CONSULTANCY SERVICES on #StreetView

https://goo.gl/VstWkd

NIIR PROJECT CONSULTANCY SERVICES

An ISO 9001:2015 Company

www.entrepreneurindia.co

Who are we?

- *One of the leading reliable names in industrial world for providing the most comprehensive technical consulting services*

- *We adopt a systematic approach to provide the strong fundamental support needed for the effective delivery of services to our Clients' in India & abroad*

We at NPCS want to grow with you by providing solutions scale to suit your new operations and help you reduce risk and give a high return on application investments. We have successfully achieved top-notch quality standards with a high level of customer appreciation resulting in long lasting relation and large amount of referral work through technological breakthrough and innovative concepts. A large number of our Indian, Overseas and NRI Clients have appreciated our expertise for excellence which speaks volumes about our commitment and dedication to every client's success.

We bring deep, functional expertise, but are known for our holistic perspective: we capture value across boundaries and between the silos of any organization. We have proven a multiplier effect from optimizing the sum of the parts, not just the individual pieces. We actively encourage a culture of innovation, which facilitates the development of new technologies and ensures a high quality product.

What do we offer?

- *Project Identification*
- *Detailed Project Reports/Pre-feasibility Reports*
- *Market Research Reports*
- *Business Plan*
- *Technology Books and Directory*
- *Industry Trend*
- *Databases on CD-ROM*
- *Laboratory Testing Services*
- *Turnkey Project Consultancy/Solutions*
- *Entrepreneur India (An Industrial Monthly Journal)*

How are we different ?

- *We have two decades long experience in project consultancy and market research field*
- *We empower our customers with the prerequisite know-how to take sound business decisions*
- *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

Contact us

NIIR PROJECT CONSULTANCY SERVICES

106-E, Kamla Nagar, Opp. Spark Mall,

New Delhi-110007, India.

Email: npcs.ei@gmail.com , info@entrepreneurindia.co

Tel: +91-11-23843955, 23845654, 23845886, 8800733955

Mobile: +91-9811043595

Fax: +91-11-23845886

Website : www.entrepreneurindia.co , www.niir.org

Take a look at NIIR PROJECT CONSULTANCY SERVICES on #StreetView

https://goo.gl/VstWkd

Follow us

- https://www.linkedin.com/company/niir-project-consultancy-services
- https://www.facebook.com/NIIR.ORG
- https://www.youtube.com/user/NIIRproject
- https://plus.google.com/+EntrepreneurIndiaNewDelhi
- https://twitter.com/npcs_in
- https://www.pinterest.com/npcsindia/

For more information, visit us at:

www.niir.org

www.entrepreneurindia.co