AN ISO 9001 : 2015 CERTIFIED COMPANY

Handbook on Printing Technology (Offset, Flexo, Gravure, Screen, Digital, 3D Printing with Book Binding and CTP) 5th Edition

FREE SAMPLE: contents and introduction of the 616-page book
Price: Rs 1,875 | US$ 45

Order the full book >

AN ISO 9001 : 2015 CERTIFIED COMPANY

Author: NIIR Board of Consultants & Engineers
Format: paperback
Code: NI73
Pages: 616
Price: Rs 1,875 | US$ 45
Publisher: NIIR PROJECT CONSULTANCY SERVICES
Shipping: 5 days

About the Book

Printing is a process for reproducing text and image, typically with ink on paper using a printing press. It is often carried out as a large-scale industrial process, and is an essential part of publishing and transaction printing. Modern technology is radically changing the way publications are printed, inventoried and distributed. Printing technology market is growing, due to technological proliferation along with increasing applications of commercial printing across end users.

In India, the market for printing technology is at its nascent stage; however offers huge growth opportunities in the coming years. The major factors boosting the growth of offset printing press market are the growth of packaging industry across the globe, increasing demand in graphic applications, the wide range of application in various industry, and industrialization. 3D printing market is estimated to garner $8.6 billion in coming years. The global digital printing packaging market is expected to exceed more than US$ 40.02 billion by 2026 at a CAGR of 13.9%. Computer-to-plate systems are increasingly being combined with all digital prepress and printing processes.

This book is dedicated to the Printing Industry. In this book, the details of printing methods and applications are given. The book throws light on the materials required for the same and the various processes involved. This popular book has been organized to provide readers with a firmer grasp of how printing technologies are revolutionizing the industry.

The major content of the book are principles of contact (impression), principles of noncontact printing, coated grades and commercial printing, tests for gravure printing, tests for letterpress printing, tests for offset printing, screen printing, application of screen printing, offset lithography, planography, materials, tools and equipments, sheetfed offset machines, web offset machines, colour and its reproduction, quality control in printing, flexography, rotogravure, creative frees printer, shaftless spearheads expansion, digital printing, 3D printing, 3D printing machinery, book binding, computer-to-plate (ctp) and photographs of machinery with suppliers contact details.

A total guide to manufacturing and entrepreneurial success in one of today's most printing industry. This book is one-stop guide to one of the fastest growing sectors of the printing industry, where opportunities abound for manufacturers, retailers, and entrepreneurs. This is the only complete handbook on the commercial production of printing products. It serves up a feast of how-to information, from concept to purchasing equipment.

Contents

Contents
1. INTRODUCTION
History
Four Major Printing Processes
Relief Printing Process
The Process
Letter Press Printing Process
Plano Graphic
Offset
The Advantages of Offset Printing Include
Screen Printing Process
Other Printing Methods
Digital Printing
Paper for Printing
2. MODERN PRINTING TECHNIQUES
Printing (Press Operation)
Colour Printing
How a Printing Press Works
The Latest Technologies in Printing Industry
Digital Inkjet Printing
3D Printing Rise
Software Innovations
Hybrid Print Technologies
Efficient Technology
Special Printing Technologies
Basic Principles of Hybrid Printing System
Hybrid Printing System Concepts of Combining Conventional Printing Technologies
Hybrid Printing Systems Combining NIP Technologies
Hybrid Printing Systems Combining Conventional and NIP Technologies
Hybrid Printing Systems Combining Computer to Press/Direct Imaging with NIP Technologies
Hybrid Printing Systems Combining Conventional Printing Technologies with Computer to Press Technologies
Basic Principles of Waterless Offset Printing
Advantages/Merits of Waterless Printing
Qualitative Advantages
Production Advantages
Ecological Advantages
Basic Principle of Digital Printing
Flow Chart of Digital Composition of a Printed Page
Direct Imaging (with master)
Computer to Print (without master)
Scope and Job suitability of Digital Printing Process
Digital Printing has a very bright future because

Digital Printing is Suitable for
Basic Principle of Direct Imaging
Once Imagebale Master (Plate Imaging)
Re-imagebale Master (Surface Imaging)
3. PRINCIPLES OF CONTACT (IMPRESSION) PRINTING PROCESSES
Introduction
Printing Methods
The Printing System
Preparatory Sections
Halftone Photography
Platemaking
Printing
Binding and Finishing
Inks for Letterpress and Lithography
Speciality Printing
4. PRINCIPLES OF NONCONTACT PRINTING
Introduction
Impactless printing system for variable printing
Summary
5. COATED GRADES AND COMMERCIAL PRINTING
Coated and Commercial Papers
Coating Methods
Coating Materials
Adhesives
Coated Paper Properties and Use
6. TESTS FOR GRAVURE PRINTING
Introduction
Print Smoothness
Gravure Print Testing
7. TESTS FOR OFFSET PRINTING
Introduction
Runnability
Surface Strength
Water Resistance
Mechanical Properties
Web Runnability
8. SCREEN PRINTING
Select Correct Screen Printing Fabric
An Antistatic Stencil Mesh
Screen Printing Frames
Stretching Equipment
Correct Stretching
Adhesives
The Manufacture of Diapositives
Stencils
The Diapositive
9. APPLICATION OF SCREEN PRINTING
Screen Printing Accessories
Stencils
Chemicals Used and Formulations

Common Faults in Screen Printing
Printing Unit
Automatic Screen Printing Machine
Screen Printing on Different Surfaces
Inks for Screen Printing
10. OFFSET LITHOGRAPHY
Printing Processes
Origin and History of Lithography
Job Planning
Evolution of Offset Printing
Offset Machine Construction
Pre-Make Ready and Make Ready
Setting the Machine for Operation
Small Offset
Running Problems
Colour
Rollers
11. PLANOGRAPHY
Origin of Planography
Principle of Planographic Printing
Direct Printing Process
Offset Printing Process
Working Process
12. MATERIALS, TOOLS AND EQUIPMENTS
Lithographic varnish
Acids
Turpentine
French Chalk
Resin
Asphaltum
Paraffin
Driers
Sponge
Dampening Cloth
Vaseline
Tools and Equipments
Scraper
Ink Knife
Wrench
Proofing Devices
Mechanical Features
Automatic Proof Presses
Qualities of a Good Proof
13. SHEETFED OFFSET PRINTING
Names of the machines
Mechanical Features
Lubrication
Sheet feeding mechanism
Sheet board
Functions of blowers
Functions of the blower foot

Sheet lifting and forwarding
Sheet Controls
Sheet Register
Sheet Insertion and Transfer
Inking System
Distribution System
Multiroll System
Wash-up device
Adjustment of Rollers
Different Dampening Systems
Cleaning of Dampeners
Construction of the machine
Working on the cleaning machine
Plate Cylinder
Blanket Cylinder
Impression Cylinder
Adjustment of Cylinders
Advantages of Both Principles
Delivery Mechanism
Anti-setoff Spray
Miscellaneous Operations
14. WEB OFFSET PRINTING
Driving Mechanism
Printing Units
Main Parts of Printing Unit
Inking System
Delivery Unit
Folding Unit
Ancillary Operations by Delivery Unit
15. COLOUR AND ITS REPRODUCTION
Terminology Related to Colour
Mixing and Matching of Colors
Sequence of Colours in Printing
16. QUALITY CONTROL IN PRINTING
Before Printing
During Printing
After Printing
17. FLEXOGRAPHY 407
Flexography
Flexographic Platemaking
Photochemical Change
Rotary Principle
Rubber Plates
Substrates
Paper and Board
18. ROTOGRAVURE
19. DIGITAL PRINTING
Introduction
Digital Printing
Important Things We Should Know About Digital Printing
Types of Digital Printing

1. Inkjet Printer
2. Laser Printer
Important Features of Laser Printer
Advantages of Digital Printing
Benefits of Digital Printing Design & Printing
1. Cheaper Printing
2. High quality
Difference between Screen Printing and Digital Printing
Screen Printing
Digital Printing
Comparison between Digital Printing and Press Printing
Digital Printing
Press Printing
20. 3D PRINTING
Introduction
History of 3D Printing
How Does 3D Printing Work?
Technology
3D Printing Applications
1. Medical and Dental
2. Aerospace
Complex Designs
Weight Reduction
Improved Strength and Durability
Major Savings
3. Automotive
4. Jewellery
5. Art/Design/Sculpture
6. Architecture
7. Fashion
8. Food
Benefits of 3D Printing
Advantages of 3D Printing in Manufacturing
1. 3-D Printers are Becoming More Affordable
2. Quicker Turnaround Times for Prototyping
3. Quicker Product Launches
4. Competitive Advantage
5. Reduction in Manufacturing Errors
6. Complex Geometries
7. Mass Customization
8. Less Tooling
9. Fewer Costs
10. Environmentally Friendly
Benefits of 3D Printing in Healthcare
What Materials do 3D Printers Use?
1. Plastics
(a) Nylon (Polyamide)
Features
(b) PLA Filament
Features
(c) ABS Filament

Features
(d) PVA Filament
2. Powders
3. Resins
Features
4. Other Materials
How do the Different 3D Printing Technologies Work?
1. Fused Deposition Modeling (FDM)
How does FDM Work?
Materials for FDM
ABS (Acrylonitrile Butadiene Styrene)
ABSi (Acrylonitrile Butadiene Styrene – Biocompatible)
ABS-M30 (Acrylonitrile Butadiene Styrene)
ABS-M30i (Acrylonitrile Butadiene Styrene – Biocompatible)
PC (Polycarbonate)
ABS-ESD7 (Acrylonitrile Butadiene Styrene – Static-Dissipative)
PC-ABS (Polycarbonate ABS)
PC-ISO (Polycarbonate ISO)
Ultem 9085
2. Stereolithography and Digital Light Processing (SLA & DLP)
3. Selective Laser Sintering (SLS)
4. Material Jetting (PolyJet and MultiJet Modeling)
5. Binder Jetting
6. Metal Printing (Selective Laser Melting and Electron Beam Melting)
Electron Beam Melting
Characteristics
Selective Laser Melting Applications
7. PolyJet Photopolymer
Benefits of Polyjet
Realistic Finish
Greater Choices
Multiple Materials and Colors
Polyjet Materials
1. Digital Materials
2. Digital ABS
3. High Temperature
Wide Range of Applications
4. Transparent
3D Print Clear and Tinted Prototypes
3D Printing With Transparent Material
3D Print Translucent Shades and Patterns
Wide Range of Applications
5. Rigid Opaque
6. Polypropylene-like
3D Print Tough, Flexible Models
7. Bio-compatible
3D Print Medical Devices
3D Printing With Bio-compatible Material
8. Rubber-like
3D Print Flexible, Soft-touch Models
3D Printing With Rubber-like Material

8. Syringe Extrusion
9. Other Methods
3D Printing is a Game Changer
21. 3D PRINTING MACHINERY
Airwolf AW3D HD
SLA 3D Printing Machine
3D Printing Machine
Makerbot Replicator
Dual Head 3D Printer
Prototyping Machine
Flashforge Finder
3D Systems Cube
3D Jet
Formlabs
22. BOOK BINDING
Terms and Techniques
Cutting & Folding
Folded Sheet or Section Binding
Book Binding Methods
Perfect Binding
Hardcover/Case Binding
Saddle Staple (Fold, Staple, Trim) Binding
Wiro Binding
Automatic Book Binding Machine
Programmable Logic Controllers (PLC)
Perfect Book Binding Machine
Disc Perfect Binding Machine
Perfect Binding Line
Thread Book Sewing Machine Semi Automatic
23. COMPUTER-TO-PLATE (CTP)
CTP Technologies
Regulatory Requirements
Plate Development
Visible Laser Plates Using Silver Halide
Thermal Laser Plates Using Ablation
Plate Making Process Steps
Temperature Control for Computer to Plate Technology
Process
Platesetter Cooling
Plate Processor Cooling
CTP Technology in Offset Printing
Digital Plate Setter UV CTP Machine
24. PROCESS FLOW DIAGRAMS & LAYOUTS
25. PHOTOGRAPHS OF MACHINERY WITH SUPPLIER'S
CONTACT DETAILS
Single Color Offset Printing Machine
Two Color Satellite Offset Printing Machine
Offset Printing with Numbering and Perforating Machine
Web Offset Printing Machine
Color Screen Printer
Flatbed Screen Printer

Automatic Sheetfed Offset Printing Machine
Sheetfed Offset Machine
Mini Offset Printing Machine
Flexographic Printing Machine
Label Master Flexographic Printing Press
Poly Offset Printing Machines
Prepress Equipments
Flip Top Printing Down Frame Single/Double Sided Machine
Instant Start Metal Halide Plate Exposure
Plate Coating Whirler
Plate Curing Equipment
Damper Roller Washer
Vertical Process Camera
3M Plate Processor
Computer-to-Screen Exposure System
IGP Plate Processor
Screen CTP System
Inkjet CTP System (Computer to Plate Machine)
Rotogravure Printing Machine
4 Hi Tower (Automatic)
3 Colour + Stack Unit (Manual)
Finishing System
UV Inkjet Digital Printing System
Perfecting Production System
Tape Binder
High Light Color System
Color Printer
Digital Press
Digital Color Press
Manual Offset Printing Machine
Rotogravure Printing Machine
Black and White Digital Print Production System
Digital Printing Machine
Paper Binding Machine

Get the full book

This sample shows only the contents and introduction. The full book has every chapter.
Price: Rs 1,875 | US$ 45
Delivery: Shipped within 5 working days of payment
Order online: niir.org/books/printing-technology-handbook-5th-edition/ **WhatsApp:** +91 9097-075-054

Planning a unit? NPCS project reports:

- Automatic Book Binding project report
- Inkjet Inks project report
- Printing Ink project report

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, Market

Research, Manufacturing Process, Machinery, Raw Materials, Project Feasibility, Investment Opportunities, Technical Consultancy and Startup Help.

NPCS also publishes process technology books, technical books, startup books, directory, business database, detailed project reports and market research reports.

Our Detailed Project Report aims at providing all the critical data required by entrepreneurs for starting new business ventures.

NIIR PROJECT CONSULTANCY SERVICES
106-E, Kamla Nagar, New Delhi-110007, India

Email: npcs.india@gmail.com **Website:** https://www.niir.org/

Scan to order the full book on niir.org