INTRODUCTION

This unique guide explains the inner-workings of electronics, from beginning through intermediate to advanced topics, with hands-on projects that show how experimentation leads to new ideas.

Electronics from the Ground Up: Learn by Hacking, Designing, and Inventing takes a highly practical approach to teaching electronics, starting with simple LEDs and ramping up to a collection of circuits that can be used in a variety of electronic systems. The book explains the components used in electronics projects, from diodes and resistors through amplifiers and oscillators.

Readers will learn how to read schematics, use test equipment, and solder. The book explains how inventions are created: how to think outside the box and borrow ideas from other fields to solve problems. A chapter reveals the practical application of algebra to electronics. Troubleshooting and repair techniques are also included.

- Demonstrates construction approaches, including 3D wired circuits, proto board (super-strip), vector board, copper-clad circuit board, and soldering techniques
• Shows multiple iterations of circuits and how to make improvements via learning new sub-circuits
• Explores hacking and modding circuits to create alternate uses

DESCRIPTION

Discover the inner-workings of electronics through innovative hands-on experiments

Are you fascinated by the power of even the smallest electronic device? *Electronics from the Ground Up* guides you through step-by-step experiments that reveal how electronic circuits function so you can advance your skills and design custom circuits. You’ll work with a range of circuits and signals related to optical emitters and receivers, audio, oscillators, and video.

This practical resource explains components, construction techniques, basic test equipment, circuit analysis, and troubleshooting. Photographs, schematics, equations, and graphs are included throughout. By the end of the book, you’ll be able to hack and modify existing circuits to create your own unique designs.

Do-it-yourself experiments cover:

• Batteries, lamps, and flashlights
• Light emitters and receivers
• Diodes, rectifiers, and associated circuits
• Transistors, FETs, and vacuum tubes
• Amplifiers and feedback
• Audio signals and circuits
• Oscillators
• AM and FM signals and circuits
• Video basics, including video signals
• Video circuits and systems

ABOUT THE AUTHOR

Ronald Quan (Cupertino, CA) is an RF circuits design engineer and holds more than 77 patents. He has worked at Ampex, Sony, Monster Cable, Portal Player, Hewlett Packard, and Macrovision, and is the author of *Build Your Own Transistor Radios.*
INTRODUCTION

This complete guide shows how to perform preventive maintenance necessary to keep HVAC systems and refrigerator equipment running at peak efficiency and minimize repair costs.

Written by a bestselling author and professional with nearly 40 years of experience in commercial and domestic appliance, refrigeration, and HVAC sales, service, and installation, HVAC and Refrigeration Preventive Maintenance is a practical manual filled with step-by-step instructions and detailed illustrations.

Ideal for appliance service technicians, vo-tech students, residential and commercial facilities maintenance managers, and technically savvy do-it-yourselfers, this book covers troubleshooting and maintenance of residential and commercial HVAC systems and refrigeration equipment. Special icons throughout show the degree of difficulty of each project, so readers won't be tempted to take on something that goes beyond their technical comfort level.

- Helps readers save time and money on unnecessary repairs
- Discusses how to improve indoor air quality, addressing numerous health issues.
• Action items result in increased product efficiency and lower electric bills

DESCRIPTION

Perform the preventive maintenance necessary to keep HVAC systems and refrigerator equipment running at peak efficiency and minimize repair costs.

Written by a bestselling author and professional with nearly 40 years of experience in commercial and domestic appliance, refrigeration, and HVAC sales, service, and installation, HVAC and Refrigeration Preventive Maintenance is a practical manual filled with step-by-step instructions and detailed illustrations. Ideal for appliance service technicians, vo-tech students, residential and commercial facilities maintenance managers, and technically savvy do-it-yourselfers, this book covers troubleshooting and maintenance of residential and commercial HVAC systems and refrigeration equipment. Special icons throughout show the degree of difficulty of each project.

• Follow along easily with this step-by-step, visual guide
• Save time and money
• Improve indoor air quality
• Increase product efficiency and reduce electric bills

ABOUT THE AUTHOR

Eric Kleinert (Lake Worth, FL) is a professional with nearly 40 years of experience in commercial and domestic major appliance, refrigeration, and HVAC sales, service, and installation. As an instructor with the ATI Career Training Center and the Palm Beach County School District in Florida, he taught adults aspects of preventive and diagnostic services and techniques. He is the bestselling author of Troubleshooting and Repairing Major Appliances, now in its third edition.
INTRODUCTION

Complete coverage of closed feedwater heaters used in nuclear and fossil-fuel power generation

Written by experts in the field, Closed Feedwater Heaters for Power Generation: A Working Guide offers comprehensive information on the design, construction, inspection, maintenance, troubleshooting, repair, and economics of these essential power plant components.

The book is written to be used alongside the Heat Exchange Institute’s Closed Feedwater Heater Standards, the ASME Boiler and Pressure Vessel Code, the National Board Inspection Code (NBIC), TEMA standards, and other applicable codes.

- Offers comprehensive, analytical coverage of the steam cycle in power generation
- Explains how to prepare procurement specifications evaluate manufacturers’ proposals
- Covers quality control with inspection and nondestructive testing
DESCRIPTION

Best practices for using closed feedwater heaters in power generation plants

Based on the authors’ decades of industry experience, this book explains how to improve cycle efficiency and reduce the cost of fuel used to produce electricity using closed feedwater heaters. This practical guide describes the steam cycle and contains detailed information on how manufacturers build feedwater heaters.

*Closed Feedwater Heaters for Power Generation* illustrates how to control the liquid level of the condensed extraction steam and offers recommendations for what to include in procurement specifications. Expert advice for evaluating manufacturers’ technical proposals for new and replacement feedwater heaters is provided. This comprehensive resource also discusses inspection, maintenance, and repair of closed feedwater heaters as well as failures and their causes.

Complete coverage includes:

- The steam cycle
- Channel design and construction
- Tubing
- Tubesheets
- Tube-to-tubesheet joints
- Bundle construction
- Shell construction
- Assembly of bundles and shells
- Examining and testing feedwater heaters
- Quality assurance and quality control
- Level control
- Preparing procurement specifications
- Evaluating bidder’s proposals
- Drawing reviews
- Inspection, maintenance, and repair
- Feedwater heater autopsies

ABOUT THE AUTHOR

**Stanley Yokell**, a Fellow of the ASME, is a registered Professional Engineer in Colorado, with retired registrations in Iowa, Illinois, and New Jersey. He consults for fossil and nuclear power plants on closed feedwater heaters and auxiliary power plant heat exchangers. Mr. Yokell was previously vice president and president of Process Engineering and Machine Company (PEMCO) and vice president of Ecolaire, Inc.

**Michael C. Catapano** has had more than 40 years’ experience in the operation, design, procurement, and maintenance of feedwater heaters, condensers, and other shell-and-tube heat exchangers, including seven years with PSE&G and 33 years as president of Powerfect, Inc. He is past chairman of the ASME Power Division Heat Exchanger Committee and served for many years as their technical program coordinator. Mr. Catapano is a Fellow of the ASME.
Eric Svensson has 10 years’ experience as the vice president of engineering at Powerfect, Inc. Since joining Powerfect, he has been involved in the writing the specification and conducting quality control checks for more than 25 replacement feedwater heaters. Mr. Svensson is currently a member of the ASME Heat Exchanger Committee.
INTRODUCTION

This state-of-the-art guide provides practical, easy-to-understand coverage of current usage and cutting-edge trends for the application of capacitor technology.

Capacitors provides a comprehensive overview of capacitor technology and its evolution to keep pace with the emerging electrical and electronics industry. Computers, mobile devices, power supplies, automobiles, and other systems are consuming unprecedented quantities of capacitors. The book discusses capacitor physics, raw materials, and the latest manufacturing processes and describes how to select appropriate products for specific applications. Testing methods to ensure optimum capacitor performance are also included.

This practical resource delivers the information needed to understand the application of capacitor technology in the electrical and electronic sectors. It will serve as a ready reference for all students, scientists, and engineers involved in the manufacture and use of capacitors.

- Provides comprehensive technical data to aid in selecting the appropriate products and for making the most economical choice for a given application
- Offers guidance on proper capacitor testing methods to ensure best performance
- Mathematical equations and theoretical treatment have been purposely kept to a minimum

Capacitors covers:

- Introduction to capacitors
- Properties of dielectrics
- Polypropylene and polyester film
- Metallized films
- Types of capacitors
- Power factor correction capacitors
• Switching of capacitors
• Harmonics in power systems
• Power quality management
• Electrolytic capacitors
• Ceramic capacitors
• Mica capacitors
• Ultracapacitors: the future of energy storage
• Auto ignition and CDI capacitors
• Electronic grade capacitors
• Capacitors for RFI suppression
• Energy storage and pulse capacitors
• Application in electronic circuits
• Capacitors for power electronics
• Manufacture of paper/plastic film capacitors
• Selection guide for capacitors
• Capacitor failures and their mitigation

**R. P. Deshpande (India)** has more than 40 years of experience in the capacitor technology sector. He has worked as a consultant with capacitor manufacturing organizations and has pioneered the development of many capacitor products, technologies, processes, and related applications. Mr. Deshpande’s recent research has focused on ultracapacitors, and his work on the use of capacitors for energy storage and alternative energy is widely recognized.