

# High Performance Regenerative Receiver Design

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*There have been several popular Regen projects in recent QST's and ARRL Handbooks. Look at the design process and progress; then build one—or both—of the receivers described.*

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By Charles Kitchin, N1TEV

**M**any hams have tried regenerative receivers with mixed results. Some people are quite attached to "regens," while others consider them only suitable for beginner experimentation.

I have spent several years researching this subject and have come away with a great respect for the technical knowledge possessed by the "old-timers" of the 1920s and '30s. Unfortunately, much of this knowledge has been forgotten. Many significant discoveries, such as the "throttle"-capacitor regeneration control are unknown to most modern homebrewers.

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This article will show that, if properly designed, a modern regen is quite capable of direct-conversion or superheterodyne-level performance, although it does require greater operator skill. Attention to a few simple details can provide an excellent receiver for ham or general-coverage shortwave use. For beginners and veterans alike, studying, building and using regenerative circuits can add new interest, excitement and fun to the radio hobby.

## A Brief History

The regenerative circuit was used in both commercial and ham receivers in the 1920s until the early 1930s. It was the standard ham receiver during this period, and a great deal of experimental work was done to optimize its performance. As the great depression slowly ended, the use of the regen de-

clined, because many people could then afford to buy commercial superheterodyne receivers.

Hams continued to use regens, usually home-brewed, through the rest of the 1930s. Although better components were then available, regens of the 1940s and '50s had been reduced to introductory sets for beginners—with generally poor performance.

By the 1960s and '70s, regenerative circuits had been replaced by the now popular direct-conversion receiver.

## Regeneration Basics: What's Really Happening Here?

Fig 1 shows the basic regenerative circuit, discovered by Edwin Howard Armstrong<sup>1</sup> in 1914.

Fig 2 shows a modern equivalent

<sup>1</sup>Notes appear on page 36.

# High Performance Regenerative Receiver Design

**S Nieto**



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## **Table of Contents High Performance Regenerative Receiver Design**

1. Understanding the eBook High Performance Regenerative Receiver Design
  - The Rise of Digital Reading High Performance Regenerative Receiver Design
  - Advantages of eBooks Over Traditional Books
2. Identifying High Performance Regenerative Receiver Design
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an High Performance Regenerative Receiver Design
  - User-Friendly Interface
4. Exploring eBook Recommendations from High Performance Regenerative Receiver Design
  - Personalized Recommendations
  - High Performance Regenerative Receiver Design User Reviews and Ratings
  - High Performance Regenerative Receiver Design and Bestseller Lists
5. Accessing High Performance Regenerative Receiver Design Free and Paid eBooks

- High Performance Regenerative Receiver Design Public Domain eBooks
  - High Performance Regenerative Receiver Design eBook Subscription Services
  - High Performance Regenerative Receiver Design Budget-Friendly Options
6. Navigating High Performance Regenerative Receiver Design eBook Formats
    - ePub, PDF, MOBI, and More
    - High Performance Regenerative Receiver Design Compatibility with Devices
    - High Performance Regenerative Receiver Design Enhanced eBook Features
  7. Enhancing Your Reading Experience
    - Adjustable Fonts and Text Sizes of High Performance Regenerative Receiver Design
    - Highlighting and Note-Taking High Performance Regenerative Receiver Design
    - Interactive Elements High Performance Regenerative Receiver Design
  8. Staying Engaged with High Performance Regenerative Receiver Design
    - Joining Online Reading Communities
    - Participating in Virtual Book Clubs
    - Following Authors and Publishers High Performance Regenerative Receiver Design
  9. Balancing eBooks and Physical Books High Performance Regenerative Receiver Design
    - Benefits of a Digital Library
    - Creating a Diverse Reading Collection High Performance Regenerative Receiver Design
  10. Overcoming Reading Challenges
    - Dealing with Digital Eye Strain
    - Minimizing Distractions
    - Managing Screen Time
  11. Cultivating a Reading Routine High Performance Regenerative Receiver Design
    - Setting Reading Goals High Performance Regenerative Receiver Design
    - Carving Out Dedicated Reading Time
  12. Sourcing Reliable Information of High Performance Regenerative Receiver Design
    - Fact-Checking eBook Content of High Performance Regenerative Receiver Design
    - Distinguishing Credible Sources
  13. Promoting Lifelong Learning
    - Utilizing eBooks for Skill Development

- Exploring Educational eBooks
- 14. Embracing eBook Trends
  - Integration of Multimedia Elements
  - Interactive and Gamified eBooks

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