

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By the 1960s and '70s, regenerative circuits had been replaced by the now popular direct-conversion receiver.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

**Ying-Ying Zheng**



## **High Performance Regenerative Receiver Design:**

The Top Books of the Year High Performance Regenerative Receiver Design The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous captivating novels enthralling the hearts of readers worldwide. Lets delve into the realm of bestselling books, exploring the engaging narratives that have enthralled audiences this year. High Performance Regenerative Receiver Design : Colleen Hoover's "It Ends with Us" This heartfelt tale of love, loss, and resilience has gripped readers with its raw and emotional exploration of domestic abuse. Hoover expertly weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can succeed. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids compelling storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. High Performance Regenerative Receiver Design : Delia Owens "Where the Crawdads Sing" This mesmerizing coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens crafts a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting. These bestselling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of engaging stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a masterful and thrilling novel that will keep you guessing until the very end. The novel is a cautionary tale about the dangers of obsession and the power of evil.

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