



The

# ***Broadcasters' Desktop Resource***

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*... edited by Barry Mishkind – the Eclectic Engineer*

## **Hilmer Irvin Swanson**

**1932 - 2005**

On July 21, 2005 Hilmer I. Swanson died in Quincy, IL at the age of 72. A long-time and world-respected employee of Harris Corporate, Swanson was a pioneer in AM transmission until his retirement in 1999.

### **LIFE LONG RADIO ENGINEER**

Born July 25, 1932 in Davenport, IA, Swanson graduated from high school there and began his career in radio after being drafted into the U.S. Army during the Korean War when the Army sent him to Radio Signal School.

Returning to Indiana after his military service he attended Valparaiso Technical Institute, where he received a Bachelor of Science in Engineering degree; then progressed on to a Master of Science degree from Iowa State University. Swanson worked for Collins Radio in Cedar Rapids, IA and Dallas, TX before joining Gates Radio, which later became Harris.



**Hilmer Swanson**

### **A MASTER AM DESIGNER**

Perhaps best known for his work in high efficiency AM transmitters, Swanson worked for Harris Corp. for 35 years before his retirement in 1999, primarily on the design of AM transmitters. His interest in improving the efficiency of AM transmitters led to a series of patents on various types of high efficiency modulation. The first commercial implementation was the PDM (pulse duration modulation system),

which has been utilized in many different transmitters including the MW-5, MW-10, MW-50, VP-100 and SW-100.

The MW-1 implementation of Swanson's PSM (progressive series modulation) system was highly successful. Further improvements in PSM technology led to the polyphase PDM system employed in the SX-1 through SX-5 and later in the Gates-1 through Gates-5 series.

Not resting on his laurels, Swanson continued seeking higher efficiency transmitters, leading to the DX (digital amplitude modulation) system. These transmitters were revolutionary in that they employed no high-level modulator at all yet achieved very high efficiency. The DX technology has been deployed in the US and around the world at power levels ranging from 10 kW to 2,000 kW.



**Hilmer Swanson checking the operation of a DX-1000 (TPO: one million Watts)**

## **A REAL LEGACY**

In the past two decades, manufacturers have shifted to where virtually all production now is of solid-state, digitally modulated transmitters based in one way or another on Swanson's patents. Essentially they made AM tube transmitters obsolete. And, although those patents have started expiring, the technology is still the foundation for AM broadcasting.

The recipient of many awards from both the industry and Harris, Swanson was a Harris Fellow, the highest honor given to an employee of that company. In 1990, Swanson received the NAB Engineering Achievement Award. From his work, he was awarded over 25 patents in at least six countries. He was an honorary member of SBE, and a life member of IEEE and the Sigma Xi, Science Honor Fraternity.

After retiring, Swanson and his wife, Carolyn, performed missionary work in Palau, Chili and Estonia by putting Christian AM radio stations on the air. Harris created a scholarship in Swanson's name at the John Wood Community College for the study of radio broadcast technology.

## **A MORE IMPORTANT LEGACY**

Invariably, those who have worked with Swanson remember him as a mentor and friend.

"I first met Hilmer in 1973 when I went to work for the Gates Radio division of Harris as a young engineer," said Geoff Mendenhall. "Hilmer had a quiet manner and was a man of few words, but when he did speak he had everyone's undivided attention. What he had to say was always relevant and important to the task at hand.

"Hilmer was a tremendous technical resource and mentor to all of us. When we ran into a particularly challenging technical problem, we could always depend on Hilmer for a simple, but elegant solution. He was always willing to travel anywhere in the world to solve a technical problem in the field and in doing so, he became a radio engineering legend around the world," Mendenhall added. "I will miss my friend, mentor, and colleague. He is now part of Radio History."

"Hilmer was a 'gentleman farmer' and we used to joke about what new invention Hilmer came up with while riding his tractor in the fields behind his home," Mendenhall recalled. "He was an environmentalist who raised his own crops organically and experimented with solar energy for his home."

Dan Dickey recalls that "Hilmer was my mentor right after I graduated from engineering school. As I look back now I cannot believe the good fortune it was to work for him every day for several years. Many of us watched him work and were awed by his continuous output of cutting edge ideas and designs year after year. At the time it seemed daunting to try to live up to the standard that he set for other engineers until I finally realized that task was beyond me. His influence on radio technology and business would be difficult to overestimate."

*Some information provided via the Hansen-Spear Funeral Home in Quincy, IL.*

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