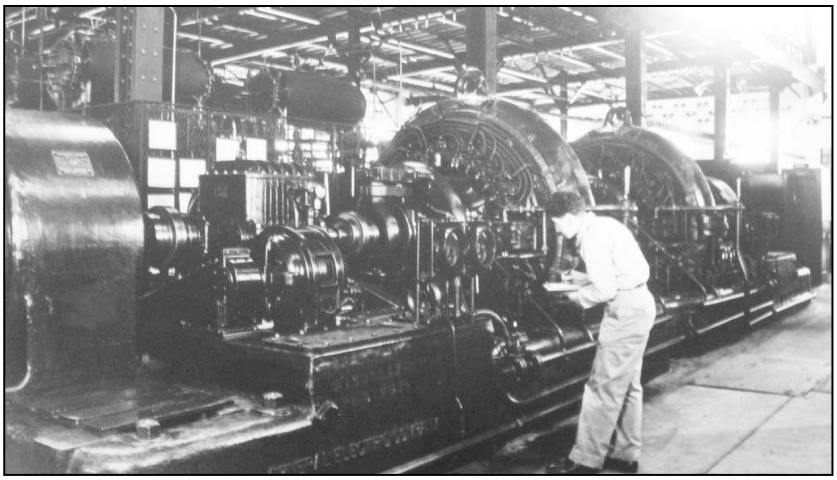
National Capital Radio & Television Museum

Artifact Showcase:

Photo of an Alexanderson Alternator



This large historic photograph in our collection shows one of the Alexanderson alternators at RCA's trans-Atlantic radio station at Rocky Point, Long Island, in the early 1920s.

As the 20th century dawned, long before vacuum tube transmitters were even imagined, radio pioneer Reginald Fessenden set out to find a way to transmit voice and music. Spark transmitters in use at the time could transmit Morse code, but were unsuitable for voice transmission. Fessenden realized that what was needed was a device to generate continuous radio waves (carrier waves) that could be modulated by the voice signal. He concluded that the best option was a high frequency alternator—an alternating current (AC) rotating machine. Low frequency AC generators like those used by utility companies to generate 60 Hz (cycles-per-second) power for homes and businesses were in common use, but to make an alternator operate at the much higher frequencies (many kilohertz) needed for radio was a *huge* challenge. Fessenden went to General Electric to tap into their expertise in electrical machines. A young GE engineer, Ernst Alexanderson, was assigned to work with Fessenden to develop a suitable alternator (which could also transmit Morse code signals). The project was successful, and in December 1906 Fessenden used GE's alternator to send voice messages.

Over the next decade, GE dramatically scaled up its alternators, and by WWI, GE had built and sold huge high-power alternators that could reliably span the Atlantic. After GE purchased the American Marconi Company in 1919, and it became The Radio Corporation of American, the new RCA began expanding its long-distance radio communications facilities. It installed several Alexanderson alternators like the 200-kilowatt model shown here at its flag-ship station near the tip of Long Island. These machines operated 24/7, handling communi-cations across the Atlantic as well as with South America. By the late 1920s, high-power transmitting vacuum tubes had become readily available, and soon much smaller and cheaper tube transmitters replaced bulky alternators. However, a large Alexanderson alternator is still preserved as a historical monument in Sweden and actually operates on special occasions.

We appreciate your support of the museum so that historical artifacts like this one, and the stories that go with them, can be preserved for future generations. THANKS!