



Annex to the reasons for the submission to the Milestone Program
Reference 4: Thurn, H.: Die Poulsenanlage bei der Hauptfunkstelle in Königs wusterhausen, periodical "Telegraphen- und Fernsprech-Technik", issues 3 and 4, 1920

Beginning of the translation: Issue 3, page 37, left column

The Poulsen system of the Main Radio Station Königs Wusterhausen

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Outline

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Introduction

The Main Radio Station Königs Wusterhausen (fig. 1) used in World War 1 by the German army administration was taken over by the Reichs-Telegraphenverwaltung in 1919 and is serving merely traffic interests today. The original purpose of the station becomes clear in half of the buildings are recessed into the ground, and the ceilings are made of strong cement vault as protection against enemy air raids. The protection of the antenna towers was limited to securing the base against ejection from its bearing by lateral anchoring.

Currently the aerial system consists mainly of a large L-antenna carried by five masts, each of 150 m height. Other antennas which allow simultaneous operation of several transmitters were also built by the Radio Operation Office using existing masts. The aerial lead-in is shown in figure 2.

Apart from a sounding quenched-spark transmitter of 70 kW output power and an additional transmitter of 5 kW manufactured by the company Telefunken, the radio station has two additional Poulsen arc transmitters of 32 kW and 5 kW manufactured by C. Lorenz AG Berlin-Tempelhof. On account of the fact that the undamped system is used in the radio network of the Reich and the station had to be extended for simultaneous operation of several transmitters the quenched-spark transmitters were dismantled and replaced by tube and machine transmitters. The power supply, provided by the company Deutzer Gasmotorenfabrik, consists of three rock oil engines, each of 150 HP, and one small engine of 50 HP which are used to drive generators. The power supply, including accumulators, generates the electricity for the transmitters and all additional equipment, lighting, etc.

All machines and devices operations can be remotely controlled from an elevated switchboard including all switches, instruments, fuses, etc used to operate and monitor the transmitters. The various transmitters can be switched to the wanted antenna by a mode and antenna selector in a few moves, similar to a signal tower. The receiving equipment is situated in a special room next to the transmitting room; a number of large tables hold the receivers and the necessary auxiliary equipment, amplifiers, heterodyne generators, etc.

A General information about the arc transmitter

B The 4 kW Poulsen transmitter in Königs Wusterhausen

C The 32 kW Poulsen system in Königs Wusterhausen (including the most important components of the auxiliary equipment)

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D Wireless telephony by means of the Poulsen generator


A detailed investigation of the conditions under which a telephony transmitter will produce good results was made by Pedersen. On that basis the modern wireless telephony has to solve the following main tasks:

1. Relatively small changes in microphone currents cause strong changes in the energy radiated by the antenna to occur.
2. These changes must be proportional to the transmitted sound variations so that the voice is transmitted free of distortions and with high clarity.

It is believed that the company C. Lorenz A.G. made practical usable wireless telephony possible for major radio stations (*). For patent law reasons the details of this system cannot yet be described. It should be noted that the earlier opinion that an arc system is less suitable for telephony of high output power has become invalid because of this development.

* In repeated wireless telephony trials using a 4 kW Poulsen transmitter (with intermediate circuit) in Königs Wusterhausen the spoken text was acknowledged by the radio stations of the Reich as perfect. The main radio stations Karlsborg (700 km) and Moscow (1700 km) acknowledged clear and loud voice transmissions, too.

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