Ampex Video Tape Recorder Milestone Ceremony

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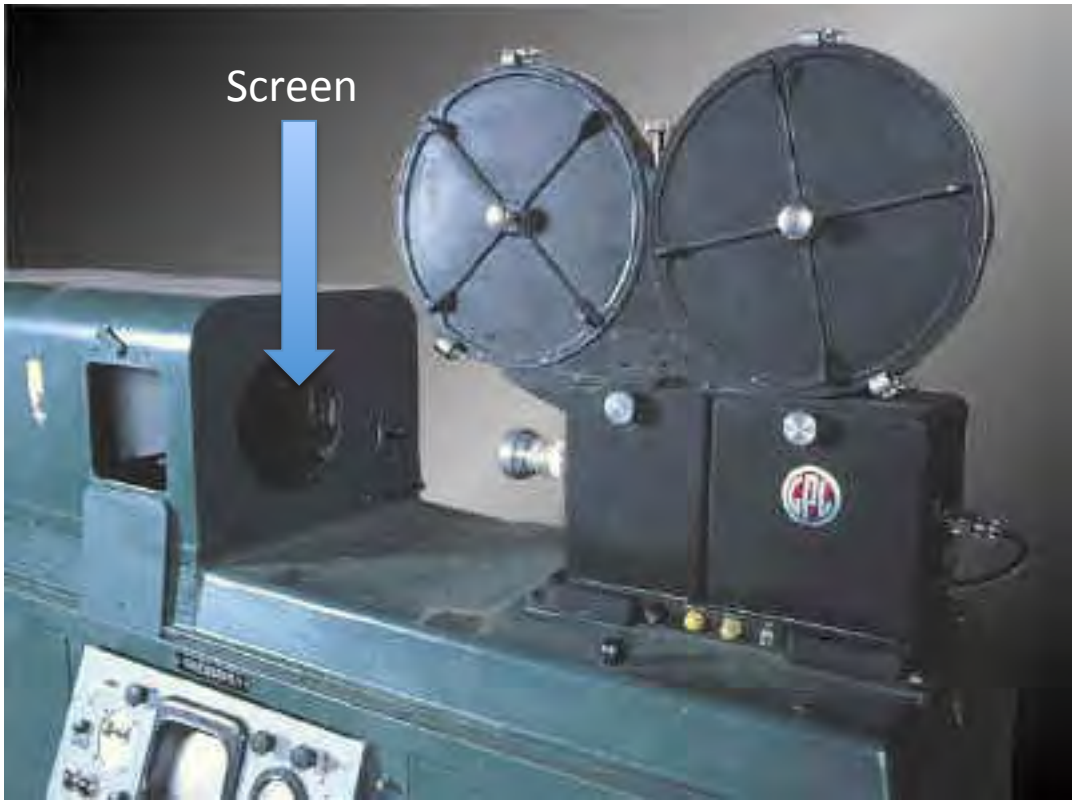
Citation: In 1956, Ampex Corporation of Redwood City, CA, introduced the first practical videotape recorder for television stations and networks to produce and time-shift broadcasts, replacing impractical "kinescope" movie film previously used to record TV. The Emmy-award-winning Ampex "VTR" analog-video standard ruled broadcasting and video production worldwide for twenty years

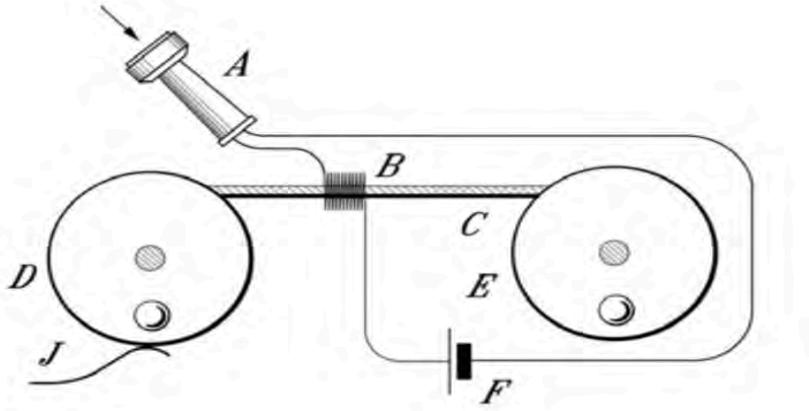
Before the VTR

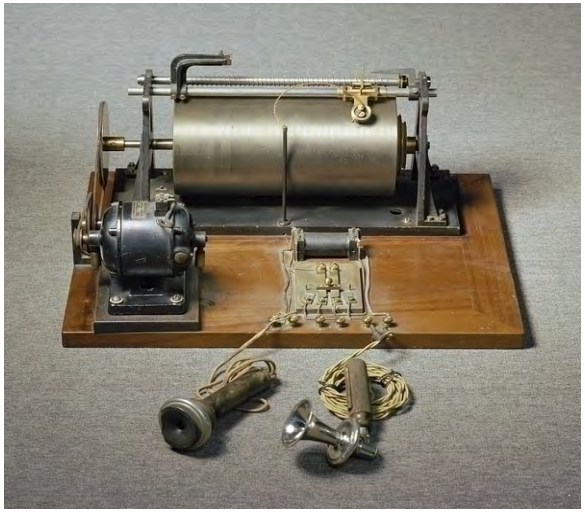
- **Kinescope** is a recording of a television program on motion picture film, directly through a lens focused on the screen of a video monitor.



A PA-302 General Precision Laboratories (GPL) kinescope (c.1950–1955)

Magnetic Recording History





- Oberlin Smith's magnetic sound recording apparatus (1888)
- Valdemar Poulsen's magnetic wire recorder (1898)

Magnetic Recording History (cont)

- Fritz Pfluemer develops paper magnetic tape licensed it to AEG (1928)
- AEG Magnetophon with plastic tape (1935)

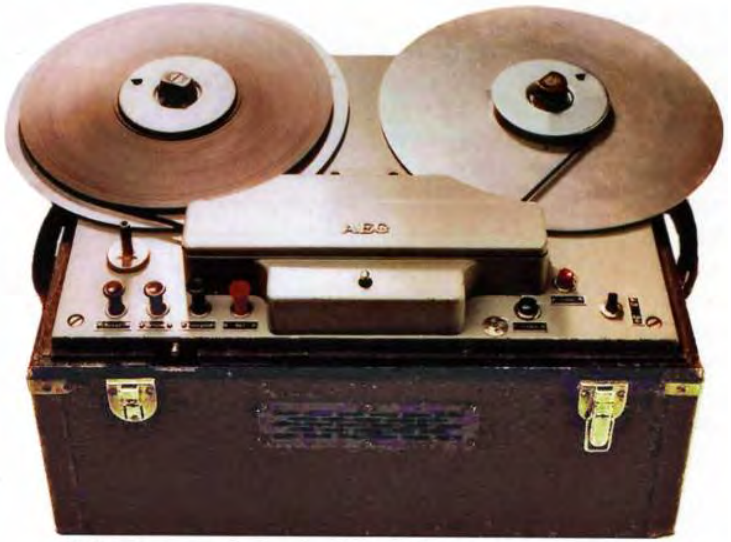


Bild 52: Das erste Tonbandgerät der Welt: K 1 von AEG. (nach Zierl, S.52)

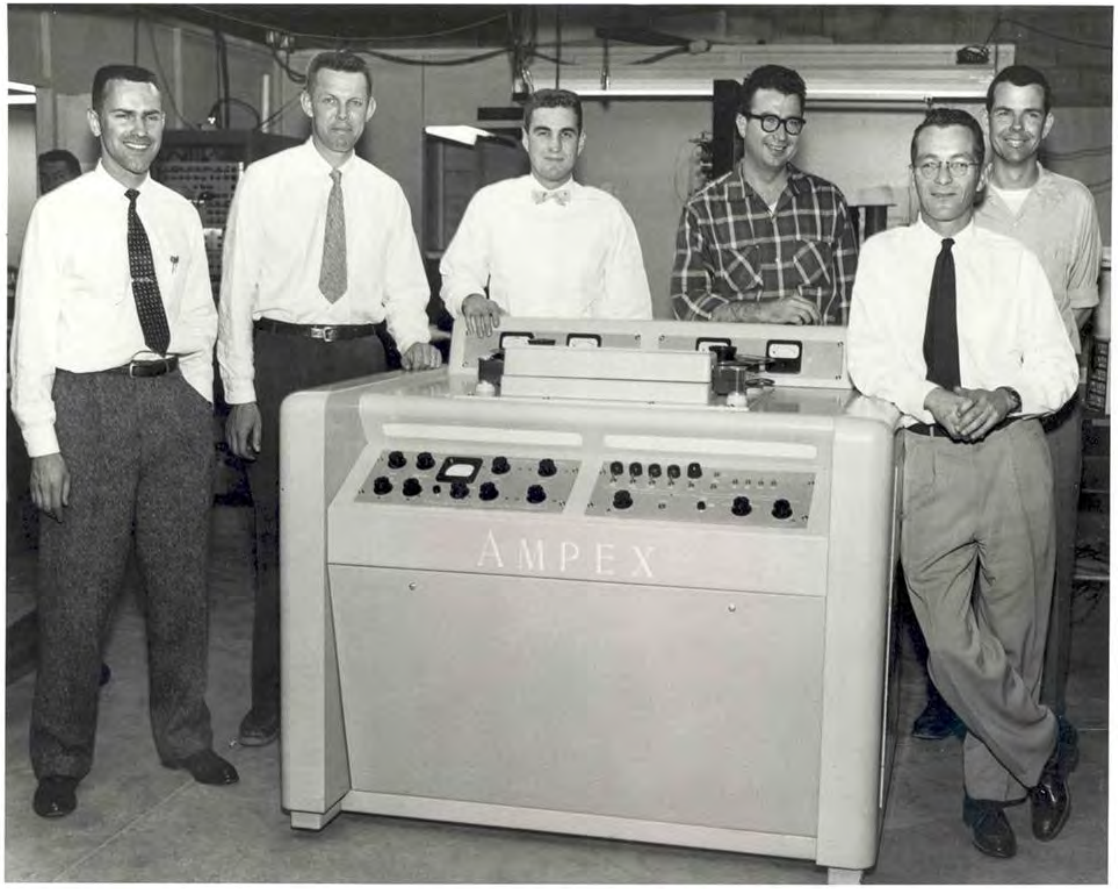
Magnetic Recording History (cont)

- Ampex Model 200 magnetic tape recorder (1947)

- Ampex VTR1000 (1956)

Magnetic Recording History (cont)

- **The Ampex Quadruplex Video Tape Recorder with its developers (left to right) Fred Pfost, Shelby Henderson, Ray Dolby, Alex Maxey, Charles Ginsburg and Charles Angerson**



Ampex VTR 1000

- It was demonstrated at the 1956 NAB Conference and delivered to customers the following year.
- This machine used the quadruplex format with 2-inch wide tape moving linearly at 15 in/s past, and in contact with a thin wheel that contained four recording heads spaced evenly around its circumference, that rotated at right angles to the tape motion.
- This wheel rotated at 240 rps and the effective writing speed was about 1,500 in/s, which allowed sufficiently short wavelengths that allowed capturing and reproducing a specially modulated carrier signal that accurately contained a monochrome video signal.
- Over time this technology was extended to color video recording as well and has long served the media and entertainment industry.

Changes in Media Workflow

- With the advent of video recording early television programming moved form being mostly live performances to a predominance of playback of recorded content.
- Recording and editing with videotape became common practices and eventually was done electronically and then using computers rather than by cutting and splicing.
- Video tape also could be viewed immediately after shooting, avoiding the delay to “develop” photographic film, leading to faster video production projects.
- Video recording on magnetic tape became the way that all content was collected and then played out at television stations.

Further Video Tape Developments

- The quandruplex recording system, initially invented by Ampex in the late 1950's was internationally standardized in the early 1960's. This quadruplex form was in general use in television production studios and broadcast stations for nearly 20 years, with only minor changes in the format.
- Ampex introduced an open-reel 1-inch wide helical scan videotape format in 1965. SMPTE standardized this format as Type A and it became the first open format videotape standard.
- In the middle of the 1970's Ampex and Sony each proposed a 1-inch open reel helical scan tape format for standardization. The user community of broadcasters in SMPTE insisted that the two companies agree on a single format before a standard would be approved. The result of this collaboration was the SMPTE type C format in 1976.
- Bosch introduced a 1-inch tape standard through SMPTE that was labeled type B.

Start of Digital Video Tape Recording

- Sony introduced its D1 digital tape format in 1986. This format recorded an uncompressed standard definition component video signal in a digital form rather than analog recording as in earlier videotape formats.
- In 1988 Sony and Ampex developed and released the D2 digital video-cassette format at the 1988 NAB show. D2 was a successful video format in the late 1980's and through the 1990's.

Thanks to those who contributed to this milestone event

- Shayne Hodge—originator of the Ampex Milestone proposal
- David Norlander—who helped arrange this milestone event
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- John Vardalas—IEEE History Center Staff (suggested this engineering milestone to Dick)
- Keith Graham—speaking for SMPTE
- Pete Hammar—speaking for Ampex


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