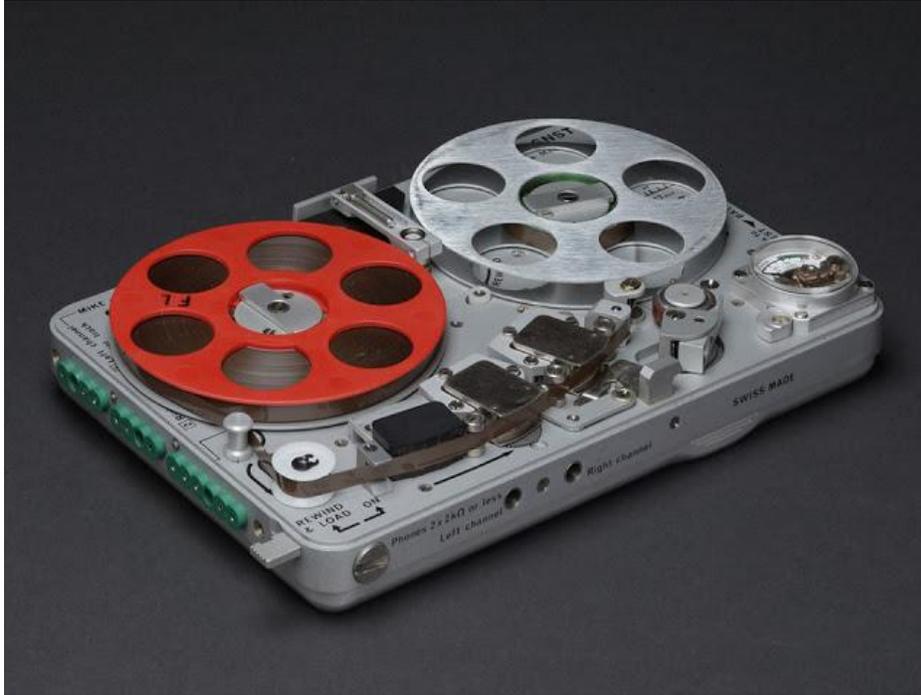


# Nagra historical impact!



More inspiring Nagra insights. This time a prolonged article by our friend Oleg Netchaev about the Nagra's historical impact... Using cassette width  $\frac{1}{8}$  th inch tape, the SN were predecessor to the walkman introduced in the late '70s. Designed as a pocket recorder for cinema actors to carry, it was equipped with a pilot system for studio synchronization.

Nagra is the brand name used on professional and high end audio equipment manufactured by Audio Technology Switzerland SA (formerly Nagra Audio). Nagra SNST - stereo, intended more for security service "two microphones to record two different people talking" usage than hi-fi usage due to technical limitations.



The Kudelski company was founded in 1951 by Mr. Stefan Kudelski. Born in Warsaw, Poland on February 27th 1929 where he completed his primary schooling. In 1939 the declaration of war in Europe saw the Kudelski family flee to Hungary, then France and finally Switzerland in 1943.

In 1951, his prized invention, the "NAGRA" (meaning "will record" in Polish) takes a concrete form: a portable audio tape recorder with exceptional specifications, i.e. light, small, self-contained, portable and high quality.

In 1952 the first customers, Radio Lausanne and Radio Geneva placed official orders for the NAGRA I. In May 1952, following the first international sound recording contest, some well-known reporters become interested in the NAGRA.

Stefan Kudelski then obtains a firm order for six NAGRA 1's from Radio Luxembourg. Nagra reel to reel tape recorder with the 4 channel nagra mixer. He leaves the EPUL where he was studying electrical engineering and devotes himself to the manufacture of his machines.

Assembly of such equipment meets many obstacles. Parts ordered elsewhere often arrive late, or do not meet the required specifications and the customers are always in a hurry. As a result, as many parts as possible for the new NAGRA II were to be made by the company.



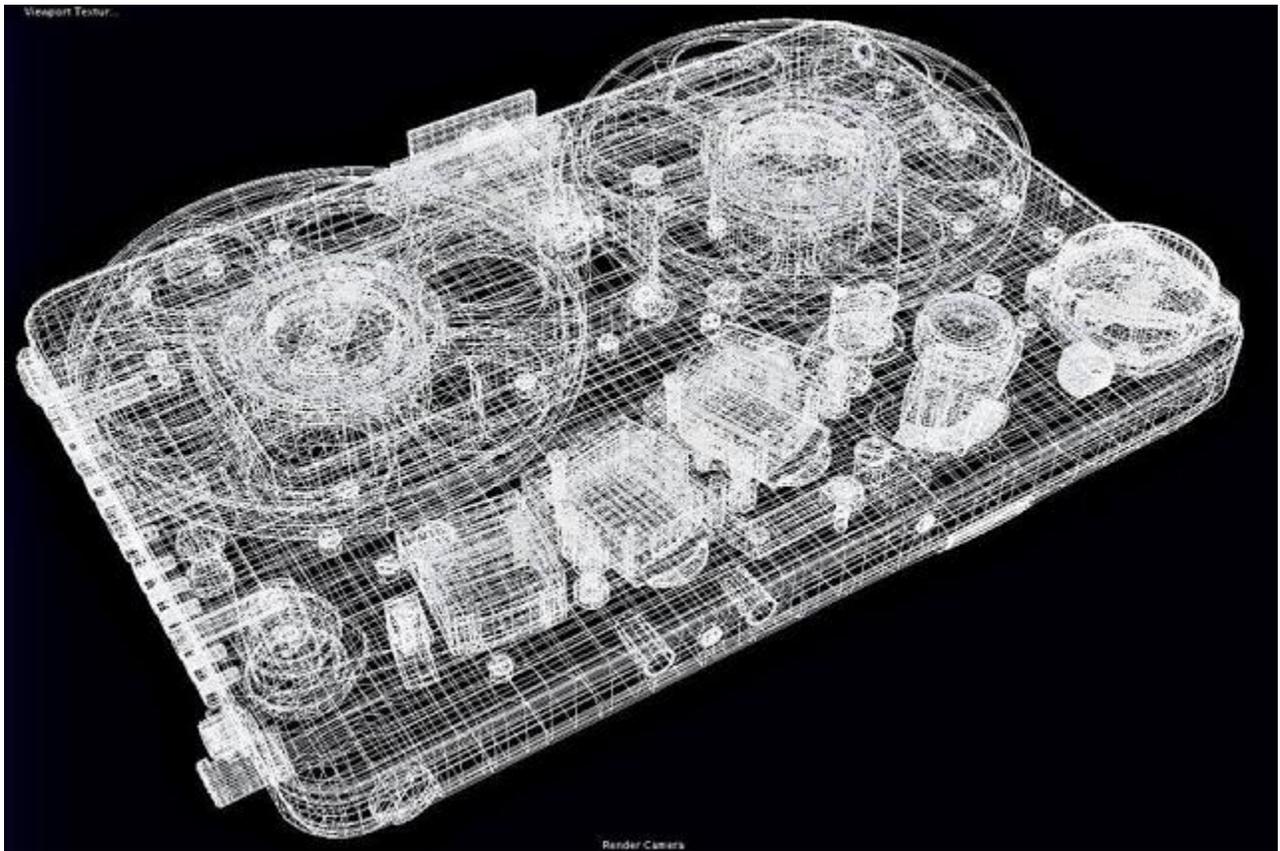
### **Production of the NAGRA II began in 1953**

The NAGRA II is quite sophisticated, driven by a Gramophone spring from language laboratory equipment, and with excellent subjective and audio quality. The recorder is extremely sturdy; No advertising is needed, every day new reporters become acquainted with the machine and immediately try to buy one.

The manufacturing was done at a house in Prilly (West of Lausanne) where a small staff were employed by the Kudelski company, listed in the trade register of the city of Lausanne in 1953. Improvements are in the making; towards the end of 1954 a printed circuit board is mounted in the NAGRA II and the microphone jacks are standardized. By the end of 1953 eleven employees work full-time.

By 1956 this number has risen to 17. Although the NAGRA II has well served its purpose, it must be improved still further. A much better machine, with exceptional specifications in all respects has to be created; in 1957 this is done.

Nagra III professional on location reel to reel tape recorder in the [Reel2ReelTexas.com](http://Reel2ReelTexas.com) vintage recording collection. Kudelski Sync SLP No63187c4 in the [Reel2ReelTexas.com](http://Reel2ReelTexas.com) - Museum of Magnetic Sound Recording vintage recording collection.



In 1958 the NAGRA III sees the light of day. It is a solid-state machine employing an electric motor with closed loop servo speed control. It is a fully transistorized machine with all the modules enclosed in metal cases. It is powered by conventional “D” type batteries. Moreover, it is equipped with a true peak meter called a “Modulometer”. Orders come flooding in and 240 NAGRA III machines are completed in 1958.



The NAGRA III was becoming a standard in many different industries. The system “PILOTON” for lip synchronization of audio recordings with moving pictures, made good results possible, but a better system was needed.

Stefan Kudelski invented the “NEOPILOT” system, and the first NAGRA III machines equipped with the system were sold in 1962. Commercial motion pictures were traditionally filmed using a dual system, that is picture on photographic film in the camera, and sound on a magnetic tape

recorder. Neopilot was the standard synchronization system used to synchronize these separate elements until the late 1980s, when time code became the preferred standard. Nagra used a special, very narrow time code track in between the space of channel 1 and channel 2 on the stereo Nagra IV-S and T models.



Success of the NAGRA III was huge, and delivery times were between 6 and 8 months. Production has to be increased continually.

In 1964 office space and manufacturing space is rented in Renens, then in 1965 in Malley. At the end of the year a factory in Neuchâtel is purchased. A vast piece of ground is purchased in Cheseaux-sur-Lausanne, for the construction of a dedicated factory. In 1967 the 10'000th NAGRA III is celebrated.

In early 1969 the NAGRA III is replaced by a more efficient machine: the NAGRA IV and 2510 machines are built in 1969.

In 1970 the NAGRA 4.2 was introduced to replace the NAGRA IV. It once again offered improvements on its predecessor with new features and better audio performance.



In the same year the IV-S was introduced. A Stereo machine destined towards the music industry, allowing musical performances to be captured in Stereo in a portable format.

The NAGRA SNS was also introduced in the same year. This half-track slow speed version of the SNN became a standard tool with law enforcement agencies around the globe.

In 1974 a new extra lightweight recorder, the IS, for broadcasters was introduced. The IS was followed in 1976 by the NAGRA-E which was a single microphone input, single speed recorder for reporters.

In 1977 the SNST a stereo version of the successful SNS machine for the security industry was also developed. Nagra SN miniature reel to reel tape recorder photo in the Reel2ReelTexas.com vintage recording collection. 1977 also saw the introduction of the NAGRAFAX.

1978 saw the introduction of a sophisticated instrumentation recorder, the NAGRA TI.

In 1979 the T-RVR (Remote Voice Recorder) was built. The capstan-less machine was designed as a logging recorder for radio broadcast transmission logging as well as telephone lines.



In 1983 the Kudelski company entered into a commercial joint venture with the AMPEX corporation of America, with the aim of building the worlds smallest, lightest professional portable C-format video recorder. The development and construction was entirely completed in Cheseaux. The resulting machine was baptised the AMPEX-NAGRA VPR-5. Using rotary head technology and the state-of-the art SMD (Surface Mount Devices), the project came to fruition and great leaps in technology were achieved.

AMPEX ordered 100 machines, which were to be used to cover the Mexico World Cup in 1986.

Nagra TA TC professional reel to reel tape recorder photo in the Reel2ReelTexas.com vintage recording collection.

The JBR security recorder was introduced in 1984 with the aim of replacing the ageing SNST technology with a smaller, undetectable covert recorder for the security industry.

In 1984 the IV-S was adapted to accept the SMPTE / EBU time code system for motion picture synchronization previously only used in video recorders, and the IVS-TC was born. In 1985 the NAGRA T-AUDIO was also adapted to this new universal synchronization format. It became the most sophisticated transfer machine ever built and was to be found in post-production facilities all over the world.



1992 saw the return to the traditional location sound acquisition with the introduction of the company's first digital audio recorder the NAGRA-D.

In 1997, Nagra launched the PL-P, a vacuum tube phono preamplifier, beginning a range of high-end audio equipment. The range is intended for audiophile consumers as opposed to exclusively the professional equipment manufactured hitherto. Since then, the range has grown steadily and have added tubes and mosfet amplifiers, CD players, other pre-amps and DACs. Now divided into 2 Classic and HD lines, Nagra's products are acclaimed by many journalists as being among the world's best sound reproduction electronics.

The reputation of Nagra equipment is firmly established among audio professionals. Whether in the television and cinema industries or among radio journalists, Nagras are always appreciated for their sound quality and reliability.

Equipment such as the Nagra III, 4.2 and the Nagra IV-S Time Code are seen as benchmarks in terms of sound recording for cinema productions and have been used on film sets the world over. The performance of this equipment has been recognized with three Oscars® and an Emmy® Award.



*Images credits - Yukio Miyamoto* For more information please visit [www.nagraaudio.com](http://www.nagraaudio.com)