

REPORT 311-6

THE PRESENT POSITION OF STANDARDS CONVERSION

(Question 2/11, Study Programme 2B/11)

(1963-1966-1970-1974-1978-1982-1986)

Although early methods of standards conversion involved electro-optical image transfer techniques, methods of conversion which do not require the use of the image-transfer method have been developed, and are employed in the United Kingdom and in Japan. These are field converters for both monochrome and colour television which, in the past, used ultrasonic delay lines as the storage medium.

Work in the United Kingdom and in Japan has led to the successful development of digital field converters, employing stores based on dynamic shift registers or random access memories having the capacity to store two, three or four fields. These digital converters are now in wide use at earth stations and broadcasting centres throughout the world. Operations with these equipments have confirmed that converters of this type can be relatively small in size, and are likely to prove very stable in service and economic in terms of running costs. In general, they include far fewer pre-set and operational controls than corresponding analogue equipments. The performances of the digital equipments are noticeably better than that of previous converters and the signal-to-noise ratio at the output can be significantly better than that at the input.

A new standards conversion algorithm has been developed [CCIR, 1982-86a] which uses a position interpolation technique for frame rate conversion in addition to the conventional linear interpolation in order to solve the problem of motion judder. This algorithm was successfully applied to a standards converter from 1125/60 to PAL in order to meet the requirement that the high-definition television should be converted to the existing television systems keeping a quality essentially equivalent to that of those systems.

The results of the subjective test for the output picture quality of this converter carried out by several broadcasting organizations show that the quality difference between the converted pictures and the direct PAL pictures is small. It is believed that a quality essentially equivalent to PAL quality will be possible within a reasonable period of time [CCIR, 1982-86b].

The conversion algorithm used in this converter can be applied not only to the conversion between the existing television systems but also to the conversion between television systems and film systems.

A considerable amount of work on the design and production of converters has been carried out in several countries. For the benefit of workers in this field of activity, a bibliography follows.

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CCIR Documents

[CCIR, 1982-86]: a. 11/270 (Japan); b. 11/405 (EBU).

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