



Marconi Communication Systems Limited

**Broadcast and Television
Transmitters**

Mobile Capability

A convenient and compact means of providing a broadcast service is offered by Marconi Communication Systems Limited (MCSL). The widespread use of transistor radios has enabled communications to be established, even in remote parts of the world, with a large number of people from a medium frequency broadcasting station. Some occasions may arise when it is important to communicate with the population in areas where normal broadcasting reception is inadequate, or separate broadcasts of a specific nature are required. For example, in some parts of the world, the occurrence of earthquakes, hurricanes, floods or tidal waves may interrupt the normal broadcasting services or other communication media, and a rapidly erected local broadcasting station can provide a useful means of imparting information to the community.

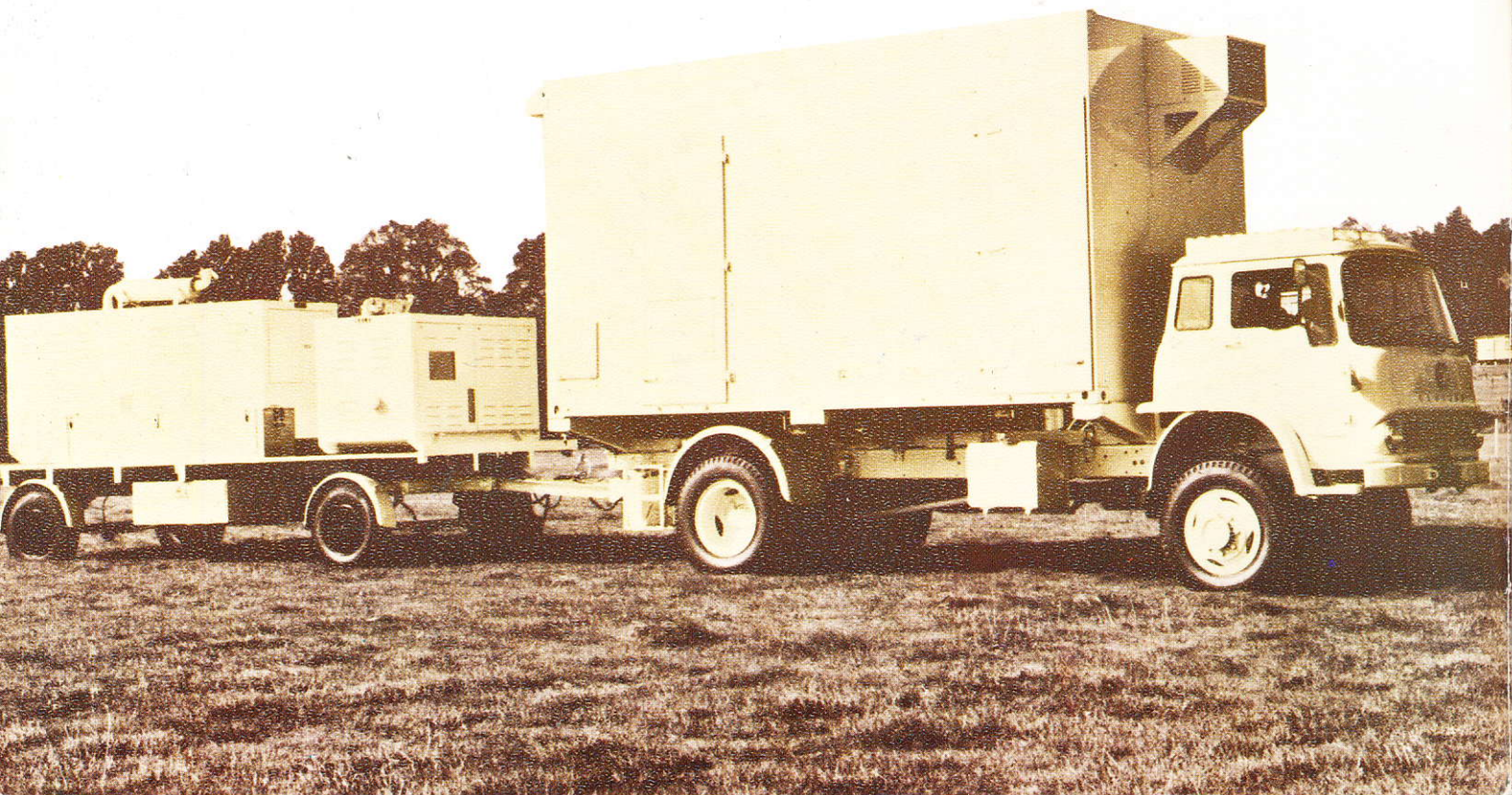
Mobile broadcasting units are also of use to the Military by providing information to civilians and the fighting forces in areas involved in military operations.

The MCSL Mobile MF Broadcasting Unit can be supplied in a container housing an MF transmitter complete with programme presentation facilities. A trailer mounted diesel generator provides power for the unit and enhances its mobility. An antenna system which can be erected in a short time completes the system.

The principle of mobility has also been applied to a recent design of low power UHF Television transmitter which is housed in a shelter complete with a video tape recorder and announcement facilities. These units may be set down at virtually any location to give local television coverage, provided a suitable power supply, antenna and mast are available.

Both these systems can be air transported to areas of operation and movement to the exact site carried out by local transport.

As parts of its services the Company would be delighted to discuss modifications to the standard arrangements to suit individual Customers' requirements.



MF Broadcasting

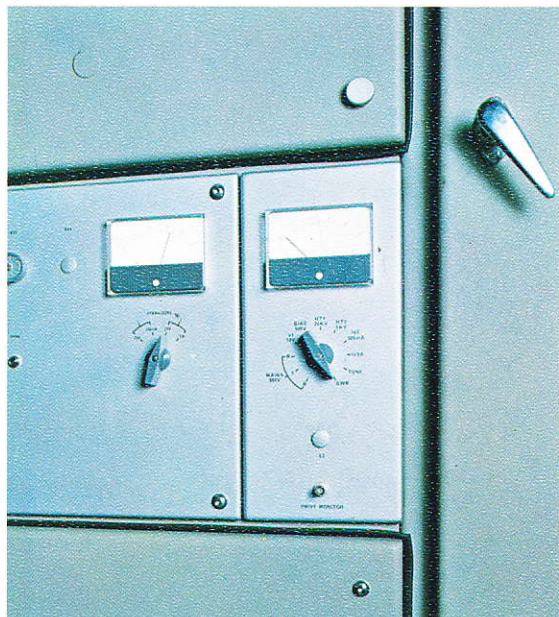
Medium Frequency Broadcasting, in spite of the congestion in a band with a limited number of channels, is nevertheless still popular and growing.

The MCSL product range starts at 1,000 watts, a popular power for local community broadcasting for the shorter ranges, and extends into a class of equipment capable of radiating megawatts. Thus for province-wide, or external coverage, MCSL manufacture 500kW or 750kW vapour cooled transmitters. Systems have been designed using the 750kW transmitter, such that the transmitters can be paralleled upto 2.25mW for the super power operation. The company has extensive experience of the super power installations, and have installed a number of systems world-wide over the past few years.

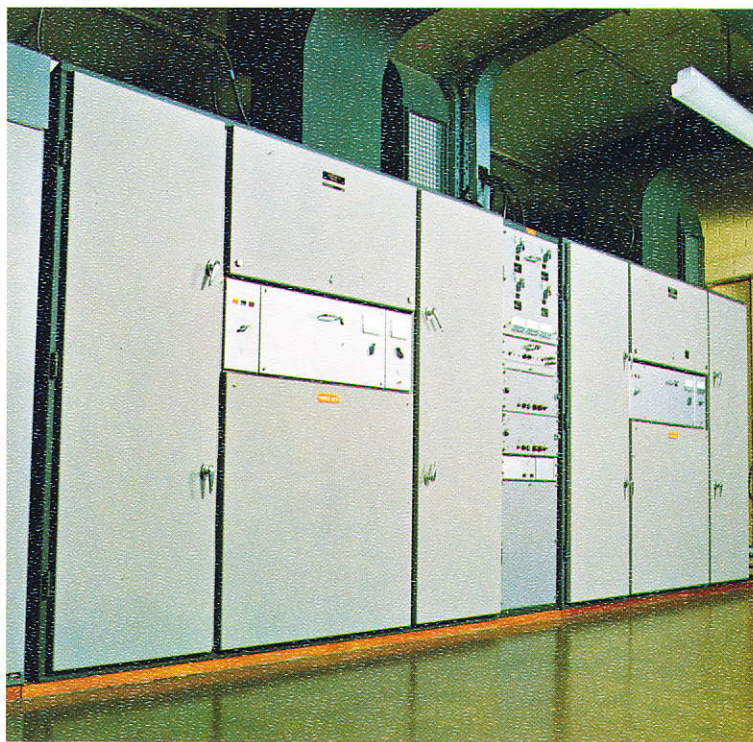
Planning capability includes individual stations or even countrywide coverage. Typical of the latter nationwide coverage is the work carried out for the planning of the commercial local radio stations in the United Kingdom, which posed the problem of both mutual interference between the stations, and minimising radiation toward other European countries.

Long experience on high power and super power installations enables MCSL to plan, supply, deliver, install and commission all the equipment necessary for a complete transmitting station. Expertise is available on the planning of civil engineering works and our drawing office have specialist engineers available for such consultancy work should turnkey projects be required, from the low power community stations, to the super power installations covering whole countries.

Close up of Drive and Control Panel of 10kW MF Transmitter.



Two 10kW MF Transmitters operated by IBA at Saffron Green, Nr. London.



CAPITAL
RADIO 194

ALL THE HITS AND MORE

194 METRES
MEDIUM
WAVE | 95.8



FM Broadcasting

In many countries a VHF/FM broadcasting network has been set up to augment existing MF coverage, or to provide alternative programmes on a nationwide or a localised basis, with limited coverage, to provide programmes of local interest for a city or large town.

Increasing interest is being shown in VHF/FM broadcasting due to the inherent high quality of the audio signals produced by the modulation process. This interest is related to the great demand for high-fidelity receivers and audio reproducing equipment. Many Broadcasting Authorities devote at least some of their programme time to stereophonic broadcasts which, with the necessary ancillary equipment, can be transmitted as part of the VHF/FM signal.



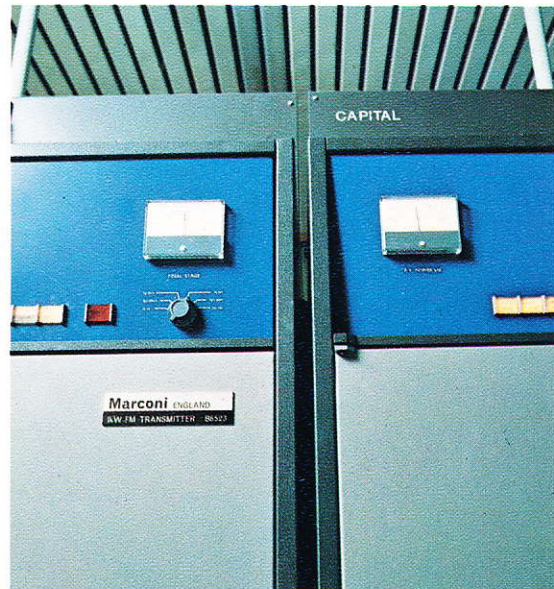
Two 1kW FM Transmitters operated by IBA for LBC and Capital Radios.

It is common practice for a transmitting station to house several VHF/FM transmitters, each of which radiates a different programme, and this requires the provision of equipment to combine the output of the transmitters into the antenna feeder.

MCSL has for many years produced transmitters and combining equipment, as well as other products which form part of the transmitting system, and will undertake the design of equipment to customers' special requirements if it is not part of the normal product range.

The MCSL product range encompasses equipment from low power operation up to 10kW FM transmitters. Paralleling equipment is also available to facilitate even higher power operation. The company has delivered a number of FM systems together with the studio equipment for production of the radiated programmes. Studio systems are available for all frequencies—FM, MF and HF—and planning capability is extensive in sound equipment for the broadcast studio itself.

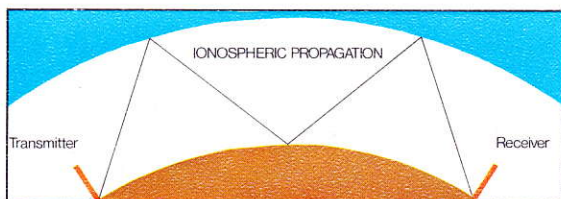
Other services available, in common with those on other broadcasting bands, are investigations into coverage problems and the carrying out of field-strength surveys.



Close up of Transmitter Control Panels

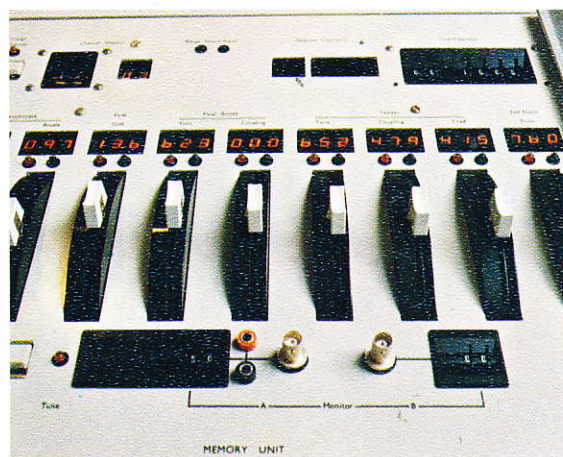
HF Transmitters for w

In spite of the great advances in satellite communication shortwave broadcasting currently remains the most popular way of transmitting programmes between different countries however far apart. This type of broadcasting works on the principle that waves are reflected between the ionosphere and the earth's



surface successively so that they in effect follow the curvature of the earth's surface. Different frequencies in the shortwave band are chosen depending on the time of day to ensure good reception at all times and this in turn necessitates specially designed transmitters and directional antenna systems which can readily change channel several times a day.

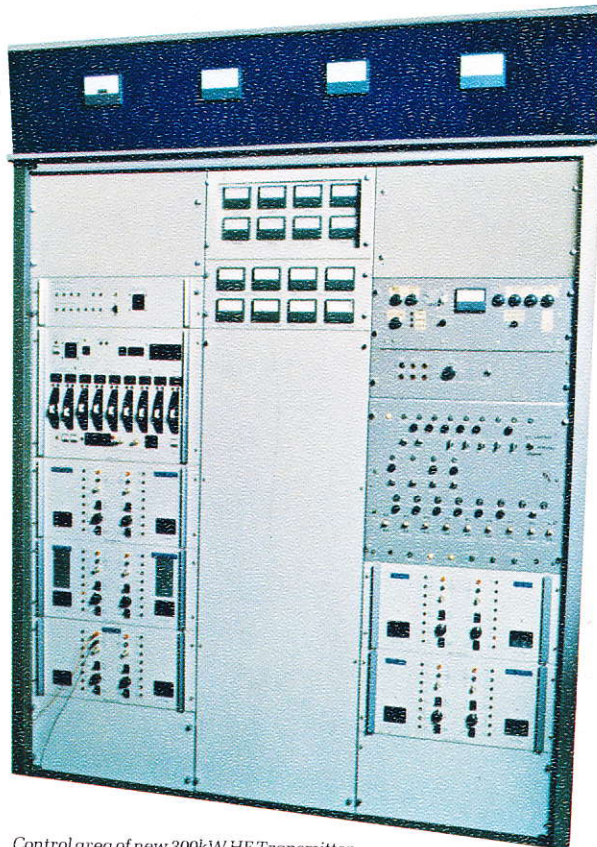
The higher power transmitters represent a bigger capital outlay and greater running costs, hence there is an increased need to make maximum use of the equipment installed. This places a premium on reliability, and an ability to change rapidly to new frequencies either to overcome a deterioration in constantly changing propagation conditions or to equip the transmitter to broadcast in a different programme to a different area.



Worldwide Broadcasting

MCSL experience in shortwave communication starting with Guglielmo Marconi's first experiments in transatlantic communication at the start of the century has culminated in one of the most advanced high power transmitter designs of this decade. Capable of channel changing in seconds at the touch of a button or by command from a computer controlled program system, this 300kW equipment combines MCSL's philosophy of maximising reliability and ease of maintenance.

Planning for a shortwave broadcast transmitting station which usually involves a multiplicity of transmitters, antennas, feeder switching and programme source switching requires considerable expertise which MCSL is able to offer in addition to the necessary hardware.



Control area of new 300kW HF Transmitter.



Television Transmitters

Since the Marconi Company supplied the first television transmitter for the world's first public service in 1936 it has been in the forefront as a major supplier of television transmitters throughout the world.

A complete range of modern transmitters and transposers covering all the television bands is available with output powers extending from a few watts to 55 kilowatts. The transmitters are designed to transmit colour pictures of the highest quality in any of the three colour systems PAL, NTSC or SECAM, and the high performance and stability so necessary for unattended applications has been well proven in the field in all climates.

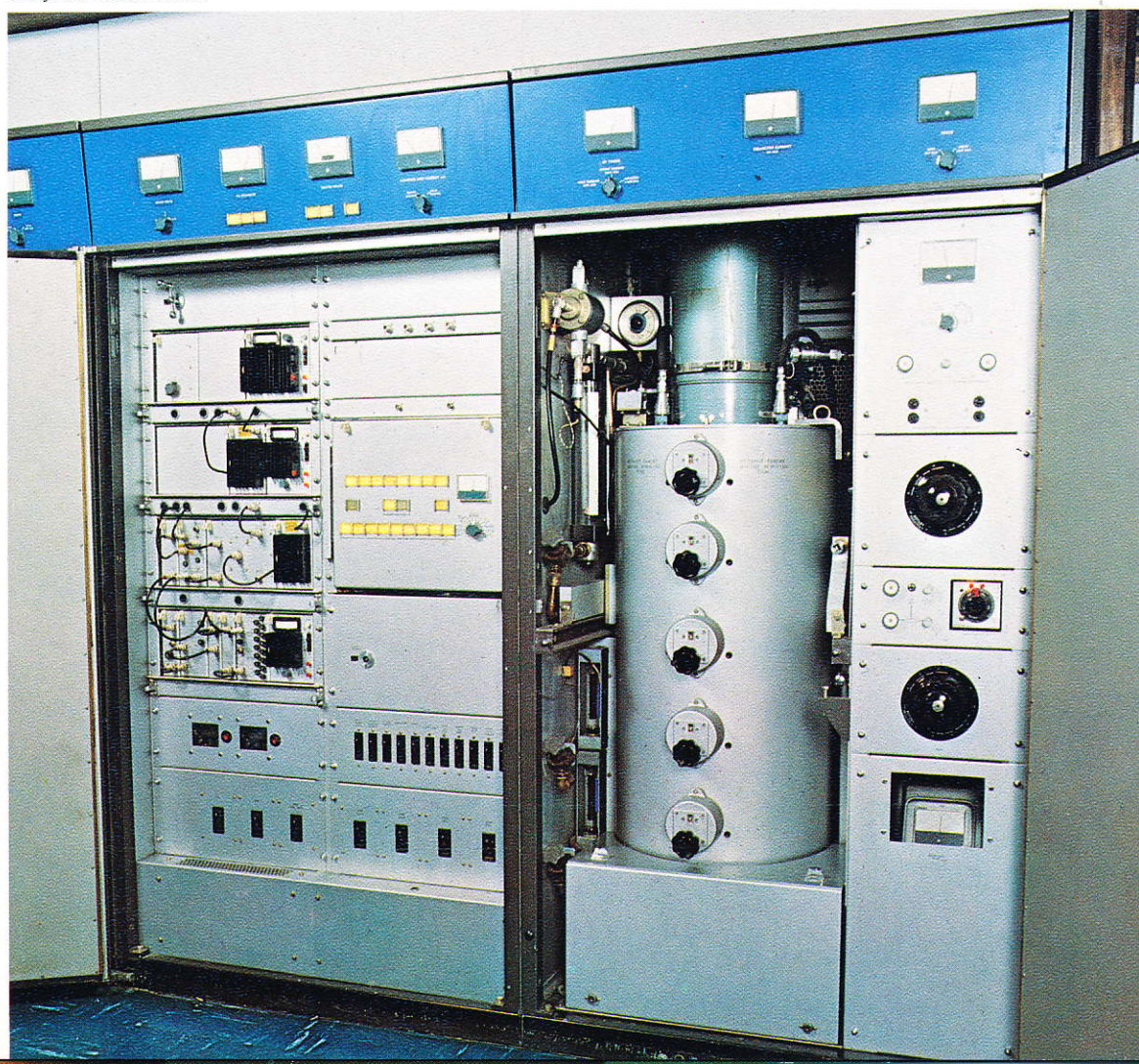
Complementary equipment necessary to complete fully working systems are also made "in house" and these include such

specialised items as multi-channel antennas, multi-channel combining units and special coaxial switching arrangements which include automatic facilities where necessary.

To back up this comprehensive range of television transmitting equipment, MCSL has a wide complement of products for the associated studio systems, providing television production facilities for both monochrome and colour installations. Our range encompasses black-and-white and colour cameras, plus vision and sound switching, presentation and mixing equipment.

A complete system engineering capability has been instrumental in providing many major uses throughout the world with a variety of successful systems. This facility continues to be at customers' disposal.

*Unattended 40kW UHF Television Transmitter
at Crystal Palace, London.*



*Opposite page.
MCSL Mark VIII
Colour Cameras
at Harlech
Television*



Antenna Systems

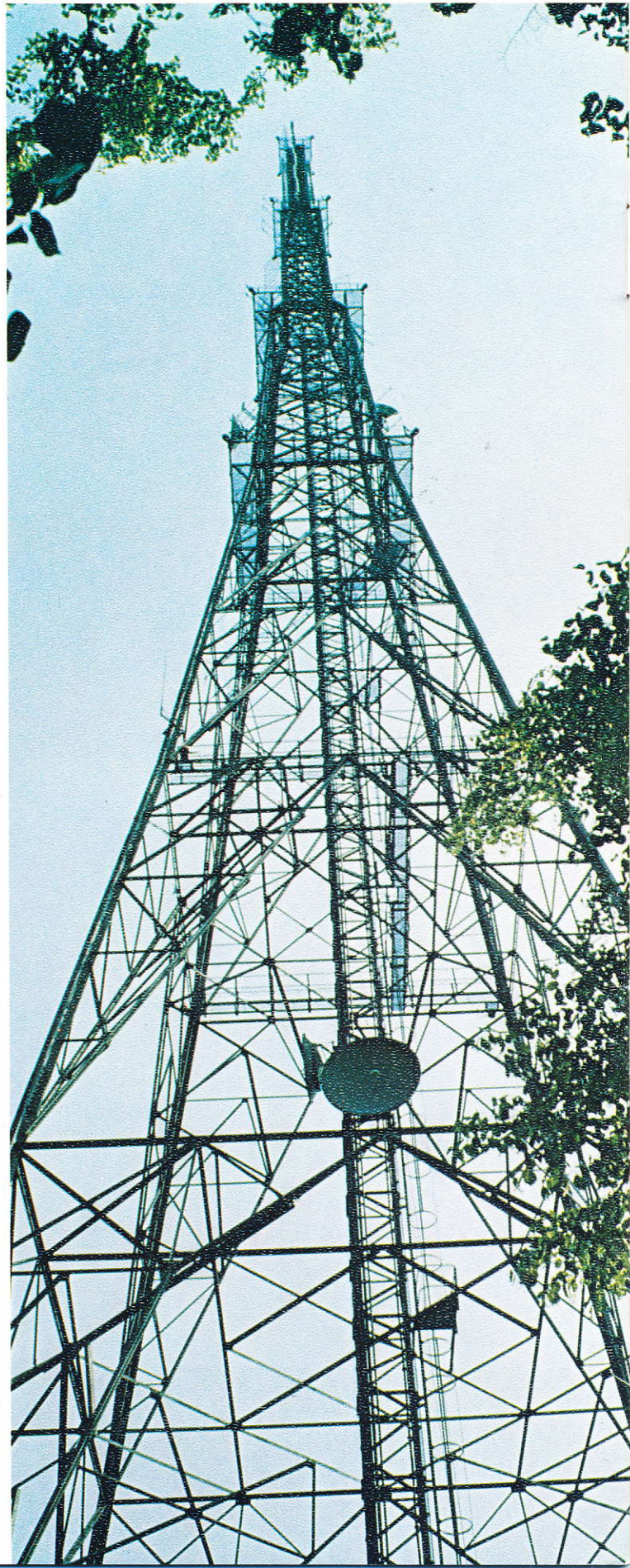
MCSL designs cover the complete range of sound broadcast and television bands. As well as individual antennas, complete systems including supporting towers are designed and supplied. All aspects of installations including site inspection, civil engineering, erection, testing commissioning and subsequent maintenance are undertaken.

Medium frequency radiators can be supplied for a wide range of requirements from highly directional arrays for super power installations down to economical transportable "umbrella" radiators for low power applications.

High frequency broadcasting is mainly used for long distance external services and depending on how many countries are to be served the antenna system can vary in complexity. However up-to-date broad-band arrays reduce the number of "curtains" to a minimum, thus economising in the area of land required for the antenna systems.

MCSL Television Antenna designs cover all the requirements usually met within the VHF and UHF bands and in particular offer the facility of multi-channel working. Also available are designs of special filters and combining units which enable several transmissions to be fed to a single radiating system.

On all sound broadcast and television bands MCSL offers comprehensive propagation planning services and objective and unbiased consultancy work can be undertaken. This expertise is backed up by a wealth of past experience and supported by the extensive facilities of GEC-Marconi research laboratories at Great Baddow, Essex, where work is carried out on such diverse subjects as antenna and feed design, propagation measurements and mathematical analyses.



A total communications package

Marconi Communication Systems is a member of the GEC-Marconi Electronics group of companies which is in turn part of the General Electric Company.

MCSL is renowned for its handling of complete 'turnkey' projects, the execution of which calls for the application of many different aspects of systems expertise.

In the pre-contract stages, operational requirements are translated into a detailed system proposal, involving the analysis of the system including topographical, radio propagation and site surveys; and environmental studies of geography and climate. Based on these findings, an objective selection is made of equipment that will form the basis of a reliable, cost-effective system. Liaison is established with outside contractors in the matter of building design, and assessments are made of local architectural standards and civil engineering capability.

When the feasibility of the overall proposal has been proved, systems engineers initiate any necessary development, or modification of the equipment, which they then interface and intergrade so that it forms a unified system.

Only a company with the experience and resources of MCSL is in a position to guarantee the success of projects that make such large-scale demands on initiative, engineering skill, and management expertise.



In addition to its complete systems capability in Broadcast and Television Transmitters MCSL has an enviable reputation in all other areas of communication. This includes satellite communication systems and HF equipment.

During this year (1976) the Company has won the Queen's Award for Technological Achievement in respect of its telecine system which is the world's first telecine with a film transport designed specifically for television broadcast operation and represents a significant advance on all other equipment currently in use. Other activities include, radio communication equipment and systems including point to point, microwave and tropospheric scatter systems, and naval communications.



Work is also carried out on digital equipment systems covering PCM, Data Transmission and Error Correction. Additional products include Mobile Radio systems, communication receivers and specialized components. The photograph on the left-hand side shows the Goonhilly III Antenna built for the British Post Office. The other photograph is of a receiver from a new Marconi Fast Tune (MFT) range of HF equipment.

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