

# Telecommunications in Bangladesh



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## Beyond Range of Human Voice

by Rahat Fahmida

THE history of communications is as old as that of man himself for, from the earliest records, there is evidence of man's desire and efforts to communicate speedily with others beyond the range of human voice and sight. Probably the first method of communication was by means of runners and, even in comparatively recent centuries, fires or beacons were commonly employed as means of rapid communication. One can, in fact, quote innumerable methods, such as drums, semaphore, and so on, which have been used successfully at various times for the rapid transmission of information. All of these methods of communication were essentially telegraphic, that is they involved the transmission of a written message or the use of oral or visual coded signals.

It was not until the nineteenth century that physicists turned seriously to the scientific examination of speech sounds. This together with the historic pioneer work of Oersted, Davy, Sturgeon, Faraday, Page, and many others in the electrical field paved the way to Graham Bell's electric telephone of 1875.

The word telephone (which incidentally is derived from the two Greek words *tele*, meaning at a distance, and

*phone*, meaning speech) was in use some considerable time before Bell's patents, and was — according to some authorities — first used by Sir Charles Wheatstone to describe a mechanical arrangement which he had devised to transmit speech from one room to another.

In modern usage the true literal derivation is somewhat lost, and the word *telephone* almost invariably implies the transmission of speech over a distance by means of electric currents.

It is highly desirable for all to know more about the world of telephone, with a proper understanding of the nature and behaviour of sound, and particularly the form of sound with which telephone is most concerned, that is, human speech. All who possess the normal faculty of hearing are fully aware of the diversity of the sounds which form a part of everyday life.

Some sounds are irritating to a greater or lesser degree, whilst others are pleasing or even musical. Moreover, sounds can be further described by such terms as loud, soft, harsh, mellow, explosive, high pitched, low pitched, and so on. What then is the nature of this sound which excited the auditory system in so many different ways?

When any source of sound,

such as a tuning fork, bell, or violin string is examined, it is found that the emitting body is in a state of mechanical vibration. In some cases this vibration is apparent to the naked eye by the blurred outline. Less pronounced and more rapid vibrations can be detected by means of a pith ball, where as other vibrations may require sensitive apparatus for their detection. In every instance, a sound can be traced to the mechanical vibration of some solid, fluid, or even, as in the case of organ pipes, to the vibration of a column of air.

In Bangladesh tele-communication was established decades back. As a developing nation it has come a long way with the progress of science and technology. One of the new developments is the introduction of loud speaking telephones. Such instruments cannot, of course, meet all the requirements of commercial telephony but there is a considerable field of application in quiet offices where the user spends a large part of his time "on the telephone."

The provision of loud-speaking facilities introduces a number of transmission problems. Possibly the most important difficulty is the provision of a circuit which has adequate volume and sensitivity but which will remain stable and free from self-oscillation under

all conditions of use. It is apparent that an ordinary telephone circuit would not remain stable under conditions where there is good acoustic coupling between the loudspeaker and the microphone. Speech currents from the microphone induce corresponding currents in the line and part of these currents circulate through the local loudspeaker. The resultant sound energy energises the microphone and the currents build up until the instrument "sings" at a resonant frequency of the circuit. It has already been stated that in any reactive circuit of this type, the amplitude of self-oscillation will build up until the total losses in the circuit equal the total gains of the circuit. Thus, a sensitive microphone and the amplification of in-coming speech to provide a satisfactory volume on the loudspeaker produce conditions which are diametrically opposite to those required for a stable circuit.

It would appear that the provision of a differential or balance transformer would solve this difficulty. Such a scheme is, however, not practicable. It is comparatively easy to provide a local impedance equal to a given line impedance at a particular

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## Siemens' Hi-tech Hicom Inter-com System of the Future

Gunter Krause

NOTHING is more important to the smooth operation of a hotel than its phone lines, which must provide the hotel and its guests with clear connections not only to the outside world but also to each other. Also, keeping up with the sophisticated communications needs of today's business traveler is no small task. So when Beijing's Friendship Hotel went shopping for a new telecommunications system to replace their aging crossbar system, they were looking for a system that would bring them into the future and allow them to keep pace with technology without having to replace its major components every 10 or 15 years. Siemens' digital Hicom 300 system turned out to fulfill all requirements.

Indeed, they were considerable requirements. As the largest in China's chain of 11 garden-style Friendship Hotels, what is referred to as the Beijing Friendship Hotel is actually a good-sized village of 50 guest houses with 1900 rooms, spread out over an area of 230000 square meters. In addition, the hotel houses the offices of some 100 other Chinese businesses (most of which are also switched behind the Hicom PBX), as well as 26 restaurants and numerous conference rooms. Various gardens typical of those found in China's different regions beautify the grounds, and every possible convenience is offered to its guests: a nursery, a medical clinic and recreational facilities ranging from a health club and massage parlor to tennis courts and an indoor swimming pool. When one considers the size of the Beijing Friendship Hotel complex, it does not come as a surprise to learn that the Siemens Hicom 300 PBX installed at the site in March 1990, with 180 digital trunk lines and 3000 extensions, is currently the largest Hicom telecommunications system to be found in a hotel anywhere in the world.

### Future-proof quality

The attraction of the hotel's management to the Hicom 300 by Siemens was primarily digital. As a true ISDN system, the Hicom could bring the hotel's communications network into the digital age, providing them

not only with the clarity of connection one expects of a digital system, but also with absolutely future-proof technology that will not need replacement or adaptation — which ultimately means long-term savings. And in the short term, thanks to the adaptability of Hicom, the hotel was able to minimize costs by keeping the cabling system already in place, as well as their existing computer.

The digital network was established with the installation of 180 digital trunk lines from two central offices routed via six PCM30 interfaces with modified MFC-R2 signaling. The routing of the trunk lines in this way ensures a more than adequate capacity for the hotel's communications traffic. At the same time the digital nature of the system allows for future attachment of terminals other than telephones for communications functions such as telefax or data processing as the need for such functions arises, or even for the attachment of multiterminals, which enable the user to perform several functions at once. In short, the Hicom 300 was the surest, easiest and most economical way for the Friendship Hotel to meet its current and future demands for high-quality communications.

### Friction-free communication

Probably the Hicom feature which the hotel is most pleased to extend to its guests is the system's capacity for direct inward dialing (DID), which the management offers for a small fee. Made possible because of the digital trunk lines, DID allows for calls made outside the system to be received directly in the guest's room. For business travelers, as well as for businesses located on the hotel grounds, DID means that clients attempting to contact them need not route their calls through the hotel operator — an outdated method which invariably leads to a logjam of the phone lines and excruciating delay and for foreign callers perhaps even to the frustration of a language barrier impasse. With DID, however, the hotel guest need only pass his designated phone number on to his business associates and Hicom will automatically route

their calls to him directly. If the line is busy or there is no answer, the caller can still leave a message with the hotel operator or can be switched automatically to the integrated voice mail system. The result: friction-free business communication for the hotel's guests and resident businesses; easier and more pleasant management of the phone lines for hotel staff members. For business people choosing a place to stay and for businesses needing office space, the availability of direct inward dialing at the Friendship Hotel has become a definite attraction.

Another priority of the hotel management was to provide fingertip access to as many services as possible via the telephones in the individual guest rooms — a daunting endeavor in view of the hotel's size. But the Hicom 300, in connection with Siemens Comtel 3 telephones in each room, enables them to do just that.

Each telephone is equipped with pre-programmed feature buttons to put the guest immediately in touch with the operator, room service or to the hotel's wake-up service. The fourth feature button provides the hotel guest with automatic callback for calls made within the system. If he calls room service, for example, and receives a busy signal, he can enter an automatic callback request and hang up. Then, as soon as the room service line becomes available, the guest's phone will ring. When he lifts the receiver, a connection will be established to room service and the call may be completed. The callback feature saves time and minimizes frustration for both the hotel guests and its staff by allowing for fast-possible service. It is worth noting again that the automatic callback feature is available at any station on the hotel complex, for guests as well as members of the staff. Consequently, everyone connected to the Friendship Hotel's Hicom 300 enjoys simplified communications; the quick response time made possible by the callback feature lets people take care of business.

The Comtel 3 telephones also have an LED that indicates whether two further features of the Hicom system have been activated. The first, do-not-dis-

turb, allows for calls coming from within the hotel or from outside to be directed to the integrated voice mail server. The guest can retrieve the message at his convenience. Alternately, if the guest so chooses, he may have all incoming calls intercepted by the attendant. The LED flashes slowly to helpfully remind the guest to de-activate the do-not-disturb function whenever he wishes to receive calls in his room. The same LED flashes quickly to indicate activation of the message-waiting feature, which is stored in the voice mail system. Callers attempting to reach a party who is unavailable may leave a spoken message in that person's "voice mailbox," from which the guest may retrieve it at any time by using the telephone. The message-waiting LED informs the guest immediately whether any messages have been stored.

The voice mail system of the Hicom 300 was a very attractive feature to the management of the Beijing Friendship Hotel. (A voice mail server is integrated in the Hicom system). Not only does the voice mail system provide for the storage and retrieval of messages left by callers from within or outside the hotel, it also allows the hotel management to store information it wishes to make available to its guests. Operator prompts in both English and Chinese guide the user safely through the system, giving guests access to recorded information in five languages (Chinese, Japanese, English, French and German) about the numerous services available at the hotel, from health and fitness to beauty and entertainment. Taking advantage of the voice mail system in this manner helps the hotel give better service in several ways. It allows the management to supply guests with accurate, updated information, but, perhaps more importantly, it also frees up internal phone lines, making the staff more efficient at completing duties that require immediate personal attention, such as taking reservations and checking guests into and out of their rooms. Fulfilling the information demands of several

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The global telecommunications network is expanding into every corner of the world, linking more than half a billion telephone subscribers on all continents. Siemens has for many years played an active role in creating a worldwide telecommunication infrastructure. Our digital public telephone switching system EWSD has been accepted by 97 telecommunication authorities in 42 countries with some 22 million subscriber lines.

The Philippines is one example. Here some 240,000 subscribers are linked to 29 exchanges supplied by Siemens. During the next 18 months 30 exchanges will be added to provide 130,000 additional telephone connections.

And Siemens has set another milestone in the Philippines by installing the world's first fibre optic minisub cable link by using a specially built submarine plow. This minisub cable transmits

voice and TV signals between Cebu and Argao and further on to Dumaguete, a distance of nearly 100 km without using any repeaters. And in line with this rapidly growing telecommunication network, the Siemens joint venture company ETSI produces 150,000 telephones every year for the Philippine market.

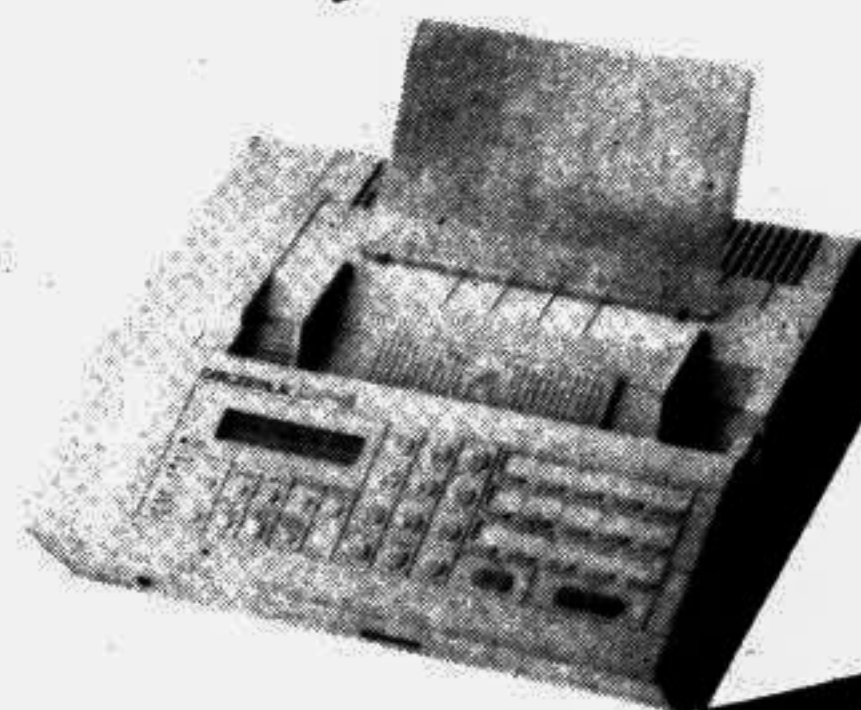
From digital telephone exchanges to telephones, from fibre optic cables to micro-wave links and advanced office communication systems, Siemens technology enables people to communicate, in the Philippines, in every Southeast Asian country, and throughout the world.

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