THE EVOLUTION OF THE COMMERCIAL INSERTION BUSINESS

ERNEST O. TUNMANN
PRESIDENT

TELE-ENGINEERING CORPORATION
2 CENTRAL STREET, FRAMINGHAM, MA 01701

Considered by many the most important non-subscriber revenue producer of the 1980's, the business of commercial insertion is discussed along its evolutionary milestones of the past two years.

Since the insertion of spot commercials depends upon the smooth interaction of technical, operation, marketing and production personnel, it is important that both hardware and software of the commercial insertion equipment satisfies a complex number of desirable features.

This paper presents a look at commercial insertion hardware and software from the viewpoint of features.

Features are grouped by production, insertion, random access, programming, logging, fail safe, remote operation, expansion, automated billing and management information.

Tele-Engineering's family of commercial insert equipment, the AD MACHINE™, the AD CUE 84™ and the AD CUE 100™ systems are then compared to these features to make the user aware of the differences.

1. EVOLUTIONARY DEVELOPMENTS

Tele-Engineering Corporation has been a designer and manufacturer of commercial insert equipment from the beginning, or since 1979.

At the time, we had a line of programmable time switching equipment on the market, which featured a seven day per week programmer for 8, 16, and 32 channels and to one second resolution.

The first commercial insert product was the AD MACHINE™ system. It is still being sold. It features semi-automatic operation and we like to refer to it as the "Starter Kit".

The AD CUE 100™ system is at the other end of the scale of our hardware development. We call the AD CUE 100™ the "Total System".

The AD CUE 100™ system is a sophisticated microprocessing time/tone switching system expandable to 18 channels of commercial insert.

The AD CUE 100™ system supports commercial insertion with time assignment cueing, up to 96x96 channel routing switches at baseband video, composite video and IF, as well as Local Program source switching and an array of special baseband and IF switching modules.

Last year, Tele-Engineering Corporation added the AD CUE 84™ system that we call the "Econoline" which is a compact 2 channel, four tape player version of the AD CUE 100™ system.

Early this year, Tele-Engineering Corporation introduced the COBIAS I™ automated billing system and the COBIAS II™ management information system. Both software programs can be used by replacing the Z-29 or WY-50 terminal with a Columbia MPC 1600-4 or IBM XT personal computer.

The business of commercial insertion has matured both in hardware and software to provide you, the user, with the proper tools required to conduct your business efficiently and economically.

FEATURES OF COMMERCIAL INSERT EQUIPMENT

- PRODUCTION FEATURES
- INSERTION FEATURES
- RANDOM ACCESS FEATURES
- PROGRAMMING FEATURES
- LOGGING FEATURES
- FAIL SAFE FEATURES
- REMOTE OPERATIONAL FEATURES
- EXPANSION FEATURES
- AUTOMATED BILLING FEATURES
- MANAGEMENT INFORMATION SYSTEM FEATURES

2. FEATURES OF COMMERCIAL INSERT EQUIPMENT

Without going into the vast differences between these product lines, it is appropriate to take a look at the features of commercial insert equipment.

Since the insertion of a spot commercial depends on the interaction of technical, operations, marketing and production personnel, it is appropriate to group the desirable features into the following categories:

Now, we can analyze each of these main categories individually.

2.1 Production Features

The production of spot commercials follows standard practices of the broadcast industry. The time slot reserved for commercial insertion varies from 30 seconds to two minutes, with most services, making available a two-minute period.

The length of the spot commercial has been standardized to 30 seconds. This means that, depending on the time slot, either one, two, three or four 30-second commercials are shown in sequence.

Ideally, then our commercial production department would produce 4 video cassettes with 30-second commercials and we use 4 tape players per channel.

At a price of about $1,500. for a Sony VP 5000 tape player, this method, however, does not appear cost-effective.

The compromise is 2 tape players per channel to retain flexibility.

Production would edit one, two or three 30-second commercials back-to-back on the first cassette and then use the second cassette for special, last minute, infrequent or fill-out commercials. An example may be the local hardware store that only bought one spot at 6:59 p.m. every day or an "HBO Tonight" message that is inserted whenever the last 30-second spot has not been sold.

PRODUCTION FEATURES OF
COMMERCIAL INSERTION EQUIPMENT

CHANNEL UNIT MUST SUPPORT 2 TAPE PLAYERS PER CHANNEL
EXPANDABILITY TO 4 TAPE PLAYERS DESIRABLE
FIXED ASSIGNMENT OF CHANNEL UNIT AND TAPE PLAYERS TO A NETWORK
SIMPLE PRODUCTION METHOD TO DETERMINE START POINT OF SPOT COMMERCIALS
SIMPLE PRODUCTION METHOD TO IDENTIFY SPONSOR AND COMMERCIAL NUMBERS
UP TO 1 HOUR LONG CASSETTES DESIRABLE

To avoid coincidences between spots of different networks, it is good practice to associate a channel unit with each network and to assign the playback equipment in the same manner.

Production can now proceed with the grouping of the commercials in a flexible manner and in accordance with the schedule of spots sold by the sales force.

Upon completion of the master tape, production has to determine the start location of each commercial group. This can be done by frame number count. There are 30 frames per second on a video tape that need to be counted in an accurate manner. A special unit is required to count the frame numbers of all commercial start locations for random access programming.

The second audio track can be used to carry sponsor identification and commercial numbers. A special unit is required to insert these identification numbers as cue tones. In this manner, there is correlation with the network cue tones and logging can become cue tone based.

At 30 frames per second, there are about 108,000 frames on a one hour cassette. It is, therefore, required that the frame number counting system of the commercial insert equipment can handle 6-digit numbers.

2.2 Insertion Features

The category of insertion features includes all functions of the commercial insert unit that are required to provide a clean and timely transfer to the commercial and back to the network.

INSERTION FEATURES

VERTICAL BLANKING INTERVAL SWITCHING

SYNCHRONIZATION TO THE SATELLITE SOURCE

PROGRAMMABLE SELECTION OF PRE-ROLL TIME

TIME ASSIGNMENT CUEING BY FRAME NUMBERS

Vertical blanking interval switching by itself is not sufficient to assure a clean picture transfer. Synchronization to the satellite source is mandatory. Each of Tele-Engineering's commercial insert systems incorporates this feature.

Digitally programmable selection of pre-roll time is an important consideration. Otherwise, a chip change is required to alter the pre-roll timing.

Most satellite services provide 5 and 8 second pre-roll allowance. The Sony VP 5000 tape player requires over 6 seconds to come up to speed and requires modification to comply with the 5 second allowance. It is hoped that the satellite services will soon standardize their pre-roll allowance to at least 6.5 or 7 seconds to account for sloppy VP 5000 players.

Time Assignment Cueing permits the association of a particular spot commercial with the desired time of insertion. Let us suppose for a moment that you have your spot commercials sold for a particular time slot. If for some reason the cue tone does not come or there is a short power failure, then the commercial insertion did not take place and your commercial will be played one hour later. Any following commercials would be played later as well and the entire spot programming is out of step.

Time Assignment Cueing is programmed on the CRT. The selected time assignment will move the tape player within 3 frames of the commercial start.frame.

Should the cue tone not come or the power fail, the tape player will advance to the next selected time assignment and only the execution of one commercial is affected.

2.3 Random Access Features

Random access programming is provided by using keyboard and CRT to enter the beginning frame numbers of all commercial spots in the desired sequence of playback.

RANDOM ACCESS FEATURES

- 7-DAY PROGRAMMING OF ANY AND ALL CHANNELS
- 100 SEQUENTIAL STEPS PROGRAMMABLE PER CHANNEL
  - (DAY PART AND ROTATOR SELECTION)
- SECOND TAPE PLAYER PROGRAMMING INTERACTIVE
  - WITH FIRST
- TIME ASSIGNMENT CUEING FOR EACH SEQUENTIAL STEP
  - OR GROUP OF STEPS

All of Tele-Engineering's family of commercial insert equipment permits programming for 7 days a week for every channel or network.

Each channel can be programmed for up to 100 sequential steps using 6-digit frame numbers to identify the begin location of each commercial spot. The equipment can be programmed optionally by position numbers, which is a data reduced frame number and defines the exact position on the tape. When two playback machines are used, then the second unit will interactively cue and pre-roll upon command of the first machine. This is accomplished by start-up cue tones on the second audio track of the first machine.

Time Assignment Cueing permits the rotation of a group of commercials during day part periods as well as the selection of promo material for any unused 30 second to two minute time slot. Time assignment cueing will protect the execution of a rotation sequence, a group of commercials or each individual sequential step.

2.4 Programming Features

User friendly programming must combine set-up, random access programming, logging recall and utility programming.

PROGRAMMING FEATURES

- SET-UP PROGRAM
  - IDENTIFICATION OF CHANNEL NUMBERS AND SATELLITE SERVICES
  - SELECTION OF MENU
- RANDOM ACCESS PROGRAM
  - CHANNEL SELECTION
  - TIME ASSIGNMENT SELECTION
  - STEP AND FRAME NUMBER SELECTION
- LOGGING RECALL PROGRAM
  - LOGGING SELECTION BY DAY
  - CONTINUOUS MEMORY DUMP
- UTILITY PROGRAM
  - MATRIX SWITCHING
  - LOCAL ORIGINATION PROGRAMMER
  - SUBSTITUTION SWITCHING

The set-up program permits the initialization of the system. It defines, for example, that CNN will be run on channel unit number 2. It defines the pre-roll time selection for the network. It identifies the cue tone sequences of the individual services and is used to set-up sub-carrier services like MTV.

Upon completion of initialization, any operator can now select the menu to proceed with:

CI - Commercial Insertion and random access programming
LOG - Logging recall
UT - Utility functions

The CI commercial insert random access programming proceeds by channel or network and associates the frame number listing from production with the desired sequence of playback.

In this manner, every channel can be programmed in sequence. The addition of time assignment programming now provides an association of the commercial position with day, hour, minute and seconds of the expected insertion. In this manner, seven days of programming can be completed in less than one hour per channel.

The LOG program simply recalls all recorded commercial information and displays it on the CRT. The user can verify on a continuous basis that the commercials are being aired.

The Utility program is used only for ancillary equipment programming, such as:

routing switching
protection switching
matrix switching
local origination switching

These time programmable switching functions are a part of the expansion capabilities of Tele-Engineering's insertion equipment.

2.5 Logging Features

Record keeping in the commercial insert business is important. In order to verify that a commercial has played, it is desirable that the following LOG features are incorporated.

LOGGING FEATURES

RECORDING OF START CUE TONES

RECORDING OF SPONSOR AND COMMERCIAL IDENTIFICATION

RECORDING OF DAY, HOUR, MINUTE OF COMMERCIAL START

RECORDING OF DURATION OF COMMERCIAL

CONTINUOUS MEMORY TO STORE DATA UP TO 7 DAYS (ALL NETWORKS)

ABILITY TO DUMP AND PRINT ON COMMAND SORTED BY CALENDAR DAY

All logging is cue tone based. Each commercial is logged by channel number along with sponsor or commercial number that was imprinted on the second audio track of the commercial.

The seven-day continuous memory logs the commercial identification by day, hour and minute of the start sequence and counts the running period by using a length code of 1 for every 15 seconds of the commercial time played.

In this manner, a sequential log of all commercials played is maintained in the continuous memory, which can be recalled at any time by the operator. The log schedule can be reviewed on the CRT and/or printed for affidavit and billing purposes on a day-by-day and line-by-line basis.

The capacity of the continuous memory is of importance to avoid frequent recall that may interfere with the operational billing intervals.

The commercial log print-out is purposely condensed and does not include any English notations because it has to be sent via telephone line to the distant business office. At 1200 bps, it is important to keep the connect time as short as possible.

2.6 Fail-Safe Features

Power failures are an important consideration in the commercial insert business. It would be disastrous to lose programming, clock reference and logging in a momentary power outage. Without proper fail-safe features, any commercial insert schedule would be altered by a power failure and go out of step.

FAIL-SAFE FEATURES

MAINTAIN PROGRAMMING OF STEPS AND FRAME NUMBERS
MAINTAIN TIME ASSIGNMENT CUEING
MAINTAIN EXACT DAY, HOUR, MINUTE
MAINTAIN LOGGING
STAND-BY OPERATION DESIRABLE UP TO 1 WEEK
MAINTAIN SATELLITE PROGRAM DURING POWER FAILURE
COMPLETE AND AUTOMATIC RECOVERY AFTER POWER FAILURE

It is then of utmost importance that all programming of step and frame numbers, all Time Assignment Cueing, all logging and exact clock references for day, hour, minute and second are protected.

What is meant by complete and automatic recovery is that clock memories, logging and programming have been properly maintained and that the commercial that is scheduled to play on the next day at 11:57 a.m. will play as scheduled.

The one week stand-by operation may sound like overkill, but we have received programmers for repair and returned them to the customer clear across the country, without loss of any memory, clock, programming or logging information.

2.7 Remote Operational Features

Most of Tele-Engineering's commercial insert equipment can be remotely programmed over standard telephone lines and can be remotely called to transmit the logging data back to the central location.

All interfaces of CRT's, printers and modems are RS 232C. Remote operation requires 1200 bps modems at both ends which is about the highest possible speed that produces error free transmission on the standard dial-up telephone network.

REMOTE OPERATIONAL FEATURES

PROGRAMMING OF TIME ASSIGNMENT CUEING OVER STANDARD DIAL-UP TELEPHONE NETWORK

PROGRAMMING OF STEP NUMBERS AND FRAME NUMBERS OVER THE TELEPHONE NETWORK

DEMAND ACCESS TO RECALL LOGGING INFORMATION BY DAY CODE

THREE DIGIT SECURITY CODE FOR REMOTE ACCESS

FOUR DIGIT LOCATION CODE FOR LOGGING IDENTIFICATION

To facilitate remote programming, it is important that the operator is given a schedule of time assignments, step numbers and frame numbers for each location to be programmed.

He then dials up the telephone number of the location to be programmed, waits for the programmer to respond to the call and dials the security code for access to the programming unit. He is now ready to transfer the programming information into the station's memory using the keyboard and CRT as if he were sitting next to the machine.

Verification of the completed programming should become standard operating procedure as errors on telephone lines can occur.

Demand access to recall the logging of executed commercials is established in an identical manner. After gaining access to the programmer, the logging program is selected by the operator and the command to send the information held in continuous memory is given. The operator can view all data sorted by day on the CRT and record the log on a standard line printer connected to the CRT.

The operator can execute the retrieval of data line by line and repeat each line in case of errors of the transmission medium.

A four digit location code is sent from the participating programmer so that it is easy for the operator at the central location to identify the market location after print-out.

2.8 Expansion Features

The business of commercial insertion will expand over the next decade. It is, therefore, important to consider related time and tone programming functions. Good commercial insert hardware should provide expansion in the following areas.

EXPANSION FEATURES

AUTOMATION OF LOCAL ORIGINATION CHANNEL

AUTOMATION OF ACCESS CHANNELS

MATRIX ROUTING SWITCHING

PROTECTION AND SPECIAL FUNCTION SWITCHING

FLEXIBLE EXPANSION OF COMMERCIAL INSERT CHANNELS

To automate the Local Origination channel, it is required to arrange a number of playback units in a manner that would allow sequential playback of program cassettes, infomercials, alphanumeric announcements as well as live programming.

Tele-Engineering's local programming switch shelf can be provided for up to 13 separate time programmmable video inputs. Two, four or eight inputs can be provided with tape player control and random access spot selection.

A cue tone option can be added which can be used to enter program and infomercial identification numbers and thus provide logging for operational record purposes.

The same method can also be used for commercial insert on the Local Origination channel as well as for automation of any desired access channel.

The programmer of Tele-Engineering's commercial insert system can support matrix switching configurations up to 96x96 switch points.

The switching equipment can be configured for baseband video with audio follow-on, for composite video and for IF frequencies.

The programming of protection switching and any special function switching, such as 4 on 1, dual 4 on 1, 8 on 1, 11 on 1 and alternate program (AB) switching, can be accomplished with the same programmer.

The expansion of the commercial insert business is only a matter of time. The commercial insert shelf configuration should permit easy expansion. Tele-Engineering's total system, the AD CUE 100™ system permits the installation of 9 channel units in the first shelf and can go to 18 channels by adding a second shelf.

2.9 Automated Billing Features

Stand alone automated billing is as important for the business of commercial insertion as it is for subscriber billing.

An automated billing system must be able to maintain the data on customer transactions, recall the logging of commercial spots that have been shown and print the invoices with affidavit or verification statement

The MENU selection establishes the execution of the automated billing program.

The selection of FILES enables the user to record data on customer, transactions, past dues, and commercial rates.

AUTOMATED BILLING FEATURES

MENU
FILES
COMMCALL
PRINTLOG
BILLING
BILLING SUMMARY

MANAGEMENT INFORMATION SYSTEM FEATURES

MENU
ALL AUTOMATED BILLING FEATURES PLUS
CONTRACT FILE
SCHEDULING
SALES ACTIVITY
COMMERCIAL LISTING
SPOT SALE
SCHEDULE REPORT
MARKET SHARE

The COMMCALL program enables the user to call an unlimited number of markets or commercial insert locations by dial-up and retrieves the logging information from the continuous memory of the commercial insert equipment. It also converts the numeric information to English for print-out and billing.

The PRINTLOG program sorts the logs of each commercial in chronological order, by day and by sponsor or customer. The PRINTLOG report is used as a verification report that the customer's commmercial ran as scheduled. It can serve as an affidavit of performance.

BILLING is selected to print invoices for verified and executed commercials. The program tracks past dues as well as all transactions, rate schedules, payments, credits and debits for each advertiser.

A SUMMARY program prints the summary of all invoices that were printed for each advertiser and consolidates the totals of all advertisers.

The COBIAS I™ automated billing software will operate on any IBM PC compatible computer. It requires two 5 1/4 inch disk drives and is programmed for three color presentations. The computer requires a standard RS-232C printer interface and a 1200 bps modem when remote operation through the dial-up telephone system is required.

2.10 Management Information System Features

It is appropriate to computerize the business of commercial insertion beyond the fairly simple billing program. Larger commercial insert networks require information relative to availability of spots, scheduling of available time periods, sales activity to monitor the effectiveness of the sales force, correlation between tape production and commercial numbers as well as information on spots sold, in which time frame and at which location.

To assure a total Management Information System, the COBIAS II™ software has been developed.

The CONTRACT file has been added to the FILES program and permits the storage of rates and commercial information in the form of a contract with all advertisers, sorted by market location.

The SCHEDULING program indicates which spots are available and which spots have been sold. Again the sorting is by network and market or location.

The SALES ACTIVITY report indicates all sales during the current month and for the past 5 months, sorted by salesman, network, market or location.

There is a COMMERCIAL LISTING program which cross references the production on file by tape master number with the commercial number of the various advertisers. This program enables the production personnel to quickly select repeat spot sales from the tape library and save time in the preparation of new tapes.

The SPOT SALE report will inform, at a glance, about what has been sold in each market, by network and time schedule.

A SCHEDULE REPORT informs the traffic manager every day which spots are open, so that he can schedule his own local insertions as filler material. This could be HBO program announcements, discount offers for subscribers, important local announcements or simple reminders for the subscribers.

The MARKET SHARE report lists the payables from advertisers sorted by name, contract, market location, rate structure and billing, inclusive of payments made and ageing for 30, 60 and 90 days.

The COBIAS II™ software requires the IBM XT version hard disk computer. In case you wanted to upgrade from the Automated Billing System to the Management Information System, only the computer units and the software needs changing. All other equipment remains identical.

3. THE AD INSERT FAMILY OF PRODUCT LINES

As mentioned in the beginning, Tele-Engineering's family of Ad Insert product lines consists of:

The AD MACHINE™ System (Starter Kit)
The Ad CUE 84™ System (The Econo System)
The AD CUE 100™ System (The Total System)

It is appropriate to spend a few minutes to review the features of these products.

3.1 The AD MACHINE™ System

The AD MACHINE™ system consists of a two- or four-channel commercial insert shelf, the AD CUE II™ command console and the AD LOG™ cue tone recorder.

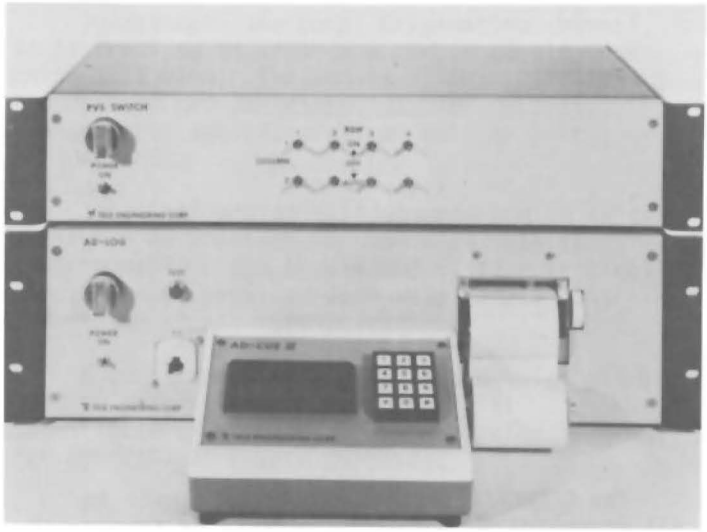
The AD MACHINE™ commercial insert shelf accommodates up to 2 dual channel modules that provide switching to the video tape player (VP-5000) in response to satellite cue tone sequences. A digital cue tone receiver can be programmed to the desired cue tone sequence and permits accurate responses without drift. The pre-roll delay is pre-programmable and pre-set to the satellite pre-roll time allocations. Switching is accomplished in the vertical interval of the satellite video signal.

The AD CUE II™ command console is a random access programmer that permits the sequence selection of the commercial spots on the video tape player by step numbers. There can be up to 99 steps selected per channel. The step numbers are programmed by frame numbers on the video tape. There are 30 frames per second. The AD CUE II™ console accommodates five-digit frame numbers. The AD CUE II C™ console accommodates six-digit frame numbers.

Upon execution of a commercial insertion sequence, the AD CUE II™ command console will advance the video tape player to the next selected frame number and park the player until the next cue tone insertion command is received. Off cue tones are used to switch the transmission back to satellite. Should the off cue tone not be received, the unit will return to satellite after a period of 2 minutes.

Additional cue tone sequences for spot commercial and sponsor identification can be added to the second audio track using the AD PRO™ automatic hand-held tone sequence generator. Cue tones are individually dialed and then executed in the proper 40 milliseconds per tone sequence.

Both satellite and AD PRO™ tone sequences are recorded by the AD LOG™ dual-channel, paper strip recorder expandable to 6 channels. The AD LOG™ recorder has a buffer to permit sequential printing of simultaneous cue tones by month, day, hour, minute and second of occurrence.



The AD MACHINE™ complement of equipment incorporates all features required for semi-automatic operation. It does not support Time Assignment Cueing, computerized logging or automatic billing.

The AD MACHINE™ system features are indicated below:

AD MACHINE™ SYSTEM - FEATURES

2 CHANNEL OPERATION

1 INPUT FOR VCR PER CHANNEL

PRE-PROGRAMMED PRE-ROLL TIME SELECTION

RANDOM ACCESS PROGRAMMING WITH AD CUE II™ PROGRAMMER OF UP TO 100 SPOTS PER CHANNEL AND 5 DIGIT FRAME NUMBERS

VERTICAL BLANKING INTERVAL SWITCHING

7-DAY PROGRAMMING (AD CUE II™) PROGRAMMER FOR 2 CHANNELS WITH 1 VIDEO CASSETTE PLAYER

FAIL-SAFE OPERATION OF SATELLITE PROGRAM DURING POWER FAILURE

STAND-BY POWER TO MAINTAIN PROGRAM OF AD CUE II™ PROGRAMMER AND CLOCK OF AD LOG™ THROUGH EXTENDED POWER FAILURES

3.2 The AD CUE 84™ System

The AD CUE 84™ system is a compact 2-channel random access commercial insert processor.

The AD CUE 84™ system supports 2 VCR's for cue tone derived commercial insertion and 1 character generator or video source for local program insertion. The AD CUE 84™ system permits 30, 60, 90 and 120 second commercial spots or local program insertions under time assignment control and satellite cue tone execution.

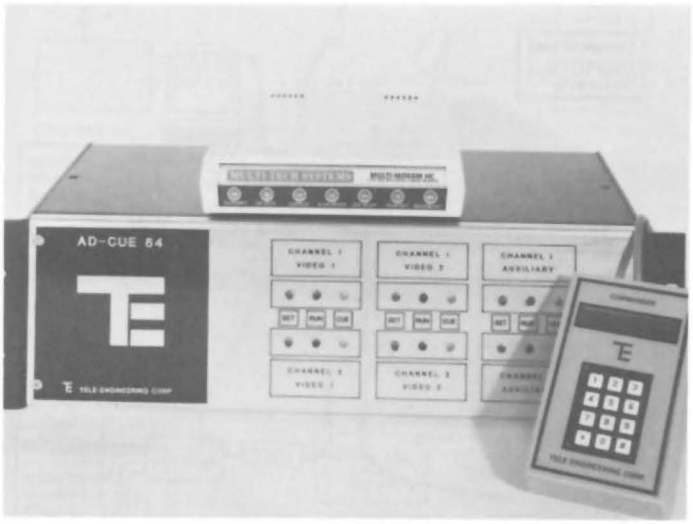
There can be up to 100 spots per channel and up to 200 time-program entries per channel and per week. The AD CUE 84™ system consists of the the AD CUE 84™ programmer, the hand-held Command Terminal, two 4-ft. cable assemblies for VCR's and two 4-ft. cable assemblies for video source equipment.

The AD CUE 84™ programmer features colored LED's to report the status of each VCR or video source equipment, i.e., ready, run and cueing conditions.

The AD CUE 84™ system can be programmed from the hand-held Command Terminal (COMMANDER™ microterminal), or from local or remote CRT terminals such as the Scanset or a Zenith Z29 or a Wyse WY-50 terminal.

The AD CUE 84™ system includes a continuous memory for cue tone and commercial verification of all spot commercials for at least one week. The commercial verification log can be printed locally through the CRT printer port or remotely accessed via dial-up telephone line.

By using an optional Columbia or IBM PC microcomputer, the AD CUE 84™ system can be expanded to provide automatic billing, commercial affidavits and management information system software.



The AD CUE 84™ system combines all the features that we have been talking about except for expandability.

The AD CUE 84™ system is a cost-effective re-packaging for markets that operate 12 channel systems and that do not expect to run commercials on more than 2 channels.

THE AD CUE 84™ SYSTEM - FEATURES

- 2 CHANNEL OPERATION
- 2 INPUTS FOR TAPE PLAYERS PER CHANNEL
- 3rd INPUT FOR VIDEO SOURCE OR CHARACTER GENERATOR
- UP TO ONE HOUR CASSETTE PROGRAMMING
- UP TO 100 STEP NUMBERS PER CHANNEL
- VERTICAL BLANKING INTERVAL SWITCHING
- SYNCHRONIZATION TO SATELLITE SOURCE
- PROGRAMMABLE PRE-ROLL TIME SELECTION
- TIME ASSIGNMENT CUEING
- 7 DAY PROGRAMMING FOR ALL CHANNELS
- SET-UP PROGRAM, RANDOM ACCESS PROGRAM AND LOGGING RECALL PROGRAM
- CONTINUOUS MEMORY FOR 7 DAYS
- RECORDING OF TIME, DURATION, COMMERCIAL I.D.
- FAIL SAFE FOR PROGRAMS, TIME ASSIGNMENT CUEING, CLOCK, LOGGING FOR 1 WEEK
- REMOTE PROGRAMMING WITH ACCESS CODE
- REMOTE RECALL OF LOGGING INFORMATION
- EXPANDABLE FOR LOCAL OR REMOTE
  - COBIAS I™ AUTOMATED BILLING SYSTEM
  - COBIAS II™ MANAGEMENT INFORMATION SYSTEM

3.3 The AD CUE 100™ System

The AD CUE 100™ system is a sophisticated microprocessing time/tone switching system expandable to 9 channels of commercial insert in one shelf. Expansion to 18 channels can be achieved by adding an additional shelf.

The AD CUE 100™ system supports commercial insertion with time assignment control, up to 96x96 channel routing switches and Local Program source switching, as well as an array of special baseband and IF switching modules.

The AD CUE 100™ system consists of the PVS-100™ Q Programmer, SW-20 or SW-48 shelf that can be equipped with cue tone, matrix and special purpose switching modules.

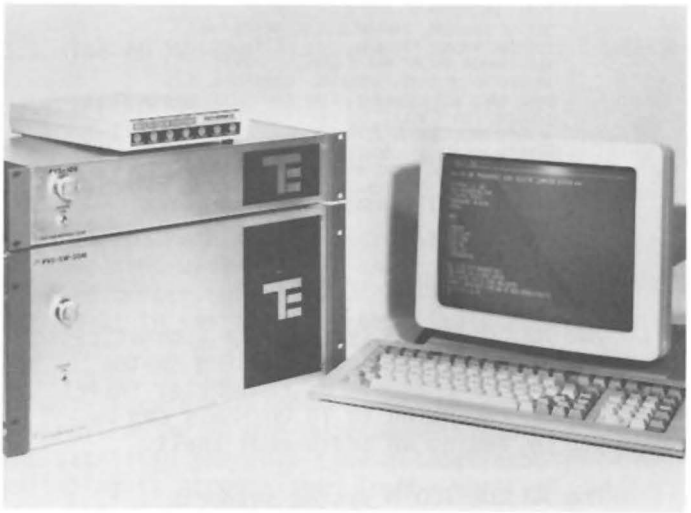
The command post of the AD CUE 100™ system can be a Z-29, a Wyse WY-50 or a Scanset terminal that can be located remotely and interconnected with the programmer via dial-up telephone lines.

The AD CUE 100™ system permits 30, 60, 90 and 120 second commercial spots on every channel. The LP local programming module can be expanded from 4 to 15 source inputs per channel. These sources can be time-programmed or cue tone sequenced and can be used for local origination channel programming as well as spot commercials.

The AD CUE 100™ system features RS-232C interfaces between programmer, switching shelf and command terminal and works for remote programming and commercial verification with standard 1200 bps modems on the dial up telephone network.

The continuous memory of the AD CUE 100™ system records commercial start times and duration per day and per channel. The memory can be recalled by the Command Terminal, locally or over telephone lines, by simple dump command. All commercial spots for up to 18 channels and up to seven days can be verified in this manner and a hard copy obtained by the simple connection of a printer to the CRT printer port.

By using the optional Columbia or IBM PC, the AD CUE 100™ system can be expanded through COBIAS I or II™ software to include total management information for the commercial insert business.



The AD CUE 100™ commercial insert system is indeed the Total System. It combines all features that we discussed with an unlimited expansion capability. It supports networking of an unlimited number of markets as well as the addition of any desirable switching function. It supports fully automatic programming locally and remotely as well as a total management information package that permits efficient conduct of a growing commercial insertion business.

Some of the features are highlighted below:

THE AD CUE 100™ SYSTEM FEATURES

- UP TO 9 or 18 CHANNELS
- UP TO 96x96 IF OF BASEBAND MATRICES
- UP TO 15 L.O. PROGRAMMING INPUTS PER CHANNEL
- ACCEPTS 4 AB, 4 ON 1, 8 ON 1, 11 ON 1 IF OR BASEBAND
- SPECIAL SWITCHING REQUIREMENTS
- UP TO ONE HOUR CASSETTE PROGRAMMING
- UP TO 100 STEP NUMBERS PER CHANNEL
- VERTICAL BLANKING INTERVAL SWITCHING
- SYNCHRONIZATION TO SATELLITE SOURCE
- PROGRAMMABLE PRE-ROLL TIME SELECTION
- TIME ASSIGNMENT CUEING
- 7 DAY PROGRAMMING FOR ALL CHANNELS
- SET-UP PROGRAM, RANDOM ACCESS PROGRAM, LOGGING RE-CALL PROGRAM AND EXPANSION PROGRAM
- CONTINUOUS MEMORY FOR 7 DAYS
- RECORDING OF TIME, DURATION, COMMERCIAL I.D.
- FAIL SAFE FOR PROGRAMS, TIME ASSIGNMENT CUEING, CLOCK, AND LOGGING FOR 1 WEEK
- REMOTE PROGRAMMING WITH ACCESS CODE
- REMOTE RECALL OF LOGGING INFORMATION
- EXPANDABLE FOR LOCAL OR REMOTE OPERATION OF
  COBIAS I™ AUTOMATED BILLING SYSTEM
  COABIA II™ MANAGEMENT INFORMATION SYSTEM

4. COMMERCIAL INSERTION NETWORKS

Using the AD CUE 84™ and the AD CUE 100™ systems, regional and national programming is feasible.

If we assume that the Billing Center and Operations Control is at one location, then all we need at this location is the IBM PC or XT or Columbia MCP 1600-4 computer plus a good commercial printer.

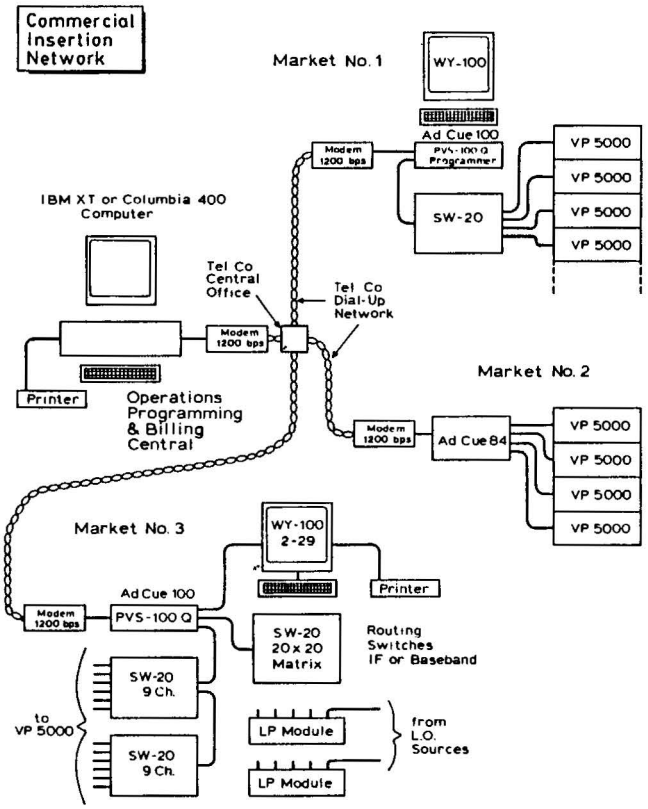


FIG. 19

TELE-ENGINEERING CORP.

At the outlying locations or markets, we find the AD CUE 84™ or AD CUE 100™ systems installed and interlinked via standard dial-up telephone network.

All programming and logging retrieval is done over the telephone network. Distance is not a factor for the operation of the commercial insert network. It is, however, a detriment if the production of commercial cassettes is not conducted at the insert locations.

Should centralization of tape production be a desirable feature, as it may be for national commercials, then tape shipping, deployment and placement may become a problem.

For national commercial insert networks, down loading of the tape production via satellite, at night and during off-hours, appears to offer a good alternate solution.

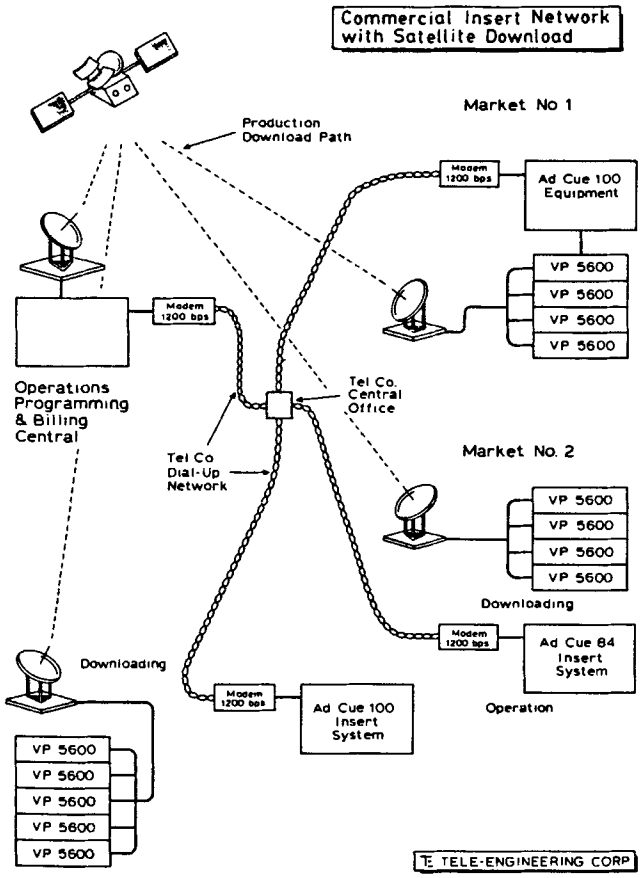


FIG. 20

All that has to change are the playback machines. The Sony VP 5000 has no recording capability and would have to be replaced with the VO 5600 model. No changes have to be made to the commercial insert equipment or the network.

Programming and log retrieval would still be conducted over the dial-up telephone network.

5. SUMMARY

The business of commercial insertion consists of a number of complex problems that all have found reliable solutions through evolutionary development.

Tele-Engineering has been at the forefront in this evolution and can proudly point to the fact that all hardware and software is available and field proven to establish nationwide commercial insertion networks.

The potential user does not have to ask the question anymore whether commercial insertion is a viable business.

Commercial insertion is not just here to stay, but when planned properly in the beginning, i.e., when operations, marketing, and production are clearly defined - will lead to revenue growth that will out-perform any business forecast. Statistics show that the capital equipment can be paid for within the first six months of operation.

Tele-Engineering Corporation is proud to be in the position to assist you in developing this new and exciting business area. The most flexible and expandable hardware and software package of the industry is available to enable you to build your commercial insert business on pay-as-you-grow basis into the revenue leader on your company's balance sheet.