HIGHLIGHTS

TECHNICAL EYE OPENER WORKSHOP

STAND BY POWER - WHAT PRICE RELIABILITY?

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Society of Cable Television Engineers

National Organizer

Robert Bilodeau
Suffolk Cablevision
Central Islip, New York

Organizer/Moderator

Loyal C. Park
T-V Transmission Inc.
Lincoln, Nebraska

Panelists

A. Robert LeServe
Interstate Telephone &
Electronics Inc.
Dallas, Texas

Robert Schultz
Glentronics
Glendora, Ca.

Selig Lenefsky
Coral Communications
Hoboken, N.J.

Robert Cowart
Gill Cable, Inc.
San Jose, Ca.

E. Harold Munn, Jr.
E. Harold Munn, Jr. Assoc.
Coldwater, Mich.

Reporter

Robert Bilodeau
Suffolk Cablevision
Central Islip, New York

The session convened with a statement by chairman Loyal Park comparing the traditional cable situations with their emerging large system requirements to a need for greater emphasis on system reliability and specifically stand-by power. Following introductions, panelist R. Cowart, representing the operators' viewpoint, delivered a paper* that focused on the gap between available solutions (hardware) and the operators' real needs. Drawing from his extensive use of stand-by power units in San Jose, Mr. Cowart cited experiences with battery incompatibility, local power failure patterns, subscriber attrition caused by outages and system design considerations of cost, layout and powering techniques. In addition, he described the pros and cons of switching vs. floating systems and the elapsed time switching interval as it relates to amplifier output levels, data carriage and switching circuits. Improvements in SCR switching and power handling capacity was noted. All new stand-by units in San Jose feature SCR switching.

Mr. Cowart concluded his remarks with an excellent statement on battery types, chargers and their relationship to battery characteristics, trade offs vs. costs per volt amp/hour and a formula for selecting the right battery for each system's anticipated back-up requirements. An evaluation of data for the San Jose dual cable system yielded

a 3600 VAH output requirement. This number was derived from:

1. An average 28 minute power outage duration.
2. The desire to protect for 1 1/2 hours.
3. A 60^{V} cable powering voltage.
4. Power supply ampere ratings.
5. 60% inverter efficiencies.
6. Customary safety factors.

This system would provide back-up for 95% of power outages and has a life expectancy of 10 - 20 years. Outages of greater duration than design would be covered by utilization of gasoline-driven generators.

Selig Lenefsky described Coral's unique approach* to reliability improvement. This twofold solution features redundant trunk modules and DC power packs with external battery back-up per trunk location. He emphasized that utilizing lower cost DC systems more frequently without inverter mechanics could have some engineering and economic advantages over the AC back-up technique. The Coral battery units are continuously recharged with a built in system energized from the normal cable AC. By choice this scheme provides trunk back-up - not associated distribution. At a cost of $100.00 per trunk location cost comparisons can be made with the AC system when related to system design, i.e. amplifiers per power supply.

A lively question and answer period revealed a substantial interest in this subject.

Selected condensed verions of questions and their replies are listed:

Q. Mr. Munn: How does the operator of systems smaller and less densely populated than San Jose determine the value of and extent of stand-by power?

A. Mr. Cowart: Operators must determine their own requirements tailored to their system design and market strategy.

Q. During a power loss situation, does the AC side disconnect from local power and what visible indication to power company personnel appears?

A. Mr. Shultz: This did arise as a problem and the (mfgs.) unit was then equipped with a large relay physically observable as to switch position.

Q. What considerations must be given to the matching of charger voltages to battery voltages for optimum charge conditions?

A. Mr. Cowart: The operator must be sure that the charger used does not void the warranty of the battery due to incompatibility, etc.

Q. Is anyone considering a return to all DC powering?

A. Mr. Shultz: Yes, research is under way; reality some 5 years away. Dissimilar metals is a major problem.

Q. Mr. Hale: What about brown outs up to 15% instead of complete loss of power?

A. LeServe: What point to switch at and not lose useful power is a difficult decision. Light hum might be better than stand-by battery drain. Power companies could have severe problems at 15% with its own system and customer appliances. Brown outs don't usually exceed 8%. Power phase staggering can be used to minimize hum.

Q. Mr. Braun: How does the operator detect the status of stand-by power?

A. Mr. Shultz: Potentially with the use of two-way return capability, several mfgs. provide this capability via encode/decode technique.

Q. How generally do computer mfgs. protect against incoming transients and could these techniques be used for studio and amplifier protection.

A. Mr. LeServe: Via floating systems using battery stand-by, which provides the back-up and isolation from power company transients. Computer systems typically convert back to AC for general powering.

Q. Are flush mount (below ground level) stand-by units available?

A. Mr. Shultz: Not yet. Pedestal mounts are available.

*Copies available from authors.