

PROFESSIONAL GROUP ON RADIO FREQUENCY INTERFERENCE



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Number 22	August 1962	A. R. Kall Ark Electronics Corporation	Leonard W. Thomas Electromagnetic Compatibility
PGRFI OFFICERS - Administrative Committee and		624 Davisville Road	Analysis Center
Committee Chai	rmen for 1962-1963	Willow Grove, Pennsylvania	Annapolis, Maryland
Chairman:	Herman Garlàn Federal Communications Com. Washington, D. C.	:	D. R. J. White White Electromagnetics, Inc. 4903 Auburn Avenue Bethesda, Maryland
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	Research and Engineering		
	The Pentagon Washington, D. C.	Awards	James S. Hill Jansky and Bailey Division Atlantic Research Corporation
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	1339 Wisconsin Ave., N. W. Washington, D. C.	Chapters	Zigmund V. Grobowski Jansky and Bailey, Inc. 1330 Wisconsin Ave., N. W.
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	and Development Laboratory Fort Monmouth, New Jersey	Constitution and By-Laws	John J. Egli U.S. Army Signal Research and Development Laboratory
Administrative Committee - E	xpiration Date: 1963		Fort Monmouth, New Jersey
Harold E. Dinger	Herman Garlan	Education	Charles W. North
Naval Research Laboratory	Federal Communications Com.		The Martin Company
Washington 25, D. C.	Washington, D. C.		Cape Canaveral, Florida
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Administrative Committee - E	R. B. Schulz The Boeing Company Seattle, Washington xpiration Date: 1964	Meetings	D. R. J. White White Electromagnetics, Inc. 4903 Auburn Avenue Bethesda, Maryland
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Zigmund V. Grobowski	Henry Randall		
Jansky & Bailey, Inc.	Office of Director of Defense	Newsletter	Rexford Daniels
1330 Wisconsin Ave., N.W. Washington, D. C.	Research and Engineering The Pentagon Washington, D. C.		Interference Consultants, Inc. 150 Causeway Street Boston, Massachusetts
	R. M. Showers	Nominations (1963)	Harold E. Dinger
-	Moore School of E. E. 200 S. 33 Street		Naval Research Laboratory Washington, D. C.
	Philadelphia, Penna.	Publications	O. P. Schreiber
Administrative Committee - Expiration Date: 1965			Technical Wire Products, Inc. 129 Dermody Street
Stanton A. Bennett Department of Navy	James S. Hill Jansky & Bailey Division		Cranford, New Jersey
Bureau of Yards and Docks Washington, D. C.	Atlantic Research Corporation Alexandria, Virginia	Technical Advisory	H. A. Gauper General Electric Company Schnectady, New York

Filter Applications:

"Lawrence N. Pasquino, International Business Machines Corp's Space Guidance Center, Owego, New York, told the design session that proper filter applications could reduce conducted radio interference.

"He said it was often necessary to provide such RFI filters on power lines and other interconnecting leads 'to ensure that a system meets the military specification on RFI".

"The need for and the degree of filtering, he said, 'should be determined early in the design of equipment by prediction methods and testing of early breadboard models,' in order to install the filters for optimum efficiency.

"Since noise can be radiated around the filter, the input and output ends of the filter must be isolated from one another: Mr. Pasquino said this could best be done by mounting the filter through the RFI shield, with one terminal penetrating the shield.

"The design philosophy being used by Hewlett-Packard Co.'s Microwave Laboratory, Palo Alto, California, in controlling RFI signals from electronic modules was detailed for the symposium by H-P's Richard W. Anderson. He delivered a paper co-authored by Arthur Fong, also of H-P.

"The designer of an RF module is faced with the problem of obtaining prescribed performance over a specified range of environmental conditions while holding interfering signals from the module to acceptable levels, he said.

"Assuming the engineer has reduced all unwanted signals, to a minimum, the objective is to contain the functional signals within the module, Mr. Anderson said. He gave a number of techniques for accomplishing the needed operations, including careful module enclosure, and the use of low-pass filters in the electrical connections with rejection bands extending over the frequency range of all functional signals within the module.

"Cooling vents can be built with minimum RFI transmission by use of waveguide-beyond-cutoff, he said. Each vent will have an attenuation of 'at least 32 db per diameter plus the coupling losses.'

"If the module requires a window, such as a cathode ray tube or a meter movement, the authors said radiation could be reduced by coating the glass surface with a thin invisible metallic film. This procedure gives reductions in cross-plane transmission of greater than 40 db at frequencies as low as 50 kc, it was said.

"Design guides for interference reduction in electronic equipment were covered by R. F. Ficcká of Radio Corp. of Amer.'s Defense Electronic Products, Camden, New Jersey.

"Reduction of unwanted energy resulting in interference can be accomplished by physical isolation; reducing the level of intensity of the unwanted energy; and designing equipment to operate free from interference within the existing level of the unwanted energy, Mr. Ficcki said.

"He suggested that, whereas interference reduction had usually been handled as a 'crisis', a preventive approach was a better solution.

"Physical isolation can be accomplished by grouping, shielding and shading, and space separation, he said.

"The cause of interference can be greatly simplified by proper selection of components. His suggestions included design of circuits with maximum stability to give stable operation at all frequencies; making maximum use of the linear operation of amplifier circuits, and avoiding unwanted feedback loops.

"Minimizing the effect of interference in design of electronic equipment is best accomplished by shielding, bonding and filtering, he said.

"The use of computer techniques to analyze RFI problems prior to equipment design was detailed by a team of engineers from Capehart Corp., where such a computer program has been tried with an IBM 7090.

"In their paper, H. O. Beers, S. A. Scharff and Dr. J. H. Vogelman said a digital computer program for analysis and prediction of RFI was particularly well adapted to use in design projects to produce equipment capable of meeting operational requirements 'without causing or suffering from RFI'.

"The computer process was intended to handle situations where massive interference might exist, '200 receivers and 200 transmitters, for instance', it was said.

"Results of test runs, they said, indicated that 'a practical answer to the problems of designing for non-interference is available.

"Continuing application of RFI computer analysis from the initial through final stages in the design of a major electronic system 'will at a small fraction of the system cost substantially reduce the chance of incurring the disastrous expenses of a system failure because of an unsuspected, but now predictable, interference problem', it was concluded.

"The importance of military requirements to design engineers was stressed in papers throughout the two-day meeting.

"Work done by Radio Corp. of America, Burlington, Mass., to explore real-time simulation of radio frequency environment under the Department of Defense electromagnetic compatibility program were described by B. C. Pierstorff of RCA.

"In a paper co-authored by A. I. Matheson, he said the work, sponsored by Rome Air Development Center, was expected to lead to a Laboratory Simulation Testing Facility.

"The basic problem in determining the mathematical basis on which an RFI simulator might be built was the lack of detailed data for an analysis of all causes of interference in each type of receiver, they said.

"Laboratory investigation involving a breadboard simulator indicate that none of the circuit or hardware problems associated with the necessary requirements posed unsurmountable obstacles in the design of an electro-magnetic environment simulation facility, it was said.

"The authors said detailed design studies had been undertaken and breadboard equipment fabricated for the simulation of the desired signal and several discrete interfering source signals in the 1000-2000 mc range of L-band. Circuit and equipment design studies are essentially complete, they said, and system tests will be undertaken 'in the second half of 1962".

SIDELIGHTS of the SAN FRANCISCO SYMPOSIUM

Final attendance was 333.

Field trip to Stanford's Two Mile Linear Accelerator attendance approximately 50.

Ladies' Brunch was attended by approximately fifty wives.

Herman Garlan substituted for Donald R. J. White as luncheon speaker and spoke on radio interference problems from the FCC viewpoint and related problems to FCC Regulations.

Harold Dinger Presented the Certificate of Appreciation to Rexford Daniels which was accepted, in his absence, by Laurence G. Cumming IRE Professional Groups Secretary.

The Symposium not only made expenses but may be able to turn back to the PGRFI national treasury around a thousand dollars above the five hundred dollar original advance.

8th TRI-SERVICE CONFERENCE ON ELECTROMAGNETIC COMPATIBILITY

The following is a letter from Armour Research Foundation announcing the 8th Tri-Service Conference on Electromagnetic Compatibility, It should be noticed that the words "Radio Frequency Interference" have been eliminated from this title. The Conference will be held at the Museum of Science and Industry.

"Dear Sir:

This letter is to announce the Eighth Tri-Service Conference on Electromagnetic Compatibility which is being planned by Armour Research Foundation to be held in Chicago on October 30, 31 and November 1, 1962. As in previous years this conference on the subject of radio interference reduction and electromagnetic compatibility is being sponsored by the U. S. Army, Navy and Air Force and is being conducted in cooperation with the IRE professional group on radio interference.

We hope to make this conference most informative by presenting technical papers in such areas as interference prediction, equipment design techniques, instrumentation, measurement techniques, interference reduction measures, etc. The program should be sufficiently diverse to attract representatives from industry and government activities both at the practical and the more technical levels.

We ask your cooperation in this program. If the work you are currently doing is related to or concerned with electromagnetic compatibility and you believe your experience would be of interest to others in this profession, and you would like to present a paper at this conference, we invite you to fill out and return the enclosed card. An abstract of approximately 150 words or a copy of the paper should be submitted on or before 1 August 1962. Approximately 35 minutes will be allotted for presentation and discussion.

A one-day session for <u>Classified</u> papers will be included if there are sufficient papers of merit that cannot be presented on an unclassified basis. It is believed that this arrangement will make available considerably more complete and pertinent information to qualified conference attendees.

In view of the additional processing time for Confidential and Secret material it is requested that such abstracts be submitted as soon as possible through the appropriate security agencies. For your assistance in handling classified paperwork, the following information is provided:¹

Contract under which conference is sponsored.....Signal Corps DA 36-039 (E178) - SC89102. Foundation facility clearance.....Top secret, per Office of Naval Research, Chicago 20, April 1956.

If you have any questions regarding this conference, please call me at CAlumet 5-9600.

Very truly yours, J. E. McManus - Conference Chairman

CHAPTER OFFICERS

Philadelphia Chapter

Chairman:	Fred Kugler Ark Electronics Corporation Willow Grove, Penna.
Vice-Chairman:	Harry Kenny Ace Eng. and Machine Company
	Tomlinson Road
	Huntingdon Valley, Penna.
Secretary:	Robert Sugarman
-	U. S. Army Signal Lab.
	Fort Monmouth, New Jersey

CHAPTER MEETINGS:

Chicago Chapter

December 12, 1961 - "Aspects and Limitations of the Present Military Specs on RFI", by R. J. Gianni, Teletype Corp., Chicago, Ill. and J. C. Klouda, Elite Electronics, Chicago, Illinois.

February 13, 1962 - "Instrumentation for RFI Measurements", by Michael Hargess, Empire Devices Corp., Amsterdam, New York.

April 10, 1962 - "Radiated Interference Measurements at Microwave Frequencies", by Robert Friedman, Polarad Electronics Corp., Long Island City, New York.

Los Angeles Chapter

May 17, 1962 - "Application of Suppression Components", by Edgar Wheeler, Filtron Co., Los Angeles, California.

"Power Density vs Field Intensity RFI Measurements", by Robert Friedman, Polarad Electronics Corp., N. Y. C.

Philadelphia Chapter

April 17, 1962 - "The RAD-HAZ Program: Radiation Hazard to Material", by James Hinds, U.S. Naval Air Development Center, Johnsville, Pennsylvania.

Washington, D. C. Chapter

May 8, 1962 - "Electronic Weapons System Compatibility", by Robert K. Hothem, Welex Electronics, Washington, D.C.

Transactions - Professional Group Communication Systems

Volume CS-9, No. 4, December 1961, carries the following papers of interest:

"Effects of Impulse Noise on Digital Data Transmission" by Andrew B. Bodonyl (p. 355)

"Effects of Terrestrial Electromagnetic Storms on Wireline Communications" - by R. Sanders (p. 367)

"On the Potential Advantage of a Smearing, Desmearing Filter Technique in Overcoming Impulse-Noise Problems in Data Systems" - by Richard A. Wainwright (p. 362)

Transactions - Professional Group on Electron Devices

Volume ED-9, No. 3, May 1962, carries the following papers of interest:

"Noise Performance of Transistors" - by Don G. Peterson (p. 296)

"Low-Frequency Noise Figure and Its Application to the Measurement of Certain Transistor Parameters" by J. F. Gibbons (p. 308)

"Noise and the Potential Minimum at High Frequencies" by Martin A. Pollack (p. 316)

Extraction of Signals from Noise

Prentice-Hall announces the translation from the Russian d the book "Extraction of Signals from Noise" by L. A. Wainstein and V. D. Zubakov, 416 pages, price \$14.00.

SPACE/AERONAUTICS CARRIES EMC SURVEY

Space/Aeronautics, 205 East 42nd Street, New York 17, N.Y., is running a Survey on Electromagnetic Compatibility in three issues, July, August and September 1962. The Survey is described, in brief, as follows:

"This is the second article in a three-part series on electromagnetic compatibility in electronic equipment. It shows how to forestall interference problems early in the design program by attending to such details as bonding, shielding, and cabling interconnections, and outlines methods for controlling circuit non-linearities and attenuation characteristics so that the susceptibility of equipment to interference and the generation of interference are minimized. The first article in this series, which appeared last month, reviewed the general goals of interference control and analyzed the basic nature of interference and of equipment susceptibilities; the concluding article will further extend the survey of design guidelines for interference control and suppression".

BEER BLACKS OUT TV:

United Press International dispatch, May 31, 1962, states as follows:

"Rochdale, Eng. (UPI) - Television sets in the neighborhood of the Dog and Partridge pub are back to normal now that they discovered that the trouble was caused by beer. Engineers found interference was caused every time the barkeeper drew a beer from one of the pub's seven taps, so they 'neutralized' the spigot."

FCC SAID TO FAIL IN MEETING DUTIES:

Felix Belair, Jr. sent a special dispatch to the New York Times April 24, 1962, which summarizes a survey of the FCC by the Bureau of the Budget. Excerpts from the special dispatch are as follows:

"Washington, April 24 - A team of management experts reported today that the Federal Communications Commission was unable to discharge its public responsibilities and urged its immediate overhaul.

. "Inadequate equipment, personnel and financing in the face of explosive advances in tele-communications has left the agency unable to carry out its functions, the report said.

"The report added that, because of insufficient attention to the method and basis of rate-making, the commission could not say whether interstate telephone and telegraph rates were just and reasonable.

"The survey was made by the concern of Booz, Allen and Hamilton, management consultants, at the request of the Bureau of the Budget....."

"Part of the agency's regulatory deficiency was ascribed in the report to the 'staggering' burden resulting from expansion of communications services and introduction of new industries.

"To correct deficiencies in the agency's organization and management the report proposed creating several divisions & consolidating others. It recommended substantial increases in budget and personnel and a shift to automatic data-processing for much work now carried on by staff personnel.

"The report gave no estimates of the budget or personnel increases required. Apparently this was left for the F.C.C. to justify in its estimates to the Bureau of the Budget."

"The report emphasized the need for more effective monitoring and inspection of licensed radio station. It said that radio frequency interference had reached alarming proportions in the United States.

"Interference caused by radio emissions of industrial equipment such as heaters and arc welders threatens the safety of air travel in some locations, ' it said.

"In the Gulf of Mexico, the report added, shrimpboaters casually invade the international distress frequency to exchange information about the movements of their quarry or even to order groceries, with the result that a ship in distress might well have difficulty contacting the Coast Guard. "The Field Engineering and Monitoring Bureau does a good job wit limited resources, according to the survey, but the results fall sho: of requirements.

"While the bureau had performed near miracles in rehabilitating o adapting used or surplus equipment, 'there is a limit to which utilization of 'hand-me-downs' can be carried, ' the Report warned.

"It said the same was true of enlisting the help of private individua and organizations in performing the bureau's responsibilities.

U. S. JUNKS PLAN FOR BIGGEST TELESCOPE:

U. S. News and World Report, July 30, 1962, carried the following news item under the above title:

"Washington - Construction of a huge radio telescope - which may have been planned originally to spy on Russia - was ordered halted July 18 by Defense Secretary Robert McNamara.

"Mr. McNamara said the project at Sugar Grove, W. Va., had become too costly, indicated it would be obsolete before it was completed. It was to have a 600-foot radio telescope - the world's biggest - built at a cost of 200 million dollars. Some 42 million had been spent since work started in 1958.

"Details of eventual use of the telescope were classified, but there were reports it had been planned to listen in on Russian radio broad casts as they bounced off the moon".

ULTRASONIC RF AFFECTS COMMUNICATIONS FACILITIES:

The FCC has expressed concern over radio frequency generators in ultrasonic machines creating radiated RF energy which is affecting communications facilities. Ultrasonic machines generating RF energy on frequencies below 20 kc are subject to regulations of Par 18 and not to ultrasonic regulations.

ELECTRO-EXPLOSIVE RADIO FREQUENCY HAZARD TESTING:

Genistron, Inc., 2801 Federal Avenue, Los Angeles 64, California has brought out a 3-page flyer on the above subject showing an RF hazard test diagram of a typical test set up for 85 kc to 10 mc. Cop may be obtained by writing for RF-102. A complete RF hazard con trol plan and test procedure is available upon request by writing fo Engineering Test Procedure TP-1043.

ARTICLE ON RADIO FREQUENCIES:

international Science and Technology, July 1962, carries a 6-page article by J. Howard Dellinger on the problems concerned with fre quency allocation throughout the world. The sub-head states:

"In Brief: Despite the pace of technical advances making more fre quencies available, and despite remarkable international cooperatiin frequency management, the available frequencies within the radi spectrum never grow as fast as the demand for them. The current surge in demand for radio is coming from two directions: the new nations, striving to find opportunity to use radio; and new services such as satellite communications, which will need portions of the already crowded spectrum.

"An intensive effort is being mobilized to get us out of this dilemm: the spectrum itself might be better utilized; still higher frequencie: will be opened up; the resources of science must be used to solve tl general allocation problem. Provision must be made in the spectru for research in all fields".

RESEARCH DATA CENTERS SET UP THROUGHOUT COUNTRY

Twelve universities and libraries have been selected to store and disseminate the unclassified results of federally sponsored researc and development projects. The National Science Foundation and the U. S. Department of Commerce recently named the new Regional Technical Report Centers with the hope of easing today's problem c scientific communication. The centers, chosen on the basis of geographical distribution and proximity to scientific activities, will maintain a library of material from the Office of Technical Services of the Department of Commerce and furnish to the general public such services as inter-library loans and photocopy service.

The twelve centers are: Georgia Institute of Technology, Atlanta, Ga.; Massachusetts Institute of Technology, Cambridge, Mass.; John Crerar Library, Chicago; Southern Methodist University, Dallas Tex.; University of Colorado, Boulder, Colo.; Linda Hall Library, Kansas City, Mo.; University of California, Los Angeles, Columbia University, New York; Carnegie Library of Pittsburgh, Pittsburgh, Pa.; University of California, Berkeley, Calif.; University of Wash., Seattle, Wash.; and the Library of Congress, Washington, D. C.

THE REAL COST OF MICROWAVE TEST EQUIPMENT:

Lloyd B. Wilson, of the Sperry Gyroscope Company, Great Neck, New York, has written an article under the above title which appeared in the July 1962, issue of Microwaves. The sub-title states:

"Operation, repair, calibration, evaluation and training costs may exceed by several times the purchase price of the test instrument itself. Here is a guide to identifying and reducing these expenses".

LOCK-IN AMPLIFIERS for SIGNALS BURIED in NOISE:

Robert D. Moore, Princeton Applied Research Corporation, Princeton New Jersey, has written a 4-page article in Electronics, June 8, 1962 under the above title. The sub-title and first paragraph state:

"Phase sensitive detector followed by low pass filter is heart of lockin amplifier. Signals 40 db below the input noise level of a microwave receiver can be recovered with lock-in technique; oscillators can be checked to high precision quickly.

"Signal intensity measurements can be made where noise would otherwise rule them out by using a lock-in amplifier. Applications to date include radio astronomy, nuclear magnetic resonance and solid state investigations".

TRANSIENT GENERATOR CHECKS MISSILE SYSTEMS:

R. C. Dyer, The Boeing Company, Seattle, Washington, has a 3-page article in Electronics, June 8, 1962, with Figures 1 to 6 under the above title. The sub-title and first paragraph state:

"Trancients are simulated and injected into missile system wiring to determine its susceptibility to interference.

"Interference tests on missile systems require a generator to simulate interference external to the missile and insert this simulated interference back into the missile wiring. Military specification MIL-I-00605 1B requires that the interference present in the system be no greater than half the amplitude required to cause a malfunction. This audio frequency generator produces interference at twice the measured amplitude and injects it back into the weapons system. It also functions as the operating power source for the system".

NEW PUBLICATIONS

"Notes on Microwave Measurements"

Polarad Electronics Corporation, 43-20 34th Street, Long Island City 1, New York, has brought out the fourth edition of its 30-page booklet under the above title. It covers general procedures for the use of the principal types of microwave test equipment: spectrum analyzers, signal generators, receivers and power meters. The booklet includes test set-ups, calibration charts and formulas.

Switching Devices and Components

The North Electric Company, Electronetics Division, Galion, Ohio, has brought out a 130-page handbook containing useful information on electromechanical and electronic switching devices and components. The book covers relay and switch terminology and theory, switching and control circuits, plus reference, application and technical data. The handbook contains 4 pages on the techniques of arc suppression. The handbook may be obtained at the cost of \$2.00 by writing to W. F. Keally, Field Promotion Engineer, at the above address.

"The Impact of Spectrum Signature Programs on Equipment and Test Instrument Design"

The above paper presented by A. H. Sullivan, Jr., H. D. Zink and J. J. Dozier of Frederick Research Corporation, at the 4th National Symposium on Radio Frequency Interference, is available by writing to Frederick Research Corp., 2601 University Boulevard, West, Wheaton, Maryland. The section headings are "Introduction to Radio Spectrum Utilization", "Compatibility of Armed Forces C-E Systems", "Department of Defense Programs", "General Purpose of Spectrum Signature Measurements", "Standardization of Spectrum Signature Requirements", "RFI Specifications", Categories of Problems", "An Example of Measurement Technique Problems-Antenna Patterns", "Data Recording & Reduction", "Utilization of Test Equipment", "Signal Generators", "Field Intensity Meters", etc. "RFI Suppression by Filter Design Techniques"

White Electromagnetics, Inc. has brought out Volume 2, Number 2 Technical Bulletin under the above title. It is Part II of Physical Realizability of a three part series. Copies may be had by writing to Jane Stockham, Librarian, White Electromagnetics, Inc. 4903 Auburn Avenue, Bethesda 14, Maryland.

Literature on Microwelding Available

Maser Optics, Inc., 89 Brighton Avenue, Boston 34, Mass., has brought out reprints of articles on the research and study of the various laser parameters that affect microwelding and microdrilling. The requests for reprints and additional information may be addressed to J. G. Prout, Jr., Marketing Engineer.

Technical Magazine Called "FREQUENCY" to Start

A new technical magazine called "FREQUENCY" is planned by the Benwill Publishing Corporation, 167 Corey Road, Brookline 46, Massachusetts, to start with the September issue. David I. Kosowsky will be editor. The publication is intended to reach all those who deal with frequency problems within such fields as communications, navigation, and many others. Distribution will be made to those who can qualify and requests for qualification should be addressed to Mr. Kosowsky.

Motorola "Extender Operation" Paper Available

A paper with the title "Extender Operation - Ignition Noise Suppression Built Right Into the Radio Receiver" was given by Jack Germain, Ass't. Chief Engineer, Mobile Communications Development Engineering Communications Division, Motorola, Inc., before the Chicago Section of the PGVC on September 20, 1961. Copies of this are available by writing to Motorola, Inc., 4501 West Augusta, Chicago 51, Illinois, Attention: Jack Germain.

"ARMA Engineering" Runs Articles on EMC

"ARMA Engineering" published by the ARMA Division American Bosch Arma Corporation, Garden City, N.Y., has run a series of articles on Electromagnetic Compatibility (EMC) Volume 4, No. 2, carries articles under the following titles: "Electromagnetic Compatibility" - By J. J. Sexton

- "Project Integration of EMC" By G. A. Yabroudy
- "Weapon Systems and Electromagnetic Compatibility" By David Wildfeuer
- "Electromagnetic Compatibility, Prediction Techniques" by David Wildfeuer

Volume 5, No. 1, carries the following articles:

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- "ARMA Report on EMC Electromagnetic Compatibility Part II" by John J. Sexton
- "EMC Design Guidance General" by Albert Mastandrea

"EMC Design Guides - System Wiring" - by William Goodhue "Reliability Assurance of Military Electronic Equipment

- Through Effective Reliability Control" by Stanley A. Rosenthal
- "EMC Measurements" by William A. Sennello

Copies may be obtained by writing to Mr. Robert T. Harding, Editor.

Radiation-Hazard Suppressors on Electroexplosive Devices

One of the techniques used in protecting ordnance from accidental initiation by radio frequency currents is to place a low-pass filter in front of the electroexplosive device. The task of designing filters for this purpose, using the procedures based upon transmission line theory, is tedious and difficult to realize. An analysis is presented of some elementary low-pass filters which points out implications of their loss-characteristic equations for the design of radiation-hazard-suppressing filters. RF Filters as Radiation-Hazard Suppressors, Naval Ordnance Test Station, China Lake, Calif., December 1961, 8 pp, \$1.10. Order AD-271 117 from OTS, Washington 25, D. C.

NEW PRODUCTS

Ground Stud for Single Point Ground Problems:

Jan Engineering, 2018 Pico Boulevard, Santa Monica, Calif., has brought out ground studs to help in solving the following single point ground problems:

Providing an equipotential chassis termination for ground leads.

Minimizing resistance between circuit contacts with chassis ground point.

Diminishing ground loops, noise, pick-up, & regenerative feedback caused by differences in chassis ground potentials.

Eliminating the need for buss bars or unwieldy stacks of lugs.

Additional information may be obtained from David M. Griver, Director of Engineering.

Process Deposits Copper on Teflon:

The Shipley Company, Inc., Walnut Park, Wellesley 81, Massachusetts, has developed a chemical process for depositing copper with a good bondi onto Teflon and other flourinated plastics at reduced production costs and less weight.

A major application of this copper-cladding process is in the manufacture of wave guides, microwave antennas, RF shielding parts, and printed circuits with or without plated throughholes, it is said.

Heretofore, the only effective way of shielding Teflon has been to laminate it with copper by conventional processes.

Detection of Insignificant but Dangerous Static Charges:

The B. K. Sweeney Manufacturing Company, 6300 East 44th Avenue, Denver 16, Colorado, has developed a Static Meter, model SWE-1125 and a fabric static charge tester set, model SWE-1190 and an ETVM model 1170. Technical Data Sheets are available under the following titles:

"The Detection of 'Insignificant' but Potentially Dangerous Static Charges in the Operating Room". Form H-1125. "Testing Conductive Shoes and Floors". Form 1125-3. "The Detection of Static Charges in Aircraft Fueling Areas". Form B-SWE-1125-F.

"Measuring Atmospheric Potential Gradient". Form 1125-2. "Fabric Static Charge Tester Set". Form 1191. "Model 1170 ETVM Applications". Comparative Data CD-1170.

Further information may be obtained by writing Fhil Speck at the above address.

Superconducting Wire:

Westinghouse Electric Corp.'s Materials Manufacturing Division, Blairsville, Pa., announces commercial quantities of superconducting wire are now available. The wire, made from niobiumzirconium based alloys, can be supplied with 15 to 50 per cent zirconium, in standard sizes from 20 to 5 mil diameter, and in lengths to 18,000 feet. It is available either bare or with an epoxy enamel cryogenic insulation.

Conductive Coatings:

Micro-Circuits Company, New Buffalo, Michigan, has brought out an 8-page catalog on the various applications for its conductive paints and inks.

EDITORIAL: CONTROL EDITORIAL:

"The gladual change, in referring to our field of interest, from "Redio Frequency Interference" to "Electromagnetic Compatibility". The Stif Armour Conference, as you have already seen, has dropped BFI from its title.

This broadening of our concept has a very important bearing on our fulling place in the AIEE-IRE set-up and warrants some sincere thinking on all our parts. PGRFI is now scheduled to be placed under "Communications" which, in the minds of some, will restrict our the fulless. As everybody knows, the applications of electromagnetic compatibility are multiplying every day and the side effects discovered in one application can be applied to others.

In a fash moment, someone has suggested that we be the umbrella under which other applications will gather, such as communications systems, vehicular communications, etc. Your editor would like to receive some communications on this question and some ideas as to what might be done before the new professional-technical groups get frozen

Rexford Daniels, Editor PGRFI Newsletter Monument Street Concord, Massachusetts.