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de l'Association Suisse des Electriciens

des Verbandes Schweizerischer Elektrizitätswerke
de l'Union des Centrales Suisses d'Electricité

2/1981

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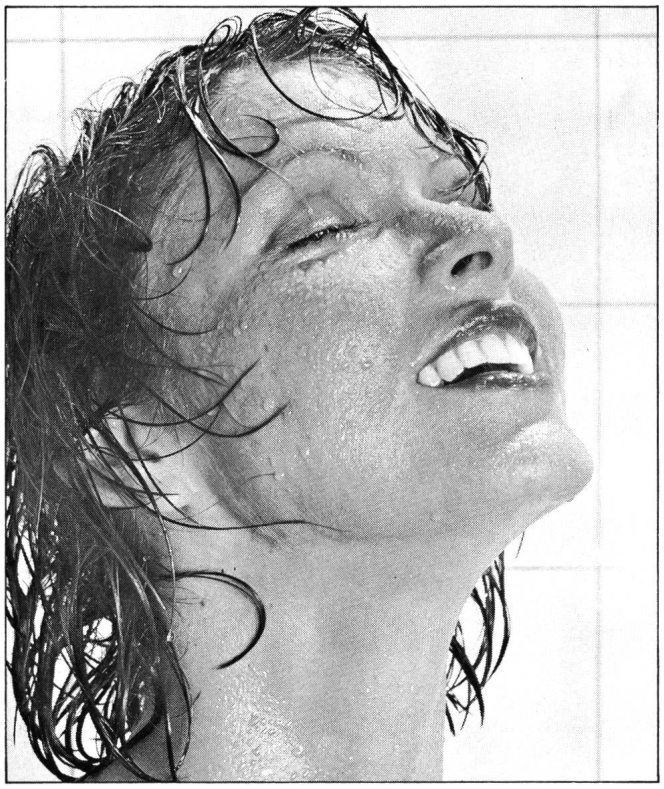
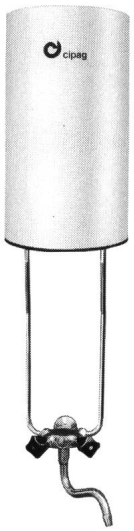
Elektrizitätswirtschaft – Economie électrique

11. Weltenergiekonferenz
11e Conférence Mondiale de l'Energie

8–1000 LITER WARMWASSERBEREITER

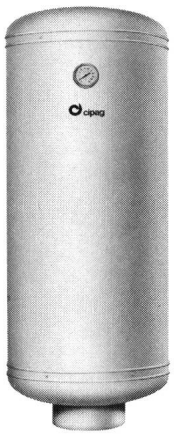
CIPAG OFFERIERT DEN ELEKTRISCHEN UND KOMBINIERTEN BOILER, DER IN JEDEM FALL PASST





ELEKTRO-SCHNELLHEIZ-BOILER ELLAX

8 l (1500 W, 220 V). Aus rostfreiem Stahl. Für Lavabo oder Spülbecken.

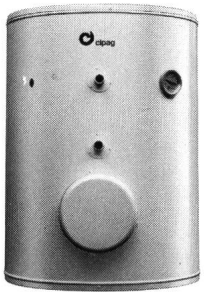


BOILER DM (MIT DOPPELMANTEL), ELEKTRISCH KOMBINIERT

An einen Heizkessel oder Kochherd für Zentralheizung anzuschliessen.

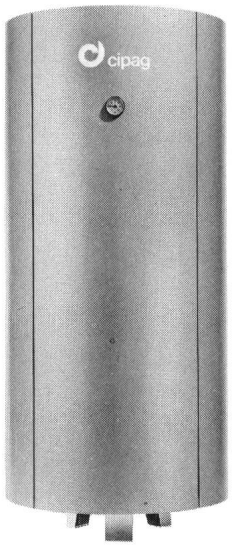
ELEKTROBOILER CIPAGglas, WANDMODELL

Thermoglasiert. 50, 80, 100, 125, 150, 200 l. Automat PRONTAQUA: 150 und 200 l.



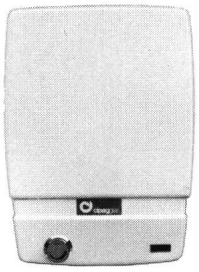
ELEKTRO-EINBAUBOILER CIPAGglas oder ELLAX

Rundes Modell. Thermoglasiert oder aus rostfreiem Stahl. 50, 100 l.



SOLAR-BOILER, ELEKTRISCH KOMBINIERT

Für Anschluss an Sonnenkollektoren.

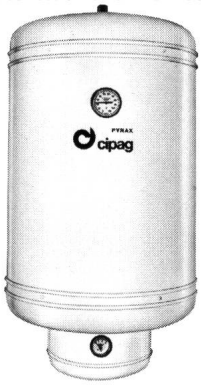


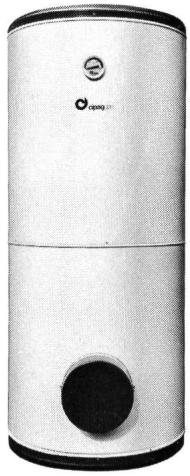
ELEKTRO-SCHNELLHEIZ-BOILER CIPAGglas

Thermoglasiert. 15 l (1500 W, 220 V). Für Lavabo, Spülbecken, Dusche.

BOILER PYRAX, ELEKTRISCH KOMBINIERT

Für Anschluss an einen Holzkochherd.





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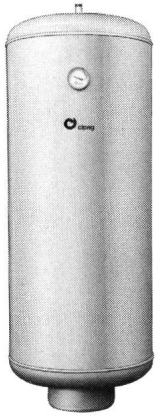

ELEKTROBOILER ELLAX, WANDMODELL

Aus rostfreiem Stahl. 30, 50, 75, 100, 125, 150, 200 l.
Automat PRONTAQUA: 150, 200 l.

EINBAUBOILER CIPAGglas oder ELLAX

Viereckiges Modell. Thermoglasiert oder aus rostfreiem Stahl. 50, 100, 120 l.

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EMC Symposium & Exhibition, Zurich 1981 March 10–12

TECHNICAL PROGRAM

TUESDAY, MARCH 10

A. Spread Spectrum compatibility — TUm

Chairman: Prof. Dr. G. R. Cooper

A1 H. Ochsner, T. Dvorak, *Fed. Inst. of Technology Zurich, Switzerland:* **Low tension power line as a fast digital data transmission channel.**
A2 H. P. Baer, *Fed. Inst. of Technology Zurich, Switzerland:* **Effect of hard limiting in a PN Spread-Spectrum system.**
A3 A. A. Hernandez, *Harris Corp., Melbourne, FL:* **Effect of direct sequence and frequency hopping interference on FDM/FM systems.**
A4 G. R. Cooper, *Purdue University, West Lafayette, IN:* **Operation of a low-power Spread-Spectrum system in a strong interference environment.**

B. Characterization of interference and noise and evaluation of system performance — TUm

(Special session of URSI commission E)

Invited chairman: Dr. J. M. Morris

B1 D. Middleton, *New York, NY:* **New results in the development of canonical and quasi-canonical EMI probability models.**
B2 Z. McC. Huntoon, A. A. Giordano, *Sylvania-GTE, Needham Heights, MA:* **RMS-to-average deviation ratio for interference and atmospheric noise.**
B3 A. D. Spaulding, *Institute for Telecommunication Sciences, Boulder, CO:* **Voice communication system performance in the presence of automotive ignition noise.**
B4 J. M. Morris, *Office of Naval Research, Arlington, VA:* **On worst-case additive interference for m-ary signalling and correlation receivers: Results for representative signal sets.**

C. Intrasystem EMC — TUm

Invited chairman: J. F. Spina

C1 G. T. Capraro, *Rome Air Development Center, Griffiss AFB, NY:* **The intrasystem EMC problem and future directions.**
C2 C. R. Paul, *University of Kentucky, Lexington, KY:* **Adequacy of low-frequency, crosstalk prediction models.**
C3 S. J. Kubina, *Concordia University, Montreal, Canada:* **EMC computer codes and the user: An adaptive symbiosis.**
C4 J. Shapira, R. Baron, M. Ruso, E. Milshtein, *RAFAEL-Armament Development Authority, Haifa, Israel:* **Intrasystem EMC testing—a new concept.**

D. Mathematical and computer methods in spectrum utilization — TUa

Invited chairman: Prof. Dr. R. Struzak

D1 G. De Couvreur, G. Chan, R. McCaughern, N. Ahmed, *Dep. of Communications, Ottawa, Canada:* **The Canadian field trials of a computer assisted land-mobile licensing system.**
D2 G. De Couvreur, M. Drouin, R. McCaughern, N. Ahmed, *Dep. of Communications, Ottawa, Canada:* **Acquisition and utilization of channel occupancy data in the shared frequency assignment process.**
D3 J. H. Causebrook, *BBC Engineering Research Dept., Tadworth, England:* **The assignment of frequencies to a transmitter network in a broadcast band to avoid mutual interference.**
D4 R. G. Struzak, *Institute of Telecommunications, Wroclaw, Poland:* **On some optimization problems in planning of transmitter networks.**
D5 V. N. Troitsky, *Ministry of Posts and Telecommunications, Moscow, USSR:* **A method for determining statistical characteristics of SHF, UHF and VHF interfering signals over long distances in land and coastal areas.**
D6 Yu. M. Payansky, I. S. Povolotsky, *Ministry of Posts and Telecommunications, Moscow, USSR:* **Some aspects of EMC in single carrier per channel systems.**
D7 P. H. Sawitz, *ORI Inc., Silver Springs, MD:* **Radio interference: The limiting factor in spectrum-orbit utilization.**

E. Nuclear EMP I — TUa

Invited chairman: Dr. C. Baum

E1 F. M. Tesche, *LuTech Inc., Berkeley, CA:* **Utilization of network theory for the solution of EMP interaction problems and system hardening.**
E2 J. Fontaine, A. Umbert, *Lab. d'Electronique et Resonance Magnetique, Aubiere;* B. Djebari, J. Hamelin, *Centre Nat. d'Etudes des Telecomm., Lannion, France:* **Ground effects in the response of a single-wire transmission line illuminated by an EMP.**
E3 K.-L. Groenhaug, *Norwegian Defence Research Establishment, Kjeller, Norway:* **Calculations of current induced in long conductors by an exo-atmospheric EMP.**
E4 I. L. Gallon, *Atomic Weapons Res. Establishment, Aldermaston, England:* **EMP coupling to extensive systems.**
E5 Ch. Braun, W. Graf, W. Ochs, H. U. Schmidt, *INT-Fraunhofer Gesellschaft, Euskirchen, GFR:* **A frequency domain NEMP simulator for tests on scaled models.**
E6 F. Fruengel, H. Martinen, D. Ebeling, *Impulsphysik GmbH, Hamburg, GFR:* **Practical measures at a water-Blumlein 500 kV EMP generator and its oscilloscopic measurements.**
E7 K. Feser, M. Modrusan, *E. Haefely & Cie AG, Basel, Switzerland;* K. H. Gonschorek, H. Singer, *Hochschule der Bundeswehr, Hamburg, GFR:* **Mobile EMP-system with high flexibility.**

F. EMI in microelectronics — TUa

Invited chairman: Dr. J. J. Whalen

F1 J. J. Whalen, *State University of New York at Buffalo, Amherst, NY:* **Current status of determining EMI in microelectronics.**
F2 J. G. Tront, *Virginia Polytechnic Institute, Blacksburg, VA:* **Using the modified Ebers-Moll model to predict EMI in active filters.**
F3 J. Alkalay, D. Weiner, *Syracuse University, NY:* **Computer simulation of EMI effects in a 7400 TTL NAND Gate.**
F4 G. K. Chen, J. J. Whalen, K. N. Chen, *State University of New York at Buffalo, Amherst, NY:* **Using macromodels to compare RFI in bipolar and FET-bipolar operational amplifiers.**
F5 C. A. Paludi, Jr., *Rome Air Development Center, Griffiss AFB, NY:* **A methodology for EMC in microelectronics.**
F6 J. G. Olin, *General Motors Institute, Flint, MI:* **EMC testing of automotive electronic control system.**

WEDNESDAY, MARCH 11

G. Biological effects — WEm

Chairman: Prof. Dr. P. Bernardi

G1 N. Dekleva, *Clin. Hospital, Zemun;* B. Beleslin, *Med. Faculty, Belgrade;* B. Stamenovic, *Inst. for med. Research, Belgrade;* V. Majic, *Technical University Belgrade, Yugoslavia:* **Magnetic field and oxygen interaction in biological material.**
G2 J. Silny, *Technical University Aachen, GFR:* **Influence of low-frequency magnetic field (LMF) on the organism.**
G3 D. J. Bem, T. Wieckowski, *Technical University of Wroclaw, Poland:* **On the measurement of hazardous EM fields in lossy media using a small loop antenna.**
G4 R. Klimkiewicz, M. Macher, P. Tyrawa, *Institute of Telecommunications, Wroclaw, Poland:* **EMC of transmitting antennas. The problem of spectrum density in the vicinity of high-power UHF TV antennas.**
G5 T. Smialkowski, A. Koperski, *National Radio Inspection, Warsaw, Poland:* **Measurements of strong electromagnetic fields in the frequency range from 0.1 to 300 MHz.**
G6 B. Raufmann, *Institut für Rundfunktechnik, München, GFR:* **Field strength measurements in the vicinity of LF-, MF- and HF-transmitting aerials.**
G7 P. A. Neukomm, R. Ballisti, G. Klaus, *Federal Institute of Technology Zurich, Switzerland:* **The influence of the human body on the radiation characteristics of small, body-mounted antennas, especially in the resonance region from 50 to 200 MHz.**

H. Nuclear EMP II — WEm

Invited chairman: W. Joehl

H1 C. E. Baum, *Air Force Weapons Laboratory, Kirtland AFB, NM:* **Electromagnetic topology: A formal approach to the analysis and design of complex electrical systems.**
H2 E. F. Vance, *SRI International, Menlo Park, CA:* **EMP hardening of systems.**
H3 M. Wik, *Defence Material Administration, Stockholm, Sweden;* A. Eggendorfer, W. H. Kapp, *Joslyn Electronics, Goleta, CA;* W. Joehl, W. Buchmann, *Forschungsinstitut fuer Militaerische Bautechnik, Zurich, Switzerland:* **Measurement and application of secondary surge arrestors for NEMP protection.**
H4 L. Marin, *The Dikewood Corp., Santa Monica, CA:* **External interaction problems made simple with the Singularity Expansion Method.**
H5 M. Ianovici, *Federal Institute of Technology Lausanne, Switzerland:* **Computer model and impulse current injections for optimum NEMP protection of cables.**
H6 F. Fornerod, *Cables Cortaillod S.A., Cortaillod, Switzerland:* **Calculation and measurement of transfer impedance of cable sheaths.**
H7 B. Wamister, J. Bertuchoz, T. Ruedy, *AC-Laboratory Wimmis, Switzerland:* **Estimation of NEMP-induced voltage in coaxial cables using transfer impedance.**

I. Coupling — WEm

Invited chairman: J. F. Fischer

I1 F. M. Tesche, T. K. Liu, *LuTech Inc., Berkeley, CA:* **Recent developments in electromagnetic field coupling to transmission lines.**
I2 C. R. Paul, *University of Kentucky, Lexington, KY:* **Coupling to twisted pair transmission lines.**
I3 W. L. Chadsey, J. E. Tigner, *Science Applications Inc., Vienna, VA:* **System generated electromagnetic pulse coupling to cables.**
I4 G. T. Capraro, *Rome Air Development Center, Griffiss AFB, NY;* C. R. Paul, *University of Kentucky, Lexington, KY:* **A probabilistic approach to wire coupling interference prediction.**
I5 A. Martin, *Raychem Corp., Menlo Park, CA:* **The connector pin voltage of a shielded cable immersed in a radiation field.**
I6 S. A. Davidson, *Aeronautical Systems Div., Wright-Patterson AFB;* G. A. Thiele, *University of Dayton, OH:* **A hybrid method of moments-GTD technique for computing electromagnetic coupling between two monopole antennas on a large cylindrical surface.**
I7 H. Ryser, *Hasler Ltd., Berne, Switzerland:* **Coupling of fast transients from power supply lines into coaxial lines: Experimental and theoretical results.**

J. Immunity — WEa

Chairman: A. de Jong

J1 R. Bersier, *Swiss PTT, Berne, Switzerland:* **Measurement of the immunity of TV receivers to AM fields in the 3-30 MHz range, including the influence of connected cables.**
J2 H. Cichon, *IARU Reg. 1;* H. Trzaska, *Technical University of Wroclaw, Poland:* **Susceptibility problems of general use electronic devices.**
J3 G. H. Schildt, *Siemens AG, Braunschweig, GFR:* **Safety control systems interfered with by electromagnetic noise.**
J4 Y. M. Abramson, A. Y. Senchillo, *Radio Research Institute, Leningrad;* V. S. Akimov, *Ministry of Posts and Telecommunications, Moscow, USSR:* **Protection of earth stations of satellite television broadcasting systems against man-made interference.**
J5 G. K. Boronichev, *Radio Research Institute, Leningrad, USSR:* **Investigation and control of immunity of receptors to interference.**
J6 E. Corsaro, *RAI-Radiotelevisione Italiana, Torino, Italy:* **A comprehensive proposal for radio devices immunity measurement methods.**

K. EMC in communications — WEa

Chairman: Prof. E. Paolini

K1 V. A. Parfenov, *Ministry of Posts and Telecommunications, Moscow, USSR:* **Electromagnetic compatibility of high speed digital data transmission circuits and analog circuits in cables of local telephone networks.**
K2 L. Inzoli, S. Caniggia, G. Cardinali, *ITALTEL s.p.a., Milano, Italy:* **EMI problems in the design of new telephone switching systems.**
K3 J. P. Mills, *GTE Automatic Electric, Northlake, IL;* D. R. J. White, J. D. M. Osburn, *Don White Consultants, Gainesville, VA:* **EMC design of PCB's and backplanes.**
K4 V. B. Dikhtyar, K. I. Palatov, B. M. Paramonov, *USSR Academy of Sciences, Moscow, USSR:* **Calculation of nonlinear amplifiers with single- and multifrequency input signals.**
K5 K. K. Venkauskas, *Merchant Marine Research Institute, Leningrad, USSR:* **Improvement of EMC characteristics of HF and MF ship communication systems.**
K6 A. Wojnar, *Warsaw Academy of Technology, Poland:* **On the probability of communication in radio systems.**
K7 M. A. Bykhovsky, *Ministry of Posts and Telecommunications, Moscow, USSR:* **EMC evaluation methods for line-of-sight radio relay links using different types of modulation.**

L. Particular EMI sources — WEa

Chairman: Prof. Dr. C. Egidi

L1 Y. Amemiya, O. Fujiwara, *Nagoya University, Japan:* **Effects of resistive plugs in suppressing ignition noise.**
L2 P. de Bruyne, *Fed. Institute of Technology Zurich, Switzerland:* **Compatibility of graphic data input tables.**
L3 W. Hadrian, *Technical University of Vienna, Austria:* **The magnetic field of three-phase transformers and bus-bars at considerable distances.**
L4 J. Simic, J. Rajda, *El. Inst. "Rade Koncar", Zagreb, Yugoslavia:* **Disturbances of signalling-protective and telecommunication devices caused by diode- and thyristor-controlled locomotives.**
L5 H. S. Cabayan, *Lawrence Livermore Laboratory, Livermore, CA:* **Electromagnetic emission from accelerators and electron beams.**
L6 J. M. G. A. Ouderling, J. T. A. Neessen, *Dr. Neher Laboratory PTT, Leidschendam, Netherlands:* **Analysis of interference in telecommunication networks caused by power generating windmills.**
L7 L. P. Kozlova, V. A. Leonov, *Radio Research Institute, Leningrad, USSR:* **On establishing limits for radio interference at mains terminals of TV receivers over the frequency band above 1,605 kHz.**

THURSDAY, MARCH 12

M. EMC measurements options for the future — THUm

Invited chairman: M. L. Crawford

M1 M. L. Crawford, *National Bureau of Standards, Boulder, CO:* **Options to open-field and shielded enclosure EMC measurements.**
M2 B. F. Lawrence, *Ray Proof, Norwalk, CN:* **A new generation of anechoic chambers.**
M3 G. Benham, *British Aerospace, Filton, England:* **A new approach to anechoic chambers.**
M4 M. Kanda, *National Bureau of Standards, Boulder, CO:* **The theoretical and experimental investigations of loading effects due to perfectly conducting rectangular cylinder in a transverse electromagnetic (TEM) cell.**
M5 G. Meyer, *Federal Institute of Technology Zurich, Switzerland:* **The TEM measuring line—a critical overview.**
M6 L. Bolla, M. Mensa, E. Rondi Totto, *Aeritalia, Torino, Italy:* **A wide-band measuring system intended for time domain measurements.**
M7 M. A. Bridgwood, *Portsmouth Polytechnic, Hampshire, England:* **Some uses of electrolytic cells in the statistical study of electromagnetic interference.**

N. Reliability, limits, measurements — THUm

Chairman: Prof. Dr. R. Zwicky

N1 N. Ari, *Brown Boveri & Cie, Baden, Switzerland:* **Electromagnetic phenomena and reliability of electronic equipment and systems.**
N2 A. Brenot, *Centre Nat. d'Etudes des Telecomm., Issy-les-Moulineaux, France:* **Comparison of EMC measuring methods and RFI limits.**
N3 H. Sauvain, E. Vieux, *Condensateurs Fribourg S.A.;* M. Aguet, *Fed. Institute of Technology Lausanne, Switzerland;* A. Geneux, *Fribourg Condensateurs S.A., Noirefontaine, France:* **Characterization of interference caused by household apparatus.**
N4 M. Borsero, *IENGF, Torino;* E. Nano, *Politecnico di Torino, Italy:* **Comparison between calculated and measured attenuation of the site recommended by IEC for radiation measurements.**
N5 K. Hausdorf, *Micafil AG, Zurich, Switzerland:* **Evaluation of EMC techniques for sensitive production tests.**
N6 H. Knoller, *Lockheed-California, Burbank, CA:* **A new induction probe for high efficiency coupling.**
N7 W. Moron, Z. Rymarowicz, R. Struzak, *Inst. of Telecomm., Wroclaw, Poland:* **Results of MF composite urban radio noise survey in Poland.**

O. Available computer programs for the EMC engineer — THUm

Invited chairman: Prof. J. Perini

O1 J. D. Nordgard, *Georgia Institute of Technology, Atlanta, GA;* C. L. Chen, *Purdue University, Lafayette, IN:* **A cable coupling code.**
O2 A. T. Adams, J. Luzwick, E. Ngai, *Syracuse University, Syracuse, NY:* **Computer programs for linear and planar arrays of thin-wire dipoles.**
O3 B. J. Strait, *Syracuse University, Syracuse, NY:* **Available computer programs based on the method of moments.**
O4 D. J. Bem, J. Janiszewski, R. Zielinski, *Technical University of Wroclaw, Poland:* **Computer analysis of electromagnetic compatibility of VHF-FM broadcasting systems.**
O5 P.-A. Merz, *Siemens-Albis, Zurich, Switzerland:* **Lightning and NEMP surges on gas arrestors. A computation procedure for the transient response.**
O6 G. Gerbi, C. Anro, *Aeritalia, Torino, Italy:* **ACAP: Antenna coupling analysis program.**
O7 D. J. Bem, M. Klajn, *Technical University of Wroclaw, Poland:* **Power flux density in the near field of TV transmitting antennas.**

P. Shielding and grounding — THUa

Chairman: G. A. Jackson

P1 P. J. Madle, *TRW Inc., Redondo Beach, CA:* **Contact resistance and porpoising effects in braid cables.**
P2 B. Demoulin, P. Degauque, M. Cauterman, *Lille University, France:* **Shielding effectiveness of braids with high optical coverage.**
P3 G. Chandesris, *Centre Nat. d'Etudes des Telecomm., Issy-les-Moulineaux;* B. Demoulin, P. Degauque, *Lille University, France:* **Effect of ground connection on the coupling of disturbing signals to a coaxial line.**
P4 L. Borek, *Vacuumschmelze GmbH, Hanau, GFR:* **Heavily magnetically shielded room for measurements of extremely weak magnetic fields.**
P5 D. A. Bull, G. A. Jackson, *ERA Technology Ltd., Leatherhead, England.* **Assessment of screening effectiveness of low conductivity panels.**

Q. Lightning and power lines — THUa

Chairman: Prof. Dr. J. Wiesinger

Q1 F. D. Martzloff, *General Electric Comp., Schenectady, NY:* **Transient overvoltage protection: The implications of new techniques.**
Q2 B. Djebari, J. Hamelin, C. Le Tenturier, *Centre Nat. d'Etudes des Telecomm., Lannion;* J. Fontaine, *Clermont University, France:* **Comparison between experimental measurements of the electromagnetic field emitted by lightning and different theoretical models—influence of the upward velocity of the return stroke.**
Q3 A. Courty, R. Nanquette, *Thomson-CSF, Malakoff, France:* **Optical link for EMP and EMC measurements.**
Q4 A. Beuret, *Fed. Institute of Technology Lausanne, Switzerland:* **An optical fibre link for lightning stroke current measurements.**
Q5 T. Yoshino, I. Tomizawa, *University of Electro-Communications, Tokyo, Japan:* **Rocket and baloon observation of power line radiation over Japanese islands.**
Q6 L. Jermendy, *Res. Inst. for Electrical Energy, Budapest, Hungary:* **Radio interference experiences with a 750 kV transmission line.**
Q7 H. Schaffner, *Schaffner AG, Luterbach, Switzerland:* **The propagation of fast interference pulses along the power cord.**

R. EMC analysis and modeling — THUa

Chairman: Dr. A. D. Spaulding

R1 V. P. Pevnitsky, Y. V. Polozok, *Radio Research Institute, Leningrad, USSR:* **On the agreement of two methods of construction of stochastic models of cumulative interference-processes.**
R2 R. A. Orlov, *Radio Research Institute, Leningrad, USSR:* **Matrix formulation of electromagnetic compatibility problems.**
R3 L. T. Remizov, *USSR Academy of Sciences, Moscow, USSR:* **Measurement of fluctuation noise characteristics in the presence of impulsive interference.**
R4 V. A. Morozov, *USSR Academy of Sciences, Moscow, USSR:* **An order algorithm of two-channel reception of binary signals with interference of unknown intensity.**
R5 J. Holownia, *Technical University of Wroclaw, Poland:* **General characteristics of impulsive noise caused by the operation of a switch.**
R6 J. de Reffye, *Centre Nat. d'Etudes des Telecomm., Issy-les-Moulineaux, France:* **Modeling of impulsive noise bursts.**

Explanation of symbols:
TUm, TUa ..... Tuesday morning/afternoon
WEm, WEa ..... Wednesday morning/afternoon
THUm, THUa ..... Thursday morning/afternoon

WORKSHOPS

Workshop organizer:
Herb K. Mertel, *EMACO Consultants, San Diego, CA*

W1. EMC Diagnostics
(Tuesday, March 10, 1981, 14.00-17.00)

Chairman: H. K. Mertel

Offered by SAE AE-4 Group on EMC and the following speakers:
H. K. Mertel, *EMACO EMC Consultants, San Diego, CA*
J. F. Fischer, *XEROX Corp., Los Angeles, CA*

Topics:
- How can EMC problems be recognized?
- What is EMC?
- What are the EMC design parameters?
- What are the elements of EMC design?
- What are the EMC diagnostic tools?

W2. EMP Hardening of Electronic Systems
(Wednesday, March 11, 1981, 14.00-17.00)

Chairman: Dr. F. M. Tesche, *LuTech Inc., Berkeley, CA*

Speakers: Dr. L. O. Marin, *The Dikewood Corp., S. Monica, CA*
E. F. Vance, *SRI International, Menlo Park, CA.*

Topics:
- Present background of EMP and topological shielding concept
- Methodology for determining degree of hardness, based on source, shielding surface, system penetration mechanism, and susceptibility
- Presentation of design example
- Question - answer period

W3. Applications of Programmable Calculators and Computers for EMI Prediction and EMC Design (Updated course Rotterdam 1980)
(Thursday, March 12, 1981, 14.00-17.00)

Chairman and speaker: D. R. J. White

Offered by Don White Consultants, Inc., *Gaithersburg, MD*

Topics:
- Input of low-price, 200 step hand-held calculators, 2,000 step desk-top types and minicomputers
- New EMC design methodology and calculator/computer demonstrations
- Discussion and critique of models, programs, exchange of views on user-oriented problems

TECHNICAL EXCURSIONS

Excursions organizer:
J. Ørum, *Zurich*

Following technical visits are planned:

A. Tour of the Federal Institute of Technology at Zurich. (Technical facilities of the Institute and selected laboratories)
B1. Visit to Siemens-Albis AG, Zurich. (EMC measures in transmission equipment and military units, Siemens-Albis PCM module for IFS switching system, modern electronic private branch exchanges)
B2. Visit to Brown, Boveri & Cie, Baden. (Control systems for power and communication networks. Data transmission, radio telephones, radio relay links, large transmitters)

Tour A is planned for Friday morning and includes a light lunch, in the afternoon either visit B1 or B2 may be chosen. All excursions are at no cost for the participants.

PROVISIONAL LIST OF EXHIBITORS
(As per August 20, 1980)

AILTECH, GFR/USA
Vacuumschmelze GmbH, GFR
Amplifier Research, USA
High Voltage Test Systems, Switzerland
Impulsphysik GmbH, GFR
Pötschke GmbH & Co. KG, GFR
Ray Proof, USA
Condensateurs Fribourg S.A./EMC, Switzerland
Schaffner AG, Switzerland
Thomson-CSF, France
Feller AG, Switzerland
Don White Consultants, USA
Raychem, Switzerland/England
Rohde & Schwarz, GFR

For information concerning the exhibition contact Mr. K. Hausdorf, Exhibition Chairman, c/o Micafil AG, Badenerstrasse 780, 8048 Zurich, Switzerland. Phone: (+411) 62 52 00, Ext. 361, telex: 52 560a mica ch.