

TABLE OF CONTENTS

SESSION 1: SYSTEM DESIGN

<i>Recent Studies of MHD Systems: Baseline Plant and Part Load Performance</i> R.L. Lawlt, M.L.R. Murthy, J.C. Cutting, W.R. Owens, P.R. Sheth; Gilbert/Commonwealth, Reading, Pennsylvania	1:1:1
<i>Design and Development of a Conceptual MHD/Steam Power Plant for Western India</i> V.R. Rama Prasad; Bharat Heavy Electricals Ltd., India.	1:2:1
<i>Pilot Plant for MHD Power Generation--Research Programme of Bharat Heavy Electricals Limited (India)</i> S. Sridharan; Bharat Heavy Electricals Ltd., India.	1:3:1
<i>Experiments of ETL Mark VII MHD Facility</i> Y. Kusaka, K. Takano, K. Kato, Y. Kaga, Y. Aiyama; Electrotechnical Laboratory, Ibaraki; T. Imatake, Y. Fukaya, I. Osada; Mitsubishi Heavy Industry Ltd., Tokyo; T. Tanaka; Mitsubishi Electric Company, Tokyo, Japan	1:4:1
<i>MHD Power Train Design Approaches to Enhance Lifetime</i> A.R. Jones; Westinghouse Electric Corporation	1:5:1

SESSION 2: GENERATORS

<i>Consideration of Optimal Boundary Configurations for Linear MHD Generators</i> C.D. Maxwell, J.T. Demetriades, D.A. Oliver, S.T. Demetriades; STD Research Corporation, Arcadia, California	2:1:1
<i>Magnetoacoustic Phenomena in MHD Generators</i> A.C. Munce, Jr., M. Mitchner, J.K. Koester; High Temperature Gasdynamics Laboratory, Stanford University, Stanford, California	2:2:1
<i>Modeling of Slag/Seed Interaction Phenomena in Coal-Fired MHD Generators</i> C.A. Luongo, C.H. Kruger; High Temperature Gasdynamics Laboratory, Department of Mechanical Engineering, Stanford University, Stanford, California	2:3:1
<i>Boundary Layer ARC Behavior (II)</i> R.J. Rosa; Montana State University, Bozeman, Montana	2:4:1
<i>Performance of Rod Electrodes in Segmented Faraday Generators</i> R.P. Heydt, R.H. Eustis; High Temperature Gasdynamics Laboratory, Stanford University, Stanford, California.	2:5:1
<i>Frequency Dependence of Acoustic Waves in Plasma MHD Generators</i> N. Riahi, J.S. Walker; Department of Theoretical and Applied Mechanics, University of Illinois, Urbana, Illinois.	2:6:1
<i>Measurements of Secondary Flow in an MHD Channel</i> S.L. Girshick, C.H. Kruger; High Temperature Gasdynamics Laboratory, Stanford University, Stanford, California.	2:7:1
<i>New Approach to Calculation of Three-Dimensional Flow in MHD Generators</i> M. Ishikawa, J. Umoto; The Department of Electrical Engineering, Kyoto University, Kyoto, Japan	2:8:1
<i>Recent Results of the Avco MK VI Test Program</i> A.W. McClaine, D.W. Swallow, R. Kessler; Avco Everett Research Laboratory, Inc., Everett, Massachusetts.	2:9:1
<i>Heat Transfer Studies of CFFF Upstream Components</i> P.L.R. Hoffman, J.T. Lineberry, L.W. Crawford; The University of Tennessee Space Institute, Tullahoma, Tennessee	2:10:1

SESSION 3: DISK GENERATORS

Experimental Studies on the Performance of Closed Cycle MHD Generators with Fully Ionized Seed
N. Harada, H. Yamasaki, T. Oyake, M. Watanabe, E. Shimizu, T. Isogai, S. Shioda; Tokyo Institute of Technology, Yokohama, Japan 3:1:1

Dynamical Behavior of Disk Type Closed Cycle MHD Generator
Y. Yoshikawa, S. Kabashima, H. Yamasaki, N. Harada, S. Shioda; Tokyo Institute of Technology, Yokohama, Japan 3:2:1

A Theoretical and Experimental Study of Electric Field Breakdown in Combustion-Driven Disk Generators
W.E. Lear, T. Nakamura; High Temperature Gasdynamics Laboratory, Stanford University, Stanford, California. 3:3:1

Recent Results of Power Generation Experiments with the Fuji-1 Facility
H. Yamasaki, S. Kabashima, K. Yoshikawa, N. Harada, Y. Okuno, T. Okamura; Tokyo Institute of Technology, Yokohama; Y. Hasegawa; Mechanical Engineering Laboratory, Ibaragi; T. Yokota, Ishimura, K. Matsutani, T. Sasaki; Toshiba Corporation, Tokyo, Japan 3:4:1

SESSION 4: MATERIALS

Development of Sidewalls and Interelectrode Insulators for a Slagged MHD Channel
V.M. Goldfarb, V.J. Hruby, I. Sadovnik; Avco Everett Research Laboratory, Inc., Everett, Massachusetts 4:1:1

Ceramic Materials for MHD Electrodes
D.D. Marchant; Pacific Northwest Laboratory, Richland, Washington 4:2:1

Progress in Testing of Coal-Fired MHD Generator Ceramic Channels
T. Okuo, K. Kato, Y. Aiyama; Electrotechnical Laboratory, Ibaraki; Y. Fujii; Shinagawa Refractories Co. Ltd., Okayama; H. Okamura, M. Ura; Ibaraki, Japan. 4:3:1

Thermal Resistance of Direct Bond Region Between Magnesia Ceramic and Copper
O. Nomura; Electrotechnical Laboratory, Ibaraki; Y. Ebata; Government Industrial Research Institute, Osaka; T. Kozuka; Government Industrial Research Institute, Nagoya, Japan. 4:4:1

SESSION 5: PLASMA EFFECTS

Fluctuation Analysis of Combustion Plasma in the Electrode Boundary Layer of an MHD Generator by Power Spectrum Method
Y. Aoki, T. Seido, N. Kayukawa, H. Yamazaki; Energy Conversion Research Institute, Faculty of Engineering, Hokaido University, Sapporo; Y. Ozawa; Hokkaido Institute of Technology, Sapporo, Japan 5:1:1

Electrothermal Instability Analysis for an Open-Cycle MHD Plasma under Two-Component Magnetic Field
N. Kayukawa, S. Oikawa, Y. Aoki, H. Yamazaki; Department of Nuclear Engineering, Faculty of Engineering, Hokaido University, Japan; Y. Ozawa; Department of Electrical Engineering, Hokkaido Institute of Technology, Sapporo, Japan 5:2:1

The Transition from Diffuse to Constricted Discharges on Cold Electrodes in a Molecular Plasma
R. Hernberg, E. Hakala; Tampere University of Technology, Finland; S.Ya. Bronin, V.V. Kirillov, V.M. Kolobov, A.S. Tikhotsky; Institute of High Temperatures, U.S.S.R. Academy of Sciences, Moscow, U.S.S.R. 5:3:1

Effect of Anode Temperature on Current Conduction in Seeded Combustion Plasmas
R.P. Dahiya, S.C. Sharma, Ami Chand; Centre of Energy Studies, Indian Institute of Technology, India 5:4:1

SESSION 6: COMBUSTORS

The Effects of Coal Particle Size and High-Throughput on the Performance of the 20 MW_t MHD Coal Combustor
 R. Braswell, J. Stewart; TRW Energy Development Group, Redondo Beach, California. . . . 6:1:1

An Advanced Coal Feed System for the 50 MW_t MHD Combustor
 J.E. Cox; TRW Energy Development Group, Redondo Beach, California 6:2:1

Early Development Testing of the TRW 50 MW_t MHD Coal-Fired Combustor
 R. Braswell, H. Iwata, J. Stewart; TRW Energy Development Group, Redondo Beach, California. 6:3:1

Scaling of MHD Coal Combustors for Commercial Power
 G. Roy, Albert Solbes; TRW Energy Development Group, Redondo Beach, California. . . . 6:4:1

Seed Spray Trajectories in MHD Combustors
 S.A. Arunachalam; Bharat Heavy Electricals Limited, MHD Research Project; D. Ranganatha Iyer; Bhabha Atomic Research Centre, MHD Research Project, India. 6:5:1

SESSION 7: CLOSED CYCLE MHD

Conceptual Design Study of 1000 MW_t Helium Closed Cycle MHD Power Plant
 K. Yoshikawa, S. Kabashima, H. Yamasaki, Y. Okuno, T. Okamura, S. Shioda; Tokyo Institute of Technology, Yokohama; Y. Yokota, M. Ishimura, H. Sekiya, K. Matsutani; Toshiba Corporation, Tokyo, Japan 7:1:1

Channel Design for Closed Cycle MHD
 G.K. Troost, C.A.L. Kemper, T.W. Verbruggen; FDO Engineering Consultants, Amsterdam; R.F. Van der Wijngaart, J.P.F. Lindhout; National Aerospace Laboratory NLR, Amsterdam, The Netherlands 7:2:1

Closed Cycle MHD Power Generation for Moderate Size Power Plants
 J.F. Louis; Massachusetts Institute of Technology; K. Hogeland, G. Kadagathur; Stone and Webster Engineering Corporation 7:3:1

Electric and Gasdynamic Performance of the Eindhoven Blow-Down Experiment
 W.F.H. Merck, P. Masee; Eindhoven University of Technology, Group Direct Energy Conversion, Eindhoven, The Netherlands. 7:4:1

Non-equilibrium Hall MHD Generation Experiments with an Inlet Shock Wave Pre-ionization (Effects of the Shock Wave Angle on the Performance)
 M. Miyata, H. Tsuboi; Department of Mechanical Engineering, Meisei University, Tokyo, Japan 7:5:1

ETGAR Liquid Metal MHD Program at Ben Gurion University and its Upscaling
 H. Branover, A. El-Boher, S. Sukoriansky, J. Bardin, S. Lessin; Ben Gurion University, Beer Sheva; Z. Raveh; Bateman Engineering Ltd., Beer Sheva, Israel; M. Petrick; Argonne National Laboratory, Argonne, IL; E.S. Pierson; Purdue University Calumet, Hammond, Indiana. 7:6:1

Microscopic and Macroscopic Streamer Parameters of a Noble Gas Linear MHD Generator
 J.M. Wetzter; Eindhoven University of Technology, Group Direct Energy Conversion, Eindhoven, The Netherlands. 7:7:1

SESSION 8: DIAGNOSTICS

Velocity Measurements in MHD Flows Using a Remote Controlled Laser Velocimeter
 D.V. Srikantaiah, T. Philip; MHD Energy Center, Mississippi State, Mississippi; W.W. Wilson; MHD Energy Center and Department of Chemistry, Mississippi State, Mississippi 8:1:1

A Study of Temperature Measurement by Simulation
 L. Fulai; Institute of Electrical Engineering, Academia Sinica, Beijing, China 8:2:1

Gas Temperature Measurements of Particle-Laden MHD Flows
 L.E. Bauman; MHD Energy Center, Mississippi State, Mississippi 8:3:1

SESSION 9: CONTROLS

Integration of MHD Plants into Electric Utility Systems
W.D. Jackson; HMJ Corporation; W.E. Feero, W. Gish; Electric Research & Management, Inc.; G.R. Seikel; SeiTec, Inc. 9:1:1

Current Control and Consolidation Circuits Development at AERL
V.J. Hruby; Avco Everett Research Laboratory, Inc., Everett, Massachusetts 9:2:1

Stability Study of an Inverter Controller for an MHD Generator
S. Matair, S. Ramakrishnan; School of Electrical Engineering, The University of Sydney, N.S.W., Australia. 9:3:1

The Effects of Nonlinearities in the Boundary Layer Characteristics on the Fault Currents in an MHD Channel
S.P. Kuo, E. Levi, H. Schachter; Polytechnic Institute of New York, Farmingdale, New York 9:4:1

Prevention of High Current Concentrations in the Nozzle of MHD Generators
S. Kuo, E. Levi, H. Schachter; Polytechnic Institute of New York, Farmingdale, New York 9:5:1

Design, Material Selection and Microprocessor Control for Indian MHD Air Preheaters
V.R. Malghan, K. Thiagarajan, R. Jayapal; Bharat Heavy Electricals Limited, MHD Research Project, India 9:6:1

SESSION 10: DOWNSTREAM COMPONENTS I

The Effect of Boiler Flow Distribution on NO Decomposition
L.S.H. Chow, C.S. Wang, R.W. Lyczkowski, T.R. Johnson, G.F. Berry; Argonne National Laboratory, Argonne, Illinois. 10:1:1

Validation of Kinetics Model for Nitric Oxide Decomposition in MHD Systems
J. Klinger, E.B. Smyk, T.R. Johnson; Argonne National Laboratory, Argonne, Illinois. 10:2:1

Environmental Studies for the Low Mass Flow Test Series (1982-1983) at the DOE Coal Fired Flow Facility
T.P. Lynch, J.A. Cooper, J.L. Casey, J.A. Winkleman; The University of Tennessee Space Institute, Tullahoma, Tennessee 10:3:1

SESSION 11: DOWNSTREAM COMPONENTS II

Status of Slag/Seed Interaction Testing at the Coal Fired Flow Facility
D.M. Jackson; The University of Tennessee Space Institute, Tullahoma, Tennessee. 11:1:1

An Analytical Study of Chemical Regeneration in the MHD Exhaust Stream
S.A. Arunachalam, G.V.S. Rao; Bharat Heavy Electricals Limited, MHD Research Project, India. 11:2:1

A Review and Assessment of Slagging & Fouling in MHD Steam Plants
L.S.H. Chow, E.B. Smyk, T.R. Johnson; Argonne National Laboratory, Argonne, Illinois 11:3:1

Thermodynamic Reactions of the Major Slag Species with the Potassium Seed
M. Farber, R.D. Srivastava; Space Sciences, Inc., Monrovia, California; J.W. Moyer, J.D. Leeper; Southern California Edison Company, Rosemead, California. 11:4:1

SESSION 12: NEW CONCEPTS

Coal-Gas-Based Facility for MHD Energy Conversion Studies in India
V.R. Ramaprasad; Bharat Heavy Electricals Ltd., India. 12:1:1

Hybrid MHD Synfuels Plant
J.B. Dicks, L.W. Crawford, A.J. Bart; University of Tennessee Space Institute, Tullahoma, Tennessee 12:2:1

An Investigation of the Metal-Ammonia Solution MHD Electrical Power Generator
W.R. Kallman, M.R. Johnson, M.A. Kay; Reed College, Portland, Oregon 12:3:1

Conceptual Design of an MHD Motor
A. Valfellis; Department of Science and Engineering, University of Iceland, Reykjavik, Iceland. 12:4:1

TECHNICAL ISSUES PRESENTATION

Major Remaining Technical Issues in Coal-Fired MHD Technology
E.D. Doss, T.R. Johnson, M. Petrick, W.C. Redman; Argonne National Laboratory,
Argonne, Illinois A:1