

# COMPUTER ENGINEERING DIVISION



AUGUST 1983

EDITOR: R. ARVIKAR



DR. EWALD HEER  
Chairman, 1982-1983

## CHAIRMAN'S MESSAGE/REPORT

It is now traditional for the outgoing Chairman to review the previous year's activities and thereby assure the membership that all is well. I am happy to report that during the third year of the Computer Engineering Division, we saw a continuation in growth of the depth and breadth of our activities.

By virtue of the Second International Computer Engineering Conference and Exhibit in San Diego on August 15-19, 1982, the technical session format was considerably expanded. The conference was both a technical and financial success. It is expected that the upcoming 1983 ASME International Computers in Engineering Conference and Exhibit, to be held in Chicago on August 7-11, 1983 under Chairman E. Hulbert, Program Chairman, V.A. Tipnis, and Exhibits Chairman J. Cokolis, will be even more successful.

Planning has now started for the 1984 ASME International Computers in Engineering Conference and Exhibit to be held in Las Vegas on August 12-16, 1984. This Conference is scheduled immediately after the Olympic Games in Los Angeles and offers the possibility to attend both events on one trip.

By attending the Division's conferences and reading the various publications one can obtain a reasonable picture of the most recent research and educational ideas developed by the computer engineering community in the U.S.A. In particular, the new journal, *Computers in Mechanical Engineering (CIME)*, provides in a hybrid fashion timely news items, program abstracts, and transaction papers of lasting interest. This journal has become the most important part of the Division's publishing activities, under the editorship of Professor Ali Seireg of the University of Wisconsin.

The Computer Engineering Division's main international affiliation is through the standing Committee for the Theory of Machines and Mechanisms. This committee, which is also presided over by Professor Ali Seireg, is the U.S. member of the International Federation for the Theory of Machines and Mechanisms (IFTToMM). All members of the Division are invited to participate in IFTToMM's activities. Of special interest are the IFTToMM World Congresses which take place once every four years. The next one will be held in New Delhi, India, in December of this year.

In addition to sponsoring the Annual Computers in Engineering Conference and Exhibit with participation from around the world, the Division also has sponsored various regional and special conferences, and participated in the ASME Winter Annual Meeting and in conferences sponsored by other divisions. Also, several RAMP short courses in robotics, CAD/CAM, microprocessors, and finite difference/finite element techniques were sponsored.

Without any doubt, computers will strongly impact productivity and reindustrialization. We, as mechanical engineers, are perhaps the widest user of computers in all its manifestations in our work. We have the opportunity and the responsibility to help ASME cope with this revolution.

I would like to take this opportunity to thank the many members of the Division who have given so freely of their time and energy during the past year.

## INCOMING CHAIRMAN'S POLICY STATEMENT

This will be the fourth year for the Computer Engineering Division (CED). The division is now the fastest growing division in the ASME. This is not by accident, and is largely due to the enthusiasm and hard work of my three predecessors, who have created a well structured organization and ignited member interest. It is my great honor and privilege to step into these shoes.

The primary goal of the CED is to identify computer engineering needs of ASME and to initiate communication and information exchanges within CED and the other divisions throughout ASME in a timely manner relating to the newest ideas and the exploding developments in this field. To a large extent this is accomplished by the Technical Committees of the Computer Engineering Division. The Committees are headed by very accomplished and dedicated chairmen and staffed by equally dedicated members. There are several openings in the member slots, anyone interested should contact the respective committee chairmen or attend the meeting which is usually held at one of the computer engineering conferences. If you feel that there are technical areas that should be covered but are not addressed by the technical committee, please contact me or any of the Executive Committee members. We are always happy to hear your opinions and ideas. Names and addresses of the chairmen of the Technical Committee and members of the Executive Committee are shown in this newsletter.

The Technical Committees primarily offer three kinds of services, organization of conferences, publication of technical papers and books, and selection and review of contributions to the Computer Engineering Division's journal, *Computers in Mechanical Engineering (CIME)*. The journal was launched in August 1982 under the able editorship of Dr. Ali Seireg. The journal includes timely news items, program abstracts, read-forum, and transaction papers of lasting interest. CIME is becoming the most important part of Division publishing activities. Those interested in contributing articles to this journal should contact the Editor-in-Chief, Professor Ali Seireg, or one of the associate editors listed in the journal.

(cont'd top of page 2)

Each summer the Division sponsors an International Computers in Engineering Conference and Exhibit with participation from societies around the world. We are actively pursuing the idea of joint conference sponsorship with other engineering societies in the United States and also with other divisions of the ASME. In addition to the International Conference, the Division also sponsors regional and special conferences and participates in the ASME Winter Annual Meeting and conferences offered by the other divisions of ASME. The Division encourages student participation by sponsoring the Student Conference at the Annual Division International Conference. So far this has led to a very lively and interesting exchange of ideas between students and members. The presently scheduled Annual International Computers in Engineering Conferences/Exhibits are: Chicago, August 7-11, 1983; and Las Vegas, August 12-16, 1984; Boston, July 28-August 1, 1985.

I urge you to attend our General Committee Meeting for an overview of the scope of activity in the division. This meeting is held each summer at the CED-sponsored International Computers in Engineering Conference/Exhibit. Starting last year, periodic general committee meetings were held in the months between the annual meetings, through teleconferencing. We have found that teleconferencing is a very inexpensive and efficient way to conduct some of our division business.

The computer revolution is going to have a profound impact on our careers and lives. CED must, and will grow to respond to this impact. It is our responsibility to help ASME cope with this revolution. We have the opportunity now. If you are interested in joining a specific committee in CED or work in a new area, please let us know. In any case, we hope you will participate in the Computer Engineering Division activities.



DR. RAMJEE RAGHAVAN  
Chairman, 1983-1984

Dr. Raghavan has been an active member of ASME for more than ten years. He served as chairman of the Technical Committee for Software and Hardware and is on the Executive Committee of the Computer Engineering Division. He is also a member of the Computer Technology Committee of the Pressure Vessel and Piping Division and a member of the National Nominations Committee. Dr. Raghavan was the Technical Program Chairman for the Second International Computer Conference held in San Diego in 1982. Besides this, he has organized numerous sessions for ASME technical conferences. In addition to publishing numerous articles, he is an Associate Editor of the *Journal of Pressure Vessel and Piping* and *CIME Magazine*. He has also edited two books.

Dr. Raghavan received his Bachelor Degree in Civil Engineering from Jadavpur University in 1964, a Master of Science Degree in Structural Engineering from Kanpur, India in 1967 and a PhD in Engineering Mechanics from Virginia Polytechnic Institute and State University, in 1973. He has worked in numerous industries before joining Foster Wheeler in 1973, where he is now a supervisor of the System Engineering Section.

## 1983 International Computers in Engineering Conference and Exhibit

August 7-11, 1983

Chicago Marriott Hotel  
North Michigan Avenue  
Chicago, Illinois

Plans are complete for this year's International Computers in Engineering Conference & Exhibit (ICEC&E) which is being held at the Chicago Marriott Hotel during August 7-11, 1983. With the preliminary program flyers and advance registration notices having been mailed to over 50,000 ASME members, this year's conference is expected to attract an even larger audience compared to the 1982 ICEC&E in San Diego, California.

The theme of this year's conference is "Impact of Computers in Mechanical Engineering in the Post-Industrial age". This is indeed a most timely topic, reflecting the ever growing application of computers as a work tool in many aspects of Mechanical Engineering. The technical paper and panel sessions have been well subscribed and the exhibit is shaping up well with 40-50 prominent computer software/hardware vendors expected to participate.

The keynote speaker for the conference is Mr. William C. Norris, who is the Chairman and CEO of Control Data Corporation. His speech will be followed by the grand opening of the exhibit. The remainder of the opening day (August 8, 1983) is dedicated to five one-hour plenary sessions covering the major disciplines that will experience the greatest impact of computer technology in the years ahead: Robotics & Automation, Computers in Education, CAD/CAM Future, Microprocessors Today and Tomorrow and Material Property Information Network. Nearly 50 technical paper and panel sessions will be devoted to state-of-the-art and future trends in areas such as, CAD/CAM, Microcomputers, Finite Element Analysis, Computer Simulation, Robotics, Computer Automation etc. The "Program at a Glance" below outlines the preliminary technical sessions program.

The overall conference chairman is L. Eugene Hulbert of Battelle Memorial Institute, Columbus, Ohio who is a past Chairman of the Computer Engineering Division. The conference & exhibit fee for ASME members who register in advance is \$165.00. Further details about the conference and the exhibit can be obtained by contacting:

### CONFERENCE INFORMATION:

Gemma M. Tansey  
ASME  
345 E. 47th Street, 7A  
New York, NY 10017  
(212) 705-7795

### EXHIBITS INFORMATION:

Mary S.H. Benedict  
ASME  
345 E. 47th Street, 13M  
New York, NY 10017  
(212) 705-7100

"Technical papers presented at your division conferences are available by mail-order from ASME Headquarters. All papers should be ordered by paper number and must be prepaid at \$2.50 per paper for members, \$5.00 for non-members. ASME coupons may also be redeemed by mail; one coupon per each paper plus 50c handling charge for each order. See *Mechanical Engineering* magazine for lists of papers by meetings and order blank".

## PROGRAM IN BRIEF

### Sunday, August 7

4:00 PM-7:00 PM

Registration Opens—Registration Counter (5th Fl.)

5:00 PM-7:00 PM

Opening Reception—Salon I

### Monday, August 8

8:30 AM-10:30 AM

Plenary Session I—Salon I

10:30 AM

Grand Opening of the Exhibit—Chicago Ballroom

2:30 PM-5:30 PM

Plenary Session II—Salon I

5:30 PM-6:30 PM

Cocktail Reception—Chicago Ballroom

### Tuesday, August 9

8:30 AM-11:30 AM

Session	Title	Room
1	Computer-Aided Learning Systems—I	Michigan
2	Robotics—Control Theory and Systems	Iowa
3	Finite Element and Computational Techniques	Wisconsin
4	CAD Applications—I	Minnesota
5	CAM—Application in Industry	Houston
6	Software for Robotics	Illinois
7	Computers in Engineering Work Place	Ohio
8	Computer Simulation of Fluid/Thermal Systems	Michigan State
9	Computer Integrated Manufacturing (CIM)	Kansas City

10:00 AM-5:00 PM

Exhibit Open—Chicago Ballroom

2:30 PM-5:30 PM

Session	Title	Room
10	University/Industry Cooperation in CAD/CAM	Iowa
11	Advanced Applications of Robots	Michigan
12	Finite Element Analysis—In Structures I	Illinois
13	Graphics in Design and Analysis I	Wisconsin
14	Simulation of Vehicle Propulsion Systems	Houston
15	Structure and System Optimization	Ohio
16	Flexible Manufacturing Systems	Minnesota
17	CAE Future Applications	Kansas City

7:00 PM-10:00 PM

Banquet—Salon I

## PROGRAM IN BRIEF (Continued)

### Wednesday, August 10

8:30 AM-11:30 AM

Session	Title	Room
18	Future Trends in Computer Hardware for Mechanical Engineering	Kansas City
19	Computer-Aided Learning Systems II	Michigan
20	Dynamics of Mechanisms and Robots	Iowa
21	CAD Application II and Systems	Houston
22	Data Communications and Networks	Los Angeles
23	Vehicle Dynamics Simulation	Scottsdale
24	Electronic Packaging and the Mechanical Engineer	Michigan State
25	Quality Assurance of Engineering Software	Ohio
26	Sensing and Perception in Robotics	Purdue

10:00 AM-4:00 PM

Exhibit Open—Chicago Ballroom

2:30 PM-5:30 PM

Session	Title	Room
27	Kinematics and Design of Mechanisms and Robots	Iowa
28	Microcomputers in the Engineering Laboratories	Michigan
29	Computer Simulation: Miscellaneous Topics	Los Angeles
30	Acquisition and Management of Data	Kansas City
31	Graphics in Design and Analysis II	Houston
32	Software Development Tools	Scottsdale
33	Finite Element Analysis—in Structures II	Ohio
34	CAM—Simulation	Michigan State
35	The Future of Computer Usage in Mechanical Engineering Education	Purdue

### Thursday, August 11

8:30 AM-11:30 AM

Session	Title	Room
36	CAD—Applications III	Los Angeles
37	Finite Elements and Computations in Heat Transfer and Fluids	Houston
38	Microcomputers in Education	Michigan
39	Data Base Systems for Engineering	Kansas City
40	Sensors for Robots and Automation	Iowa
41	Physical Design and Packaging of Consumer Computer Products	Indiana
42	Energy Systems	Scottsdale

11:45 AM-1:15 PM

Closing Luncheon—Salon I

### Friday, August 12

Short Courses

## ASME SHORT COURSE PROGRAM

In conjunction with the conference and exhibit, ASME is sponsoring a short course program in co-sponsorship with the Design Automation Committee of the Design Engineering Division and the CED. The courses offered deal with the subjects of Finite Element Analysis including Pre- and Post-processing, Engineering Design Optimization, and CAD/CAM Technology, and will be taught by well-known experts in these fields. The course titles and dates are provided below. Detailed information about the short course program can be obtained by writing or calling:

ASME  
Professional Development  
345 East 47th Street  
New York, N.Y. 10017  
(212) 705-7743  
TWX 710-581-5267

### PRE & POST PROCESSING FOR FINITE ELEMENT ANALYSIS

<b>Friday</b> <b>August 12, 1983</b> <b>8:30 a.m.-4:30 p.m.</b>	<b>Course Fee</b> <b>ASME Members:</b> <b>Non-Members:</b>	<b>\$205.00</b> <b>\$260.00</b>
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This introductory course in geometry modelling, finite element modelling and results postprocessing has broad technical appeal. Engineers in the aerospace industry, research facilities, machinery manufacturing companies and electronics integration companies will benefit by attending. The course focuses on structural analysis and not drafting.

**INSTRUCTOR:** Louis M. Crain  
PDA Engineering  
Santa Ana, CA.

### INTRODUCTION TO FINITE ELEMENT ANALYSIS

<b>Friday &amp; Saturday</b> <b>August 12-13, 1983</b> <b>8:30 a.m.-4:30 p.m.</b>	<b>Course Fee</b> <b>ASME Members:</b> <b>Non-Members:</b>	<b>\$370.00</b> <b>\$465.00</b>
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Finite element technology is a powerful tool for the analysis of both simple and complex structures. The use of finite element principles is standard in the area of structural analysis in pressure vessel and piping technology.

**INSTRUCTOR:** Dr. David E. Dietrich  
Swanson Analysis Systems, Inc.  
Houston, PA.

### ENGINEERING DESIGN OPTIMIZATION

<b>Friday &amp; Saturday</b> <b>August 12-13, 1983</b> <b>8:30 a.m.-4:30 p.m.</b>	<b>Course Fee</b> <b>ASME Members:</b> <b>Non-Members:</b>	<b>\$370.00</b> <b>\$465.00</b>
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This course will provide a working knowledge of numerical optimization techniques as applied to engineering design. A variety of algorithms are described to give an understanding of the methodology and the state of the art in automated design optimization. Numerous mechanical, civil, automotive and aeronautical applications are discussed, including the design of isotropic and composite structures, aerodynamic shape, mechanical components, and multi-discipline vehicle synthesis. A publicly available, general purpose, optimization program is described and demonstrated.

(cont'd top of page 5)

## '84 and '85 ICEC&E

The organizing committees have been formed and in operation for the 1984 and the 1985 ICEC&E's. The 1984 Conference & Exhibit will be chaired by Dr. Ewald Heer of Jet Propulsion Laboratory, Pasadena, CA. and will be held at the Las Vegas Hilton in Las Vegas, Nevada. The 1985 Conference & Exhibit chairman will be Dr. Ramjee Raghavan of Foster Wheeler Corporation with the Sheraton Boston Hotel as the proposed conference site. The official call for papers for the 1984 Conference will be available at the upcoming '83 Conference. Further details about the Conferences can be obtained from the conference chairmen.

### 1984 ICEC&E

**August 12-16, 1984**  
**Las Vegas Hilton, Las Vegas, NE**

Conference Chairman:	Dr. Ewald Heer JPL 4800 Oak Grove Dr. Pasadena, CA 91103 Tel. (213) 354-3060
International Chairman:	Dr. B. Roth
Exhibit Chairman:	Dr. T.J. Cokonis
Program Chairman:	Dr. W. Gruver

### 1985 ICEC&E

**July 28 - August 1, 1985**  
**Sheraton Boston Hotel, Boston, MA**

Conference Chairman:	Dr. Ramjee Raghavan Foster Wheeler Corporation 12 Peach Tree Hill Rd. Livingston, N.J. 07039 Tel. (201) 533-3518
International Chairman:	Dr. A. Seireg
Exhibit Chairman:	Dr. D. Dietrich
Program Chairman:	Dr. S. Rohde

### CED and ASME

The ASME is organized into eight Technical Groups each headed by a VP and representing a total of 32 technical divisions. The CED along with the Design Engineering and the Dynamic Systems & Controls divisions comprise the Systems & Design group under Prof. A. Seireg of the University of Wisconsin-Madison. The total primary membership of Systems & Design group is 14,356 with the CED with a membership of 1012 as shown below. The CED was formed in 1979 and the current membership count is based on the "primary" area of interest as indicated by the ASME members.

COUNCIL ON ENGINEERING ARRANGEMENT OF DIVISIONS INTO GROUPS

	YEAR ESTAB.	PRIMARY INTEREST
<b>ENVIRONMENT &amp; TRANSPORTATION GROUP</b>		
Rail Transportation	(1920)	( 900)
Aerospace	(1920)	( 3,100)
Materials Handling Engineering	(1920)	( 1,000)
Air Pollution Control	(1949)	( 800)
Solid Waste Processing	(1968)	( 300)
Noise Control & Acoustics	(1981)	( 300)
		( 6,400)
<b>ENERGY CONVERSION GROUP</b>		
Power	(1920)	( 7,800)
Nuclear Engineering	(1954)	( 2,300)
Fuels	(1920)	( 500)
Gas Turbine	(1947)	( 1,900)
Diesel & Gas Engine Power	(1921)	( 1,600)
		(14,100)
<b>SYSTEMS &amp; DESIGN GROUP</b>		
Design Engineering	(1945)	(11,605)
Computer Engineering	(1979)	( 1,012)
Dynamic Systems & Controls	(1943)	( 1,739)
		(14,356)
<b>BASIC ENGINEERING GROUP</b>		
Applied Mechanics	(1927)	( 4,900)
Fluids Engineering	(1926)	( 2,700)
Heat Transfer	(1938)	( 4,000)
Bioengineering	(1958)	( 700)
Lubrication	(1955)	( 400)
		(12,700)
<b>MANUFACTURING GROUP</b>		
Production Engineering	(1921)	( 1,900)
Plant Engineering & Maintenance	(1957)	( 3,500)
Process Industries	(1934)	( 1,500)
Textile Industries	(1921)	( 200)
		( 7,100)
<b>ENERGY RESOURCES GROUP</b>		
Ocean Engineering	(1961)	( 600)
Solar Energy	(1956)	( 1,300)
Energetics	(1964)	( 300)
Petroleum	(1948)	( 1,700)
		( 3,900)
<b>MATERIALS &amp; STRUCTURES GROUP</b>		
Pressure Vessels & Piping	(1966)	( 3,000)
Materials	(1920)	( 1,300)
NDE (Sub-division)*		( 4,300)
<b>GENERAL ENGINEERING GROUP</b>		
Management	(1920)	(13,072)
Safety	(1951)	( 506)
Technology & Society	(1972)	( 300)
		(13,920)

\* National Group



(ASME Short Course Program cont'd)

**INSTRUCTORS:** **Dr. Garret N. Vanderplaats**  
 U.S. Naval Postgraduate School  
 Monterey, CA.  
**Dr. Hirokazu Miura**  
 NASA  
 Moffett Field, CA.

**COMPUTER AIDED DESIGN AND  
 MANUFACTURING TECHNOLOGY**

**Friday & Saturday** **Course Fee**  
**August 12-13, 1983** **ASME Members:** **\$370.00**  
**8:30 a.m.-4:30 p.m.** **Non-Members:** **\$465.00**

This course is an introduction to the rapidly growing field of Computer Aided Design and Manufacturing Technology. CAD/CAM and Computer Aided Engineering issues will be examined. Computer graphics, including hardware and software will be considered, as will flexible manufacturing systems and robotics. Methods of optimal design will be examined in light of the CAD/CAM revolution. Related subjects and several case studies will be given.

**INSTRUCTORS:** **Dr. K.M. Ragsdell**  
 University of Arizona  
 Tucson, AZ.  
**Dr. Donald R. Riley**  
 University of Minnesota  
 Minneapolis, MN.  
**Hoda A. ElMaraghy**  
 McMaster University  
 Hamilton, Ontario



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(Founded in 1979)  
1983-1984

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Columbus, OH 43201  
(614) 424-5339

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#### *Student Affairs*

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Dept. of Mechanical Engineering  
University of Minnesota  
Minneapolis, MN 55455  
(612) 373-3040

## GREETINGS FROM YOUR NEW MANAGING DIRECTOR, TECHNICAL AFFAIRS

I look forward to working with the Computer Engineering Division and, of course, will be sure that you are my highest priority.

Seriously, we want to do a good job supporting everyone. To do that most efficiently, I need to understand your priorities. Please let me know, by letter if possible, what's good and what's bad. The Directorate is positioned for change. Your comments and suggestions will be heeded.

Sincerely, Jack Howell

## TECHNICAL COMMITTEES

### *Computer-Aided Manufacturing:*

DR. VIJAY TIPNIS  
Tipnis Associates  
Post Office Box 42001  
Cincinnati, OH 45242  
(513) 791-3805

### *Computers in Energy Systems:*

DR. G.D. GUPTA  
Corporation  
12 Peach Tree Hill Road  
Livingston, NJ 07039  
(201) 533-2189

### *Interactive Graphics:*

DR. D. RILEY  
University of Minnesota  
University of Minnesota  
Minneapolis, MN 55455  
(612) 373-3040

### *Statistical Modeling and Reliability Techniques:*

DR. J. MATAR  
Marquette University  
1515 W. Wisconsin Avenue  
Milwaukee, WI 53233  
(414) 224-7278

### *Process Control:*

MR. WILLIAM LIVINGSTON  
Ebasco Services  
2 World Trade Center  
Eightieth Floor  
New York, NY 10048  
(212) 839-4017

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(415) 768-4606

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Southern Illinois University  
Department of Engineering  
Mechanics & Materials  
Carbondale, IL 62901

### *Desktop Personal Computers:*

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Room 4006 JEC  
Troy, NY 12181  
(518) 270-6471

### *Finite Element Techniques:*

DR. DAVID DIETRICH  
Swanson Analysis Systems, Inc.  
Post Office Box 65  
Houston, PA 15342  
(412) 746-3304

### *Electronic System Physical Design:*

DR. R.J. HANNEMANN  
Consulting Engineer  
Digital Equipment Corporation  
146 Main Street  
Maynard, MA 01754  
(617) 890-5111

### *Computer Simulation:*

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Warren, MI 48090  
(313) 575-3004

### *Management Information Systems:*

DR. SALAR ELMAGHRABY  
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Research Program  
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Raleigh, NC 27607  
(919) 737-2350

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