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## HF/E Managers Speak Out

*By Betty M. Sanders, HFES President*

The downward spiral in the national economy that has negatively affected employment and budgetary issues in public and private organizations has had a similar impact on the human factors/ergonomics (HF/E) profession. This is evidenced by a sharp increase in the number of individuals requesting the use of the HFES Placement Service and a significant decrease in the number of employers posting job openings there. A closer look at the impact of the economy on the profession took place at the HFES Annual Meeting in Denver last October, when several managers of HF/E organizations came together in a session entitled “Roundtable Discussion for HF/E Managers.” This article is a summary of that discussion.

Nancy Cooke (Education and Training Committee chair) was the originator of the session, and I was the discussion moderator. Panelists included Barry H. Beith (president of HumanCentric Technologies, Inc.), Douglas J. Gillan (Psychology Department head and professor at New Mexico State University), K. Ronald Laughery, Jr. (president of MicroAnalysis & Design, Inc.), Arnold M. Lund (director of design and usability at Microsoft), and Ronald G. Shapiro (Enterprise-Wide Technology Program manager of learning curriculum at IBM Corp.).

The panelists were asked to respond to the following questions:

- What are the most important facilitating and inhibiting factors affecting HF/E and usability efforts within organizations?
- What changes, both positive and negative, will affect the HF/E field in the next five years, and what management implications do they have?
- What, if anything, can and should HFES be doing to help managers facilitate the positive role of HF/E and usability going into the future?

### **Facilitating and Inhibiting Factors within HF/E Organizations**

The most important organizational factor influencing the success and/or survival of HF/E projects and programs is the level of support provided by upper-level executives within an organization. Where there are one or more executives who advocate for HF/E involvement in the development of systems and equipment, HF/E work expands, and the environment is definitely more favorable. These executives speak for HF/E professionals in meetings where work groups are identified and where funds are allocated.

Middle-level managers also play a vital role in this effort by requiring the implementation of appropriate HF/E methodologies and by documenting the value added by including HF/E professionals on work teams.

One suggestion offered for creating advocacy for HF/E at higher management levels is to encourage senior HF/E personnel and consultants to take positions as product managers, development managers, and marketing directors within the organization. This could grow a culture in which designers, programmers, engineers, and marketing managers understand that good usability solutions do not “just happen” and are not just “common sense.” Today, effective HF/E leaders seek support for their projects by identifying and educating middle- and upper-level managers who will campaign for human-centered products, thereby creating an environment poised for success when adequate human and financial resources are available.

In addition, HF/E-friendly organizations have an infrastructure that encourages the tracking of problems and their solutions. This type of infrastructure provides a mechanism for capturing the input of HF/E professionals and the value added by their early involvement in a project. A critical aspect of this procedure is to quantitatively assess and document the performance of all contributors during the development process, thereby preserving information that is generally not available at the end of the project.

### **Predictions and Their Implications for HF/E Management**

Considering recent economic and political events, the panelists were asked to make five-year predictions about the state of the world and to consider the possible impacts on, and implied challenges for, the HF/E profession. Panelists consistently referenced the ideas summarized below.

*Prediction 1: economic improvements.* When the economy improves, managers will return to managing growth rather than managing a contracted workforce. Both are difficult, but an expanding economy brings with it flexibility and new opportunities for HF/E involvement that a contracting economy does not. Therefore, HF/E management will be challenged to recruit and hire highly qualified and creative individuals.

*Prediction 2: technological advancements.* The surge in the purchasing of high-technology equipment will generate the financial resources necessary to develop innovative technologies and corresponding equipment for use by humans. This equipment will

*continued on page 2*

## HF/E Managers Speak Out

(continued from page 1)

require human-centered design input and usability testing, resulting in increased responsibility and visibility for HF/E professionals.

*Prediction 3: technology democratization.* Technology democratization will increase, and the general population will be more diverse. The HF/E professional will have to define design requirements for (a) young users who have grown up with high-technology knowledge and are comfortable using it, (b) older users who have not grown up with high-tech equipment but want to use it, (c) disabled users who must be accommodated in order to use it, and (d) users from various cultures who participate as stakeholders at all levels of the process. This new population mix will have higher expectations and greater needs for easy-to-use products than the current population.

*Prediction 4: remote product development.* The growing trend toward outsourcing product development and services to other work sites, companies, and countries will complicate the management of interface designs and evaluations. Therefore, language and cultural differences will have to be considered by management, as well as alternative modes of communication. These challenges will require new, creative approaches to effective communication.

*Prediction 5: media attention.* Media attention will increase as the population reacts to the availability of more consumer product information. Therefore, it will be necessary to take advantage of positive exposure while mediating the negative impacts that frequently accompany media coverage. It will be necessary to appropriately communicate that HF/E decisions are based on the results of research-based input that requires the gathering of requirements and the analysis of data.

*Prediction 6: multimodal user interfaces.* The use of multimodal technology will increase as the capacity of computers and other equipment expands. Therefore, keeping a user-centered focus in the face of exciting new software and hardware capabilities will be challenging. The HF/E professional will have to be more knowledgeable about technological advances and lead the usability testing of equipment with more complex user interface requirements. Also, writing requirements documents, developing international and national standards, and publishing best practices examples will be critical to this effort.

*Prediction 7: user-experience focus.* The development of methods that directly address user interface content rather than just format and layout will occur. As systems become more complex and the role of the user moves toward supervisory control, getting the content right for the user will become increasingly important. HF/E professionals will be challenged by increased demands placed on the mental, physical, social, and emotional impacts of their products.

### HFES Support to HF/E Management

HFES supports the field by protecting HF/E science and practice while leading its expansion into new and diverse areas. It defines the field and identifies the skills and tools needed for successful practice. Specific support comes from creating a venue for information exchange, publishing research and best practices documents, offering miniconferences, and keeping members informed of important issues. Because the HF/E field changes rapidly, HFES continually reviews and assesses information about human behavior from overlapping fields and provides specialized training for members who migrate into HF/E from these areas. Furthermore, it occasionally offers workshops where new and experienced managers exchange ideas and develop additional skills.

In the future, HFES should expand its outreach to include forums for the discussion of business and political topics that will educate and inform individuals beyond the traditional HF/E organizational boundaries.

Through HF/E teachers at educational institutions, HFES encourages strong advocates for scientific principles and usability testing. Also, support to students is provided by reduced membership fees, complimentary attendance at annual meetings in exchange for volunteering, guidance to student chapters, and opportunities to present and publish research.


In the future, HFES should encourage educational institutions to expand their curricula to include business management courses for HF/E graduate students. Currently, training opportunities in this area are limited, but, as stated earlier, it is critical that future HF/E professionals be savvy in both technical and marketing matters.

Academics can provide additional support by offering workshops, short courses, and mentoring programs. This would enhance the profession by establishing a stronger communication bond among professors, researchers, and practitioners. It would also create a training venue (other than HFES) for individuals entering the profession with nontraditional degrees and credentials.

### Conclusions

The past few years have been difficult ones for HF/E professionals, but most panelists predicted that the future will be brighter. Even though public and political issues will influence the predictions made by the panelists, there was consensus on the positive effects of strong advocacy for the profession. The education and involvement of upper- and middle-level company managers was identified as the most valuable internal source of financial and moral support for the HF/E organization, and professional and educational organizations were cited as excellent sources of external support.





# Bulletin

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## Society Spurs Chapter Revitalization

By *Fayona Meyerovitz, New England Chapter President*

HFES recently formed a Chapter Revitalization Subcommittee dedicated to founding new HFES local chapters and revitalizing those that are inactive. The committee will serve as a support network for members who would like to establish or revive local chapters. Support from the committee will consist of providing guidelines regarding HFES procedures, sharing information and experience about the logistics of chapter development, and motivating members to participate. The committee can provide support from the inception of chapter formation until the chapter in question is firmly established. It can also provide input when members of local chapters have concerns about declining activity.

The Chapter Revitalization Subcommittee is part of the Chapter Affairs Committee chaired by Don Lassiter. It is chaired by Fayona Meyerovitz and staffed by Gulshan Panjwani and Jean-Francois D'Arcy. Each committee member has relevant local chapter experience and is available to be contacted by members who would like assistance with chapter revival.

### Why Are Local Chapters Needed?

There are many good reasons to found or revive local chapters. Chapters provide a community that serves member needs within the immediate area. Local issues may arise that may be highly relevant to local practitioners but not necessarily to the rest of the profession. A local HF/E community typically offers an understanding of the situation within the area as it changes and evolves and provides a support network to help practitioners adapt to local environmental demands. In serving local needs, chapters may provide job postings for local HF/E positions or consulting projects, act as an information or news source, offer members listings on local chapter Web sites, provide a forum for advertising HF/E products and services, organize events to meet local member requirements, and perform outreach functions to ensure the profession is promoted in the locality being served.

Local chapters provide networking opportunities with the same broad group of members on a regular basis. Ongoing communication allows strong bonds to form and a more meaningful understanding of personal and group issues to be developed. No member who works in HF/E alone or within a small team needs to feel isolated from colleagues when there is an active local community.

Speakers, facility tours, and continuous professional education opportunities are commonly offered on the local chapter level. The choice of activities is typically governed by member input and needs.

### Reviving "Tired" Chapters

The inception of a chapter revival effort may begin on a small scale and progress through steps that result in an active and vibrant chapter. Contact the Chapter Revival Subcommittee ([fayona@selectstrategy.com](mailto:fayona@selectstrategy.com)) early on to ensure that a support network is in place and that knowledge gaps become known quantities.

In the revival of the HFES New England Chapter, the original effort involved consulting the *HFES Directory and Yearbook* to determine available local activities and resources. The next step involved inviting Massachusetts members for a cup of coffee after work to meet, network, and find out more about what was going on in the local area. Too many members responded to hold the meeting in a coffee shop. Nevertheless, the revival began with one meeting, at which it was decided that the New England Chapter would have many more meetings.

To be successful in reviving a local chapter, it is important to determine what members want and need and then try to provide it for them. A survey as well as informal interviews can reveal members' needs. Establishing member needs should be placed on the agenda of the first meeting. This helps to organize the purposes of the chapter, which must be defined and later articulated in the Chapter Bylaws. It is less important to organize meetings featuring guest speakers at first.

In order to begin the revival process, it is useful to assume that networking is important to members. This can be facilitated by allowing time in the first meeting for conversation. The concept of "speed networking" inspired by and based on "speed dating" can facilitate interaction. Roundtable discussions, which involves dividing members into groups to discuss broad HF/E topics, provide practitioners with common ground.

The provision of dinner seems to increase attendance. Members also appreciate efforts to make meetings fun. For example, raffles or prizes can be offered for various activities. These include bringing new members and winning games played in groups, such as HF/E quizzes and word games using HF/E terms.

It is important to hold the first election as soon as possible because a delay results in fewer people doing the work. Early on, it is important that the chapter's Executive Board not be considered an interim committee, given that decisions need to be made, taken seriously, and implemented properly.

In reviving a chapter, the founders should not hesitate to delegate tasks and allow members to participate in meaningful ways. The knowledge that members work on a volunteer basis should not prevent the board from providing opportunities to them. Members should be offered tasks they may enjoy and learn from while contributing to building their local chapter. The knowledge that people are there to help is the purpose of both chapter revival and the establishment of the Chapter Revitalization Subcommittee.

*Fayona Meyerovitz is a human resources consultant and cofounder of Select Strategy, a consulting firm located in Brookline, Massachusetts. She may be reached at [fayona@selectstrategy.com](mailto:fayona@selectstrategy.com).* ☎

### Mark your Calendar!

HFES invites you to attend the 48th Annual Meeting, to be held at the Sheraton New Orleans Hotel, New Orleans, Louisiana, September 20–24, 2004. Please go to <http://www.hfes.org/meetings/2004menu.html> for regular updates on the Annual Meeting.



## Growing Our Application

By Peter A. Hancock, Nancy L. J. Larson, & Hal W. Hendrick

In early March, 700 practicing ergonomists descended on Orlando, Florida, to attend the Seventh Annual Applied Ergonomics Conference. HFES will be a cosponsor of this event in 2005; the conference is hosted by the Institute of Industrial Engineers (IIE) and cosponsored by a number of other organizations related to ergonomics, health, and safety in the workplace.

In a cornucopia of demonstrations, exhibitions, and expositions, ergonomics came to the fore as innovative thinking met practical challenges encountered in a wide range of manufacturing and technical processes. A host of companies from the upper reaches of the Fortune 500 were well represented, and the highlight of the meeting was the ErgoCup, in which more than 20 presenting teams from numerous corporations described their successful application of ergonomics to everyday business problems in three categories: team-driven solutions, engineering ergonomist-driven solutions, and training and education solutions.

The meeting also featured a vibrant technical and applied program that brought many insights to attendees as outstanding practitioners and researchers shared their successful ergonomics applications. Just as impressive was a large exhibitors area, where a spectrum of applications from hardware and software were on display.

Also featured were contributions from leaders of the applied ergonomics universe such as Peter Budnick, Timothy McLothlin, David Alexander, and William Boyd. Also evident were many factory operators, safety professionals, occupational medicine specialists, and Certified Professional Ergonomists.

HFES was represented by many members, some of whom also belong to IIE. HFES Director of Member Services Carlos de Falla staffed the HFES information desk and communicated the message of our Society to the many practitioners present. The newly established cosponsorship between the conference and HFES was featured and served to bring the name and purpose of HFES to the fore in this most important practical arena.

### What Does This Cosponsorship Mean for HFES?

Our association with IIE should be a fruitful one, given that the purposes and goals of this group are highly synergistic with our own. As we continue as the flagship scientific society for the human factors/ergonomics community, we need to understand that our discoveries and knowledge must have a conduit to transition into practice and to positively influence people's existence.

In the past, HFES might well have expressed great concern that another group was convening a meeting with *ergonomics* in the title. However, this is to misunderstand our collective enterprise and potential future. Unlike many scientific and academic pursuits, HF/E does not stop at the laboratory door or even in the pages of *Human Factors*. It ends when the quality of life is improved, often for individuals in their working environments. Those who generate our knowledge, whether in academic settings or elsewhere, are often constrained as to time and resources and

either cannot or do not carry the insights they generate into specific work environments. Attendees at the Applied Ergonomics Conference do.

Not to exacerbate the pure/applied dichotomy, but it is clear that innovative science, most evident at the HFES annual meetings, meets its practical realization through practitioners at the Applied Ergonomics Conference. A further synthesis is needed, but a strong promise of symbiosis exists. If we can proceed as sharing partners, both organizations will experience great mutual benefit.

But don't take our word for it, check out the Applied Ergonomics Web site (<http://appliedergonetwork.iienet.org>). The ErgoCup Case Studies are detailed, along with more information about the conference.

For those of you who would like to support this alliance, HFES will be sponsoring two workshops at the 2005 Applied Ergonomic Conference. If you have a topic to propose, please contact Nancy Larson ([nllarson@mmm.com](mailto:nllarson@mmm.com)) or Hal Hendrick ([hhendrick@aol.com](mailto:hhendrick@aol.com)). The deadline to identify our sessions is the end of May 2004.



*HFES Executive Council Member Nancy Larson and IIE Executive Director John Powell sign the agreement for HFES cosponsorship of the Eighth Annual Applied Ergonomics Conference, to be held in New Orleans from March 20 to 23, 2005.*

*Peter Hancock is Provost Distinguished Research Professor in the Department of Psychology, the Institute for Simulation and Training, and the Department of Civil and Environmental Engineering at the University of Central Florida. He serves as a member of the HFES Executive Council. Nancy Larson is corporate ergonomics manager for 3M. A Certified Professional Ergonomist, she also serves on the Executive Council and is a past president and director of the Upper Midwest Chapter. Hal Hendrick is emeritus professor of human factors and ergonomics at the University of Southern California and principal of Hendrick and Associates, a private consulting firm. He is a past president of HFES, the International Ergonomics Association, and the Board of Certification in Professional Ergonomics.*



## President-Elect goes to Science@Work

Wendy A. Rogers from the Georgia Institute of Technology has been chosen as an exhibitor at this year's Coalition for National Science Funding Exhibition. Science @ Work, the 10th Annual CNSF Exhibition and Reception for members of Congress and their staffs, will be held June 22 on Capitol Hill. The annual exhibition is an opportunity to showcase the important and groundbreaking research made possible by the National Science Foundation. Rogers will exhibit for the Federation of Behavioral, Psychological, and Cognitive Sciences and will also accompany members of CNSF on "Hill visits" to talk about her research and the value of NSF to help fund important research.

For more information about the CNSF Exhibition, go to <http://cnsfweb.org>.

## Volunteering: New at hfes.org

HFES members now have access to volunteering opportunities via the HFES Web site (<http://hfes.org>). Current volunteer opportunities include participating in the HFES Speakers Bureau (introducing the field of human factors in the community), working with the Chapter Revitalization Subcommittee (see page 3), or assisting with National Ergonomics Month activities. ☒

After 22 years as director of the Cognitive Science Laboratory at the Catholic University of America, Washington D.C., **Raja Parasuraman** is moving across town to George Mason University in Fairfax, VA. He will be professor of psychology and joins the Human Factors and Applied Cognition Group in the Department of Psychology in August 2004. Contact him at [rajap@earthlink.net](mailto:rajap@earthlink.net).

The Federation of Behavioral, Psychological, and Cognitive Sciences, in conjunction with the Decade of Behavior initiative, hosted a congressional briefing on May 10 that featured **David F. Dinges**, this year's winner of the Decade of Behavior Research Award. Dinges, a professor at the University of Pennsylvania School of Medicine and one of the nation's leading sleep research authorities, presented his findings on the effects of sleep deprivation on the brain's ability to sustain acceptable levels of attention and alertness and on the body's ability to fight off infection and disease.

**Maxine E. Lubner** has been appointed director of the City University of New York (CUNY) Aviation Institute at York College, where she will oversee the design and implementation of the educational and training program for the aviation industry. Contact her at CUNY Aviation Institute, 94-29 Guy R. Brewer Blvd., 2H02C, Jamaica, NY 11451; 718/262-5213, fax 718/262-2352; [mlubner@york.cuny.edu](mailto:mlubner@york.cuny.edu).

**Gavriel Salvendy**, a professor of industrial engineering at Purdue University, recently won the Great Wall Friendship Award in China. The annual award is the highest honor for foreign experts working in China. Salvendy was honored in November 2003 for his work at Tsinghua University in Beijing, where he is a chair professor and head of the newly formed Department of Industrial Engineering. ☒

## TECHNICAL GROUPS

### ASTG Takes Flight

*By Sherri Rebfeld & Chris Brill, with historical data provided by Dennis Beringer*

The Aerospace Systems Technical Group (ASTG) is home to members who hold an interest in a multitude of wide-ranging topics under the umbrella of aerospace systems. The ASTG sponsors panel, paper, and poster sessions in addition to the ASTG business meeting/social gathering at the HFES Annual Meeting. Throughout the year, our members keep in contact through the newsletter (*The Flyer*) and the Web site, <http://astg.hfes.org>, and share their insights and perspectives from academia (universities worldwide), government (including FAA, NASA, and military), and industry (various businesses represented the world over).

ASTG was officially formed in October 1986 at the Human Factors Society Annual Meeting in Dayton, Ohio. Group members were involved in forming four sessions on aviation psychology for the 1986 meeting, although the TG did not officially sponsor sessions that year. See the table on page 6 for historical data on the ASTG. Our TG is very closely associated with the Association for Aviation Psychology (<http://www.avpsych.org>), which holds its annual meeting during the HFES Annual Meeting.

Many members of the ASTG focus on investigating the areas of automation, judgment, and error. Historically, investigations have centered on the increasing role of automation technologies in the cockpit, the dynamics influencing pilot decision making, and error prevention and mitigation. Examples of recent efforts include error modeling, the effect of weather display representation on judgment and decision making, and factors influencing coherence in the automated cockpit. Although the majority of

*continued on next page*

## ASTG Takes Flight

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**Table 1. ASTG Membership, Annual Meeting Sessions, and Officers by Year**

Directory Year	Membership	Annual Meeting Sessions	Chair	Secretary-Treasurer	Program Chair	Newsletter Editor	Other
1986		4					
1987	367	8	Tom McCloy	Bruce Jaeger	John Reising	Leray Leber	<i>COTG rep</i>
1988	451	10	(same)	(same)	(same)	Mike Moroze	John Reising
1989	502	7	John Reising	Gloria Calhoun	Bill Moroney	Chip Shepherd	(same)
1990	479	9	(same)	(same)	(same)	(same)	(same)
1991	541	9	Jeff Koonce	Tony Andre	Dennis Beringer	Jen McGovern	(same)
1992	571	10	(same)	(same)	(same)	(same)	(same)
1993	535	10	Dennis Beringer	(same)	Glenn Wilson	John Bonneau	
1994	546	8	(same)	(same)	(same)	Dennis Beringer	
1995-6	436	7	Glenn Wilson	(same)	Tony Aretz	(same)	
1996-7	416	6	(same)	(same)	(same)	(same)	
1997-8	382	6	Dennis Beringer	Florian Jentsch	Tony Andre	Steve Murray	
1998-9	378	10	(same)	(same)	(same)	(same)	
1999-0	393	6	Diane Damos	David Mayer	Valerie Gawron	Jim Hitt	
2000-1	388	7	(same)	(same)	(same)	(same)	
2001-2	450	8	Kathy Mosier	Sherry Chappell	Phil Smith	Jason Kring	<i>Webmaster</i>
2002-3	394	8	(same)	(same)	(same)	(same)	Doug Peterson
2003-4	384	9	Sherry Chappell	Kathy Mosier	Amy Pritchett	(same)	(same)

research pertains to aerospace system design and operation, many of our members deal with aerospace system maintenance, whereby members strive to identify methods for improving the performance and training of maintenance and inspection activities.

Perhaps the most common area of research among ASTG members pertains to air traffic control (ATC). In fact, three paper sessions at the 2003 HFES Annual Meeting were devoted to the ATC domain: "Human Factors Challenges in Future Air Traffic Management," "Data Link Communications: Perspectives from the Air and Ground," and "Air Traffic Systems." Although ATC is the common theme, the research investigations are diverse, covering aspects such as mental model development in ATC systems, information management, and data integration.

Another primary area of interest among our members is space research: investigating system design elements such as spacecraft habitability, space shuttle warning systems, and space suit design, in addition to elements of human performance in space systems such as information flow, communication patterns, and stress associated with long-duration flights.

Other members are conducting studies on visual, auditory, and tactile display design, including the development of moving map technology and weather assessment displays, investigating factors such as message length and message intelligibility, and improving performance via sensory supplementation. ASTG welcomes new members and enjoys the participation of well-

rounded members who extend their interest of aerospace into many different topics and technical groups. This in turn enriches the TG with different perspectives and research ideas. For more information about ASTG history, membership, and activities, visit our Web site at <http://astg.hfes.org>. ☒

## Design with Spirit: EDRA 35

The 35th Annual Meeting of the Environmental Design Research Association (EDRA) will be held June 3-6, 2004, in Albuquerque, New Mexico. EDRA, an international, multidisciplinary organization of designers, researchers, educators, and professionals, seeks to advance and disseminate knowledge about the relationship between people and their surroundings, promoting the creation of environments responsive to human needs on many levels. For more information, contact EDRA 35, EDRA Business Office, P.O. Box 7146, Edmond, OK 73083-7146; 405/330-4863, fax 405/330-4150; [edra@telepath.com](mailto:edra@telepath.com); <http://www.edra.org>. ☒



**NEW!**

# Guidelines for Using Anthropometric Data in Product Design

By the HFES 300 Committee

*Guidelines for Using Anthropometric Data in Product Design* provides a path for the most efficient design of furniture, clothing, tools, or anything that must be used safely, comfortably, and efficiently by taking into account the dimensions of the human body. Anthropometry provides the human dimensional data, and the techniques to properly apply these data may vary in proportion to the complexity of the population to be accommodated.

This is the first document to present a global approach to anthropometry, extending from the use of averages and percentiles to methods appropriate for more complex designs, such as multivariate analysis. The unifying theme for all anthropometric methods is what is referred to as *case selection*. Case selection is the process of choosing realistic combinations of body dimensions that must be accommodated simultaneously for a design to fit its target audience.

Basic and advanced methodologies to properly apply anthropometric data are described, their advantages and disadvantages are explained, and illustrative examples are provided. Includes abundant resources and references.

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**FLASH!**

## Directory and Yearbook

The 2004-2005 *HFES Directory and Yearbook* was mailed in April. If you did not receive your copy because of an address change, please contact Member Services at 310/394-1811, fax 310/394-2410, carlos@hfes.org.

## Annual Meeting Updates

Registration fee information for the Annual Meeting is now available on the HFES Web site at <http://www.hfes.org/meetings/2004AMReg.html>.

You can also obtain exhibitor information on the Web site by going to <http://www.hfes.org/Meetings/2004exhibits.html>.

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