Greetings from the new POWID Director. On 1 January 2001, Roger Hull completed his two-year directorship of POWID and I began my term as Director and Wayne Holland began his term as Secretary/Director-Elect. The POWID membership thanks Roger for his tremendous energy, devotion, contributions, and leadership over the last two years. Roger’s hard work, along with that of his predecessor, Ron Hicks, has resulted in POWID receiving the Outstanding Division Award for three years in a row. This is a great achievement for POWID and all of the members should be proud of this accomplishment. Wayne and I have some big shoes to fill as we look back on all the past Directors and Director-Elects.

Here it is, the 21st century and things are changing everywhere. The US has a new President, ISA has a new name and a new logo, and ISA is going to a fall exhibit and conference with division participation as we had years ago. Technology is advancing at an incredible rate, especially in the computer industry. Instrumentation and Control is following the advancements of the computer industry, but maybe at a slower pace. POWID needs to keep up with the technology advancements in Instrumentation and Controls by giving its members programs and information to advance the power industry. This includes the annual POWID Conference and our sponsored nuclear standards committee SP67 and fossil standards committee SP77. Over the next two years the POWID Executive Committee will be working to give the POWID membership interesting, informative, and enjoyable POWID Conferences that have a large attendance. This year’s POWID Conference shows how we are changing to meet the needs of our membership. Ron Hicks has put together, with the help of several Executive Committee members, a great conference at Disney’s Coronado Springs Resort in Orlando, FL, 7–13 July. It is a new format that should appeal to all members. We hope to see everyone in attendance at the 2001 POWID Conference. The POWID Executive Committee will be working to make the conferences for 2002 in San Diego and beyond as great as the 2000 one was in San Antonio and as great as the upcoming one will be in Orlando. We will also be working on the POWID participation in ISA 2001 to insure that the POWID sessions are informative and interesting for the power industry.

We want all our POWID members to be involved with the POWID activities. Members, please send us your ideas for improving our POWID conference, our membership services, our participation in ISA 2001, our standards activities, or on anything else you feel POWID should be doing for the power industry. We especially want your ideas on how to bring into ISA and POWID, the new and younger instrumentation and controls engineers and technicians of the power industry. Increasing our POWID membership is one of our major goals over the next two years and we need everyone’s help to accomplish this goal. Please call or e-mail any of our POWID Executive Committee members now. In this issue of WHAT’S WATT is a complete roster of the POWID Executive Committee. Contact us, we are here to serve the members of the Power Industry Division of ISA.

I am looking forward to working with the POWID Executive Committee and all of the POWID members over the next two years. Hopefully POWID can help to advance instrumentation and controls in the power industry as we move ahead into the 21st century.
Come to ORLANDO!

The 44th Annual ISA POWID Conference will be held at Disney’s Coronado Springs Resort in Orlando, Florida, 7–13 July 2001. Join your fellow colleagues for a great learning and networking experience. An exciting conference program is being planned which will consist of technical papers, tutorials, and training classes.

When it’s time to unwind, Disney’s Coronado Springs Resort is a recreation paradise. Located in the heart of Walt Disney World Resort®, the Coronado Springs Resort is situated on a 15-acre lake, complete with a marina. Recreational facilities include a fitness center, sand volleyball court, spa, five swimming pools, tennis, and golf. In addition to the Resort facilities, exciting opportunities await you and your family at the Walt Disney World Theme Parks. Disney’s Epcot® Center, MGM Studios and Animal Kingdom are adjacent to the Resort. We know you don’t want to miss this excellent opportunity to enhance your career at this exclusive event.

Power Industry—Odyssey 2001

The globalization of the power industry occurs at a rapid pace and affects the public and private sectors. Challenges in the global arena include fluctuating currency markets and control of generation and distribution. Advances in telecommunications, computer technology and information management allow data and material to be integrated into a comprehensive strategy to help mitigate these issues and to achieve global business goals. This conference program covers the spectrum of technical topics, emphasizing quantitative tools to address the complexities of our new market.
### Power Industry—Odyssey 2001
#### Preliminary Conference, Meeting & Training Schedule

| TIME   | 7 a.m. | 8 a.m. | 9 a.m. | 10 a.m. | 11 a.m. | 12 p.m. | 1 p.m. | 2 p.m. | 3 p.m. | 4 p.m. | 5 p.m. | 6 p.m. | 7 p.m. | 8 p.m. |
|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| **Saturday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| Meetings |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Long Range Planning |        |        |        |         |         |         |        |        |        |        |        |        |        |
| **Sunday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| Family Speaker—Disney |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Family Reception |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Meetings |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Executive Committee |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Exec Committee Meeting |        |        |        |         |         |         |        |        |        |        |        |        |        |
| **Monday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| Opening Remarks |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Keynote Speaker |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Honors and Awards |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Conference Papers |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 2A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 2B |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Free Training |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Meetings |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Meetings |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Meeting SP67.04 |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Disney |        |        |        |         |         |         |        |        |        |        |        |        |        |
| **Tuesday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| Conference Papers |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 3A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 4A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Training/Meetings |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 3B |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 4B |        |        |        |         |         |         |        |        |        |        |        |        |        |
| ISA Testing |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Tentative Date—Exam given either Tuesday or Friday |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Meetings |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Meeting SP67.04 |        |        |        |         |         |         |        |        |        |        |        |        |        |
| NPPIEC |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Mtg SP67.06 |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Golf |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Disney |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Golf Classic Event |        |        |        |         |         |         |        |        |        |        |        |        |        |
| **Wednesday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| ISA Training |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Nuclear Meeting |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Free Training |        |        |        |         |         |         |        |        |        |        |        |        |        |
| SNSRI—Setpoints for Safety-Related Instrumentation in the Nuclear Industry (Part 1) |        |        |        |         |         |         |        |        |        |        |        |        |        |
| FG21C Ethernet and TCP/IP on the Plant Floor |        |        |        |         |         |         |        |        |        |        |        |        |        |
| OM1 Implementation of On-line Monitoring Approach for Instrument Calibration Reduction |        |        |        |         |         |         |        |        |        |        |        |        |        |
| CC1 Combustion Controls |        |        |        |         |         |         |        |        |        |        |        |        |        |
| FG30C Picking the Right Bus: A Comparison of Field and Device Networks |        |        |        |         |         |         |        |        |        |        |        |        |        |
| IC55C Implementing Enterprise/Control Integration |        |        |        |         |         |         |        |        |        |        |        |        |        |
| **Thursday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| ISA Training |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Conference Papers |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 5A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 6A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 5B |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 6B |        |        |        |         |         |         |        |        |        |        |        |        |        |
| SNSRI (Part 2) |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Disney |        |        |        |         |         |         |        |        |        |        |        |        |        |
| **Friday** |       |        |        |         |         |         |        |        |        |        |        |        |        |
| ISA Testing |        |        |        |         |         |         |        |        |        |        |        |        |        |
| ISA Training |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Conference Papers |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 7A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 8A |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 7B |        |        |        |         |         |         |        |        |        |        |        |        |        |
| Session 8B |        |        |        |         |         |         |        |        |        |        |        |        |        |
Conference Schedule at a Glance

**MONDAY, 9 JULY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 1: Welcome &amp; Introductions</th>
<th>Session 2A: Emerging Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 a.m.–10 a.m.</td>
<td>Welcome &amp; Introductions Honors &amp; Awards</td>
<td>Emerging Applications</td>
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<tr>
<td></td>
<td>Keynote Speaker: Ann E. Pauley, President Westinghouse Process Control, Inc</td>
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<td></td>
<td>Ann Pauley is President of Westinghouse Process Control. Appointed to this position in 1998, Pauley has led the company to significant sales growth and increased market presence in the power and wastewater process control segments. She has implemented initiatives that expanded the company’s core focus to include integrated project implementation services, and has driven the continued investment in technology with the launch of the Ovation® control and information system in 1997. The company has established several strategic business alliances with key electric generating organizations during her tenure.</td>
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<td>Prior to her current appointment, Pauley served as Vice President and General Manager of WPC. In 1989 she was appointed Manager of Westinghouse Process Control Projects, responsible for all technical, commercial and financial aspects of implementing control systems projects in Europe, Asia and North America. Pauley joined Westinghouse Corporation in 1973, and held a broad range of operating, commercial and staff management positions in the Nuclear Fuel Division and in Research and Development.</td>
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<td></td>
<td>Pauley has an AB in Mathematics from Indiana University and an MBA from the University of Pittsburgh.</td>
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<thead>
<tr>
<th>Time</th>
<th>Session 2B: Economics &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30 a.m.–1 p.m.</td>
<td>Economics &amp; Management Session Developer: Robert C. Webb, Senior Consultant, Altran Corp</td>
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<tr>
<td></td>
<td>EM1 Managing Global Interfaces in Control System Design, John Kaman, Black &amp; Veatch</td>
</tr>
<tr>
<td></td>
<td>EM2 Plant Information and the Internet, Kerry J. Retort and Christopher J. F. Powell, Applied Control Systems, Inc.</td>
</tr>
<tr>
<td></td>
<td>EM3 Wireless Ethernet—An Economic Tool for Small-Scale Control and Data Acquisition, Ron Welk, Sr. Process Control Engineer, Hurst Technologies</td>
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TUESDAY, 10 JULY

7:30 a.m.–10 a.m.

Session 3A: Clean Energy
Session Developer: Goray Mookerjee, Science & Technology Analysis, Office of Policy, U.S. Department of Energy

The use of modern and advanced control devices and systems in energy production offers major opportunities to reduce costs, increase efficiency, and limit environmental impacts. Accordingly, initiatives that accelerate the employment of this technology benefit both the public and private sector interests. The meeting is composed of two sections: 1) examples of the benefits of advanced control systems, and 2) a panel discussion focused on the planning of future technology transfer.

Paper topics include reduction of emissions, Ox, SO2, etc., advanced controls, and controls retrofits that reduce emissions.

DOE1 To be determined.

Session 3B: Management Division
Session Developer: Jan Jekielek, Senior Project Engineer, Ontario Power Generation, Inc.

MAN1 Outsourcing: Assuring Quality and Reliability of Service, Valia Petkova
MAN2 Integrating Information and Control Systems Technologies, Peggie Koon
MAN3 What It Takes To Be a Leader, Jan Jekielek, Senior Project Engineer, Ontario Power Generation, Inc. and Dr. Maria Koczorowska

WEDNESDAY, 11 JULY

8 a.m.–5 p.m.

Training

IC35 Understanding DCS (Independent of Conference Part 1)
SNSRI Setpoints for Safety-Related Instrumentation in the Nuclear Industry (Part 1)
FG21C Ethernet and TCP/IP on the Plant Floor
OM1 Implementation of On-Line Monitoring Approach for Instrument Cal Reduction
CC1 Combustion Controls
FG30C Picking the Right Bus: A Comparison of Field and Device Networks
IC55C Implementing Enterprise/Control Integration
THURSDAY, 12 JULY

7:30 a.m.–10 a.m.

**Session 5A: Environmental Session II**

Session Developer: James P. Batug, I&C Design Supervisor, PP&L, Inc.

E5 Field Experience Using Low Cost Fuel Cells for CEMS, Robert L. Mollonney, Jr. AIR-WORLD Environmental, Inc.

E6 CEMS—Design Considerations for Meeting Changing Trends in Power Industry Compliance Monitoring, Matthew J. Radigan, Vice President of Sales and Bill Enerhardt, Manager of Engineering, KVB—Enertec, Inc.

E7 Certification of a Selective Catalytic Reduction Equipped Combined Cycle Generating Unit, Johnny M. Hay, Air Quality Supervisor and James W. Rice, Southern Co.

E8 Emissions Reduction By Improved Measurement, Dr. Carlos E. Romero, Research Engineer; Dr. Nenad Sarunac, Principal Engineer; and Dr. Edward K. Levy, Director, Lehigh University Energy Research Center; James Batug, I&C Design & Services Supervisor, PPL Generation

10:30 a.m.–1 p.m.

**Session 6A: Energy Technologies**

Session Developer: Michael J. Skoncey, Duquesne Light Co.

ET1 Common Electronic Platform for All Power Plant Needs, Jerry A. Kopczynski, Product Line Manager, and Patrice Rung, Machine Control Sales Manager—ALSTOM Power

ET2 Advanced Information Management Solution for Large Biomass-Fired Fluidized Bed Boiler, Esa Jokiniemi, Vice President, RTD Coordination, Neles Automation-Max Control Systems

ET3 The Environment and Plant Economy Gain Benefit from Improved Combustion Control for FBB, Tero Joronen, Application Specialist, Metso Automation, Inc., Finland

**Session 6B: Nuclear Plant 10CFR50.59 and EMI/RFI Issues**

Session Developer: Dr Joseph Naser, EPRI

Mini tutorials on two issues, the new 10CFR50.59 rule and EMI/RFI, as related to digital systems in nuclear power plants are planned. A panel discussion on these issues will be held after the mini-tutorials.

Tutorial on the new 10CFR50.59 rule will be lead by Ray Torok, EPRI

Tutorial on EMI/RFI will be lead by Dr. Ramesh Shankar, EPRI

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2001 ISA POWID Golf Outing

Tuesday, 10 July

On Tuesday, 10 July at 1 p.m. sixty intrepid ISA golfers will inaugurate the first sanctioned golf outing associated with the Power Division Symposium in a shotgun start on the Palm Course at Walt Disney World. As this year’s chairman, I want to invite you to join us for a relaxing 18 holes following the technical sessions.

This year’s event is intended to attract golfers of all abilities with the focus on FUN. Only one prize will be awarded for lowest score. There will be over twenty other prizes rewarding luck, skill, lack of skill, strength, perseverance, and the ability to count with your shoes on. Following our round, we will gather at the 19th hole to hand out prizes, down a cold one, swap tales, and enjoy the POWID camaraderie. Come find out why Ron Hicks is calling this year’s Conference an Odyssey (long wandering trip covering vast expanses, with no assurance of the route to be followed, ending up with refreshment, relief, and reward).

The Palm is a 6,461-yard layout with a slope of 129 and a par of 72 from the white tees. The golf fee includes a box lunch, 18 holes of golf, a cart, multiple vendor handouts, and the chance to win any of the over twenty prizes. The cost is $70 per person, sign up as a single, get a couple of friends to join you, talk your salesman into picking up the tab, whatever, just be there.

Bob Szczerbicki, Golf Chairman
### FRIDAY, 13 JULY

<table>
<thead>
<tr>
<th>7:30 a.m.–10 a.m.</th>
<th>10:30 a.m.–1 p.m.</th>
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<tbody>
<tr>
<td><strong>Session 7A:</strong></td>
<td><strong>Session 8A:</strong></td>
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<tr>
<td>Marketing &amp; Sales Division</td>
<td>To be determined.</td>
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<tr>
<td>Marketing Issues in the 21st Century, Session I</td>
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<tr>
<td><strong>Session Developer:</strong> Paul Gruhn, Siemens Moore Process Automation, Inc.</td>
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<td>While some things never change, technology and the Internet are having a profound affect on all industries. This session will cover traditional topics such as effective presentations and the pros and cons of business alliances, as well as up and coming topics such as the e-business and e-marketing.</td>
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<td><strong>MS1</strong> Dos and Taboos of Effective Speaking, (Tutorial), Paul Gruhn, Siemens Moore Process Automation, Inc.</td>
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<td><strong>MS2</strong> Getting the Biggest Bang for Your Marketing Bucks: How to Choose the Right Opportunities Online and Off, (Tutorial), Shari Worthington, President, Telesian Technology</td>
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<tr>
<td><strong>MS3</strong> What E-Business Really Means Tutorial, (Tutorial), Walt Boyes, Principal, Marketing Practice Consultants</td>
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<tr>
<td><strong>Session 7B:</strong></td>
<td><strong>Session 8B:</strong></td>
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<tr>
<td>Regulatory</td>
<td>To be determined.</td>
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<tr>
<td><strong>Session Developer:</strong> Goray Mookerjee, Science &amp; Technology Analysis, Office of Policy, U.S. Department of Energy</td>
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<td><strong>R1</strong> To be determined.</td>
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EA1 An Impact on Plant Performance From Advanced Instrumentation
Joseph W. Harpster, President, Intek, Inc.

Abstract: The importance of advanced instrumentation to directly measure assumed or unknown subsystem properties or characteristics of power plants, operating within the current market, is presented. These measurements are needed to quantify critical parameters, not only in units with older control equipment but also for those having modern information systems, which may or may not contain simulation computations, for plant control and management. One such measurement is air in-leakage into the shell side of a steam surface condenser. This measurement, along with an understanding of its behavior within the condenser space, is discussed. This understanding provides the foundation for a comprehensive theoretical treatment of how air behaves in a condenser, and its effect on condenser performance.

The use of RheoVac® air in-leakage and condenser diagnostic instrumentation will be presented. This instrument provides the ability to measure properties of the gases entering the vent line at the air removal section of a condenser. It will be shown that these data, along with other condenser operating parameters, can be combined to describe air passage within the condenser. Also described are the performance characteristics of the condenser as they are affected at different levels of air ingress. The impact of air in-leakage on excessive sub-cooling, resulting in high dissolved oxygen, will be presented. A practical control point for maintaining air in-leakage in operating plants will be argued from the viewpoint of minimizing dissolved oxygen and heat rate.

EA2 MEMS Humidity Sensors for Meteorological Instrumentation
Qamar A. Shams, Research Scientist, NASA/Langley Research Center, Raouf Selim, Associate Professor and Robert Harvey, Christopher Newport University

Abstract: Since the 1970s, numerous studies have found aircraft noise linked to stress, hypertension, sleep disturbance, work-related performance, learning and academic performance. Because of these issues, aircraft noise is one of the areas where future environmental regulations will challenge us to provide advanced technology concepts and innovations. For the last three decades, researchers at the National Aeronautics and Space Administration (NASA) have been engaged in acoustic research directed towards understanding and reducing noise generated by aerospace vehicles. Previous NASA noise reduction research is now embodied in new aircraft entering the fleet, and in modifications to existing aircraft.

A field-deployable acoustic measurement system is important to measure noise level in the field. Two such systems, Digital Acoustic Measurement System (DAMS) and Remote Acquisition and Storage System (RASS) have been developed at NASA Langley and are being used to make acoustic measurements in the field. For processing noise data, more information on aircraft tracking and weather data are also required. Usually, aircraft tracking is provided by NASA Ames Precision Automated Tracking System (PATSS) while Ames Instrument Positioning System (IPS) is used to provide flight path guidance information to the pilots. Two conventional data systems are used to acquire weather information, a tethered balloon system and a weather profiler system. The first consists of an electric winch-controlled, tethered, helium-filled balloon, an instrument/telemetry pod, a ground-based receiver/data controller and a ground-based support computer. Profiles of temperature, relative humidity, wind speed, wind direction are acquired up to 1000 ft altitude before, during and after each test flight. During the test, the aircrafts are flown at different altitudes. The existing system is bulky and can measure data at one altitude at a given time. Each time the weather parameters are determined by changing altitude of the instrument/telemetry pod that requires an operator. An emerging Micro Electro-Mechanical Systems (MEMS) technology coupled with the latest cutting edge technologies for smaller, faster and more accurate systems have opened the way for developments of smaller units which can be installed at each 10 feet altitude. To minimize consumption of power and operator requirement, A MEMS system is being developed which will be installed at each 100 feet altitude along the tether. As a first step, MEMS humidity, pressure, and temperature sensors are being packaged with a transmitter which will transmit data to the base station on the ground for real time display of weather conditions. Principle of MEMS humidity sensors is, “A dab of polymer flexes a modified strain gauge in response to humidity changes.” The speed of response is measured in few seconds, full scale. These humidity sensors are rugged and tiny, measuring only 2 mm x 2 mm. In this paper, calibration of MEMS humidity sensors will be compared to conventional humidity sensors. Pressure, temperature and humidity profile will be acquired at different altitudes and compared with the existing weather system. Data rates from the telemetry system will be presented. Data display in real time on the ground and recording on a magnetic disk will be discussed.
EA3  *A Novel Training and Engineering Simulation Concept for Power Plants*
Jukka Pyykko, Product Manager and Jori Leppakoski, Application Development Director, Metso Automation, Finland

*Abstract:* A new concept for a tailor-made power plant simulation system is presented. The simulator system consists of a virtual process control system and dynamical process simulation software. The connection between the control system and the simulator software is done with OPC interfaces.

A unique benefit of this simulation system is that the control system software is an exact copy of the application software in the reference system controlling the real plant. No modifications need to be done to control system application software for use with the simulation software.

The power plant simulation system can be used as an engineering simulator for control system application testing and as a training simulator for the operators even before the real plant is operational. On an operational plant the simulator can be used for practicing rare or abnormal operating conditions as a part of continuous development of operator’s capabilities. A trainer can generate simulated process disturbances or malfunctions through a trainer-interface. The results in this paper are derived from two simulator projects, which were delivered based on this concept. Main use of one of the simulation systems is as a training simulator for a pulverized coal fired power plant unit. The other system was mainly used for dynamical FAT of the control system application on a similar PCF power plant unit.

**SESSION 2B**

**Economics & Management**

*Session Developer: Robert C. Webb, Senior Consultant, Altran Corp.*

**EM1 Managing Global Interfaces in Control System Design**
John Kaman, Black & Veatch

*Abstract:* Coordinating the design of a plant control system requires unique and creative methods when the major components of the plant have international affiliations. This can occur when the distributed control system is manufactured by an international supplier, the client is an international firm, the site is in a foreign country or when the major equipment suppliers, like combustion turbine generators, steam turbine generators, boilers, etc., are designed by international manufacturers. If not addressed, the effects of distance, language, customs, time zones, and culture can transform a well-designed system into a commissioning and startup nightmare. However, if handled properly, these effects can be minimized and even used to the engineer’s advantage to ensure that the months and years of hard work in design result in the smooth commissioning of the control system. This paper is targeted for individuals who are currently, or are soon to be involved in managing the design of a distributed control system in which 1) The DCS is being engineered and manufactured from a global office, 2) Major sources of I/O (inputs/output) and/or logic are being supplied from equipment vendor’s global engineering offices or 3) The power plant site and/or owner reside in a country that is significantly foreign to that of the individual responsible for coordinating the design.

**EM2 Plant Information and the Internet**
Kerry J. Retort and Christopher J. F. Powell, Applied Control Systems, Inc.

*Abstract:* The need has always been there for plants to be able to report their daily production and consumption data to corporate offices. And conversely for corporate offices having some control over daily production schedules of local plants, to provide their customers with inexpensive, reliable power. Deregulation trends, with the increased competition, and ever-changing power contracts, are placing greater demands on this information being timelier and more comprehensive. In addition, as companies strive to become more efficient, centralization of engineering and operating staffs has also been the direction of most modern power companies. Fortunately, with the use of modern, integrated plant control systems, and with the advent of the Internet, and with the ever-increasing availability of “off the shelf” third-party products, this problem can now be addressed.

There has been some hesitation for companies to move in this direction, mainly because of security concerns. But a carefully planned system design, and the use of firewalls and encryption products, can alleviate these.

**Type of information to be presented:**
- Accounting Data
  - Net generations and revenues
  - Fuel usages vs. fuel costs
- Performance Data
  - Efficiencies and Performance Issues
  - Availability Calculations
  - Used to coordinate planned and un-planned outages
  - Used by corporate engineering to determine feasibility of plant upgrades and modifications
- Operating Data
  - Used for daily operation decision making
  - Used to coordinate changing customer needs with production parameters

**Format of information:**
- Spreadsheets (for engineering and management staffs to easily solve specific operating problems)
- Reports (for general business purposes, and supplying customers and clients with concise information).
- Databases (to archive data efficiently for combining information, identifying trends, and predicting outages and maintenance schedules)

Once the basic system hardware and basic data transport methods are established, it is simply a matter of software development, or (most likely) software configuration to meet the changing requirements of customers and clients alike.
- Database/Excel Reports
- Modifying Web-pages
- Expanding mailing lists
Integration, using readily available “off the shelf” business product software.

- ODBC (“older method” but still used)
- HTML (Linked to real time databases)
- Virtual Networking (Wide Area Networks using internet infrastructure)
- E-mail (Automatically generated remotes tied to mail programs for distribution)

Security Concerns

- Users must address in the design of these systems the fact that with the wide availability of data...access to this data must be limited. There are many means to accomplish this.
  - One-way (with limited two-way) communications.
  - Firewalls
  - Encryption

Tailoring and Modification of Software to customer needs.

EM3 Wireless Ethernet—An Economic Tool for Small-Scale Control and Data Acquisition
Ron Welk, Sr. Process Control Engineer, Hurst Technologies

Abstract: Getting information to/from remote locations has traditionally been a messy and expensive proposition. In the past, manufacturers have produced all-in-one RTUs which provide limited control and limited data throughput. This paper will take you through the thought process that we used when devising a reliable means of handling remote control and virtually limitless data sharing capabilities through 19 remote sites over a seven mile span.

SESSION 3A

Clean Energy
Session Developer: Goray Mookerjee, Science & Technology Analysis, Office of Policy, U.S. Department of Energy

The use of modern and advanced control devices and systems in energy production offers major opportunities to reduce costs, increase efficiency, and limit environmental impacts. Accordingly, initiatives that accelerate the employment of this technology benefit both the public and private sector interests. The meeting is composed of two sections, first examples of the benefits of advanced control systems and then a panel discussion focused on the planning of future technology transfer.

Paper topics include reduction of emissions, O₂, SO₂, etc., advanced controls, and controls retrofits that reduce emissions.

DOE1 To be determined.

SESSION 3B

Management Division
Session Developer: Jan Jekielek, Senior Project Engineer, Ontario Power Generation, Inc.

Session Chair: Dr. Maurice Wilkins, Associate Director, Strategic Automation Management

MAN1 Outsourcing: Assuring Quality and Reliability of Service
Valia Petkova
Abstract: Not available at this time.

MAN2 Integrating Information and Control Systems Technologies
Peggie Koon
Abstract: Not available at this time.

MAN3 What It Takes To Be a Leader
Jan Jekielek, Senior Project Engineer, Ontario Power Generation, Inc, and Dr. Maria Koczorowska
Abstract: Not available at this time.

SESSION 4A

Environmental I
Session Developer: James P. Batug, I&C Design Supervisor, PP&L, Inc.

E1 Combustion Optimization of a 150 MW (NET) Boiler Utilizing Air and Fuel Flow Measurement and Control
David J. Earley, Manager, Power Generation Division, Air Monitor Corporation

Abstract: Coal-fired electric utilities constantly struggle to achieve optimum combustion. While many techniques are currently employed, such as fuel and air control based on O₂ and CO measurement of the furnace exit, little has been done with regard to optimizing combustion at each burner. Windbox airflow and pulverized coal flow distribution is known to vary significantly burner to burner. The absence of effective methods to measure coal and air has left the utility industry with no alternative but to accept the resulting performance inadequacies.

In this age of deregulation and concern over utility emissions, the industry continues to search for better methods of fuel and airflow measurement and control. This is especially true with the use of low NOx burners that require critical airflow and fuel balance for optimum reduction of NOx while simultaneously minimizing unburned carbon.

In 1999, American Electric Power (AEP)—Pro Serv, Inc. installed a microwave based coal flow measuring device for on line measurement of individual burner fuel flow. This technology utilizes low frequency microwaves to accurately measure relative coal density and true coal velocity in individual coal pipes to determine the mass flow distribution between individual burners. A well-proven technology for measuring combustion airflow had already been in service
for measuring and controlling the airflow to each burner. Together, these two measuring systems provide fuel and air massflow inputs to the plant’s DCS system, allowing for combustion optimization and a reduction in NOx emissions.

E2  **Control of an SCR Without the use of an Inlet NOx Analyzer**  
Greg Laegen, I&C Engineer and Robert Gavin, I&C Technician, PG&E National Energy Group  

*Abstract:* With the push to reduce NOx in power plants, many companies are installing fulltime SCR systems at their power plants. At the 2000 Symposium, we heard presenters describe how they are planning on controlling the SCR system by deriving a set point from the inlet NOx. None of the papers were from people actually using the systems.

We have been using two full time SCR’s for the past 7 years. After spending large amounts of dollars in spare parts and up to 10 hours a week in maintaining the inlet NOx analyzers, we determined that the SCR can be successfully controlled by using only the CEMs outlet NOx and boiler steam flow.

We will discuss the actual maintenance of the inlet NOx analyzer and what the “problem” areas were. We will then discuss the variations and the testing of logic used before arriving on our current logic.

E3  **Optical Flow Sensing—A New Approach to an Old Problem**  
John D. Crosby, Vice President Operations, Optical Scientific, Inc.  

*Abstract:* Airflow sensing in an industrial environment is a difficult challenge. Existing technologies like ultrasonic and Pitot tubes are expensive, require significant maintenance and installation costs, and can suffer from non-representativeness, leading to a misreporting of mass flow. For example, Pitot tube devices only measure at one point and may under or over report the true flow and ultrasonic devices must be installed at two levels on the stack leading to high installation costs.

The optical anemometer was designed to solve these problems. Optical flow sensing was approved in 1998 as an equivalent Method 14 technology for compliance with the MACT rules. More than 45 optical anemometers are installed at primary aluminum producers around the world. The OFS-2000 Optical Flow Sensor is the latest introduction in the product line and was designed for measuring in the relatively short diameters of stack and ducts.

E4  **Large Scale Selective Catalytic Reduction of NOx at PPL’s Montour Station**  
Paul Frazza, and William G. Maurer, PPL, Inc., Dennis Williams, DCS Consultant, Darryl Haag, Metso Automation  

*Abstract:* A Selective Catalytic Reactor (SCR) was added this past year to PPL Inc.’s Montour Plant. The plant is a 750 MW coal-fired, pressurized unit originally built in the mid 70’s. A supporting Ammonia Processing Plant (2-60,000 gallon tanks with associated valving and pumps to accommodate unloading and feeding) was installed as well as Induced Draft Booster Fans. This paper describes the use of the DCS to automate and streamline the control of the SCR and its auxiliary systems. A significant upgrade of the DCS Human-Machine Interface was accomplished at this time. Remote I/O Module Cabinets linked by fiber optics to the existing DCS were used to drastically simplify field wiring. Three satellite module locations truly made the installation “distributed.” Sequencer algorithms, ladder logic, and DCS configuration programming were all used to automatically sequence the process, incorporating fault indications, first-outs, and overrides to monitor and control the process, including startups and shutdowns. Final operation requires minimal operator intervention. In the course of the startup, the flexibility of the DCS configuration and graphics allowed temporary control strategy to be used to achieve load based NOx Reduction while the NOx analyzers were readied for service. Final control utilized reactor inlet and outlet NOx analyzers feeding a three-element control strategy with a percent reduction operator setpoint associated with each reactor. During the first three months of operation, the design reduction was achieved. Control Room personnel quickly mastered the required actions enabling a smooth turnover to Operations.

SESSION 4B  
**Improving Performance at Nuclear Power Plants**

*Session Developer: James Snelson, CP&L*  

IP1  **Increasing Instrument Calibration Intervals**  
H.M. Hashemian, Analysis and Measurement Services Corporation  

*Abstract:* Instrument calibrations in power plants absorb substantial manpower to isolate the instrument, calibrate it, and return it back to service. The calibration effort typically involves two steps: 1) identify if calibration is needed, and 2) calibrate if needed.

The first step can be automated by on-line monitoring. This paper illustrates how on-line monitoring techniques can be implemented in a plant to identify if an instrument has lost its calibration. This will allow plants to limit their instrument calibration effort to those instruments which need a calibration as opposed to current practices which typically calls for period calibration of most instruments. With the on-line monitoring approach, an instrument calibration interval is expected to increase from typically once every one or two years to once every six or eight years. This will reduce manpower and cost as well as the possibility of damage to the equipment or plant during the calibration process.

The information to be provided in this paper is based on a comprehensive research and development project that was completed for the U.S. Government not only to demonstrate the feasibility of on-line monitoring techniques, but also to develop new equipment to implement the techniques in power plants. The work involved development of analytical...
techniques to model the process so that instrument drift can be distinguished from process drift. These developments were followed by laboratory and in-plant validation to prove the feasibility of the techniques and help design test equipment and software packages to perform the work.

IP2 The Application of Instrument Uncertainty to Quarterly Pump In-Service Testing
Thomas Fleischer, Senior Engineer, Entergy Operations Inc.

Abstract: The purpose of this paper is to establish a basis for determining the adequacy of instrumentation used to implement quarterly in-service testing in accordance with ASME/ANSI OM-1987, 1988 Addenda Part 6 “Inservice Testing of Pumps in Light-Water Reactor Power Plants”. Interpreting the code and NUREG 1482 “Guidelines for Inservice Testing at Nuclear Power Plants,” raises more questions than answers on assessing the adequacy of instrumentation used to perform these tests.

It is apparent in the responses to Draft NUREG 1482 that some confusion remains regarding the meaning of terms such as “instrument accuracy”. What makes an instrument accurate enough for this service, and why? Do process measurement effects, ambient temperature effects, time related drift effects, maintenance and test equipment (M&TE) effects and calibration tolerance have to be considered? The NRC, in response to a similar question on the draft, deferred to the OM Committee to answer that question. The OM committee has answered this question in the detail they feel is sufficient for addressing quarterly testing requirements. However, the detail provided may not have sufficient basis for omitting certain error terms.

An understanding of the intent of inservice testing and an understanding the applicable instrumentation error terms are essential for deriving the technical basis for a defensible assessment of instrumentation used for this function. This paper discusses a basis for establishing the requirements for the instrumentation used to perform quarterly in-service pump testing.

IP3 Qualification of a PLC Platform for Safety-Related Applications in US Nuclear Power Plants
J. Troy Martel, Nuclear Services Director, Triconex

Abstract: The US electric power industry, fossil and nuclear, is faced with the dual challenges of market de-regulation and increasing environmental regulation. Nuclear power plants also confront problems of aging of facilities, obsolescence of instrument and control systems, and the consolidation of vendors. While analog and relay technology was well founded during plant design, maintaining these systems has become difficult. Systems installed fifteen years ago suffer from the lack of vendor support and the training of technicians. As most nuclear power plants were commissioned over ten years ago, the problems are widely recognized around the world. Commercial-off-the-shelf Programmable Logic Controllers (PLCs) offer many desirable features such as improved reliability, intrinsic fault-tolerance, critical and safety-related system control features, universality of control, ease of maintenance and programming, rugged design and construction, security, and reduced life cycle and O&M costs. Although PLCs have demonstrated their performance in numerous industries, there remains the question of nuclear power plant suitability. This paper presents the methods employed to test and document results, in qualifying the TRICON fault tolerant PLC in accordance with NRC endorsed guidelines. It summarizes system requirements, acceptance/operability testing, results of qualification testing and analysis, quality assurance, and documentation requirements. The forthcoming SER will significantly reduce utilities burden for licensing and qualifying digital safety-related applications.

SESSION 5A
Environmental II

E5 Field Experience Using Low Cost Fuel Cells for CEMS
Robert L. Mullowney, Jr. AIR-WORLD Environmental, Inc.

Abstract: The paper will discuss how AIR-WORLD Environmental, Inc. has certified several CEMS on various applications using fuel cells/electrochemical cells. The paper will discuss application, start-up experience, and operational history.

E6 CEMS—Design Considerations for Meeting Changing Trends in Power Industry Compliance Monitoring
Matthew J. Radigan, Vice President of Sales and Bill Enerhardt, Manager of Engineering, KVB-Enertec, Inc.

Abstract: Continuous Emission Monitoring Systems (CEMS) design and scope of supply have changed with changes in how the Power Generation Market generates power. New Acid Rain affected units from coming on line in response to the growing demands of the deregulated, North American power market. Unit type, fuel type, and new regulatory requirements have created the need to evaluate application specific CEMS methodologies in order to maintain air emissions compliance. The monitoring challenges of low NOx Combustion Turbines, Combined Cycle Units and process control analysis of SCR Retrofits on Coal Fired Boilers call for new solutions to old problems. Emission monitoring techniques have had to keep pace with these changing sampling environments while providing high levels of uptime performance and data availability.

Air Permit limits, sample conditions, and newly defined plant operations have all impacted how a CEMS is built and how projects are managed. This paper reviews process conditions that drive monitoring solutions on an application by application basis and describes how industry changes affect CEMS scope of supply. The paper explains in some detail applicable standard designs and comments on marketplace considerations that define the current CEMS business process.
E7 Certification of a Selective Catalytic Reduction Equipped Combined Cycle Generating Unit
Johnny M. Hay, Air Quality Supervisor and James W. Rice, Southern Co.

Abstract: The Acid Rain Part 75 certification of low NOx emitting unit can present numerous challenges. The most challenging area is performing the Relative Accuracy Test Audit (RATA). Alabama Power Company recently certified a Continuous Emissions Monitoring System (CEMS) on a 500 megawatt combined cycle generating unit. The unit has a SIP NOx emissions limit of 0.013 pounds per million BTU or an equivalent 3.6 ppm NOx. The CEMS also is equipped with instrumentation for the analysis of ammonia. CEMS is a Spectrum Systems Model 300 dilution-extractive system. The Referenced Method (RM) portable test trailer used also utilizes dilution-extractive technology.

There are several areas of the 40 CFR Part 60 Reference Method 7E that present challenges to the tester. Some of which are meeting the bias and trip limits for each test run when the full-scale of the RM analyzer is 10 ppm. Established known errors with the calibration gases and manufacturers specification almost total the allowable error. The use of significant digits, when based on calibration results can result in a negative emission total that the run completed. It is our intention to address these and other critical concerns, as well as, present results from three successful certifications we have performed on ultra-low NOx-emitting units. We feel our experience and expertise would be valuable to the Electric Utility Industry and hopefully lead to updating and/or modifying existing reference methods.

E8 Emissions Reduction By Improved Measurement
Dr. Carlos E. Romero, Research Engineer, Dr. Nenad Sarunac, Principal Engineer, and Dr. Edward K. Levy, Director, Lehigh University Energy Research Center; and James Batug, I&C Design & Services Supervisor, PPL Generation

Abstract: Utilities in the U.S. with fossil-fired power plants are required to use continuous emissions monitoring systems (CEMs) to measure and report quantities such as NOx and SO2 emissions. Among its many components, the typical, most used CEM system includes a flue gas flow meter and a device referred to as a dilution extractive probe for flue gas sampling. Numerous studies have pointed to positive measurement bias errors in these devices, which can be as high as 20 percent in some cases. Over-reporting represents the potential for financial losses associated with NOx and SO2 emissions trading system in the U.S.

This paper reports work performed by the ERC on flow measurement and dilution probe accuracy issues and describes approaches which have been developed to improve measurement performance of stack flow instrumentation and dilution extractive probes. Cases studies are presented on the implementation of these approaches to utility stacks which have resulted in emissions over-reporting reductions in excess of 15 percent. Another result of the ERC work, presented here, is hardware and software (a correction algorithm) modifications to the standard dilution extractive probe system which compensates for instantaneous changes in probe accuracy due to variations in stack and probe operating conditions.

SESSION 5B

Nuclear Technology
Session Developer: James Snelson, CP&L

NT1 Reactor Coolant System Resistance Temperature Detector Cross-Calibration Internal Extension
Raymond L. Herb, Senior Engineer, Southern Company Services and Michael G. Edison, Senior Nuclear Specialist, Southern Nuclear Operating Company

Abstract: NUREG/CR 5560, “Aging of Nuclear Plant Resistance Temperature Detectors,” June 1990, established cross-calibration as an acceptable method to check the accuracy of the reactor coolant system resistance temperature detectors (RTDs). An extensive analysis of J. M. Farley Nuclear Plant RTD cross calibration data was conducted in accordance with EPRI TR-103335-Rev. 1, “Guidelines for Instrument Calibration Extension/Reduction-Revision 1, Statistical Analysis of Instrument Calibration Data,” October 1998. This analysis determined that actual RTD drift over the 18-month calibration period is a fraction of the actual drift allowances assumed in the instrument uncertainty calculations that support safety analyses, RTS and ESFAS setpoints, emergency response procedure setpoints, control system and calorimetric power calculations. Furthermore, the drift study determined that the 36-month drift magnitudes are also conservative with respect to the drift allowance. The drift values were determined from actual plant data, with a high probability and high degree of confidence, based on a 95%/95% tolerance interval. Additionally, an extensive search of Farley corrective maintenance histories determined that the RTDs have been reliable and have experienced no operational failures. The measured drift and operational history of reliability allow for extension of the Farley RTD cross-calibration interval from 18 to 36 months.

NT2 USNRC Licensing of the TELEPERM XS Digital Safety System
Larry Erin, Manager, Quality & Regulatory Affairs, Siemens Power Corporation

Abstract: Not available at this time.

SESSION 6A

Energy Technologies
Session Developer: Michael J. Skoncey, Duquesne Light Co.

ET1 Common Electronic Platform for All Power Plant Needs
Jerry A. Kopczynski, Product Line Manager, and Patrice Rung, Machine Control Sales Manager—ALSTOM Power

Abstract: Scope of a modern power plant control usually includes plant DCS, boiler control and protection, steam/gas turbine governor and protection, auxiliaries control, automatic voltage controller, automatic synchronizer and operator/engineering stations. Usually these control packages are
coming from different manufacturers (OEM). Typically they are based on the various electronic hardware and software platforms. Different communication protocols often present problems during the system integration, various electronics hardware and software platforms are costly to maintain.

Advantages of an integrated, distributed, open architecture, digital system, which covers all the power plant needs will be discussed. A common electronic hardware/software platform allows optimization of the new constructions and upgrades, shorten delivery and commissioning time, and improve availability and safety of the new and upgraded power plants.

This paper will describe how these control packages were developed and will summarize experiences and benefits offered by the described concept. Packages will be presented in a matrix form, showing functionality for the specific applications.

ET2 Advanced Information Management Solution for Large Biomass-Fired Fluidized Bed Boiler
Esa Jokiniemi, VP, RTD Coordination, Neles Automation–Max Control Systems

Abstract: Oy Alholmens Kraft Ab is currently building a new power plant in Pietarsaari, Finland. The new plant will supply electricity and process steam to it’s neighbor, UPM-Kymmene’s Wisaforest pulp and paper mill, and district heating to the city of Pietarsaari. At startup the circulating fluidized bed (CFB) boiler at the plant will be the largest biomass-fired CFB boiler in the world.

Because of the broad ownership of Alholmens Kraft and the need for technologically demanding solutions, the company decided to invest in the highly comprehensive information management system with which the plant operation and performance could be followed closely. Accurate monitoring of the plant’s various products (electricity, process steam and district heating) is of utmost importance to ensure proper invoicing. Plant’s information management system is composed from historian, user tools for exploring the stored information and comprehensive calculating applications. The calculations include balance sheet for the stored information and comprehensive calculating system is composed from historian, user tools for exploring the stored information and comprehensive calculating applications. The calculations include balance sheet for accounting, condition monitoring calculation, run time deviation, operating economy, emissions, auxiliary equipment and life-span calculation. The calculating applications enable the efficient monitoring, the use, performance, maintenance and production of power facilities.

ET3 The Environment and Plant Economy Gain Benefit from Improved Combustion Control for FBB
Tero Joronen, Application Specialist, Metso Automation, Inc. Finland

Abstract: Fluidized bed combustion is a good technology for burning wet and varying fuels with low flue gas emissions and high efficiency. A supervisory level control application controls CFB (Circulating Fluidized Bed) or BFB (Bubbling Fluidized Bed) combustion, constantly. The purpose of the application is to minimize the flue gas emissions (NOx [nitrogen oxides], SO2 [sulfur dioxide], and CO [carbon monoxide]), improve combustion efficiency, and reduce the uses of the limestone, ammonium and auxiliary fuels. The combustion symmetry is controlled by means of balancing the fuel feed. Fuzzy logic is used to create the controls and optimization functions in this multivariable and non-linear process. As the fuzzy rules are created linguistically, they are easy to understand and users’ and specialists’ experience and intuition can be employed.

The application is in use on two industrial BFB boilers and one communal CHP (Combined Heat and Power) plant. The supervisory application is in constant use, and the results are good. The boilers are solid fuel fired and they control the plant steam network. With the application the boilers are easy to operate and emissions have decreased dramatically. The amount of time that CO exceeds emission limits has decreased by approximately 70% per annum, and the standard deviation has decreased to one third. NOx-emission has dropped by 18–25%. At the same time efficiency has increased by means of decreased O2 (Oxygen) concentration in the flue gas and stabilized bed temperature, which ensures lower UBC (unburned coal). The deviation of O2 concentration in flue gas has decreased by 10–20%, due to more stable combustion. The latest application is to be implemented in the world’s largest bio fuel-fired boiler in Alholmén’s Kraft utility power plant, Pietarsaari, Finland.

SESSION 6B
Nuclear Plant 10CFR50.59 and EMI/RFI Issues

Session Developer: Dr Joseph Naser, EPRI

Mini tutorials on two issues, the new 10CFR50.59 rule and EMI/RFI, as related to digital systems in nuclear power plants are planned. A panel discussion on these issues will be held after the mini-tutorials.

Tutorial on the new 10CFR50.59 rule will be lead by Ray Torok, EPRI

Tutorial on EMI/RFI will be lead by Dr. Ramesh Shankar, EPRI

SESSION 7A
Marketing & Sales Division
Marketing Issues in the 21st Century, Session I

Session Developer: Paul Gruhn, Siemens Moore Process Automation, Inc.

While some things never change, technology and the Internet are having a profound affect on all industries. This session will cover traditional topics such as effective presentations and the pros and cons of business alliances, as well as up and coming topics such as e-business and e-marketing.
MS1  *Dos and Taboos of Effective Speaking*  
Paul Gruhn, Siemens Moore Process Automation, Inc.

*Abstract:* Have you ever heard a presenter who read his paper, turned around and read his slides verbatim, you couldn’t understand (either due to accent or jargon), or spoke in a monotone? Didn’t you just hate it? Isn’t it maddening to try and figure out ‘What is this guy talking about!’? Have you ever thought ‘Why should I listen to this!’? You don’t want people thinking that about you, do you?

There is a wide difference between a person’s competence and a person’s effectiveness based on their ability to communicate verbally. When you’re a good presenter, more action is taken on your recommendations. Good presentation skills give you more authority and control. But good presentation skills do not come naturally! Come learn the do’s and don’t’s of presenting effectively—ranging from how to use (and not use) computer presentation tools, color, sound, humor, body language, and more.

MS2  *Getting the Biggest Bang for Your Marketing Bucks: How to Choose the Right Opportunities Online and Off*  
Shari Worthington, President, Telesian Technology

*Abstract:* In this session, we’ll discuss and dissect the myriad of opportunities available for marketing to the measurement and control markets, with a concentration on the new possibilities available through e-marketing. We’ll start with a look at how to turn marketing strategy into tactical programs that work and analyze the programs available in the marketing toolbox. We’ll take a look at the numbers behind what works and what doesn’t work and discuss how to find the right balance between traditional efforts and e-marketing. Then we’ll focus on how to choose the right message delivery vehicles in terms of branding, lead developing, and sales, ending with a detailed look at the impact of the Web and how to develop the perfect Web presence.

MS3  *What e-Business Really Means Tutorial*  
Walt Boyes, Marketing Practice Consultants

*Abstract:* A tutorial session using several case studies from the Industrial Automation industry to illustrate both the limits and the promise of the Web-enabled enterprise. This session will look at e-Commerce, supply chain integration, and integrating the tools of the Internet into every part of the business enterprise.

SESSION 7B

**Regulatory**

*Session Developer: Goray Mookerjee, Science & Technology Analysis, Office of Policy, U.S. Department of Energy*

R1  *To be determined.*

SESSION 8A

*To be determined.*

SESSION 8B

*To be determined.*

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ISA-The Instrumentation, Systems, and Automation Society
Preliminary Training Program—Training Descriptions

Power Industry—Odyssey 2001

Introduction

EPRI and ISA offer the Training Seminars for no additional fee to Conference attendees as a special service. The courses will be valuable to:
- Plant or general office engineers involved in control system retrofit projects
- Plant technicians responsible for maintaining control systems
- Control and system retrofit project managers
- Individuals involved in interfacing to other plant control or data systems
- Plant Operations

Combustion Controls (POWID CC1)

Instructor: Robert W. Hill, PE
Class Duration: 8 hours

Course Overview:

The course covers the fundamentals of boilers, utility power plants cycles, and combustion. This is followed by a brief tutorial on control theory, then a detailed discussion of combustion control, feedwater control and steam temperature control. The course is ideal for someone newly assigned to power plant controls or as a refresher for experienced personnel.

Robert W. Hill, P.E. is president of Amtech Services, a senior member of ISA, and a long time member of the POWID executive committee. He has presented this seminar over 125 times to numerous utility companies. His practical, entertaining teaching system style makes complex control systems understandable and memorable.

Instrumentation & Control Maintenance (ICM1)

Instructor: H. Hashemian, President, AMS
Class Duration: 8 hours

Course Overview: Not available at this time.

Implementing Enterprise Control Integration (IC55C)

Length: 1 Day
Credit: 1.0 CEU

This course defines an approach to integration of manufacturing systems with other business logistics systems using the models and functions defined in the ISA-95.00.01 standard. The course includes a definition of the activities associated with manufacturing control business logistics systems. The course also describes, in detail, the information that must be shared between enterprise and control systems. Enterprise/Control integration is the integration of the business and administrative processes managing the order and product with the manufacturing plant responsible for real-time process execution. Business systems focus on optimizing business processes and operational decision-making while manufacturing control systems focus on the control and optimization of real-time production processes and resources.

You will be able to:
- Specify the requirements for an enterprise/control integration solution
- Understand the issues involved in the integration of logistics to manufacturing control
- Identify the business processes that need information from manufacturing systems
- Identify the manufacturing control processes that need information from business systems
- Understand the business drivers behind integration
- Identify the information associated with integration

You will cover:
- Standards and Models: ISA-95.00.01 Standard, MESA International Model, Purdue Model
- Business Processes: The business logistics processes that interface to manufacturing control, such as procurement, product cost accounting, product inventory control, maintenance, and production planning and scheduling
- Production Processes: The activities associated with production control, including production, reporting, monitoring, operations planning, and process support engineering
- Information Model: The product definition information, product capability information, and production information, including production segments, production requests, production rules, and production responses

Ethernet and TCP/IP on the Plant Floor (FG21C)

Length: 1 Day
Credit: 1.0 CEU

Ethernet is fast becoming the new standard for industrial control networking worldwide. Using process control
concepts, this course explains both Ethernet and TCP/IP as they apply to the plant floor. Included are topics such as the various types of copper and fiber based Ethernet, how to design Ethernet cabling systems and principles of network security. We also look at the differences between repeaters, bridges, switches and routers and how to correctly implement them. Real life examples and case histories will help you understand the truth about Ethernet and TCP/IP and how to use both effectively in your plant.

You will be able to:

• Appreciate what network protocols really are and how the OSI Reference Model helps organize them
• Compare Local Area Network (LAN) topologies and cabling methods
• Understand media access techniques including CSMA/CD, token passing and master/slave
• Know the basics of TCP/IP and what it does for your network
• Design an Ethernet LAN in an industrial environment using repeaters, bridges, routers, gateways and switches
• Understand the principles of good network management, including network security, redundancy and troubleshooting

You will cover:

• The Open Systems Interconnect Reference Model (OSI/RM): Learn the basics of the OSI model as the framework to cut through the confusion of the different network protocols
• Network Cabling Strategies: Compare the strengths and weaknesses of star, bus and ring topologies
• Access Methods: Develop an understanding of Ethernet’s CSMA/CD access method. Contrast with other access methods, such as token passing, master/slave and virtual circuits
• The Truth about Determinism: Understand the impact of collisions on the network and the new solutions such as switched networks, IEEE802.1p QOS and upper layer timing solutions
• The Ethernet Physical Layer: Understand the flavors of Ethernet cabling, including ThickNet (10Base-5), ThinNet (10Base-2), UTP (10Base-T), and Fiber (10Base-FL), and Fast Ethernet
• TCP/IP: Learn what TCP/IP does and the IP addressing basics, Discuss specific examples of how IP is used in industrial settings
• Connectivity: Know where to use Repeaters, Bridges, Routers, Gateways and Switches
• Industrial vs. Commercial Requirements: Compare the requirements of industrial networks with commercial networks, Discuss how Ethernet measures up to the real time needs of Industrial Networks, Learn how to make Ethernet survive in the industrial environment
• Managing Ethernet Networks: Understand firewalls, network monitoring tools and the use of redundancy techniques to make your process LAN both secure and reliable

Picking the Right Bus—A Comparison of Field & Device Networks (FG30C)

Length: 1 Day
Credit: 0.7 CEU

You will be able to:

• Understand the strengths and weaknesses of these technologies
• Understand that a combination of buses may be needed in your plant
• Understand the issues
• Examples include AS-I, Foundation Fieldbus™, DeviceNet™, Profibus™, and Ethernet Field and Device Bus wrap-up

Payment separate from the Conference fee is required for the following courses:

ISA—Setpoints for Nuclear Safety-Related Instrumentation (SNSRI)

Instructor: Jerry Voss

Class Duration: 2 hours

Course Overview:

Modern instrumentation technology can help to ensure that critical process parameters are automatically kept within safe limits, even in emergencies. This course discusses ISA methodology documented in by ISA-67.04 Part I and Part II for determining instrument trip set points in nuclear power plants. The first part of the course is devoted to management-level overview of the importance of set points and the basic concepts and procedures involved in implementing set point methodology. The remainder of the course explores the statistical analysis and calculation routines involved in determining set points. The course addresses operational issues and potential economic benefits.

Understanding Distributed Controls (IC35)

Length: 3 Days
Credit: 2.1 CEU

Provides a view of distributed processor systems and their evolution from distributed control systems (DCS) to open control systems. Compares distributed control to traditional single loop, central computer, PLC, and PC architectures with a view to future directions and links into corporate-wide enterprise resource planning systems.

You will be able to:

• Examine latest advances in distributed processor technology using several commercial systems to illustrate the concepts
• Analyze impact of this technology on possibilities of control strategies as well as operator interfaces
• Apply concepts of body/mind reaction to audio and visual symbols to meaningful human machine interfaces
• Evaluate and justify potential benefits of distributed processor technology for improved productivity
• Examine how a process control strategy can evolve with changing needs
• Reconfigure and link processor technology to enterprise resource planning systems
• Specify, select and implement distributed processor systems

You will cover:
• Understanding of Distributed Computing: Distributed Analog to Central Computer to Microprocessor, Functional Distribution, Physical Distribution, Distributed and Centralized Information
• Comparison of Current System Philosophies: Distributed Control, Programmable Logic Control, Personal Computing Networks, Open Control Systems
• Controller Structures: Inputs/Outputs, Shared Loops, Clustered Loops, Discrete and Logic Control, Sequential and Batch Control, Multifunction Control
• The Operator Interface: Philosophy, Workstation Roles, Operator Input Devices, Alarms, Testing
• Communication Networks: Physical Architectures, Communicating Structures, Media Access Protocols, Fieldbus Links, Plantwide Links to MES, ERP, etc.
• Control Strategy and Configuration: Development of Control Parameters, Development of Control Strategy, Configuration Languages
• System Security: Reliability, Availability, Redundancies, Diagnostics, Personnel Access
• Implementation: Justification, Prepare Specification, Looking at Vendors, Evaluating Quotes, Post Purchase
• Looking to Future Changes: Technologies, System Structures, Process Performance

Payment separate from the Conference fee will be required for the examination.

Certified Control Systems Technician® (CCST®) Exam
Tuesday, 10 July, 1:30 p.m. to 5:30 p.m.

OR
Friday, 13 July, 9:00 a.m. to 1:00 p.m.

Show your career commitment by becoming an ISA CCST. As a CCST, you earn credibility in your job performance, gain respect from your managers and peers, and increase your salary and career advancement opportunities. Apply today and join the more than 3,300 technicians who are certified CCSTs.

For more information visit: http://ccst.isa.org

NOTE: This exam is tentatively scheduled for either Tuesday or Friday. Please check the final conference agenda for correct date and time.

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ISAJobs.org Receives Positive Reaction

Since its debut in July 2000, ISAJobs.org—ISA’s employment Web site—is becoming the place to go for Society members looking for new career opportunities.

With the number of user sessions averaging almost 7,000 a month, the site has proven popular with both companies looking for good people and professionals looking for new opportunities. So far, 95 employers have posted open positions while 161 job hunters have posted resumes to the site. In addition, 693 people have registered for Job Alert, an electronic notice that is sent when a new job is posted.

“We created ISAJobs.org to give employers and employees in the industries we serve an easy way to find each other,” said James Bouchard, volunteer director of ISA OnLine. “The results we have seen thus far are very encouraging. We truly feel that the clean and straightforward interface and features of this site make the process of finding a job or finding an employee quick and simple.”

The site currently centers around a wide range of engineering, engineering management, and sales and marketing positions in product and system design, utilities, raw materials processing, systems integration and manufacturing. Employers can post positions using a credit card to pay the fee. ISA members can post their resumes for free, while nonmembers may post their resumes for a $50 fee using a credit card.

Those who wish to take advantage of this growing employment resource can access it through the Web at isajobs.org.

Past Director’s Note

It truly is hard to believe that my last phase serving on the POWID Board has begun. I would like to wish Gordon McFarland, your new Director, and Wayne Holland, Secretary/Director-elect, all the best as they start their new assignments. I’m sure you will all give them your support in the upcoming years of their terms as you did for me.

The past two years were especially tough for the Power Industry. We have weathered many obstacles including corporate downsizing, Y2K and the start of deregulation. With these changes have come new opportunities for POWID in their goal to provide support of the Utility Industry. As a sign of better times ahead, POWID had an increased attendance at the 2000 Symposium in San Antonio. We hope that trend will continue for the upcoming Conference this July 2001 in Orlando.

I would like to thank all those who spent their free time supporting POWID by attending our meetings, volunteering or offering advice/counsel when called upon. It certainly made my job easier having such a knowledgeable board to turn to for support. The end result of the hard work and dedication of the entire board was POWID receiving the ISA Outstanding Division Award for the third year in a row!

I would finally like to thank the Support Staff at ISA Headquarters who have been a valuable resource to POWID and to our conference. Without their hard work and dedication, my job would have been much harder and the running of the conferences would not have been as efficient and profitable.

I hope you all will give Gordon all of your support and encouragement as he takes over the reigns of the POWID membership.

Regards,
Roger L. Hull, Past Director

1999 Best Technical Paper

The ISA Power Industry Division’s Spring Conference is a rich source of quality information captured in the numerous technical papers that are presented. Each paper receives a rigorous review by three industry specialists before it is accepted for presentation and publication at the conference. Each year the authors of the top three papers receive an honorarium, and the papers are selected for publication in the POWID newsletter. We are pleased to include the second of the three best technical papers for 1999 “Year 2000 Testing Results at Nuclear Power Plants” by Christopher Groff and Akbar Moarefy in this issue of What’s Watt for your reading pleasure.

Paper starts on page 21.

44th Annual ISA Power Industry Conference

3 WAYS TO REGISTER!

Online at www.isa.org/~powid
Email info@isa.org
Call ISA at (919) 549-8411

Registration Fees

Conference Registration

<table>
<thead>
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<th>Before 5 June:</th>
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<td>ISA/EPRI Member</td>
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<tr>
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</table>

Training Registration

| ISA Member | $295 |
| Non-Member | $345 |

Golf Outing

| Per Person | $70 |
| 4-Person Team | $280 |
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45th Annual ISA
Power Industry (POWID) Conference

12th Annual Joint
ISA POWID/EPRI
Conference

Third Annual
ISA POWID/EPRI/DOE
Conference
2–7 June 2002
San Diego, CA

Conference Theme:
“e2002—A New Paradigm in Power Industry’s Use of IT”

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ISA Program Chair
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Dr. Ramesh Shankar (704) 547-6127
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Goray Mookerjee (202) 586-6183
The 128th meeting of the ISA POWID Executive Committee was held on 21 August 2000 in New Orleans, Louisiana, in conjunction with ISA EXPO/2000.

Attendance:

<table>
<thead>
<tr>
<th>Members Present</th>
<th>Members Absent</th>
<th>Others Present</th>
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<tbody>
<tr>
<td>D. Antonellis</td>
<td>J. Batug</td>
<td>Brad Carlberg</td>
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<tr>
<td>G. Cohee</td>
<td>R. Hill</td>
<td>Howard Nekimken</td>
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<td>D. Crow</td>
<td>R. Johnson</td>
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<td>D. Christopher</td>
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<td>W. Holland</td>
<td>J. Makansi</td>
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<td>B. Hubby</td>
<td>M. Neher</td>
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<td>R. Hull</td>
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<td>D. Lee</td>
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<td>G. McFarland</td>
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<td>M. Stanley</td>
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<td>T. Stevenson</td>
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<td>J. Vavrek</td>
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<td>R. Webb</td>
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<td>H.R. Wiegle</td>
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**MEETING CALLED TO ORDER**

Roger Hull, division Director, called the meeting to order at 1:07 p.m.

**I. INTRODUCTION OF MEMBERS AND GUEST**

**II. APPROVAL OF THE PREVIOUS MINUTES**

The minutes from the 7 June 2000 POWID ExCom meeting were approved as written.

**III. AGENDA ADDITIONS AND/OR CORRECTIONS**

Agenda was approved as written.

**IV. FINANCIAL REPORT**

Roger Hull presented the financial report for Bob Szczerbicki. As of 30 June 2000, POWID had $298.00 in its treasury without the 2000 conference revenue.

**V. COMMITTEE REPORTS—See tab “Committee Reports” for reports submitted**

1. SP67

   No report

2. SP77

   Wayne Holland reported that there is a current problem financing standards work, and solutions are being looked at to solve the problem. SP77 has recommended that the standards be paid for by an increase in membership dues, in which case all members will get a copy of the standards.

   SP77.42.02 scope on drum level was sent to the S&P Board, but advised that it was not needed, as SP77.42.02 was part of SP77.42 committee work.

   Dan Lee and Wayne Holland attended the SP5.1 meeting, Monday, 21 August. New symbols are being added, and the inclusion of SAMA symbols is causing more work.

3. Honors & Awards

   Roger reported, on behalf of Milt Neher, that by receiving the 2000 award POWID has received the Best Division Award three years in a row. The Board acknowledged Roger Hull for his work as Director in winning the POWID awards.

4. Newsletter

   Dan Antonellis reported that the last newsletter was delayed because of publication problems. Dan advised that the photographs taken by Joe Vavrek at this year’s POWID Conference were well received.

5. Publicity

   Joe Vavrek reported that the best publicity avenues are the POWID newsletter and the POWID Web-site. Joe will be working with the new Power Magazine editor to have a full-page advertisement of the 2001 Conference similar to the 2000 Conference. Joe inquired about the existence of an EPRI Web-site link to the POWID 2001 Conference, or of an EPRI mailing list(s) announcing the Conference. No one in attendance knew about either issue. Inquiries to EPRI will be made.

   Bob Webb acknowledged Ramish Shankar’s (EPRI) Conference 2000 contribution, and suggested that we need to maintain communication with EPRI to get EPRI involvement.

6. Membership

   Danny Crow reported that he is working on ways to get new/young blood into POWID. IPPs, and new and emerging technology companies serving the power industry were suggested as sources of potential new members.

   Danny also suggested that we try to elicit more student involvement at the conferences.

7. Editorial Review

   Harold Sternberg is retiring from ABB/Bailey and will no longer be Editorial Review Chair after 2000. He will assist Don Labbe this year as Don begins his tenure as the new Editorial Review Chair.

8. Historian

   Bob Webb still needs to get the POWID records from Harold Hopkins.
9. Nominating
The POWID Board voted on and installed three new members to its Board:

Marland Stanley
EG&G DMI
11600 Stark Road
Tooele, UT 84074
Phone: (435) 833-7618
Cell: (435) 830-4047
E-mail: mls@srv.net

Dale Evely
Southern Company Services
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E-mail: DPEVELY@southernco.com

Dennis K. Younie
Woodward Global Services
185 Harrison Ave.
Loveland, CO 80537
Phone: (970) 962-7365
E-mail: dennis.younie@ps.ge.com

10. Long Range Planning
Williamsburg, VA in 2003 is added to the planned POWID conferences.

11. Web Page
Gary Cohee reported that the Web site roster has been updated, there are the photographs from the 2000 conference, links to the coffee break sponsors, links to SP77 and SP67, links to the 2001 conference and to the 2002 conference hotel, and the 1999 and 2000 POWID conference papers.

12. Professional Development
Tom Stevenson reported that over 110 PDH certificates were handed out during the conference for an approximate total of 400 PDH (Professional Development Hours). Tom will work with the session developers to make it easier to get certificates handed out during the sessions.

Bob Web advised that he was involved with a local section in California that attracted more than 20 people by advertising early for technician certification testing. ISA has a 3-day course for technician certification testing. Ron Hicks indicated that he is open to doing this at the 2001 conference. Tom advised that we would need to have Orlando listed on the 2001 test sites for ISA and listed on the ISA Web site.

VI. OLD BUSINESS
None

VII. NEW BUSINESS
1. Brad Carlberg, present at the POWID Board meeting, explored possibility of POWID assistance with the Wastewater Division, per Bob Hubby’s suggestion.
2. Howard Nekinen was present at the POWID Board meeting representing the Emerging Technologies group in ISA.

VIII. ISA/POWID CONFERENCES
San Antonio, June 2000
Marge Widmeyer/Rudy Neustadter
Marge Widmeyer reported on the San Antonio conference, and thanked all that helped to make it a success. All the bills will be in after this meeting then a final dollar number will be available. There were over 200 attendees at the 2000 conference.

Marge reported the key items that made the conference a success:
1. Everyone did their part
2. Training by SP67 on set point and publication of the training
3. EPRI and DOE conference co-sponsors helped to reach a wider audience
4. Dedicated work from the co-sponsor representatives Goray Mookerjee (DOE) and Ramish Shanker (EPRI)

Orlando, July 2001
Ron Hicks
Ron Hicks reported:
1. Technical Program—Rudy Neustadter has everything set and working with other divisions for sessions. Critical dates are: Abstracts by 8 December 2000; Review Draft by 16 February 2001; all reviews completed by March 2001; and, final copies of papers to ISA staff by 23 April 2001. The proceedings will be on CDs for the 2001 conference.
2. Training—Tom Stevenson is working with Elizabeth Price at ISA headquarters to determine the conference training classes. Per a survey at the 2000 conference, Implementing DCSs, and Ethernet TCP/IP on the Plant Floor were high ranking for possible training courses. Ron is also looking at the training fee structure.
3. SP67 and SP77 need to submit meeting room requirements.
4. Poster Sessions/Table Top—Bob Hubby is working on fee structures for the table top and poster sessions. Fee structures will be posted on the POWID Web site. The Web site will link to Disney tickets, airlines, car rentals, hotel, etc.
5. Social Events—Mike Skoncey has the Reedy Creek Utilities tour just about set up. He is still working on the underground city tour. Nothing additional on golf outing from Bob Szczerbicki.

Matricia Smith and Charlotte Clayton of ISA staff are coordinating the conference, including hotel contract.
Joe Vavrek advised that no publicity done yet, but Power Magazine would hand out conference information at the Electric Power Conference in Baltimore (Spring 2001).

San Diego, June 2002
Gary Cohee
Gary Cohee—General Chair. Gary advised that Dan Lee had volunteered to be the program chair for the 2002 conference. Gary stated that the 2002 conference would use the same format as the 2000 conference. Tom Stevenson would do the training and PDH certificates. Waiting on Hotel contract.

X. TECH/EXPO CONFERENCES
Roger advised that POWID was sponsoring a panel discussion on Wednesday morning.

Houston, 10–13 September 2001, ISA 2001
The 2001 event will be at the new convention center. The Divisions are going to work on sessions as in the past. Four volunteers are needed for the sessions. Don Christopher has volunteered to be the overall coordinator for the POWID sessions.

XI. NEXT EXECUTIVE COMMITTEE MEETING
Roger advised that the next POWID Board meeting will be at the ISA President’s Winter Meeting in Albuquerque, NM, 3–7 February 2001.

XII. This was Roger Hull’s last meeting to officiate over as POWID Director.
The Board acknowledged Roger for his outstanding work over the last two years. Roger announced that Wayne Holland is the next Director-Elect.

XII. ADJOURNMENT
The meeting was adjourned at 3:45 p.m.

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# Power Industry Division Officers

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<th>Role</th>
<th>Name</th>
<th>Company/Address</th>
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<tbody>
<tr>
<td>DIRECTOR</td>
<td>Gordon R. McFarland</td>
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<td></td>
<td></td>
<td>125 Shelby Drive NE</td>
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<td>Eatonton, GA 31024-8889</td>
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<tr>
<td>PAST DIRECTOR/</td>
<td>Roger Hull</td>
<td>Westinghouse Process Control</td>
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<td>CHAIRMAN NOMINATING</td>
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<td>203 Monticello Dr.</td>
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<tr>
<td>COMMITTEE</td>
<td></td>
<td>Chagrin Falls, OH</td>
<td>(440) 247-9373</td>
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<tr>
<td>SECRETARY/TREASURER</td>
<td>Wayne Holland</td>
<td>Southern Company</td>
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<td>MEMBERSHIP CHAIRMAN</td>
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<td>FALL CONFERENCE</td>
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