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Summer 2008

## Director's Message

by Dan Lee



Hello to all Power Industry Division (POWID) members from your ISA Power Industry Division Director. Since my last Director Message, your POWID Executive Committee (EXCOM) has met during our 18th Annual ISA POWID/EPRI Controls and Instrumentation Conference (51st POWID Symposium) and the Director and Director-Elect participated in the ISA Summer Leadership Meeting. I will summarize some of the activities and awards of our division, but I also urge you to read the meeting minutes and visit the POWID Division Web site for current information.

Our **18th Annual Joint ISA POWID/EPRI Controls and Instrumentation Conference** (51st ISA POWID Symposium) was held on June 8-13, 2008, at the Hilton Scottsdale Resort, Scottsdale, Arizona. I would like to congratulate Denny Younie (General Chair), Don Labbe (ISA Co-Program Chair) and Aaron Hussey (EPRI Co-Program Chair) for putting together an outstanding program which included over 224 attendees, ten (10) sponsors, and twenty (20) exhibitors showcasing their products. The conference included two excellent keynote speakers in Harsh Chital (Honeywell Process Solutions) and Kim Miller Dunn (President of ISA), a luncheon speech by Glen Reeves (Salt River Project), and eighteen (18) paper/tutorial sessions with over 70 presenters.

POWID held its annual Honors & Awards Luncheon on Monday to recognize several individuals and one organization for their contributions to our industry. I am pleased to announce the 2008 award winners (see table). Further details of the awards and award winner biographical information are available inside this newsletter. Again, on behalf of the EXCOM committee, I would like to congratulate the 2008 Power Industry Division Award winners.

After the conference, members were able to participate in a number of Power Industry Division related activities. The ISA67 and ISA77 standards committees and associated sub-committees met to work on reaffirming existing standards or to write new standards. A Controls and Instrumentation Workshop was held by EPRI and DOE to discuss current activities and future industry needs.

The POWID Executive Committee would like to thank our corporate sponsors: ABB, Emerson, Invensys, Honeywell, Metso, Siemens, SRP, WoodGroup, Yokagawa, and Power Magazine for their support in making this conference a success. Please read Denny Younie's article on the successful conference.

POWID is pleased to announce that an agreement has been made with TradeFair Group (POWER Magazine) to co-locate POWID's 2009 Symposium with the Electric Power Conference to be held in Rosemount (Chicago), Illinois, on May 12-14 at the Donald E. Stephens Convention Center. Leo Staples (General Co-Chair), Tim McCreary (General Co-Chair), James Batug (ISA Co-Program Chair) and Aaron Hussey (EPRI Co-Program Chair) are planning another exciting conference. Plans are underway to keep the intimacy of our small conference, but also to create more visibility and the attendee service benefit of a larger conference.

The ISA Summer Leadership Meeting was held May 31- June 2 in West Palm Beach, Florida. During the ISA Summer Leadership Meeting, Cyrus Taft (Director-elect) and I attended the A&T and I&S Advisory Meeting, Department Workshop, and Department Meeting. As Director, I reported on the many activities and current issues related to POWID. The 2009 Business Plan and 2009 Division budget all have been submitted for Department approval.

*continued on page 2*

## Power Industry Division 2008 Awards and Recipients

Achievement Award / *Allan Zadiraka*  
Outstanding Service Award / *Jim Redmond*  
Facility Award / *Mirant Morgantown Generating Station*  
R. Hubby Scholarship Award / *Sharanya Jaganathan*  
Best Paper Award / *Denny K. McDonald* and  
*Allan J. Zadiraka* for "Control of Pulverized Coal Oxy-Combustion"  
2nd Best Paper Award / *Dale P. Evely* for "ASME Code  
Considerations Associated with Steam Drum Level Measurement"  
3rd Best Paper Award / *Henry Ellis, Dale P. Evely, John N. Sorge,*  
and *Cyrus Taft* for "Process Control Tuning Software  
Demonstration at Greene County"

*continued from page 1*

During the ISA Summer Leadership meeting, the ISA Honors and Awards Committee met and voted the Power Industry Division the 2008 Outstanding Division. This is the 11th consecutive year POWID has received this award and I would like to thank all Executive Committee members and POWID members for their support and contributions over the past year. In recognition of one Executive Committee member and the associated service provided to members, please read the spotlight article by Gordon McFarland on his Membership Chair role and duties.

I am pleased to report that the ISA Honors and Awards Committee approved the nomination of John Gay (Power Max Consulting Inc.) as the ISA E.G. Bailey award recipient. The E.G. Bailey award is a very distinguished award given to individuals who have made significant contribution in the design, development or application of instrumentation, systems, and automation in the utilities or process control industries. On behalf of all POWID members, I would like to congratulate John on his award. The ISA Society awards will be presented in October during the Honors & Awards Dinner in conjunction with ISA EXPO 2008.

### **Some key topics from our last Executive Committee meeting include:**

- Dan Lee (Director) submitted the 2007 POWID Annual report, 2007 POWID Communication Award report, 2009 POWID Business Plan, and the POWID Summer Meeting Status report to the ISA Department VP.
- Leo Staples (OG&E) has been nominated and approved as a POWID Executive Committee Member. In his new role, Leo has volunteered to be the 2009 General Co-Chair for the POWID Symposium.
- ISA, POWID, and TradeFair Group signed a Memorandum of Understanding agreement to co-locate the POWID Symposium at the Electric Power conference in 2009. The 2009 conference planning is underway.
- Dale Evelyn has assumed the role of POWID's Newsletter Editor.
- Danny Crow volunteered to serve as the POWID Coordinator for ISA EXPO 2009.
- Gary Cohee (POWID Coordinator for ISA EXPO 2008) has put together one technical session with power industry related papers. I urge POWID members to attend the ISA EXPO 2008 held 13-17 October in Houston, Texas.
- Don Andrasik volunteered to support a task of updating the POWID membership survey and tabulating the survey results.
- POWID Executive Committee Members were asked to solicit individuals who would want to serve on the POWID Executive Committee. As with any organization, succession planning is important to develop future POWID leaders.

To facilitate electronic communication with POWID members, I will continue using the ISA Lyris service to broadcast an occasional email and our electronic newsletter. The Lyris service has been set up so that members cannot reply to all. Thus, you will not be flooded with excessive email. If you have received my director messages, you are subscribed in the POWID Lyris database. If you are a new POWID Member, or if you are uncertain whether you are in the POWID Lyris database, please subscribe per the following steps:

- 1) Connect to [www.ISA.Org/Lyris](http://www.ISA.Org/Lyris)
- 2) Select "ISA Technical Division"
- 3) Select "powid"
- 4) Select "Join POWID" and register

In conclusion, the next Executive Committee meeting is scheduled during the ISA EXPO 2008 on October 13 at the Westin Galleria Hotel in Houston, Texas. If you have any questions or suggestions, please send me an email message at [dan.lee@us.abb.com](mailto:dan.lee@us.abb.com).

Best Regards,

*Daniel Lee*  
2007-2008 ISA Power Industry Division Director

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## 2008 ISA POWID/EPRI Conference Review



From the shootout with the Pittsburgh Kid during the reception on Sunday night to the closing statements on Wednesday at noon, this year's conference was a very successful one. Many thanks to all of the attendees and the Conference Committee for making our time in Scottsdale a worthwhile and memorable event. An untold number of volunteer hours were spent arranging the program, and my sincere thanks go out to each

and every one of you. A special thanks to Don Labbe and Aaron Hussey - Program Co-Chairmen, and Tim Hurst - Paper Review Chairman. Without the tireless efforts of these volun-

teers, our conference could not have been held and it certainly would not have been the success that it was.

Additionally, our record number of Major Sponsors is appreciated more than one can say -

THANK YOU! Of particular note for this year's conference was the record number of paper submittals (over 70) and resurgence of the Nuclear content within the program. Next year will be the first time for co-location with Electric Power in Chicago and expectations for that event are now higher than ever (Week of May 10th, 2009 - Please mark your calendars now!).



### 2008 Conference by the numbers -

224 registered attendees

60+ final presented papers and tutorials

\$45,000 of food and beverage consumed

10 Sponsors

20 Exhibitors

Thanks again! - Denny Younie, General Chairman 2008

## Upcoming ISA and POWID International Conferences

### Joint POWID / EPRI Conferences:

- Chicago, IL 10-15 May 2009
- Baltimore, MD May 2010

### ISA EXPO:

- Houston, TX 14-16 October 2008
- Houston, TX 6-8 October 2009

## 2008 ISA POWID/EPRI Conference Committee

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## 2008 POWID Honor and Awards Luncheon in Review

by Michael J. Skoncey, POWID Honors & Awards Chairperson

### Luncheon Speaker

This year's luncheon speaker was Glen Reeves, Manager of Power Generation from the Salt River Project. Glen provided the attendees with a talk on the Salt River Project as a company and on the challenges facing the U.S. electrical supply. We thank Glen for taking the time from his busy schedule to talk to our attendees about this important problem facing our industry.

### Achievement Award

This year's recipient of the POWID Achievement Award was Allan J. Zadiraka from Babcock and Wilcox. Allan (Zeke) graduated from Penn State University with a bachelor's degree in Electrical Engineering and has been involved with the automation and control of fossil fired boilers within the power industry for over 42 years. Zeke's career has been with B&W the whole 42 years.



Zeke mentioned in his acceptance speech that he was honored to receive this award being that his Mentor (Oliver Durrant) received this award exactly 30 years ago. Currently, Zeke is the Team Leader of the Power and Process Control Team in the B&W Power Generation Group's Technology Division. He is responsible for the development of instrumentation, automation and control concepts and designs needed to meet the emission, safety, efficiency, response and reliability requirements for the next generation of coal fired steam generation equipment. Zeke holds five patents and has authored and co-authored a number of technical papers within the power industry's instrumentation and control area. Zeke has been a Senior ISA Member since 1981, serves on the ISA Admissions Committee, the POWID Executive Committee, ISA SP77 Fossil Power Plant Standards Committee, and was the Program Chair for the 2007 POWID Conference. In 2007, Zeke was rewarded by his peers by being elevated to the ISA Fellow membership grade.

The Executive Committee again thanks and congratulates Zeke on his past work and achievements.

### Service Award

This year's recipient of the POWID Service Award was Jim Redmon. Jim graduated from the Texas College of Arts and Industries in 1965 with a Bachelor of Science in Electrical Engineering. Jim served our country in the Marine War as a fighter pilot. Upon his return, he worked for Boeing and the Puget Sound Naval Shipyard from 1970 to 1982.



His power industry career started with Southern California Edison at the San Onofre Nuclear Generating Station where he worked on reactor plant protection systems and engineered safety feature actuation systems. Some of the positions he has held are Senior I&C Engineer, Group Leader, Electrical / I&C Supervisor and Group Supervisor.

He retired in 2007 from Southern California Edison and is currently working part time as a Consulting Engineer at San Onofre. Jim is a member of IEEE, ISA SP67.04 & 67.06, and was elected to the POWID Executive Committee in June of 2006. The Executive Committee congratulates Jim on being selected as our Service Award recipient.

### 2008 Robert N. Hubby Scholarship

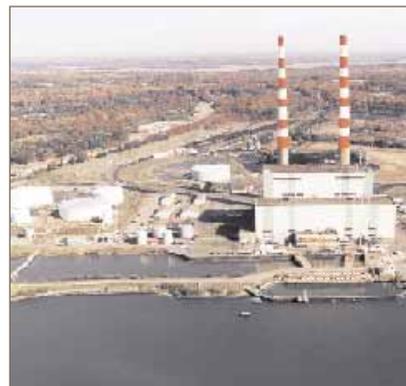
This year's recipient of the Robert N. Hubby Scholarship is Sharanya Jaganathan. Sharanya has a Bachelor of Engineering Degree from Sardar Patel University and a Bachelor of Science in Mechanical Engineering from Tennessee Technological University.

Sharanya is presently a graduate student at Tennessee Technological University studying for a Masters in Electric Power. Sharanya has worked for Essar Construction, Wipro BPO and TVA at the EPRI I&C Center. The driving force behind Sharanya is to explore new fields of interest and develop her leadership skills. Upon graduation Sharanya's desire is to work in the power generation field.

The Executive Committee congratulates Sharanya on being our 2008 Hubby Scholarship recipient and wishes her well on her future endeavors.

### Facilities Award

This year's recipient is Mirant's Morgantown Generating Station located in Charles County, Maryland. The plant has a net capacity of 1,492 megawatts and is fueled by coal and oil. The facility operates with over 175 employees and is ISO 14001 compliant. The facility is one of several plants being upgraded as part of Mirant's plan to comply with the Maryland Healthy Air Act.



The following were improvements that were made and warrant the plant to be our facility recipient: Determining end-element process limits by expert system to assure each process is not prematurely limited, reheat tilt exercise routine to prevent burner pipe pluggage and fires, automatic over-pressurization with safety constraints, high steam temperature overrides to the firing demand, adaptive firing rate controls depending on coal quality and mill loading, lower NOx production and heat rate improvement thru Model Predictive Control, intelligent sootblowing, and automatic control over the furnace firing zone addressing boiler tube wastage. The plant has seen an overall improvement of their plant operation.

The Executive Committee congratulates the Morgantown Station and their employees on their success.

## Paper Awards

**Best Paper for 2007** was authored by Denny K. McDonald and Allan J. Zadiraka entitled Control of Pulverized Coal Oxy-Combustion Systems.

**Second Best Paper** was authored by Dale P. Evely entitled ASME Code Considerations Associated with Steam Drum Level Measurement.

**Third Best Paper** was authored by Henry Ellis, Dale P. Evely, John N. Sorge and Cyrus Taft entitled Process Control Tuning Software Demonstration at Greene County

*Congratulations and thanks to these authors for their time and effort on their winning papers.*

## The 18th Annual Joint ISA POWID / EPRI Controls and Instrumentation Conference says *Thank you to our Sponsors!*



### Advertise with POWID

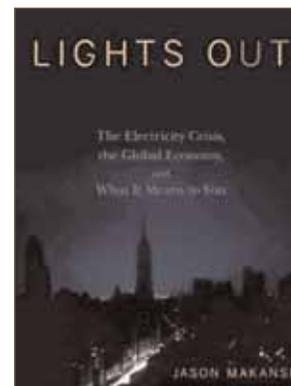
Promote your products and services to a very specific, focused readership of power industry instrumentation and control engineers and managers by advertising in this newsletter. Advertisements will run for 3 consecutive issues (typically March, July and November) based on the payment schedule below.

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Advertising rates also include a link to your advertisement being provided on the POWID website. For further information please visit the POWID website at: <http://www.isa.org/divisions/powid>

## Lights Out A Book Review by Don Labbe, ISA Fellow

Author Jason Makansi, an ISA Member, has compiled a provocative yet thorough assessment of the state of our electricity industry in his newly published book *Lights Out*. The basic premise is that "reliable" and "reasonably priced" electricity is absolutely essential to the future of our country. Combining in-depth research and personal experience, Jason presents the issues facing the reliability and viability of the production and transmission of electricity. He describes the programs, policies and events of the past and how these have shaped the state of the industry today. "I see our industry backsliding, rather than moving forward. I see our leadership in the technology, once unchallenged, now seriously eroded," he says. He relates the electricity industry to a "quasi-deregulatory quagmire."



With the severity of the state of our electric utility industry clearly defined, Jason begins an in-depth evaluation of the many industry options, considering the economic, environmental, and political aspects. While he makes it clear that there is "no silver bullet," a vision of the best options is presented with solid justification.

For those of us working in the electric industry, the book is a call-to-action to provide guidance to local and national social, business, and political leaders. It provides us with an assessment of the state of the industry, backed up by the history that has shaped current policy and followed by a plan to restore the electricity industry and ensure our country's future. Of note, intelligent instrumentation is part of the plan.

It's a must-read for those of us in the electricity industry. You may not agree with every recommendation and conclusion, but the information empowers us to take action. And, if we who have fostered a career in the electricity industry fail to take action, then who will?

*Lights Out* is published by John Wiley and Sons, Copyright 2007, and is available from Amazon.com. Author Jason Makansi is a member of the ISA POWID executive committee and is President of Pearl Street, Inc. He is also the author of *An Investor's Guide to the Electricity Economy*, also published by Wiley, and *Managing Steam: An Engineering Guide to Commercial, Industrial, and Utility Systems*.

## 2009 POWID Symposium Call for Papers

The 19th Annual Joint ISA/POWID/EPRI Controls and Instrumentation Conference (also the 52nd ISA POWID Symposium) will take place 12–14 May, 2009, at the Donald E. Stephens Convention Center. We will review all submissions and publish accepted papers in the Conference Proceedings via CD. The proceedings will later be available to the general ISA membership through the ISA POWID web site at [w.isa.org/powersymp](http://w.isa.org/powersymp).

Some of the topical areas for this conference are listed below. Focus on some aspect of the theme, Greening the Power Industry: Using Automation Technology to Address Environmental Impacts & Business Opportunities, is encouraged, and application to some aspect of the power industry is necessary.

### Power Plant Control System Advances

- Power plant control system new and retrofit projects
  - Boiler, turbine, and balance of plant
  - SO<sub>x</sub>, NO<sub>x</sub>, particulate, and mercury capture-Emissions instrumentation innovations
- Novel control strategies, calibration, and tuning aids
- Integration of disparate control systems
  - Wireless networks
  - Fieldbus
- Optimization systems: continuous and discrete
  - Neural Net
  - Model Predictive
  - Expert System
- Advances in process measurements, calibration, and other maintenance
- Operator/technician training
  - Productivity Technologies
- Integration of automation systems to:
  - Business systems
  - Maintenance management systems
- Computer aided design and engineering
- I&C design and records management

### Nuclear Plant Issues and Technologies

- Digital upgrade experiences and developments
- Advances in process measurements and calibration

- Human factors and control room design
- Operator training advances
- I&C-related technical and licensing issues

### Power Plant Safety and Training

- Burner management and safety systems
- Hazardous material monitoring and control
- Electrical safety
- Other safety regulations and requirements
  - Control and Information Systems Security
- Regulatory requirements — NERC 1200, 1300, CIP-002-01 Cyber Security Standard
- Application of security standards — ISA-99 and others
- Vendor adoption/rejection of standards

### Environmental Regulations

- NO<sub>x</sub> Emissions
- FAS 571
- Environmental Compliance
- Waste and Chemical Reporting

### Other Power Industry Related Issues

- Automation life cycle
- Automation for environmentally friendly power
  - IGCC
  - CO<sub>2</sub> sequestering
  - Accelerating Nuclear deployment
  - Power for electric automobiles
- Aging workforce

### Deadlines:

- Abstracts: 30 September 2008
- Paper Drafts: 5 January 2009
- Final Papers: 2 March 2009

Contact 52nd POWID Conference Co-Chairs, Leo Staples at [staplehl@oge.com](mailto:staplehl@oge.com), Tim McCreary at [timmccmd@aol.com](mailto:timmccmd@aol.com), or Jim Batug at [jpbatug@pplweb.com](http://jpbatug@pplweb.com) with your questions.

For submission guidelines, applications, and to submit your abstract, please go online to [www.isa.org/powersymp](http://www.isa.org/powersymp).

## Power Surfing

Allan (Zeke) Zadiraka, the recipient of POWID's 2008 Achievement Award and co-recipient of the 2008 Best Paper Award, has provided the following listing of reference material that is available free of charge through the Internet. We thank Zeke for his technical contributions to this newsletter. In Zeke's words:

The amount of information that is available on the web is amazing. I have been collecting sites to reference in internal training. Some of my favorites are listed below.

The Department of Energy has a number of DOE Fundamentals Handbooks available on their site at <http://www.hss.energy.gov/NuclearSafety/techstds/standard/standard.html>. These include a two-volume handbook on Instrumentation & Control, a three-volume handbook on Thermodynamics, Heat Transfer, and Fluid Flow, and a two-volume handbook on Engineering Symbolology, Prints, and Drawings. The site also has a number of guides to good practices as defined by DOE.

While the U.S. Chemical Safety and Hazard Investigation Board (CSB), similar to the National Transportation Safety Board (NTSB), does not seem to be directly involved in the power industry, some of its incident reports and recommendations certainly can be relevant to the power industry. This is probably becoming

more so as power plants become more and more chemical plants. Its web site is <http://www.chemsafety.gov/>.

While distillation columns have not been considered as a major part of power plants, the coming integration of air separation units (ASU) and CO<sub>2</sub> compression and purification units (CPU) will change that. At [http://www.controlglobal.com/wp\\_downloads/liptak\\_distillation\\_ebook.html](http://www.controlglobal.com/wp_downloads/liptak_distillation_ebook.html) you can find an Ebook by Bela Liptak on Distillation Control & Optimization.

A work-in-progress is the controlguru Ebook Practical Process Control by Douglas J Cooper at <http://www.controlguru.com/>. Every month or so, a new or updated section is released, so you have to check it at least monthly. The Ebook covers the practical application of process control to a variety of processes including a few topics on boiler control.

Greg McMillan has an interesting blog Modeling and Control – Dynamic World of Process Control at <http://www.modelingand-control.com/> with updates several times a month. Also, Process Control Insights, a collection of some of his earlier works is available at [www.easydeltav.com/controlinsights](http://www.easydeltav.com/controlinsights).

The classic *Control Valve Handbook* – Fourth Edition by Emerson Process Management - Fisher is available at <http://www.documentation.emersonprocess.com/groups/public/documents/book/cvh99.pdf>.

## Resources Available Through the Society

Bob Hubby, who serves on the POWID Executive Committee as the Section-Division Liaison, has provided the following listing of resources that are available to ISA Sections. As a member of ISA, if you are not also participating in your local section, this may be a good reason to do so.

1. ISA brochure, "Automation Technical Papers" - ISA's comprehensive collections of technical articles according to technical topic - a subscription service: [www.isa.org/techpapers](http://www.isa.org/techpapers)

2. Division newsletters - all contain best technical papers - use this as a section programming resource. All Division newsletters can be found on the web at each Division's homepage - but access is restricted to Division Members. Main division web page: [www.isa.org/divisions](http://www.isa.org/divisions)

3. ISA Publications and Standards Catalog - a listing of current available standards. Presentation of a critical standard could be used as a section programming resource: [www.isa.org/books](http://www.isa.org/books)

4. ISA TechNetwork, a sections source for books, standards, technical papers, training, CDs, conferences and communities of practice. Collection of newest books and standards - new and notable book page would have the same information: [www.isa.org/books](http://www.isa.org/books)

5. Instrumentation, Systems and Automation continuing education and training is available for download at [www.isa.org/training](http://www.isa.org/training)

6. ISA Training Institute Regional Course Catalog - Regional course catalogs are not available online, but searching by region at the following address will accomplish a regional schedule:  
[http://www.isa.org/Template.cfm?Section=Find\\_Training&template=/TaggedPage/LocationAlphaOrder.cfm&ICID=1](http://www.isa.org/Template.cfm?Section=Find_Training&template=/TaggedPage/LocationAlphaOrder.cfm&ICID=1)

7. The Power Industry Division Website:  
<http://www.isa.org/MSTemplate.cfm?MicrositeID=538&CommitteeID=5230>. This web site contains Power Industry Division papers back to 1999 under the left click hot spot "Conference Proceedings." These are available to all Sections. The site, however, no longer includes a list of all active SP77 Fossil Power Plant Standards Committees and all active SP67 Nuclear Plant Standards Committees. This information would be accessed through the Free Standards to ISA member benefit.

8. Analysis Division, Aerospace Division web sites (get there through the divisions list) list all proceedings available through the ISA bookstore. All divisions are listed with hyperlinks at: [http://www.isa.org/Template.cfm?Section=Division\\_List](http://www.isa.org/Template.cfm?Section=Division_List)

9. ISA Web Seminars Available When You Are. Web Seminars are located at: [www.isa.org/websem](http://www.isa.org/websem)

10. Systems Integration Community page: [www.isa.org/system-integration](http://www.isa.org/system-integration)

11. ISA Standards link for the Member free standards download benefit: [www.isa.org/memberbenefits](http://www.isa.org/memberbenefits)

## Best Paper from the 2007 Conference

As stated earlier in this newsletter, during the Honors and Awards Luncheon on 9 June in Scottsdale, Arizona, the Best Paper Award for the 2007 Conference in Pittsburgh was presented to Allan (Zeke) Zadiraka and Denny K. McDonald, both of The Babcock and Wilcox Company in Barberton, Ohio. Their technical paper is provided in its entirety in this newsletter for your reading pleasure. See page 12.

## POWID at ISA EXPO 2008

The Power Industry Division is sponsoring a session at this fall's ISA EXPO 2008 event. Information on this session is as follows:

ISA EXPO 2008 Reliant Center, Houston, Texas  
Session 209: Power Management for the Environment  
Tuesday 10/14/2008 3:45 to 5:15 PM  
Session Abstract: Power plant resource management for the environment through simulation and control data software techniques  
Session Developer: Gary Cohee [garyacohee@aol.com](mailto:garyacohee@aol.com)  
Session Moderator: Tom Stevenson  
[thomas.w.stevenson@constellation.com](mailto:thomas.w.stevenson@constellation.com)

- Control System Design Using Dynamic Simulation - Kent Kozak [kmkozak@traxcorp.com](mailto:kmkozak@traxcorp.com) Trax Corporation
- Dynamic Simulation of an Integrated Gasification Combined Cycle (IGCC) Plant - Alex Lekich [alex.lekich@gses.com](mailto:alex.lekich@gses.com) GSE Power Systems Inc.
- Documenting Power Generation Instrumentation and Control Data - Jody Damron [jody.damron@srpnet.com](mailto:jody.damron@srpnet.com) Salt River Project

If you are planning to be in Houston for ISA EXPO 2008, arrange your schedule so that you can attend this session. Complete information about this year's ISA EXPO can be found at: <http://www.isa.org/expotemplate.cfm>

# POWID Excom Member Spotlight

## Membership Coordinator Roles and Duties

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I currently hold the POWID Excom's Membership Co-Coordinator position and have been an ISA Member for over 35 years. I am a Senior Life Member of ISA and have been active in the Power Industry Division (POWID) since 1982. I previously served as POWID Director, symposium program Chair, and session developer, received the POWID

Achievement Award in 1988, and have

authored several papers for the POWID Symposiums. I currently am Chair of ISA77.41 and ISA77.42 and a Managing Director on the S&P Board of Directors with responsibility for the ISA77 committee.

I live on 25 acres in the country in Georgia with my wife Kathryn and enjoy the country living and ability to hunt on my own land. We have two sons and two grandchildren, a granddaughter and a grandson, that we truly enjoy.

The function of the POWID Membership Coordinator is to monitor the ISA POWID membership database and report the membership statistics to the POWID Executive Committee. The membership committee reports are submitted at the POWID Executive Committee meetings at the annual POWID Symposium in June of each year, in February at ISA's Research Triangle Park, NC, headquarters, and at the fall meeting during the ISA EXPO. The main membership committee report is on the total POWID membership, which has the total number of Members with a break-out of the active (paid) Members, active grace Members (in a 3-month holding period to renew their dues), and the student Members. The total Member report also has a section that breaks down the membership as to the number of Regular Members, Senior Members, Life Members, Senior Life Members and Fellow Members.

Another function of the membership coordinator is to monitor the suspended (dropped) POWID Members each month and to email them a letter from the POWID Director that includes a survey to find out why they dropped POWID membership. A suspended membership report is submitted to the POWID Executive Committee that includes the number of suspended Members with a breakdown as to regular Members

and student Members and the feedback from the replies as to why the Members dropped their membership.

The Membership Coordinator also documents the monthly new Members and the Members returning from active grace and suspended membership and sends this report to the POWID What's Watt newsletter editor for publication in the three newsletters each year.

I have benefited greatly from my ISA and POWID membership, both professionally and personally. An ISA POWID membership gives you access to years of power industry knowledge and experience through networking with other POWID Members, from our POWID newsletter, and from the annual POWID Symposium/Joint ISA POWID/EPRI Controls and Instrumentation Conference. I would encourage everyone who works in the power industry to become an ISA POWID Member, and if you are already an ISA POWID Member, then get your industry associates to become members. There is no better way to validate your credentials as a power industry professional than being an ISA POWID Member.

### ISA Power Industry Division Participates in the Technical and Industry Division Showcase at ISA EXPO 2008

Join other Power Industry Division Members in the ISA Technical and Industry, Division Showcase at ISA EXPO 2008 during opening night industry on Tuesday, 14 October from 5:00 pm to 7:00 pm. Attend to use the opportunity to meet and mingle with other Division Members. For information and pricing, contact Rodney Jones at [rjones@isa.org](mailto:rjones@isa.org).

# New and Returning POWID Members

February through May, 2008

The Power Industry Division (POWID) of ISA is growing. In the period from 17 September 2007 to 3 June 2008 the division grew from 1660 to 1921 Members, a 16% increase. We would like to welcome all of our new and returning POWID Members. We hope you will take advantage of everything POWID has to offer for your work and your career, including the opportunity to network with power industry professional colleagues across the globe. Our primary goal is to provide a means for information exchange among engineers, scientists, technicians, and managers involved in instrumentation and control related to the production of electricity. POWID is active in developing industry safety, and performance stan-

dards, working closely with two ISA standards committees—ISA SP67, Nuclear Power Plant Standards, and ISA SP77, Fossil Power Plant Standards. The Division also conducts technical training and sponsors awards for power plants and individuals advancing instrumentation and control within the power industry. POWID welcomes your involvement in our Division activities. Opportunities are available to provide information for our newsletter and Web site, to develop papers for presentation at our annual conference, and to participate in our Division's management structure. It's a great way to get to know other industry professionals, to gain professional recognition, and to keep informed!

## New POWID Members

Mr. Clint Aishman  
Utilities I&E Team Leader  
USA

Mr. Ali Dehghan  
I & C Senior Design Engineer,  
Neill & Gunter  
Canada

Mr. Mike Leblanc  
Mechanic I&C, Taunton  
Municipal Lighting  
USA

Mr. Todd M. Lyden  
Sales & Project Engineer  
USA

Mr. Geoffrey Francis Miles  
Projects Director,Score Pacific  
Australia

Mr. Seth Morrell  
Regional Sales Manager, Altech  
Environment U.S.A.  
USA

Mr. Gregory Neneman  
Account Manager  
USA

Mr. Sam G. Rogers  
Instrumentation Technician  
USA

Mr. Jiangang Shi  
I & C Engineer  
USA

Mr. Shahriar Varkiani  
President, Can-Technologies Inc.  
Canada

Mr. Kenny Anthony Bienski  
I&E Tech, Conoco Phillips  
USA

Mr. Cris Cagampan  
USA

Mr. Sherlock Fhia  
Engineer  
Bermuda

Mr. Brendan Finn  
E & I Maintenance, ESB  
Ireland

Mr. Dwight Wayne Flinchum  
Lead Engineer Power Plant  
Controls, GE Energy  
USA

Dr. Michael P. Fuller  
Director of Marketing, Ametek  
USA

Mr. John R. Gregory  
Business Development Manager  
USA

Mr. Kristopher A. Gurney  
E & I Engineer, CITGO Petroleum  
Corp.  
USA

Mr. Rich Hering  
Discipline Director - Electrical  
USA

Mr. Luke B. Johnson  
Control Systems Engineer,  
Bechtel Power Corp.  
USA

Mr. Michael Kinik  
Electrical & Controls Engineer,  
Iroquois Pipeline Operating Co.  
USA

Mr. Lawrence E. Peck  
Lab Systems Supervisor  
USA

Mr. Edward Santiago  
Industrial Controls Engineer  
USA

Mr. Mohamed Hamed  
Zarzoura  
I & C Engineer  
Egypt

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Assistant Engineer  
India

Mr. Zosimo Rabadon Bacalla  
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TVA  
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Kentucky Energy  
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Operating Co.  
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Valve Product Manager,Rawson  
& Co. Inc.  
USA

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USA

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Field Service Tech  
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USA

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Head of Engineering, Al-bakali  
General Trading Co.  
Bahrain

Mr. Kenneth Carlson  
Enercon Services  
USA

Ms. Avni Patel  
Engineer  
USA

Ms. Elmy Paul  
Sr Engineer I & C  
USA

Mr. Minio Penev Bobtchev,  
CCST  
E&I Lead Technician,  
Wheelabrator Saugus J V  
USA

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Control Systems Engineer, Saudi  
Aramco  
Saudi Arabia

Mr. Bill J. Concvloff  
Sr Engineer, Arizona Public  
Service Co.  
USA

## Returning POWID Members

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CMO, Thermo Electric Co. Inc.  
USA

Mr. Louis Bertha  
President  
USA

Mr. Dave Bruggeman  
Section Manager I&C Design  
Canada

Mr. Jeffrey V. Buck  
Sr Test Engr  
USA

Mr. Ben D. Driver  
Consultant  
USA

Mr. Craig A. Fonseca  
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Supervisor  
USA

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Sr Control Engineer, SEGA Inc.  
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Mr. Thomas J. Kibodeaux  
Product/Project Management,  
Gaumer Process  
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Engineering Co.  
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I&C Engineering Specialist, TXU  
Power  
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Mr. Edward G. Waugh  
Engineering Manager  
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Mr. Cary Dean Wilborn  
Technical Instructor, Xcel Energy  
USA

Mr. Dennis Carlsen  
Senior Engineer  
Areva Np Inc.  
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Mr. Quan Ban Chou  
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Mr. Harry G. Paris  
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Engineering Magazine  
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# Control of Pulverized Coal Oxy-Combustion Systems

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## KEY WORDS

Pulverized Coal, Oxygen Combustion, Oxy-coal, CO<sub>2</sub> Capture, Sequestration

## ABSTRACT

With the vast reserves of coal that exist in the world, coal will continue to be a prime source for electricity generation for the foreseeable future. However, fossil fuel combustion is a major contributor to the greenhouse gas emissions which is of increasing concern. Continued use of fossil fuels for electrical generation will require reduction of these emissions. While part of this reduction will be achieved through more efficient power plants that reduce the emissions per unit of electricity produced, capture and use or sequestration of CO<sub>2</sub> emissions from utility boilers appears to be required to achieve the targeted reductions. A potentially more efficient and less costly alternative to Integrated Gasification Combined Cycle (IGCC) plants under development for this purpose is Oxy-coal combustion. In this concept, oxygen mixed with recycled flue gas replaces the normal combustion air resulting in a flue gas that consists primarily of CO<sub>2</sub>. The concentrated CO<sub>2</sub> stream reduces the cost and energy requirements needed for its capture and sequestration. The control of the oxygen to the combustion process, recycled flue gas flow, and impact on other processes such as heat transfer in the boiler and gas stream constituents offers a unique set of control requirements which will be discussed.

## INTRODUCTION

Coal, while it is the most abundant domestic fuel and remains the lowest cost fuel for power generation, is under attack based on the concerns for the impact of carbon dioxide (CO<sub>2</sub>) on global warming. Coal is the most carbon intensive fuel which makes the development of an economical means of carbon management critical to ensure coal's continued use.

There are a number of technologies under consideration to address the capture of CO<sub>2</sub> from the combustion of fossil fuels. They are all dependant on the successful development of means to safely store or dispose of the CO<sub>2</sub>. A modern coal fired power plant with a heat rate around 8600 Btu/kWh produces about 1,750lb of CO<sub>2</sub> per MWh which must be captured. Unfortunately, the CO<sub>2</sub> exists in the flue gas at only about 15% by volume wet.

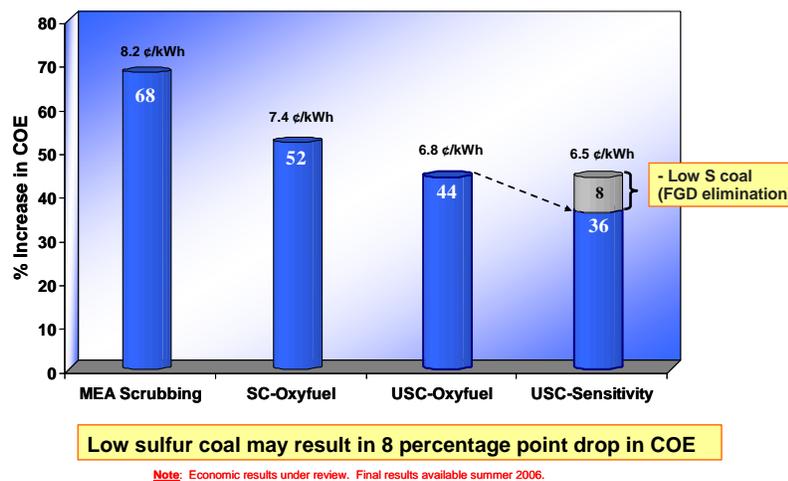
There are currently three technologies which are considered as the front runners for CO<sub>2</sub> capture:

- Integrated Gasification Combined Cycle (IGCC) where coal is gasified, the CO from the gasifier converted to hydrogen and CO<sub>2</sub> by a water shift reactor, and the hydrogen is burned in a gas turbine combined cycle plant.
- Oxy-coal combustion where pulverized coal is combusted with oxygen rather than air producing a concentrated CO<sub>2</sub> flue gas which can then be captured.
- Amine Scrubbing where a regenerable sorbent-catalyst is used to capture CO<sub>2</sub> from the flue gas.

IGCC is applicable only to new construction while Oxygen Combustion and Amine Scrubbing have the potential for retrofit to existing pulverized coal fired plants.

Only Oxy-coal combustion is based on equipment and systems that are already in commercial use at the required scale. While some operational issues remain to be proven at large scale, oxygen combustion and the major operational processes have been demonstrated at pilot scale.

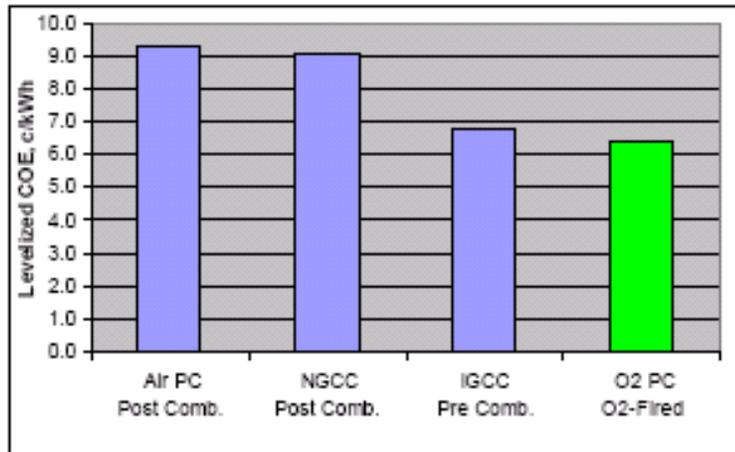
At this time, Oxy-coal's greatest challenge is to reduce the capital and power cost associated with the oxygen supply and the CO<sub>2</sub> compression. Recent work on integrating the cryogenic process with the power island needs and conditions has resulted in cost reductions but additional opportunities remain.



**Figure 1 -Impact of CO<sub>2</sub> Capture on Plant Cost Relative to Air-Fired Plant (ref. 1)**

Even with these significant cost penalties, recent studies have shown oxygen combustion as being competitive with the other technologies and, since it is largely based on conventional equipment, likely to have a considerably lower operational risk. Figures 1 and 2 show results of recent studies by the U.S.

Department of Energy<sup>1,2</sup> indicating oxygen combustion as the lowest cost solution for coal. In the figures, SC represents current supercritical steam cycles with steam conditions of around 3600 psi, 1100F, 1100F and ultra supercritical (USC) steam conditions are on the order of 4000 psi, 1300F, 1300F.



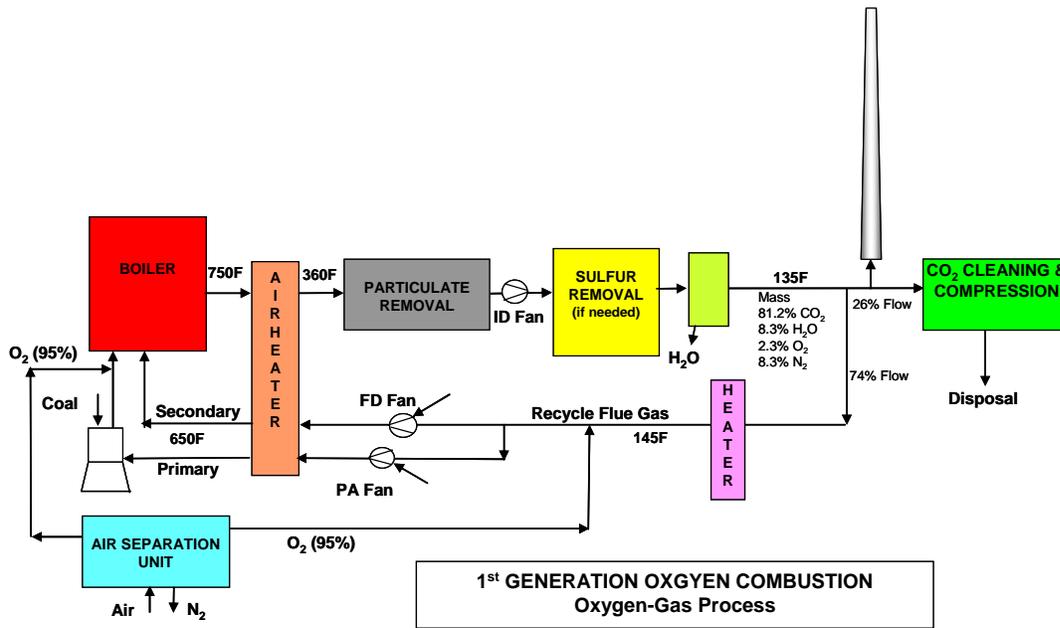
**Figure 2 - Comparison of Levelized COE among Alternative Technologies (ref. 2)**

## OXYGEN COMBUSTION

As fuel is burned in air, which consists of 21% oxygen, 78% nitrogen and 1% other gases, the oxygen chemically combines with the hydrogen and carbon in the fuel releasing heat and forming water and CO<sub>2</sub>. The nitrogen is also heated and carries significant energy away in the flue gas. Heat transfer in industrial furnaces used for such processes as melting glass and metals is dominated by radiant heat transfer. Replacing air with oxygen increases radiant heat transfer due to the increased flame temperature and reduces heat loss in the flue gas resulting in an overall improvement in efficiency.<sup>3</sup>

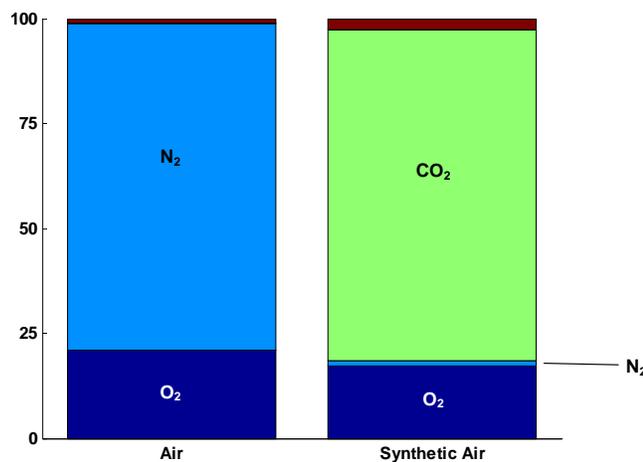
In a process, such as a power boiler where convective heat transfer is equally as important as radiant heat transfer, the reduction in the gas mass flow from pure oxygen firing would have a significant negative impact on the overall boiler heat transfer and efficiency.

Oxy-coal combustion is based on replacing the nitrogen in air with CO<sub>2</sub> creating a synthetic air mixture. Replacing the air to the unit with recycled flue gas significantly increases the CO<sub>2</sub> concentration in the flue gas, facilitating its capture and disposal, while increasing the gas mass flow to that needed for effective convective heat transfer in the unit. The basic Oxy-coal combustion arrangement is shown in Figure 3. The Oxy-coal unit is started up using air similar to any other pulverized coal (PC) fired unit. Once at a minimum stable load, the air inlet dampers to the fans are gradually closed which results in recycled flue gas replacing the air. As air is removed, nearly pure oxygen is introduced into the recycled flue gas to maintain safe and optimal combustion conditions in the boiler. This mixture of recycled flue gas plus oxygen is referred to as synthetic air. Figure 4 compares the composition of air to synthetic air. The significant reduction of nitrogen in the synthetic air reduces nitrogen oxides (NO<sub>x</sub>). The additional oxygen introduced at each burner to stabilize and complete combustion results in the oxygen content in the synthetic air being slightly lower than normal air.



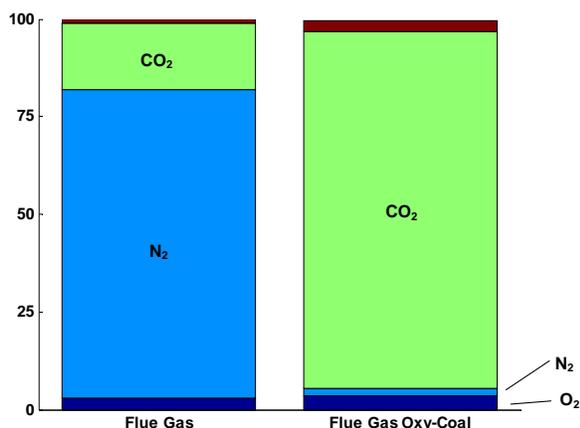
**Figure 3 - Typical Oxygen Combustion Process**

While the oxygen required for combustion could be satisfied using only pure O<sub>2</sub> injected at the burner, it would not necessarily provide the mass and volumetric flows needed to mix the fuel and oxygen at the burner or to achieve required convective heat transfer in the boiler and air heaters. Use of synthetic air allows the higher mass and volumetric flows to be provided as well as providing the necessary Primary Air to the pulverizers for transport and drying of the coal.



**Figure 4 - Synthetic Air Composition Compared to Air**

As part of the recycle process, the lack of nitrogen will naturally concentrate the CO<sub>2</sub> and other constituents. The coal analysis, oxygen purity, air-in leakage, and combustion efficiency will determine the degree of CO<sub>2</sub> concentration that can be achieved in the flue gas, typically about 80% on a mass basis. Figure 5 compares the composition of the flue gas with oxygen combustion of coal in synthetic air versus normal air.



**Figure 5 - Flue Gas Composition with Oxygen Combustion Compared to Normal Air**

Because 65% to 80% of the flue gasses are recycled back to the boiler, the flow extracted from the process for final cleaning and compression prior to disposal is relatively small, 35% to 20% of the flow to the stack for an air-fired unit of the same capacity. The removal of most of the nitrogen from the process also concentrates the other flue gas constituents in the recycle loop by a factor of about 3.5 compared to air firing. As a result, even low sulfur coals will produce flue gas with sulfur dioxide (SO<sub>2</sub>) concentrations more typical of medium sulfur coals. For example, a coal with sulfur content of about 1% will produce sulfur concentrations within the boiler and recycle loop equivalent to a coal with about 3.5% sulfur. To prevent excessive corrosion, a scrubber may be needed.

The concentration of NO<sub>x</sub>, particulate, Hg, SO<sub>3</sub> and SO<sub>2</sub>, the emission limits, and concerns for erosion dictate the design of the air quality control system (AQCS). Water is also concentrated to higher levels than in conventional flue gas and much higher than in air. In addition to the effect of recycle on moisture concentration, water added by a flue gas desulfurization (FGD) system significantly increases this concentration. Coal moisture content and combustion considerations dictate the level of moisture removal and reheat necessary to protect the equipment from corrosion and ensure pulverizer and combustion performance. Depending on the circumstances, moisture removal can be located in the full stream or only in the stream to the pulverizers. When using a wet scrubber, the recycle gas will be saturated at whatever final temperature it is cooled to, so it must be slightly reheated before it enters the fans. The degree of final cleaning and compression will vary depending on the means of transportation of the CO<sub>2</sub> stream and the tolerance of the final disposal reservoir. At a minimum, the moisture must be removed to protect the CO<sub>2</sub> compressor.

Although the properties of the flue gas differ from those with air firing due to the lack of nitrogen, studies have shown that by adjusting the design recycle ratio, an existing boiler can be converted to Oxy-coal combustion without changing existing heat transfer surfaces with only a small impact on fuel efficiency. For new units, arrangements can be optimized for reduction in equipment size and improved performance.

### Characteristics of Oxygen

Every day we experience and use gaseous oxygen at 21% volumetric (dry) concentration in the air. Oxygen itself is a colorless, odorless, tasteless, nonflammable gas. A potential danger is that many substances which do not burn in air may burn in an oxygen-enriched atmosphere (> 23.5% O<sub>2</sub>). Liquid oxygen is extremely cold (-297 F) and oxygen as a liquid or cold dry gas may cause severe frostbite to the eye or skin.

In addition, higher concentrations of oxygen (25% to 75%) present a risk of inflammation of organic matter in the body. Elevated oxygen levels may result in cough and other pulmonary changes. High concentrations of

oxygen, >75% under pressure, cause symptoms of hyperoxia which include cramps, nausea, dizziness, hyperthermia, amblyopia, respiration difficulties, bradycardia, fainting spells, and convulsions.

## **Oxygen System Purge**

To maintain clean conditions in the oxygen injection lines into the flue gas oxygen injection/mixing device and to the individual burner oxygen lances, a purge and cleaning system, using either air or low pressure slightly superheated steam, is required for purging and cleaning the oxygen lines prior to admitting oxygen to these lines. As oxygen injection begins, the purge media is gradually removed. A positive flow must be maintained in the oxygen lines at all times.

The oxygen lances to the burners are retractable and no purge is required while air firing or when a burner is out of service. Prior to introducing oxygen into the burner lance, it must be purged to clear debris and cool the lance.

## **Transitioning from Air Firing to Oxygen Firing**

The boiler is started up in the usual manner on air firing and brought up to approximately 40% stable load. The oxygen supply system is started and ready for service prior to initiating the flue gas recycle mode. A typical Air Separation Unit (ASU) requires over a day to achieve full oxygen delivery when started up from ambient temperature. Oxygen flow at lower quality is available much sooner and can be used during boiler startup if a rapid start is desired but may extend the time required to reach full load on Oxy-coal combustion. The quality and available flow depend on the specific ASU design.

Once stable pulverized coal operation is achieved, the following procedure is used for the transition to Oxy-coal firing:

1. With the forced draft (FD) and primary air (PA) fan inlet air control and isolation (tight shut-off) dampers fully open at this point, the flue gas recycle flow control damper will be gradually opened initiating flue gas to the FD and PA fan inlet flue.
2. Once the recycle flow control damper is fully open, the FD and PA fan inlet air control dampers are gradually closed increasing the recycle flue gas flow into the FD and PA fan inlet flue. Once the inlet air control dampers are closed, the associated air isolation dampers are closed. If the desired recycle flue gas flow is not achieved when the FD and PA fan inlet air supply dampers are fully closed and the recycle damper is fully open, the stack inlet damper (or damper to the CO<sub>2</sub> compression system) can be gradually closed to force additional flue gas to the FD and PA fan inlet flue. Flue gas flow to the stack must be maintained until the CO<sub>2</sub> compression system is in service. When operating in equilibrium, the flue gas flow to the CO<sub>2</sub> compression system (or stack) is equal to the sum of the excess oxidant (air and/or oxygen) added, any air infiltration, and the products of combustion.

The boiler is in full flue gas recycle mode once the FD and PA fan inlet air control and isolation dampers are fully closed. Unit load demand controls the recycle demand. Recycle gas flow can be used to trim furnace absorption (separator outlet enthalpy). Increasing recycle decreases absorption and vice-versa.

The FD and PA flows are measured and temperature compensated based on the densities of the air and oxygen/recycle gas flow streams. This density compensation will have to account for the changing constituents of the gas stream with air and synthetic air as well as during transitions between air and oxygen firing modes.

3. Oxygen is injected into the recycle flue gas stream. Oxygen is also supplied to the lances in the operating burners. The ASU Demand is the difference between theoretical stoichiometric oxygen requirement corresponding to the total Btu input plus the target excess oxygen and the oxygen available from incoming air and recycled flue gas. The ASU Demand is trimmed to maintain the target excess oxygen at the economizer outlet.

The O<sub>2</sub> flow to the oxygen mixer is controlled to maintain a minimum oxygen concentration by volume in the full recycle stream.

The total O<sub>2</sub> to the in-service burner lances will be a proportional function of the total oxygen demand on the unit. The O<sub>2</sub> flow to the individual burners associated with a pulverizer will be a function of that individual pulverizer demand compared to the total firing rate demand. Distribution between burners is preset during commissioning using manual valves on each burner lance.

During the transition from air to oxygen firing, oxygen flow initially goes to the oxygen lances on the in-service burners. As the air flow is reduced, the oxygen concentration after the oxygen mixer is decreasing. When it reaches a minimum limit, oxygen flow to the mixer will be controlled to maintain the desired oxygen concentration at this limit. Burner lighters will be kept in service throughout the transition to assist in maintaining burner stability. The total oxygen demand is trimmed to maintain the Target Excess Oxygen leaving the boiler. The local concentration of oxygen in the recycle flue gas downstream of the oxygen mixer must remain below maximum oxygen concentration limit under all circumstances. The demand for Total Oxygen is coordinated between the boiler and the oxygen supply system. The boiler control system provides a feed-forward signal of the total oxygen demand to the ASU oxygen supply control system.

4. Starting an additional pulverizer under oxygen combustion is similar to under normal air firing. The first step is to change the synthetic air flow on the burners associated with the pulverizer to be placed in service from cooling to light-off flow. The igniters are then placed in service on these burners. Oxygen flow demand for the other in-service burners is temporally increased to help maintain flame stability and decrease the risk of high O<sub>2</sub> concentration in the recycle flow as oxygen is added. PA flow through the pulverizer is established when its burner line shutoff valves are opened, increasing the recycle flue gas flow required. This increase will result in a temporary decrease in flow to the CO<sub>2</sub> compression system which is responsible for backpressure control equivalent to that which would otherwise be provided by the stack.

The oxygen lances for the burners coming into service must be purged just prior to admitting fuel to ensure they are clear of debris and sufficiently cool to permit introduction of oxygen. After the pulverizer and feeder are started, oxygen flow to the burner lances is initiated. This will automatically back the other pulverizers down to maintain heat input and redistribute the oxygen to the in-service burners based on pulverizer load. As stable conditions are achieved at the new total heat input, oxygen to the burners is returned to its normal set point.

5. Recycle flue gas and oxygen flow demands will follow changes in boiler heat release demands similar to normal air-fired systems. Oxygen flow to the burner lances is temporarily increased during faster load changes in either direction until steady state load conditions are achieved. Flue gas and oxygen flows lead fuel flow on load increases. The process is opposite for a load decrease with fuel flow leading recycle flue gas and oxygen flows.

### **Transitioning from Oxygen Firing to Air Firing**

The boiler load is reduced to the selected transition load, flow through the stack is re-established, and the CO<sub>2</sub> compression system is removed from service. The oxygen shut off valves to the burner injection headers are closed as each pulverizer is shut down. Flue gas recycle is reduced by:

1. Gradually opening both the FD and PA fan inlet isolation (tight shut-off) dampers until fully open while keeping the flow control dampers fully closed.
2. Both the FD and PA fan inlet air control dampers and the stack inlet damper will be gradually opened. As air displaces the flue gas, the oxygen demand decreases reducing the injection rate to the in-service burners and oxygen mixer.
2. As the oxygen injection rates are reduced based on the total oxygen demand, the oxygen supply system output will be reduced and excess oxygen will be vented as necessary when the boiler demand is less than the output of the ASU.
3. Once the FD and PA fan inlet air dampers and the stack inlet damper are fully open, the flue gas recycle damper will be gradually closed and the unit is in air-fired mode.
4. When the oxygen is no longer being demanded, the shut-off valves for the oxygen mixer and to the burners are closed.

### **Oxygen Combustion and CO<sub>2</sub> Sequestration Experience**

Oxygen combustion and CO<sub>2</sub> sequestration activities date to the late 1970s when the oil embargo raised interest in enhanced oil recovery (EOR) where CO<sub>2</sub> is injected to enhance recovery of oil from existing wells. These activities produced what can be considered the first generation of plant designs to provide concentrated CO<sub>2</sub> using oxygen combustion.

When global warming concerns put the spotlight on the CO<sub>2</sub> emissions from power generation in the late 1990s, interest in this technology was revitalized, especially in Canada through the CANMET's CO<sub>2</sub> Consortium since Canada at that time was approaching carbon management more aggressively than the U.S. The Canadian Clean Power Coalition and more recently the U.S. Department of Energy have sponsored a number of programs addressing all three of the CO<sub>2</sub> capture technologies as well as studies on carbon sequestration

In 2001, B&W and Air Liquide began Oxy-coal combustion R&D efforts on the element with the greatest impact on the process cost and performance, the oxygen system. Additionally, Oxy-coal combustion tests were performed at 5MBtu/h scale in B&W's Small Boiler Simulator (SBS) facility on both Illinois #6 and Powder River Basin (PRB) coals.<sup>4</sup>

The results of this pilot scale testing showed that with stable flame and optimized oxygen and recycle flue gas, almost 85% CO<sub>2</sub> concentration and a 65% NO<sub>x</sub> reduction could be achieved. This NO<sub>x</sub> reduction is not only due to the lack of nitrogen in the system but also to a re-burn effect and relatively low air infiltration.

Unburned combustibles were lower than with air firing while furnace exit gas temperature, convection pass heat absorption, and boiler exit gas temperature were similar to air firing. There were no negative impacts on boiler operation. In fact, the system could be easily started up, load changed, and shut down, and operational behavior and steam side performance were nearly the same as for a conventional air-fired unit.

This success of the pilot scale testing has led to the pursuit of a reasonably sized demonstration in a power plant environment.

## Large Scale Testing

The largest test facility in the world that has operated under Oxy-combustion conditions with pulverized coal to date is B&W's 5 MBtu/h (1.5 MW<sub>th</sub>) SBS facility. Other test facilities being proposed include the 30 MW<sub>th</sub> Vattenfall project in Germany and the 30 MW<sub>e</sub> Callide project in Australia. During 2005, the design and costs for a 25 MW<sub>e</sub> demonstration program on a unit at the City of Hamilton, Ohio, were developed but funding for the actual demonstration could not be arranged. With the need to support design of commercial scale projects, B&W and Air Liquide decided in late 2006 to convert B&W's existing 30 MW<sub>th</sub> Clean Environment Development Facility (CEDF) in Alliance, Ohio, to an Oxy-combustion system.

The CEDF was built with funding from B&W, the U.S. DOE and the Ohio Coal Development Office and was started up in 1993. It was designed as a combustion test facility with provisions for performing emissions control and air toxics testing. The furnace and convection pass are designed to provide a time-temperature characteristic equivalent to a large utility boiler. It incorporated an EL-56 pulverizer for coal preparation and an indirect coal feed system, full flow dry scrubber, fabric filter, and electrostatic precipitator (ESP). Over the years it has been used in support of the U.S. DOE's Combustion 2000 program, the "Advanced Emissions Control Development Program" as well as early mercury testing and has produced excellent data in support of three generations of pulverized coal burners and variations for specific applications.<sup>5</sup> In 2005, in cooperation with Air Liquide, it was also used to test partial Oxy-firing.

To permit full Oxy-firing, additional flues, an oxygen supply, oxygen mixers, a full flow wet scrubber, additional coal preparation equipment, and controls and instrumentation have been added. In addition, the combustion system was converted to allow direct firing to permit full Oxy-combustion operation with lignite. The testing will address the impact of both Oxy-firing and the various coals on coal preparation, ESP and wet scrubber performance and operation with the different flue gas composition; evaluate transitioning between air and oxygen firing, load changes and major system trips including Master Fuel Trip; and support nearly full-scale testing of a new Oxy-burner for lignite. In addition to testing with Saskatchewan lignite, it will be operated with eastern bituminous and sub-bituminous coals.

## SASKPOWER PROJECT

During the next 20 to 30 years, SaskPower will be making major decisions concerning the refurbishment or replacement of virtually its entire fleet. Saskatchewan's 300 year supply of readily accessible lignite coal remains their most cost-efficient and stable-priced fuel for base load generation but there are environmental concerns.

For several years SaskPower has been involved in evaluation of technologies for carbon dioxide management in coal fired power plants. Recently they announced a Clean Coal Project that will capture over 90% of the carbon dioxide produced from coal combustion.<sup>6</sup> This project will result in a power plant generating 300 net megawatts (MW) of electricity while capturing about 8,000 tonnes of CO<sub>2</sub> a day for enhanced oil recovery (EOR) to extract millions of new barrels of oil from Saskatchewan oilfields. Additional emissions-control technologies to be incorporated will result in a unit with near zero emission status.

SaskPower thoroughly examined and researched both Oxy-coal and the post-combustion clean-up processes. Based on the current state of both technologies, and project-specific parameters, they selected Oxy-coal and expect it to provide the best environmental performance and lowest cost.

After selection of Oxy-coal, SaskPower came to an agreement with Babcock & Wilcox Canada (B&W) and Air Liquide in late 2006 to jointly develop the Oxy-coal technology as the core process for a new 300 MW net unit to be located at their Shand facility near Estevan. Marubeni Canada and Hitachi will supply the turbine

generator set, B&W will supply a pulverized coal-fired supercritical once through boiler and Air Liquide will provide the air separation plant and CO<sub>2</sub> compression system. The Oxy-coal technology nearly eliminates emissions of combustion byproducts, including greenhouse gas emissions, and may be the worlds first near zero emissions pulverized coal unit.

Significant design work and costing is currently underway to assess whether SaskPower should proceed to the construction phase. When the decision is made to proceed, this power plant will be the first of its kind in a utility scale application. The decision on whether to proceed will be made in mid-2007 for an in-service date of 2011.

## CONCLUSIONS

Oxy-coal combustion offers a means of continuing to utilize the abundant reserves of coal in the generation of electricity while achieving a near zero emissions unit. The reduction in CO<sub>2</sub> emissions assumes the captured CO<sub>2</sub> can be safely sequestered. Oxy-coal combustion technology is applicable to existing coal-fired units and not just new units. Even with the high impact on net plant MWs from the oxygen supply system and CO<sub>2</sub> compression train, studies show that Oxy-coal combustion is competitive with other the CO<sub>2</sub> capture technologies currently being proposed.

One of the major problems from a control standpoint will be remembering that the O<sub>2</sub> flow through the unit is now independent of the total gas mass flow through the unit. Also, flow measurements will have to compensate for the varying densities as the compositions of the air and gas flow streams change during unit operation. Operation with oxygen combustion and CO<sub>2</sub> sequestration will require greatly increased dependence on oxygen measurement and control than has been required with air firing.

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2. Seltzer, A.H. et al., "An Optimized Supercritical Oxygen-Fired Pulverized Coal Power Plant for CO<sub>2</sub> Capture," 31<sup>st</sup> International Coal Utilization and Fuel Systems Conference, May 2006.
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4. Hamid Farzan and Stanley J. Vecci, Fabienne Châtel-Pélagé, Pavol Pranda, and Arun C. Bose, "Pilot-Scale Evaluation of Coal Combustion in an Oxygen-Enriched Recycled Flue Gas," The 30th International Conference on Coal Utilization and Fuel Systems, Clearwater, Florida, U.S.A., April 17-21, 2005.
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# ISA POWID Executive Committee June 2008 Meeting Minutes

Meeting: ISA Power Industry Division Executive  
Committee Meeting  
Chairman: Daniel Lee  
Recorder: Cyrus Taft  
Date/Time: June 8, 2008, 1:00 PM To 5:00 PM, EST  
Location: Hilton Scottsdale Resort - Scottsdale, AZ  
Distribution: POWID Executive Committee Members

Rodney Jones ISA Administrator, Technical Divisions  
Matricia Smith ISA Fall Event Coordinator  
Joe Provenzano ISA Industries & Sciences Dept VP  
Tom Devine ISA Industries and Science Dept VP-Elect  
Paul Gruhn ISA Industries & Sciences Past Dept. VP  
Kristy Becker ISA Education Services Coordinator  
Ken Hilgers ISA Director of Member & Administration  
Services  
Becky Schneider ISA Division Recruitment

## Attendees:

Members Present  
Don Andrasik  
Dan Antonellis  
Jim Batug  
Gary Cohee  
Don Christopher  
Danny Crow  
Dale Evelyn  
Jody Damron  
Roger Hull  
Bob Hubby  
Tim Hurst  
Aaron Hussey  
Don Labbe  
Daniel Lee  
Gordon McFarland  
Jason Makansi  
Tim McCreary  
Bob Queenan  
David Roney  
Michael Skoncey  
Bill Sotos  
Leo Staples  
Tom Stevenson  
Cyrus Taft  
Joe Vavrek  
Denny Younie  
Allan Zadiraka

## Members Absent

Ron Hicks  
Jim Olson  
Robert Webb  
Marjorie Widmeyer

## Call to Order

Daniel Lee, ISA Power Industry Division Director, called the meeting to order at 1:00 p.m., MST.

## Introduction of Attendees

Dan Lee asked the attendees to introduce themselves. Cyrus Taft, POWID Secretary and Director-Elect, circulated the Meeting Attendance List and POWID Executive Committee Roster. Director Lee requested that the attendees update the POWID roster personal information including active ISA position.

## Review & Approve Agenda

The POWID Executive Committee Meeting Agenda previously sent by email was also distributed before the start of this meeting by Director Elect/Secretary Taft. Director Lee noted one addition to the agenda since it was distributed by email. An item was added under New Business to discuss the formation of a POWID Sub-section in Dehli, India. Dan asked if there were any additional changes to the meeting agenda. Bob Hubby moved to approve the revised meeting agenda and Tom Stevenson seconded the motion. The agenda was approved by voice vote.

## Review & Approve Minutes of Last Meeting

The minutes for the POWID EXCOM meeting held on February 19, 2008, at ISA Headquarters in Research Triangle Park, NC, were previously distributed electronically to the POWID EXCOM members and are available on the POWID web site. Hard copies of the minutes were also distributed at the meeting. With no changes to the minutes, Dan asked for a motion to approve the minutes as distributed. Dale Evelyn moved that the minutes be approved and Don Christopher seconded the motion. The minutes were approved by voice vote.

## Director Staff Reports

### Division Report – Director Lee reported on the following;

- a1) **Outstanding Division Award**  
Dan circulated a letter from Kim Miller Dunn, ISA President, congratulating POWID for winning the Outstanding Division Award in the I&S Department in 2007. Dan acknowledged that this is the eleventh straight year POWID has won this award and thanked all the EXCOM members for their contributions and support.
- a2) **2007 POWID Annual Report**  
Dan submitted the 2007 POWID Annual Report on May 12, 2008, to the I&S Department Vice-president. Dan had previously distributed the report electronically to the POWID EXCOM members. A soft copy is available on the POWID web site and a hard copy was circulated to attendees for information.
- a3) **2007 POWID Communication Award**  
Dan submitted the 2007 POWID Communication Award Report to the I&S Department Vice-president. Dan had previously distributed the report electronically to the POWID EXCOM members. A soft copy is available on the POWID web site and a hard copy was circulated to attendees for information.
- a4) **Letter of Support to Texas A&M**  
Tim Hurst had requested a letter of support from ISA POWID supporting and I&C Initiative at Texas A&M University. Dan provided a letter which was circulated for attendees.
- a5) **ISA Member Service Funding Task Force Report**  
ISA formed a Task Force in 2007 to make recommen-

dations to the Executive Board about changes in the way Member services are funded. The goal was to comply with certain IRS guidelines and make improvements to the funding of Sections and Divisions. The report includes ten recommendations, several of which will have an impact on the POWID Division. One of the recommendations is to increase Member dues to \$100, but included two Division memberships in the cost. A few of the recommendations will have to be approved by the Society Council of Delegate at the Fall Leaders Meeting in Houston in October. The full report is available on the ISA website.

a6) **2009 POWID Business Plan**

Dan discussed the 2009 POWID Business Plan, which was distributed by email before the meeting and a copy was circulated at the meeting. Dan Lee mentioned that, with the Division funding being changed in 2009, he recommend that any POWID division balance be rolled over into the POWID Endowment Fund. EXCOM members agreed. Dale asked about the number of hardcopy newsletters (Section 3.1) being planned. Dan said that one hardcopy was planned and it would be mailed to US Members by first class mail. Joe Vavrek suggested changing the listed dates for POWER magazine ads since the first ad is now in the November-December issue. The listing will be changed. Dale asked whether it would be good to have alternates identified for each Board Member, as is done on some other organization' committees. Bob Hubby moved to approved the amended POWID Business Plan and Tim Hurst seconded. The motion passed by voice vote.

a7) **Letter to ISA84 Chair**

Dan sent a letter to ISA84 Chair Zetterburg stating that POWID was in agreement with the changes they had made to TR85.00.05 in response to POWID's suggestions.

a8) **ISA Spring Leaders Meeting**

Dan and Cyrus attended the ISA Spring Leaders Meeting at the end of May in West Palm Beach, FL. Dan submitted the POWID Summer Leadership Director Report to the Department VPs on 5/19/07. A copy was circulated to attendees for information.

1) Cyrus attended the I&S Department Advisory meeting, where Divisions report on any difficulties they are having and seek advice from other Divisions. The Member services report was discussed and several changes to the recommendations were suggested. Cyrus mentioned two areas of concern for POWID, which are inaccuracies in the financial reports we receive from ISA and the time it takes ISA to publish our Newsletters.

2) Dan and Cyrus attended the I&S Department Board Meeting. Dan reported:

2a) Member Service Funding Report was discussed and POWID is concerned that the Division accounting will be changed and that Divisions will not be allowed to maintain a surplus from year to year. Also some financial scorekeeping will be needed to give Divisions an incentive to do well. A third-party review of the financial plans is also needed.

2b) Division key dates were discussed.

2c) The Department Luncheon will be held on Tuesday during the Fall Leaders Meeting.

2d) The Marketing and Sales Division offered to share articles of general interest from their newsletter with

other Divisions. It was agreed that all Division Directors, Division Director Elects, and Newsletter Editors would receive all Division Newsletters.

2e) The Division Leadership Training Program is planned for January 2009.

2f) ISA staff has an action item to prepare the POWID Division budget by July 20.

2g) The new I&S Department VP-elect is Tom Devine.

3) Dan attended a Workforce Initiative meeting. A National Academy of Engineering report said that \$440M had been spent over the past 20 years to increase the number of engineering graduates but there had been no progress. ISA has formed a committee to work on Workforce Development issues.

4) Dan attended the Conferences and Exhibits Global Oversight Committee meeting to support the discussion on POWID's MOU with Trade Fair Group. The C&E Committee approved the co-location of the 2009 Symposium with the Electric Power Conference.

a9) **POWID List Serve**

Dan used the POWID List Serve three times since the last EXCOM meeting.

a10) **POWID Welcome Letter**

Dan renewed his membership on time but still received the POWID Welcome Letter from ISA, but it was the 2007 version instead of the 2008 version. He notified ISA of the problem.

a11) **Web Page Roster**

Dan requested that Rodney Jones add all EXCOM members to the POWID Leadership Roster on the POWID home page. Rodney has made the changes.

a12) **Society Position Nominees**

ISA is asking for nominations for the Society level positions.

**Financial Report** - Roger Hull, (Treasurer) was in attendance and reported:

b1) **1st Quarter 2008 Division Financial Statement**

The 1st Quarter 2008 Division Financial Statement showed the Division fund balance on 3/31/08 was \$401 which included \$8,288 in 2008 Symposium expenses.

b2) **1st Quarter Symposium Financial Statement**

The 1st Quarter 2008 Symposium Financial Statement showed no income and expenses of \$8,288 which is normal for the first quarter.

b3) **Endowment Fund Report**

The Division Scholarship Endowment Fund Statement for 2007 shows that income in 2007 was \$9,023. There were no expenses and the balance on 12/31/07 was \$173,834. Two Achievement Award scholarships were outstanding on 12/31/07. Dr. Smoak gave his to Tennessee Tech and ISA sent them a check recently. Jeff Williams has decided to donate his Achievement Award Scholarship to the ISA Pittsburgh Section Scholarship Fund.

b4) **2007 Symposium Outside Services Expenses**

Dan and Mike Skoncey had concerns about the Outside Services expenses for the Pittsburgh Symposium as shown on the 12/31/07 financial statement from ISA. Dan requested Rodney to provide a breakdown of the expenses which Rodney has now done. Dan and Mike will review and send a reply to ISA, including lessons learned, to help future Symposia. Dan noted that in 2007 all six Division Symposia lost money with the total coming to \$123,000.

b5) **2008 Student Summer Games**  
Laura Crumpler of ISA sent a request to Dan asking for financial support from POWID for the 2008 Student Summer Games. Dan had included this money in the 2008 budget, so it was approved by the Board in the amount of \$1000.

c) **Nomination** – Gary Cohee reported that the EXCOM now has 30 members including 8 Utility, 13 A/E, and 9 Vendors. Dan Lee nominated Leo Staples, of Oklahoma Gas and Electric to be a Board Member. Leo is the current ISA Treasurer and has volunteered to be a General Co-Chair for the 2009 Symposium. Bob Hubby moved to approve Leo as a member and Tom Stevenson seconded the motion. The motion passed by voice vote. Dan said the Division is always looking for additional Board Members.

## 6. Standards Committee Reports

a) **ISA67 Nuclear Power Plant Standards Committee** – Bob Queenan (ISA67 Chair) was in attendance and reported that ISA67 met a year ago and had a meeting scheduled this week. ISA67 subcommittees were also planning meetings for this week.

b) **ISA77 Fossil Fuel Power Plant Standards Committee** – Dave Roney (ISA77 Chair) reported he planned to resign as ISA77 Chair after this week due to a workload that prevents him from devoting adequate time to the committee. The committee will meet on Wednesday afternoon this week. David provided a verbal status report.

## 7. Membership Service Committee Reports

a) **Honors & Awards** - Michael Skoncey (POWID Honors and Awards Coordinator) distributed copies of the program for the Honors and Awards Luncheon on Tuesday. He also reported the following award winners for 2008.

a1) **POWID Service Award** – Jim Redmon was selected for this award for his service on the ISA67 Nuclear Power Plant Standards Committee.

a2) **POWID Facility Award** – Mirant's Morgantown Generating Station has been chosen to receive this award for 2008 for its use of advanced control techniques to optimize performance and emissions.

a3) **POWID Achievement Award** – Allan Zadiraka will receive the POWID Achievement Award for 2008 for his outstanding contributions to power plant control during his 40 years in the industry.

a4) **Hubby Scholarship** – There were two applications for the Hubby Scholarship this year. The winner is Sharanya Jaganathan, a graduate student from Tennessee Tech who has done some work with the power industry. She was invited to attend the conference but could not due to research workload.

a5) **Achievement Award Fund Letter**  
Mike has not had time to work on the letter providing instructions to Achievement Award winners on selecting a scholarship recipient.

a6) Mike reported that John Gay will receive the E. G. Bailey award for 2008 at the ISA Honors and Awards Banquet in Houston this fall. The award was made for John's outstanding technical design development and implementation of control algorithms that allow full, high genera-

tion capacity for large-scale fossil fuel power plants, automatically, while maintaining and improving boiler safety attributes.

a7) Mike said he will be very busy starting in August with projects at work so he would really appreciate it if nominations for next year's awards were submitted before then. There were no POWID Fellows this year and only three for the whole Society, so this is an area where we need to do better.

a8) Kim Miller Dunn, ISA President, was introduced to the Board by Dan, who asked her to say a few words. She discussed the proposal to change the society name to the International Society of Automation and why she felt it was so important for the future of the society and the profession of automation.

b) **Membership** - Gordon McFarland was in attendance and provided a membership report. As of June 3, 2008, the Division membership stood at 1921. Gordon is sending a letter to all suspended members to remind them to renew their POWID membership. In February, he sent 55 notices; in March, 38 notices; in April, 74 notices; and in May, 109 notices, 81 of which were student members. He typically gets a few surveys back each month about why people have not renewed. He sends a list of new members to the newsletter editor to include in each issue. There is still an issue with Life Members not knowing that they still need to pay for Division membership even though they do not have to pay for Society membership. This problem should go away if the Member Services funding proposals are approved by the Council of Delegates.

c) **Historian** – Don Christopher, POWID Historian, reported that he had contacted some companies in Houston for costs to scan some of our old paper proceedings. The best estimate was from Kinko's where the cost was \$0.25 per page plus a \$7.00 setup charge for each proceeding. There was some discussion about the resolution that would be used for this. Don said he would ask about that. It was recommended that at least 300 dpi be used although it would be better to have 400 dpi if possible. All the vendors contacted said they would need a copyright release from ISA before they could scan the copyrighted documents. Don will contact Chip Lee at ISA about getting a copyright release.

d) **Professional Development** – Tom Stevenson reported that 833 PDHs were earned at POWID conferences in 2007. He said he would be changing the signup process slightly for this year to help prevent session attendees from having to wait in line after the session to sign the PDH form. He said that the Society certification programs were doing well and that we should consider putting an article in the newsletter about those programs.

e) **Section/Division Liaison** – Bob Hubby, POWID Section/Division Liaison, reported that he has distributed an updated version of his resource list.

## 8. Communication Committee Reports

a) **Newsletter** - Dan Antonellis (Outgoing POWID Newsletter Editor) provided a written report. The key points were:

- a1) The Spring 2008 newsletter was published on April 24 and featured the 51st POWID Symposium in Scottsdale, AZ.
- a2) Dan thanked the Board for their support during his 15 years as Newsletter Editor. Dan Lee thanked Dan Antonellis for his dedication to the Power Division and his fine work as Newsletter Editor. Dale Evely has agreed to assume the duties of Newsletter Editor.
- a3) Dale also provided a report outlining some changes that are needed in the publishing schedule to accommodate the change in the Symposium date to May. He also noted that the MOP should be revised to remove the reference to the Editor's Guide which does not exist anymore.
- b) **Publicity** - Joe Vavrek (Publicity Coordinator) reported that POWER Magazine is our primary publicity vehicle and they have committed to providing additional publicity for next year's symposium. The first ad will appear in the Nov-Dec issue with another ad in the Feb-Mar issue. Notices also appear in InTech and ISA Events Online. Aaron reported that he was able to get the Symposium posted on EPRI's Calendar of Events this year and EPRI should be able to provide better publicity for next year's event.
- c) **Web Page** - Gary Cohee and Allan Zadiraka (POWID WEB Page Coordinators) were both present and reported:
  - c1) Gary has maintained the powersymp web site for 2008 but Zeke plans to do it for 2009. Gary said that the 2009 needs to be up and running earlier than in the past due to the co-location with Electric Power.
  - c2) Zeke and Gary have agreed to post the powerpoint presentations from the 2008 symposium on the web site after the conference.
  - c3) Dan Lee reported that ISA has established an FTP site for POWID EXCOM members to use as a repository of documents related to EXCOM business. Dan had sent out login information a couple of months ago but several members reported they had not seen it, so Dan will resend the information. Dan would like feedback on usefulness and ease of use.
  - c4) Jim Olson was not in attendance and did not report on his progress of identifying the POWID papers in the ISA paper database.
  - c5) Dan reported that Rodney has added all EXCOM member names to the POWID home page on the web.
  - c6) Dan reported that ISA has not implemented any changes to the online registration process for non-ISA members.
- d) **External Marketing** – Jason Makansi, External Marketing Coordinator, reported that he now has about 800 names in his database of non-members. He sent out 5 email blasts to this list promoting the 2008 Symposium including a call for papers, a calendar announcement, and a register now. He would like to see a show of hands at one of the general sessions for anyone who saw one of these emails from Pearl Street or Hurst Technologies. He also would like more contact from members. Leo suggested sending the POWID newsletter to non-members as a way to increase outside awareness of POWID.
- e) **ISA Marketing** - Dan reported that Crystal Strickland is the new Division Marketing Specialist. Dan is still interested in data mining the ISA membership database and the

POWID database. He will discuss this and other marketing ideas with Crystal later this week.

## 9. ISA POWID/EPRI Conferences (POWID Symposia)

- a) **Phoenix, AZ - June 8-15, 2008** - Denny Younie (General Chair) was in attendance and reported:
  - a1) Everything is set for the conference. There are nine major sponsors this year, ABB, Emerson, Honeywell, Invensys, Metso Automation, Power Magazine, Siemens, Wood Group, and Yokogawa. Salt River Project is the Utility Sponsor.
  - a2) There was some confusion about the food and beverage amount required by the hotel. The contract amount of \$40,000 did not include taxes and gratuity. This means we will have to spend \$17,000 more on food and beverage than originally planned. Denny encouraged everyone to attend the Sunday evening reception by the pool and said the food would be the best all week.
  - a3) Conference registration is currently 185 but Denny expects it to reach 215-235 before the conference is over.
  - a4) None of the training classes had enough registrants to be presented.
  - a5) The Spouse's Lounge will be in the Executive Boardroom every morning.
  - a6) Don Labbe gave a final update on the technical program. The Proceedings CD has 50 papers from this year and 8 papers from last year. There will be 70 total presentations this year including 36 on the nuclear side. Tim Hurst and Jason Makansi have really resurrected the Nuclear side of the program. Don thanked all the session developers for their hard work making this year's program a success.
- b) **Chicago (Rosemount), IL, May 12-14, 2009, Co-located with Electric Power** – Dan reported that the co-location with Electric Power was approved by the ISA C&E Global Oversight Committee at the Spring Leader's Meeting in West Palm Beach last week. The MOU was revised slightly during final negotiations so Dan asked for a motion to approve the revised MOU. Bob Hubby moved and Joe Vavrek seconded the motion, which was approved by voice vote.
  - b1) Dan said that Leo Staples and Tim McCreary had agreed to be Co-General Chairs for 2009.
  - b2) Leo reported on the conference planning meeting earlier in the day with Trade Fair Group.
  - b3) A draft of the Call for Papers has been sent to ISA for review.
  - b4) The theme of the Conference will be "The Greening of the Power Industry – Using Technology to Address Environmental Impacts and Business Opportunities."
  - b5) The sessions planned for next year will be similar to this year's.
  - b6) There will be a meeting with Trade Fair Group in August and another later to plan for the conference.
  - b7) Dan solicited Session Developers for 2009.
  - b8) ISA will have a booth on the Exhibit floor focusing on POWID.
  - b9) POWID can sell sponsorships until September 30 at which time Trade Fair Group takes over sales. Trade Fair will sell all exhibits. POWID will send a letter to all recent sponsors and exhibitors explaining the changes for 2009.
  - b10) Tim Hurst discussed the ANS and said they are forming

an I&C Division. Every 3 years they run an HMI meeting. Tim would like ISA to endorse their meeting, so that in the off years they would attend POWID. In 2009 their meeting will be held in Knoxville.

- b11) Jim Batug reviewed the Program schedule including whether the EXCOM should meet on Sunday or Monday. Jason said there were several other activities on Monday. A show of hands vote elected to keep the meeting on Sunday.
- b12) Don Andrasik said that the May date could present a problem for plant engineers from summer peaking utilities due to outages to prepare for peak season.
- c) **Baltimore, MD, May, 2010, Co-located with Electric Power** – Dan requested volunteers for General Chair and Program Chair for 2010. No one volunteered.

## 10. ISA EXPO Tech Conferences

- a) **Houston TX – October 10-14, 2008** – Gary Cohee is the POWID coordinator for the 2008 ISA EXPO in Houston. He reported that there were 5 Tracks planned and he is on the Environmental and Quality Control Track Committee. The desire is to have invited papers, but if there are not enough, then a call for papers will be issued. Gary has had trouble getting volunteers to present papers because many view the fall conference as an oil and gas conference. He received only four papers. Tom Stevenson will chair the session. Dan Lee said that ISA is planning a Division Showcase on Tuesday, Oct. 14. ISA wants Divisions to pay \$300 to pay for food and beverage at this event. He is trying to get more details from Rodney before agreeing to provide the funding. Division brochures will be distributed at the Showcase and ISA has run out of POWID brochures. We can make revisions now before ISA reprints additional brochures. The I&S and A&T Awards Luncheon will be on Tuesday. POWID will pay for member tickets, but not for spouse tickets. The ISA H&A Gala will be on Monday evening. POWID will pay for EXCOM member tickets, but not for spouse tickets.
- b) **Houston TX – 2009** – Danny Crow volunteered to be the POWID Program Coordinator for Expo 2009 in Houston.

## 11. Old Business

There was no old business.

## 12. New Business

- a) **POWID Member Survey** – The 2008 POWID Business Plan includes a Member Survey. POWID had not done a member survey since 2004. Dan asked for a volunteer to handle the survey this year. Leo said another organization focused on recent members who were active and got a different profile on what they liked about the group. No one volunteered at the meeting, but, subsequent to the meeting, Dan Andrasik volunteered to lead this effort.
- b) **Dehli India POWID Sub-section** – Cyrus discussed a request from Laura Crumpler of the ISA staff about a possible formation of a POWID Subsection in Delhi India. Laura had sent an email asking that this be discussed at this meeting. Bob Hubby mentioned that the Analysis Division had a subsection in Houston. Leo said he thought it should not be a subsection to an India section but rather a subsection to POWID for all of India. There has been other interest in the past from Brazil and Mexico. Some IEEE Societies have local sections for the society which is similar to an ISA Division. Dan will reply

to Laura. The general feeling was that this could be a good opportunity to broaden POWID's interest around the world, but more information is needed on the exact implementation details before we proceed.

## 13. Time & Date of Next Meeting

The next meeting of the Power Industry Division Executive Committee will be held on Monday October 13, 2008, from 1-5 pm at the Westin Galleria Hotel in Houston, TX.

## 14. Adjournment

Bill Sotos made a motion to adjourn and Dale Evely seconded. It was approved and the meeting was adjourned at 4:53 pm.

## ISA67 Standards Committee Status

The ISA67 standards committees met during the June 2008 ISA POWID Conference in Scottsdale. The minutes from these meetings were not yet available for this edition of the newsletter. Minutes will be published in the next edition. The recently appointed Chair of the ISA67 main committee is Bob Queenan of Scientech in Idaho Falls, Idaho.

## ISA77 Standards Committee June 2008 Meeting Minutes

Meeting: ISA Fossil Fuel Power Plant Standard Committee Meeting  
Chairman: David Roney  
Recorder: Jennifer Crumpler/David Roney  
Date/Time: June 11 from 1:00 p.m. to 3:00 p.m.  
Location: 2008 POWID Conference

Hilton Scottsdale Resort & Villas - Scottsdale, AZ

### Attendees:

Don Christopher  
Gary Cohee  
Danny Crow  
Bob Hubby  
John Kling  
Dan Lee  
Alex Lekich  
Gordon McFarland  
David Roney  
Michael Skoncey  
Tylor Slauter  
Fred Stearns  
Cyrus Taft  
Allan Zadiraka

**ISA Staff:** Jennifer Crumpler

David Roney called the meeting to order at 1:15 p.m.

### Introductions

Introductions were made by all present.

### Review and Approval of Agenda

A motion was made to approve the agenda by Bob Hubby and seconded by Dan Lee. Motion was approved.

### **Approval of Previous Meeting Minutes**

A motion was made to approve the February 2008 minutes by Dan Lee and seconded by Cyrus Taft. Motion was approved. Jennifer Crumpler to update website with revised minutes.

### **ISA77 Subcommittee Reports:**

#### **ISA77.13 Turbine Steam Bypass Systems**

Standard was delayed by SAMA reference, but is now ready for public review, then publishing.

#### **ISA77.14.01 Steam Turbine Controls**

Comments are currently under review by Jeff Schleis.

#### **ISA77.20.01 Fossil Power Plant Simulators**

Allan Zadiraka and Alex Lekich are currently recruiting new members to work on the subcommittee. Two potential members responded to the call for members, and they have names of potential members from the Power Plant Simulator Conference in Austin.

#### **TR77.40.01 Functional Symbol Diagramming**

The S77.40 Working Groups held an informal workshop on February 20 at ISA headquarters. The committee discussed issues raised by the chair on draft 9. Due to the chair's other commitments, the tasks identified during the February 20 meeting have not been completed and thus, no meeting is scheduled for June 12. If possible, the S77.40 WG will convene during the next physical meeting at the ISA EXPO conference in Houston.

#### **ISA77.41.01 Boiler Combustion Controls**

Standard is current, reaffirmation needs to begin in 2009 for publication in 2010.

#### **ISA77.42.01 Feedwater Control – Drum Type**

Standard is current, reaffirmation needs to begin in 2010 for publication in 2011.

#### **RP77.42.02 Feedwater Controls-Drum Level Measurement**

Last subcommittee meeting was held at RTP in February. Comments have been incorporated with additional changes. The document is close to sending for review. The subcommittee will try to schedule a meeting tomorrow.

#### **ISA77.43 Unit Plant Demand Development**

Standard was delayed by SAMA reference, but is now ready for public review, then publishing.

#### **ISA77.44.01 Fossil Fuel Power Plant – Steam Temperature Controls**

The SP77.44.01 (Steam Temperature Control) was completed in 2007 and is available as a publication from ISA. The SP77.44 committee is inactive until the next revision cycle beginning in 2011 for publication in 2012.

#### **ISA77.44.02 Fossil Fuel Power Plant Steam Temperature Control System — Once-Through Type**

Jennifer Crumpler to remove from the ISA website.

#### **ISA77.60.02 Alarms**

When it comes up for reaffirmation in 2010, we need to review new ISA standard committee on Alarm management (ISA18.2).

#### **ISA77.60.04 CRT Displays**

The committee completed the ballot process with no negative comments. All comments have been responded to. The next step will be public review, then publication.

#### **RP77.60.05 Task Analysis**

Standard is current, reaffirmation needs to begin by 2011.

#### **ISA77.70 – Instrument Piping Standards**

An email was sent to reactivate past members of the 77.70 subcommittee. 13 past members responded with interest in continuing to serve on the subcommittee. Jennifer Crumpler will send the list of names to Allan Zadiraka. Reaffirmation needs to begin in 2009 for publication in 2010. The 1994 version is still on the ISA website and needs to be replaced with the 2005 version by Jennifer Crumpler.

#### **TR77.70.01 - (new) Tracking and Controlling Instrument Documentation in Fossil Power Plants**

Jody Damron submitted the first draft of TR77.70.01. Based on the presentation and subcommittee recommendations, he will revise the document and use it as the basis for tomorrow's subcommittee meeting.

#### **ISA77.82.01 – SCR Instrumentation and Controls Standard**

Cyrus Taft reported that the next meeting will be held tomorrow. New material and figures have been added to the document, and the subcommittee has reviewed it once. The standard should be ready for ballot by end of year.

### **Liaison Reports:**

#### **S&P Board**

Gordon McFarland submitted report to S&P Board. He will forward S&P minutes to ISA77 committee.

#### **ISA 5.1 Subcommittee**

Dan Lee reported on November 11, 2007, Draft 6 of the S5.1 (Instrumentation Symbols and Identification) was sent to the S5.1 committee for comments. Committee comments were submitted on or before January 14, 2008. On May 6, a complete list of committee comments with the chair's (Jim Carew) responses was distributed for committee comments. Comments to the chair's responses were due by June 6, 2008. The correspondence did not report when Draft 7 would be issued for comments or ballots.

Of the twenty-five (25) comments to Draft 6 that he submitted 23 comments were accepted. He will continue to review and comment on the updated drafts.

#### **1.1 NFPA 85 Liaison Report**

The NFPA 85 2007 edition is available for purchased through NFPA. The NFPA 85 committees agreed to go on a 4 year revision cycle meaning that the next edition will be 2011. Starting in July 2008, the Fundamental (July 15-16) and HRSG (July 16-17) committees will meet to prepare committee proposals.

#### **IEC TC65 Technical Advisory Group**

Dan Lee reported the IEC TC65 (Industrial Process Measurement, Control and Automation) committees last met in Tokyo on May 23, 2008. The meeting covered various Japan's International standards activities, various IEC TC65 working group committee activities, and new committee appointments.

The WG9 (IEC/TR62140) Fossil-fired steam power station com-

mittee has been disbanded due to market interest decrease and committee inactivity. IEC reported that the existing technical reports are to be withdrawn. These include:

IEC/TR62140-1 (Limiting Control)  
IEC/TR62140-2 (Drum Level Control)  
IEC/TR62140-3 (Steam Temperature Control)

The active working group committees are:

WG1 (IEC 62419) – Control Technology – Rules for the designation of measuring instruments.  
WG12 (IEC 62424) – Specification for “Representation of process control engineering requests in P&I Diagrams and for data exchange between P&ID tools and PCE-CAE”. A final draft of this standard is out for ballot by June 16.  
WG10 (IEC 62443) – Security for industrial process measurement and control – Network and system security.

A new committee chair has been approved for IEC62421 (Device and Process Analysis).

Dan Lee reported that since the IEC TC 65 WG9 committee has folded, he does not see any need to remain as a supplementary expert on the US Tag team. After some discussion, Dan will send the 2009 ANSI Tag team membership notice to Dave Roney for possible change in supplementary expert from the ISA77 committee.

#### **IEEE**

Cyrus Taft has no current report.

The Power Engineering Society has changed its name to the Power and Energy Society.

#### **ASME**

Cyrus Taft has no current report.

#### **ISA99 Manufacturing & Control System Security**

No update.

#### **ISA TR84.00.05**

Dan Lee sent an email on behalf of Power Division to Angela and Dennis agreeing to latest revisions. Document has not gone out for public review. We will need to keep in close touch with the work of this subcommittee. Jerry Gilman is best positioned to be the liaison. David Roney will call Jerry Gilman to see if he will be the liaison.

#### **ISA101 - Human Machine Interface**

There is a large volume of correspondence regarding committee work. The work is ongoing and the committee appears to be recreating how to design HMI from the ground up.

ISA100 is very busy with the latest topic on wireless HART standard (specification). The committee is trying to decide how to deal with this specification. A new subcommittee was created under ISA100 to decide how to make the two standards work together. To date, ISA100 has produced one draft.

#### **Old Business**

- a) ISA99 Liaison position (David Roney) – No action.
- b) Sub-committee web page updates (Jennifer Crumpler) – Jennifer will update information as she receives it from subcommittee and committee chairs.
- c) ISA77 Committee membership listing (Jennifer Crumpler) – All members were asked to update their membership information. New ANSI forms require a balance of General, Producer, and User members. This balance must be completed to receive ANSI accreditation.
- d) ISA77 Web page folder structure (David Roney) – Jennifer will create a suggested folder structure and submit it to the committee co-chairs for feedback.
- e) Recruitment of new members (Dan Lee) – Dan reported that a call for subcommittee members for ISA77.20.01, ISA77.70, and ISA-TR77.77.01 was posted in the InTech magazine, the POWID list server, the POWID newsletter and the ISA Standards web. Jennifer stated that two individual responded to the call for subcommittee members.

#### **New Business**

- a) ISA77 CD Compilation – Dan Lee suggested we appoint someone to review the ISA Fossil Fuel CD compilation. Fred Stearns was nominated and accepted. Jennifer will send the 2008 list of standards and user resources to Fred.
- b) ISA77 Chair Nominations – Dan Lee and Bob Hubby volunteered to be co-chairs of the ISA77 committee.
- c) Proposed Standard on Power Plant Automated Startup – A proposal was made for a new standard from Bechtel. A motion was made to start the committee, Dan Lee seconded, and Bob Hubby approved.

#### **Next Meeting**

We will meet next on Tuesday, October 14, 2008 during ISA EXPO.

#### **Adjournment**

The meeting was adjourned at 3:00 p.m.