The ISA Honors and Awards Gala at the Fall Leaders Meeting is always an enjoyable event and the 2009 edition in Houston was no exception. The evening began with a nice reception outside the ballroom of the Westin Galleria with light hors d’oeuvres and beverages. Honorees and many others were outfitted in formal evening wear which reinforced the significance of the event.

The Gala begins with the honorees entering the ballroom in a procession, after which half take their seats while the other half prepare to receive their awards. Former ISA President Steve Huffman served as the emcee for the night and showed his good sense of humor. After the first group of honorees received their awards, an excellent dinner was served. The filet mignon was perfectly cooked and the mashed potatoes and gravy were delicious. A large chocolate dessert capped off the meal. It may have been the best banquet dinner I have ever had.

After dinner the second group of honorees was presented their awards. This was followed by lively conversation before the Gala concluded. An after-dinner party was available for those who did not get enough celebrating at the Gala.

The Power Industry Division received the Outstanding Division Award, which was accepted by Division Director Cyrus Taft. This marked the tenth consecutive year POWID has received this award. Congratulations to the Board and Members of POWID for continuing our tradition of excellent service to the industry and to ISA.

Three POWID members were also honored by being elected to the Fellow membership grade. The first was Edson da Costa Bortoni, a professor at Itajubá Federal University in Brazil. His citation reads, “In recognition of educational and technical contributions used on several energy management processes.”

John Gay, with Power Max Consulting in Lanham, Maryland, was also elected to Fellow grade. His citation reads, “In recognition of the development and implementation of control algorithms used in fossil fuel power plants.”

Leo Staples, with Oklahoma Gas & Electric in Oklahoma City, Oklahoma, and POWID Board Member, was also elected to the Fellow Grade. His citation reads, “In recognition of contributions to the practical application of automation technology in fossil fuel power plants.”

It is wonderful that such deserving POWID members are recognized by their peers for their lasting contributions to the industry and the Society. Many thanks to Bob Hubby and Mike Skoncey, POWID’s Honors and Awards Coordinator, for their work identifying and nominating POWID Members deserving of Society awards. If you know someone you feel deserves an award next year, please contact Mike at mskoncey@firstenergycorp.com. Hope to see you at next year’s dinner.
Director’s Message
By Cyrus Taft

As I write this in mid-October, it is raining again in east Tennessee. So far this year, we are about 10” over normal in rainfall. The lakes are all full or overfull and it has been great for growing grass. Last year, our rainfall was about normal and the year before we were about 15” below normal. This makes me think about the natural variability of the weather and how much it can change from year to year. It seems that many people today think that anytime the weather deviates from its historical norms it is unusual when in fact just the opposite is probably closer to the truth.

In early October, ISA held its Fall Leaders Meeting and its annual ISA EXPO event in Houston. The highlight of the Leaders Meeting is the Honors and Awards Gala where ISA recognizes Members, Sections, and Divisions for their contributions to the Automation industry and to the Society. Three POWID members were honored by being elevated to the Fellow membership grade and the Power Industry Division received the Outstanding Division Award for the 10th consecutive year in the Industries and Sciences Department. POWID’s new Fellows are Edson da Costa Bortoni, John Gay, and Leo Staples. Congratulations to all! POWID also received the Division Communication Award at the Joint A&T and I&S Department Awards Luncheon.

Work on our 53rd Annual POWID Symposium is well underway now and it promises to be an excellent event. General Chair Denny Younie, along with Program Co-Chairs Tom Stevenson and Tim McCreany, are putting together a strong technical conference along with vendor exhibits at a wonderful venue, the JW Marriott Hotel in Summerlin, Nevada. This location was selected for our symposium because it was an excellent facility at a very reasonable rate and the ISA Spring Leaders Meeting will be held there a couple of days after our Symposium. I realize that selecting a location with Las Vegas nearby may raise concerns among some attendees, but I hope you will consider POWID’s 53-year track record of producing a serious technical symposium and make an extra effort to attend our event. I promise it will be worth the effort.

POWID membership has increased significantly in the past year, partly due to ISA’s free Division membership policy that went into effect at the beginning of this year. For those of you who are new to POWID, welcome. If you would like to become more involved in the Division, there are many opportunities for doing so, including authoring a technical paper for our symposium, attending our symposium, serving on one of our standards committees, or participating in our new discussion group, POWIDTECH, on the ISA list serve system. POWIDTECH is our new email list for discussion of technical issues related to automation in the power generation industry. There is an article elsewhere in this newsletter with details about POWID’s email lists and how to enroll and participate. I hope you will take the time to sign up and post some questions.

As I look out my office window, I see that it has finally stopped raining, at least for the time being. Maybe I will be able to get outside this afternoon and catch up on some yard work. The leaves are starting to fall.

Regards,
Cyrus Taft
POWID Director

Power Industry Division Officers

DIRECTOR
Cyrus Taft
Taft Engineering, Inc.
136 Old Rockwood Hwy
Harriman, TN 37748
(865) 850-4460
cwtaft@taftengineering.com

DIRECTOR-ELECT
Don Labbe
Invensys Process Systems
33 Commercial St., C41-2B
Foxboro, MA 02035-2099
(508) 549-6554
donald.labbe@ips.invensys.com

DIRECTOR-ELECT
Timm McCmd
RTP Corporation
33 Commercial St., C41-2B
Foxboro, MA 02035-2099
(508) 549-6554
timmccmd@aol.com

DIRECTOR
Rodney Jones
ISA
P.O. Box 12277
Research Triangle Park, NC 27709
(919) 990-9418
rjones@isa.org

PAST DIRECTOR
Daniel Lee
ABB, Inc.
29801 Euclid Avenue
Wickliffe, OH 44092
(440) 585-6063
dan.lee@us.abb.com

NEWSLETTER EDITOR
Dale Evely
Southern Company
P.O. Box 2625 / Bin B463
Birmingham, AL 35202
(205) 992-6649
dpevely@southernco.com

2010 POWID Symposium Committee

GENERAL CHAIR
Denny Younie
Case M&W
(970) 443-4098
dyounie@casemi.com
www.casemi.com

FOSSIL PROGRAM
CO-CHAIRMAN
Tom Stevenson
Constellation Energy
1005 Brandon Shores Rd.
Baltimore, MD 21226
(410) 787-5260
thomas.w.stevenson@constellation.com

NUCLEAR PROGRAM
CO-CHAIRMAN
Tim McCreany
RTP Corporation
timmccmd@aol.com

EDITORIAL REVIEW
Tim Hurst
Hurst Technologies, Inc.
P.O. Box 1756
Angleton, TX 77516
(409) 849-5068
timh@hursttech.com

HONORS & AWARDS CHAIR
Mike Skoncey
First Energy Generation Corp.
W.H. Sammis Plant
PO Box 176, Route 7
Stratton, OH 43961
(740) 537-6324
mskoncey@firstenergycorp.com

PUBLICITY
Joe Vavrek
Sargent & Lundy
55 E. Monroe St. 25W53
Chicago, IL 60603
(312) 269-2270
joseph.m.vavrek@sargentlundy.com

ISA ADMINISTRATOR,
TECHNICAL DIVISIONS/ SYMPOSIA
Rodney Jones
ISA
P.O. Box 12277
Research Triangle Park, NC 27709
(919) 990-9418
rjones@isa.org

Upcoming ISA and POWID International Conferences

53rd Annual ISA POWID Symposium
J.W. Marriott, Summerlin, Nevada (near Las Vegas),
7–10 June 2010

ISA Automation Week
Technology and Solutions Event
Westin Galleria, Houston, Texas, 4–7 October 2010
ISA EXPO 2009 Attracts Thousands, Features Dozens of Special Events

ISA EXPO 2009, held at the Reliant Center in Houston, Texas, USA, on 6-8 October, attracted 8,500 attendees and included a 61,500 square foot exhibition showcasing 364 companies. The ISA Fall Training Institute ran 13 courses and trained 113 students at the event.

ISA EXPO 2009 featured seven co-locating organizations, including ARC Advisory Group, Industry2Grid (I2G), MCAA, OpenO&M, Microsoft and the Microsoft Manufacturing User Group (MSMUG), Houston SmartPlant Instrumentation (LTUF), and WBF.

The co-location of these organizations' events with the ISA Fall Training Institute, Industry Standards Forum, six technical conferences, and the exhibition brought an abundance of technical content, professional development, and networking opportunities to attendees. New technologies were a focus of both conference sessions and presentations on the exhibit floor, with attendees anxious to see the latest trends in the field. “I’m always looking for new technology. That’s what I’m here to see. I’m a control systems engineer, and anything that can make our processes work better, whether that’s software, wireless, or fieldbus, I want to have a look,” said James Pitts of Goodyear Tire and Rubber in Beaumont, Texas.

The ISA EXPO 2009 technical conference featured six Exchange Conference Tracks centered on key issues facing instrumentation, automation, and control professionals, including safety, security, process automation and control, energy and environment, wireless and networking, and enterprise integration. The conference program also included several events open to all attendees, including keynote addresses from key leaders. John Hofmeister, CEO and Founder of Citizens for Affordable Energy, and retired President of Shell Oil Company presented the opening keynote address on Tuesday, 6 October. Hofmeister's presentation, entitled “Energy Security and Affordability in the 21st Century,” tackled these two critical concerns for industrial operations.

Wednesday’s keynote address, “Securing the Nation’s Industrial Control Systems Infrastructure,” was delivered by Marty Edwards, U.S. Department of Homeland Security Program Manager of the Control Systems Security Program (CSSP). Edward’s address discussed the current threat landscape, common vulnerabilities and security issues facing critical infrastructure control systems, and mitigation strategies being developed to address these challenges.

Lisa Long, Safety Engineer with the U.S. Department of Labor-OSHA (U.S. DOL-OSHA), presented the final keynote address on 8 October, titled, “Overview and Findings from OSHA’s Refinery and Chemical National Emphasis Programs.” Long’s address described the Petroleum Refinery National Emphasis Program’s inspection protocol and procedures, and reviewed preliminary findings from the program, including data on the most frequently cited paragraphs of the process safety management standards and example citation language.

ISA EXPO 2009 featured seven co-locating organizations, including ARC Advisory Group, Industry2Grid (I2G), MCAA, OpenO&M, Microsoft and the Microsoft Manufacturing User Group (MSMUG), Houston SmartPlant Instrumentation (LTUF), and WBF.

The second annual iAU2M8 event, designed for middle and high school students, attracted over 600 students from the Houston area. Students had a chance to walk through the ISA EXPO exhibit, see automation technology in action through an interactive demonstration area, and learn about career opportunities from real-world automation professionals. Sponsored by Shell, the event attracted several participating organizations and schools, including Citizens for Affordable Energy, FIRST Robotics, Houston Community College, the Houston Museum of Natural Science, Lee College, the Offshore Energy Center, Texas State Technical College, and the University of Houston.

The students attended a keynote address entitled “Deadliest Innovation,” given by Greg Crouch, Embedded Systems Business Development Director at National Instruments. Crouch is active in National Instrument’s academic STEM (Science Technology Engineering and Math) program efforts, helping to expand excitement of engineering among youth.

During ISA EXPO 2009, ISA announced its plans for a new event in 2010. ISA Automation Week 2010 will be held 4-7 October 2010 at the Westin Galleria Complex in Houston, Texas, USA. ISA Automation Week is a new, knowledge-focused event that will feature educational and applications-based technical conference sessions delivered by subject matter experts. Discrete and process automation professionals will have a chance to learn techniques and solutions for creating more efficient, productive, and economical manufacturing processes. ISA training courses and standards meetings will also be held concurrently, making ISA Automation Week a one-stop shop for automation and control knowledge and networking opportunities.

ISA Automation Week will attract management, engineering, production, IT, and R&D professionals responsible for automation, control systems, plant-wide communications/networks, plant operations and maintenance, and systems integration in continuous and batch manufacturing environments. For more information about ISA Automation Week 2010, visit www.isa.org or call +1 919-549-8411.

Thank You To Our 2009 Sponsors of the 52nd ISA POWID Symposium in Chicago, IL

EMERSON
Honeywell
Power
ABB
Siemens
CoreTrace
The International Society of Automation recently unveiled plans for its new event, ISA Automation Week—Technology and Solutions Event, to be held 4–7 October 2010 at the Westin Galleria Complex in Houston, Texas, USA.

ISA Automation Week will feature intensive educational and applications-based technical conference sessions delivered by subject matter experts. Discrete and process automation professionals will have a chance to learn techniques and solutions for creating more efficient, productive, and economical manufacturing processes. ISA training courses and standards meetings will also be held concurrently, making ISA Automation Week a one-stop shop for automation and control knowledge and networking opportunities.

The ISA Automation Week conference program will focus on the latest industry developments and standards in key manufacturing disciplines like automation, energy and power, green manufacturing, instrumentation and process control, safety and security, systems and enterprise integration, and wireless, networking, and industrial communications. Conference sessions will include both theory-based and applications-based presentations to appeal to a wide variety of automation and control professionals. The event will feature a focused exhibition area for a limited number of companies to showcase products and services during scheduled networking and exhibit sessions. Currently, 65% of the space available for the exhibit has been sold.

"ISA Automation Week is organized around a different model than ISA has used in the past. The new model focuses on the conference as the center of the event, because we believe that automation and control professionals at every level seek knowledge above all else. By centering the event on the conference, we can help exhibitors create more successful interactions with serious and focused attendees at all levels," said ISA Executive Director and CEO Patrick Gouhin. "ISA is all about knowledge. The conference focus of this event will help us deliver a top-notch technical curriculum to our attendees, and it will benefit our partners and exhibitors as well," said ISA Automation Week Program Committee co-chair and 2009 ISA President Jerry Cockrell of Indiana State University. "By drawing on our connections to the academic community to develop presentations in addition to our strong applications-based technical network, we can create a well-rounded program that attracts all levels of automation professionals."

The increased focus on the conference aspect of the event is a positive development for automation suppliers as well, said 2010 ISA President Nelson Ninin, who is the President of Yokogawa America Do Sul SA. "We believe that an educated prospect is a qualified prospect. Our attendees will spend three intensive days learning about the latest technologies and solutions in the world of automation and control, and they'll be ready to see the products that our partner companies have to offer in those areas. This is a great opportunity for a company to showcase its products as solutions to the technical challenges and developments presented in the conference sessions."

An Exhibitor Advisory Committee and other feedback mechanisms are being created to solicit input at various stages of the development process for the 2010 event and events in future years. Companies or individuals interested in learning more, or providing input toward the development of ISA Automation Week, should contact ISA at feedback@isa.org, or call +1 (919) 549-8411.

---

**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.

<table>
<thead>
<tr>
<th>Newsletter Location</th>
<th>Ad Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside Front Cover</td>
<td>Full Page</td>
<td>$500.00</td>
</tr>
<tr>
<td>Back Cover</td>
<td>Half Page</td>
<td>$450.00</td>
</tr>
<tr>
<td>Inside Back Cover</td>
<td>Full Page</td>
<td>$500.00</td>
</tr>
<tr>
<td>Inside Page</td>
<td>Full Page</td>
<td>$375.00</td>
</tr>
<tr>
<td>Inside Page</td>
<td>Half Page</td>
<td>$250.00</td>
</tr>
<tr>
<td>Inside page</td>
<td>Quarter Page</td>
<td>$200.00</td>
</tr>
</tbody>
</table>

Advertisement rates also include a link to your advertisement being provided on the POWID website. For further information please view the advertisement order form, which can be found on the POWID website at: [http://www.isa.org/~powid/newsletters/POWIDNLAdsLetterandOrderForm.doc](http://www.isa.org/~powid/newsletters/POWIDNLAdsLetterandOrderForm.doc)
The following systems are immediately available due to conversion of a 100MW CC gas plant:

**Water conditioning**: Demineralizer, Regeneration and Neutralization Systems; Glegg Water Conditioning, installed 1992–3

**Aqueous Ammonia Dilution Air Systems**: 2 skids; Foster Wheeler Energy Corp., installed 1993


These are complete operating systems with all valves, instrumentation and controls as applicable. Equipment in good operating condition when recently removed from service. Located NE US. Pictures and detailed equipment list available upon request from Matt Gedney, Unicoi Energy Services, 678-990-1051 or unicoi@mindspring.com.

---

**UES**

**USED EQUIPMENT FOR SALE**

The following systems are immediately available due to conversion of a 100MW CC gas plant:

**Water conditioning**: Demineralizer, Regeneration and Neutralization Systems; Glegg Water Conditioning, installed 1992–3

**Aqueous Ammonia Dilution Air Systems**: 2 skids; Foster Wheeler Energy Corp., installed 1993


These are complete operating systems with all valves, instrumentation and controls as applicable. Equipment in good operating condition when recently removed from service. Located NE US. Pictures and detailed equipment list available upon request from Matt Gedney, Unicoi Energy Services, 678-990-1051 or unicoi@mindspring.com.

---

**Past POWID Achievement Award Recipients are:**

- 2009 Dale P. Evely, Southern Company Generation
- 2008 Allan “Zeke” Zadiraka, Babcock & Wilcox Company
- 2007 Dr. Robert Smoak, Tennessee Tech
- 2006 Donald Labbe, Invensys
- 2005 Jeffery Williams, Emerson Process Management
- 2004 Donald Christopher, Reliant Energy
- 2003 Frank Ryan, Leeds & Northrup Company
- 2002 James Batug, Pennsylvania Power & Light
- 2001 Leonard Gruber, Westinghouse Electric Company
- 2000 Ronald W. Hicks, Black & Veatch
- 1999 Ronald H. Johnson, Sargent & Lundy Engineers
- 1998 Cyrus W. Taft, Consultant
- 1997 Robert W. Hill, Amtech Services
- 1996 Robert N. Hubby, Max Controls Systems
- 1995 Edwin M. Good, Florida Power Corporation
- 1993 Harold S. Hopkins, Utility Products of Arizona
- 1992 Joseph M. Weiss, Electric Power Research Institute
- 1991 Richard Hottenstine, Gilbert/Commonwealth
- 1990 Paul Kenney, Fornay
- 1989 Gordon R. McFarland, Combustion Engineering
- 1988 Peter J. Clelland, Philadelphia Electric Company
- 1987 Q. B. Chou, Ontario Hydro
- 1986 Robert N. Buschell, Ebasco Services Incorporated
- 1985 John E. Coles, New Orleans Public Services Company
- 1984 Robert L. Criswell, Foster Wheeler Energy Corporation
- 1983 Porter J. Womeldorf, Illinois Power Company
- 1981 Richard H. Morse, Leeds & Northrup Company
- 1979 Samuel G. Dukelow, Bailey Controls Company
- 1978 Oliver W. Durrant, Babcock & Wilcox Company
- 1977 Alfred Watson, Westinghouse Electric Corporation

**Past POWID Service Award Recipients are:**

- 2009 Stephen E. “Skip” Wells, Southern Company Generation
- 2008 Jim Redmond, Southern California Edison (retired)
- 2007 Dan Antonellis, Invensys
- 2006 Roger Hull, Emerson Power & Water Solutions
- 2005 Wayne Holland, Southern Company Generation
- 2004 Dale P. Evely, Southern Company Generation
- 2003 Dan Lee, ABB Bailey Controls
- 2002 Gary Cohee, Applied Control Systems
- 2001 Rudy Neustadter, Raytheon Nuclear Group (retired)
- 2001 Harold Sternberg, ABB Bailey Controls

Don Christopher, the POWID Historian, is researching the names of the POWID Service Award recipients prior to 2001.

---

**Past Robert N. Hubby Scholarship Recipients are:**

- 2008 Sharanya Jaganathan
- 2006 Brandon Cavello, Pennsylvania State University

---

**Paid Advertisement**
Call for Papers

53rd Annual ISA POWID Symposium
Advances in Power Generation Industry Automation
7–10 June 2010, Summerlin, Nevada

The 53rd Annual ISA POWID Symposium will take place 7–10 June 2010. We will review all submissions and publish accepted papers in the Conference Proceedings via CD. The proceedings will be available later to the general ISA membership through the ISA POWID website.

Some of the topical areas for this conference are listed below. Focus on some aspect of the theme, “Advances in Power Generation Industry Automation”, is encouraged, and application to some aspect of the power industry is necessary.

Power Plant Control System Advances
• Power Plant control system new & retrofit projects
• Novel control strategies, calibration, and tuning aids
• Integration of disparate control systems
• Optimization systems; continuous and discrete
• Advances in process measurements, calibration, and maintenance

Productivity Technologies
• Integration of automation 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

Smart Grid Initiatives
• Alternative/renewable energy
• Alternative generation impacts on conventional plants

Power Plant Safety & Training
• Burner management and safety systems
• Hazardous material monitoring and control
• Electrical safety
• Operator/technician training

Control and Information Systems Security
• Regulatory requirements—NERC 1200, 1300, CIP-002-01
• Cyber Security Standard
• Application of security standards—ISA SP99, NIST 800 and others
• Vendor adoption/rejection of standards

Other Power Industry Related Issues
• Automation life cycle
• Automation for environmentally friendly power
• Aging workforce

Important Due Dates:
1/15 Abstract due to ISA
3/1 Draft paper due to ISA
5/5 Final paper (Word document only), rights and responsibilities form submission
5/16 Draft presentation submission
5/30 Final presentation submission

If you have any questions, please contact:
Denny Younie, Symposium Chair, DYounie@casemarine.com;
Tom Stevenson, Co-program Chair, thomas.w.stevenson@constellation.com; Tim McCreary, Co-program Chair, timmccmd@aol.com; or Rodney Jones, ISA Staff rjones@isa.org.

Visit www.isa.org/powersymp for complete details.
ISA Division Members: Top Three Opportunities to Contribute to ISA’s Success in 2010

Like most companies and organizations, ISA has faced economic challenges in the recent months. Our 2009 President, Jerry Cockrell, and our 2010 President, Nelson Ninin, have worked with the Society’s leaders to create a more sustainable business model for ISA’s long term success. I have been part of this process as the 2010 President-elect Secretary, and I am looking forward to all of the opportunities that these changes will bring to our Society.

ISA has made great strides in 2009 with our leadership role in the development of industry critical standards like ISA99 and ISA100; in our support of the development of the Automation Competency model; and in our outreach to young automation professionals through workforce development initiatives such as YAPFEST, IAU2M8.09, and the Automation Avengers campaign.

As Division Members, each of us has a unique role in ISA’s success. We are the technical arm of the Society, and we have much to offer in that regard. In fact, many of the changes we’re making call for an increased focus on technical content, and Division Members will be critical resources in this effort.

During my twenty years of membership I have been involved in many worthwhile activities. From a Society-wide perspective, I think there are several key roles for Division Members to play in our development. Here are my “top three” ways that you can contribute to the success of your Division.

1. Help ISA enhance the development and delivery of technical information. In the new Automation Week model, the technical conference is the center of the event and will be a great opportunity for our Division Members to present papers and presentations to a broad audience. In addition to submitting an abstract for the conference, you might also consider becoming a part of the conference programming committee. 2009 Industries & Sciences Department Vice President and Former Division Director Joe Provenzano (Water and Wastewater Division) and 2009 ISA President Jerry Cockrell will serve as co-chairs of the committee.

2. Do your part to promote the profession and tell the great stories that are out there. ISA organizes all kinds of events for young professionals and students, including YAPFEST and IAU2M8. Learn more about these events online and volunteer to help develop them through our workforce development committee, led by David Adler (davidadler@comcast.net).

3. Help spread the word about ISA’s education and training opportunities. ISA’s certification programs, regional courses, distance learning programs, and onsite training classes increase the competence of automation professionals around the world. We need your help to market these great programs to the companies and individuals that you work with everyday, and we need your input to help us develop the next generation of training courses. We look to you, the professionals in the field, to help us determine the best subjects and topics to develop training courses around, and we want to hear your thoughts. Download a training catalog online at www.isa.org/training to learn more about these programs.

The common theme among these three opportunities is for us as Division Members to bring all of our collective value to the table to move ISA forward. We are a tremendous resource and strength within the Society, and I want to help each and every Division Member find the best way to make a difference within ISA. I look forward to continuing this dialogue in the months and years to come.

H. Leo Staples, Jr.
Power Industry Division and Test Measurement Division Member
POWID Executive Committee Member & 2009 POWID Symposium General Chair
2010 ISA President-elect Secretary
Painting a Landscape to Achieve True Digital Asset Intelligence
By Jason Makansi, Pearl Street Inc.
POWID Executive Committee Member

One of the most critical challenges facing the power industry involves the convergence of (1) managing thinly staffed facilities; (2) retaining knowledge in the face of a more highly mobile workforce; (3) integrating the myriad plant software tools into a coherent whole; (4) applying continuing updates, revisions, patches, and new features in distributed and digital control systems; and (5) maintaining a healthy relationship between the plant and corporate work environments. Regarding the last point, corporate is often seen as the purview of the “IT guys” while the plant environment is where the engineers rule (or should). New requirements for cyber-security and potential advantages afforded by wireless communications greatly compound this challenge and cloud the point of convergence of these issues.

This convergence can be described in many ways. Recently, this convergence on the T&D side of the house has come under the umbrella of “Smart Grid.” For nuclear plants, the challenge is embodied in converting the industry to digital I&C systems and applying the latest digital automation system to the coming fleet of new nuclear units. However, regardless of where you are on the electricity production and delivery value chain, we prefer to think of it as “digital asset intelligence.” To achieve this elusive and admittedly often amorphous goal, you need a strategy. Perhaps the greatest reason is that engineers need to communicate about digital technologies to corporate management and executives.

In an attempt to articulate such a strategy, Pearl Street Inc and KurMeta Inc developed an executive white paper last year entitled, “Brains & Brawn: Integrating Digital and Human Asset Intelligence into Comprehensive Power Plant Knowledge Management.” (The white paper is available upon request—email jmakansi@pearlstreetinc.com). A presentation highlighting the concepts from this white paper was made at the 2009 Electric Power Conference in Chicago, where the ISA Power Industry Conference (POWID) was co-located. An article recapping the session in which this paper was presented is forthcoming in Power magazine at the end of the year.

Coincidentally, a presentation at the adjacent POWID conference echoed several of the points introduced by Pearl Street and KurMeta. James H. Flowers, Southern Nuclear Operating Company, Birmingham, AL, in his paper and presentation, “Non-technical Issues Impacting Digital Upgrades,” referred to the development of a hybrid digital expert who is trained in software and communications as well as mechanical and electrical theory. Many I&C and digital systems engineers have noted, like Flowers does in his paper, that few managers who make funding decisions have a strong background in I&C, much less digital controls.

Others in the community have been out in front on these issues as well. Tim Hurst, President, Hurst Technologies, has been advocating the development and execution of digital strategies at nuclear plants for many years. His presentation at the recently concluded INPO Digital Upgrade Working Meeting noted that executives at nuclear owner-operator companies need to be shown a clear assessment of the economic life cycle risks imposed by obsolete control systems. Real change, instead of piecemeal band-aids, requires a coherent strategy and management commitment over time.

The ISA Power Industry Symposium has a wonderful opportunity to “get out in front” of these issues by appropriately shaping the session descriptions and content. We need to program our conference so that it appeals to the managers, executives, and corporate IT professionals who are not familiar with I&C and digital systems. Otherwise, we are just singing to the choir.

POWID Seeks new Executive Committee Members

The Executive Committee (Excom) of the Power Industry Division is comprised of 32 members representing users, suppliers, engineers and academia. There are currently two openings on the Excom which need to be filled. The Excom is particularly interested in receiving nominations from users (those who work for power producers), from international members and from members under the age of 35 years. Membership on POWID’s Excom is a working position and all Excom members are expected to contribute to the operation of the Division. The Excom’s mission is to provide a means for information exchange among engineers, scientists, technicians, and management involved in the use of automation within the power industry. There are a variety of ways to serve the Division including developing a session for the POWID Symposium or the ISA Fall Automation Week event, serving on standards committees, or serving in one of our standing committees/coordinator positions. If you are interested in serving on the POWID Excom, please send a brief resume of your activities related to the power industry to Dan Lee, Nominations Chair, at dan.lee@us.abb.com. New Members must be approved by a majority vote of the Excom. Our next Excom meeting will be on 23 February 2010 at ISA Headquarters in Research Triangle Park, NC.

Our newest Excom member is Tim McCrea, Vice President of System Solutions for RTP Corporation. Tim is off to a fast start on the Excom, serving as a Program Co-Chair for Nuclear at our 2010 Symposium. Congratulations, Tim, on your election to the Excom—and thanks for your work on the 2010 Symposium.
2009 POWID Symposium General Chair’s Report
By Leo Staples
2009 POWID Symposium General Chair

The Power Industry Division held its 52nd Annual ISA POWID Symposium last May at the Rosemount Convention Center near Chicago, Illinois. For the first time ever, we co-located our event with another—the Electric Power (EP) Conference, which is organized by the TradeFair Group. We were pleased to be able to continue the Power Industry Division’s longstanding tradition of a strong technical program and ample opportunities for networking with peers in the industry.

I want to take a moment to thank our Program Chairman, Jim Batug. Jim and the technical conference committee put together a program that included more than 50 high-quality papers and presentations that were organized into 13 sessions—covering a period of two and a half days. Jim’s leadership allowed me, as Chair, to focus on the logistical issues and unforeseen circumstances that can arise during a collaborative effort of this kind. Thank you Mr. Batug! I also want to recognize the efforts of EP and TradeFair staff members who went out-of-their-way to make me feel like I was part of their team.

We realize that co-locating the POWID Symposium with the EP Conference proved to be an interesting undertaking. We learned that there certainly can be some challenges with co-locating our long-standing symposium with a massive event like the Electric Power Conference. And, I’m proud to say, we also found out that we were still able to successfully deliver a high-quality symposium to the POWID Members who depend on our educational events to give them technical information that can help them in their jobs. We believe the heart of any symposium is the technical program, the Program Chair, the speakers, and the volunteers who submit content for presentation.

So, what were some of the challenges we encountered co-locating with the EP Conference?
- confusion on registration—EP signage far overshadowed POWID signage
- failure to sell sufficient sponsorships
- conflicts with the EP exhibit floor being open during our technical sessions, which pulled attendees away from our sessions
- poor POWID booth location, in the back of the exhibit hall

In reality, we were late with our decision to do the co-location, which may be a contributing factor for some of these problems.

Looking ahead to 2010:
I’m pleased to announce that Denny Younie is Symposium Chair for the 53rd ISA POWID Symposium, which is scheduled for 7–11 June in Summerlin, Nevada. The Power Industry Division looks forward to an exciting event next year with a strong technical program and opportunities for power industries professionals to network with their peers.
POWID Establishes New Technical Discussion Group

One of the first big uses of the Internet was discussion groups, which allowed individuals from around the world to share information on any of thousands of topics. Discussion groups are still very popular, and ISA has had its own list system for many years. The Power Industry Division has had a list named POWID for years, but it is set up as a broadcast list and not as a true discussion list. Only the list owners can post messages to the list. It is used to send announcements about POWID activities and upcoming events to our members.

Recently, POWID established a new list named POWIDTECH, which is set up as a true discussion list and anyone who joins can post messages. The POWIDTECH list is intended to be a technical forum for topics related to power plant instrumentation and control systems.

ISA has replaced the old Lyris software with new list serve software called, appropriately enough, ListServ. If you were a member of any Lyris lists at the time of the changeover, you should have received some emails about the change. If you ignored all the emails you may have been dropped from your list(s). To subscribe to the POWIDTECH list you must login to the ListServ server using the email address for your isa.org login. You must create a new password for your ListServ account. The list serve page can be reached from the ISA home page by selecting the E-mail Lists item from the left navigation pane or at this link, http://www.isa-online.org/cgi-bin/wa.exe?INDEX. You should see a listing of all the ISA e-mail lists and a Log In link and a Get Password link. Once you are logged in, you can subscribe to the POWIDTECH list by selecting it from the ListServ list and clicking on the Join link. You will receive an email to confirm that you want to join the list. Once you are a member of the list, you can click on the “?” icon to get to the help system. There you can download PDF help files that will explain all of the many options available to you as a user. To get started, try this link: http://www.isa.org/Content/NavigationMenu/General_Information/Membership2/My_Email_Services1/ListServ_instructions_for_users.htm

To post a message to the list, you can click on the Post link or just send an email to: POWIDTECH@www.isa-online.org.

This POWIDTECH list will not be moderated initially, but if there are problems with spam or inappropriate posts we will change it to a moderated list. The list is not to be used for commercial purposes.

If you have any questions about the POWIDTECH list, or have any problems using it, feel free to contact Cyrus Taft at cwttaf@taftengineering.com.

New and Returning POWID Members

May 2009 through September 2009

The Power Industry Division of ISA continues to grow. 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 standards, working closely with two ISA standards committees—ISA67, Nuclear Power Plant Standards, and ISA77, Fossil Power Plant Standards. The Division also conducts technical training, and sponsors awards for power plants and individuals who advance 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 website, 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 for May–September 2009

Mr. Syed M R Ali
I & C Engineer
ExxonMobil Development
USA

Mr. Maurizio Ammannati
Instrumentation Project Engineer
Tecnimont SpA
Italy

Dr. Michael Anderson
Engineering Manager
USA

Mr. Kayode E. Ardwosafe
Project Engineer
Gil Automation and Control Services Ltd
Nigeria

João Paulo Artuzzi
Engenheiro DE
Brazil

Ms. Laura Baietta
Instrumentation Project Leader
Tecnimont SpA
Italy

Ms. Deanne A. Baker
I & C Engineer
URS Washington Div
USA

Mr. Shankar Balakrishnan
I & C Technical Advisor

Mr. Jose A. Banos, CCST
Sr. Instrumentation Technician
USA

Mr. Danny Lee Barker
Combustion Turbine Technician
USA

Mr. Craig Battles
Lead Electrical Engineer
HT/Dcr Engineering Inc
USA

Mr. R. K. Beaty
Project Engineer
USA

Mr. Douglas C. Beck
President
Harold Beck & Sons
USA

Mr. Badarinarth Bellaumkar
Senior Analyst
ARC Advisory Group Bangalore
India

Mr. John Aloysius Bergin, III
Engineer I–Controls

Mr. John M. Bever
Project Manager
USA

Mr. Pankaj Bhatt
Integration Application Eng
Schweitzer Engineering Laboratory
USA

Mr. Giovanni Bico
Controls Engineer
Tecnimont SpA
Italy

Mr. Kurt B. Boegli
Chief Standards Engineer
Phoenix Contact Inc
USA

Mr. James R. Bostwick, CCST
Operation/Maintenance Tech 5
USA

Mr. Michael Briley
I&E Construction Manager

Mr. Michael B. Brown
Senior Consultant
USA

Mr. Allen J. Bulot
Sr Project Engineer
USA
Mr. Chris Moritz  
Manager  
Pyromation Inc  
USA

Mr. Alejandro Del Cueto Moro  
Ingeniero  

Mr. Michel Muller  
Product Management PCS 7  
France

Mr. Tamer E. Nassar, P.E.  
Project Engineer  
AMEC Paragon  
USA

Mr. Don Bruce Nelson  
Staff Engineer  
Unified Engineering Inc  
USA

Mr. Marty K. Nemmers  
Technical; Professional Electrical  
BE & K Inc  
USA

Mr. Gregory J. Nolan  
Project Engineer  
AMEC Paragon  
USA

Mr. Jack W. Powers, CCST  
Senior Heating Technician  
WE Energies  
USA

Mr. Timothy L. Rao, CCST  
Senior Control Specialist  
Caltech  
USA

Mr. Craig M. Rehkopf, CCST  
Lead Tech  
USA

Mr. Marcial Tielas Reina  
Department Manager  

Mr. Scott Joseph Richard  
Designer  
USA

Mr. Darcy Robinson  
Genivar Consultants  
Canada

Mr. Oscar W. Rodriguez  
Faculty Member  

Mr. Antonio M. Romano  
Director Engineering  
USA

Ms. Brenda R. Rose  
Control Engineer  

Mr. David Rose, CCST  
Dir of Aftermarket Manager  
USA

Mr. Alberto Rossetti  
Instrumentation Project Leader  
Tecnimont SpA  
Italy

Mr. Timothy J. Roth  
National Sales Manager  
USA

Mr. Patrick M. Russler  
Senior Scientist  
USA

Mr. Mosaab S. Ruziyeh  
The University of Jordan  
Saudi Arabia

Mr. Robert Anthony Samuels  
Production Instrument Technician  
USA

Mr. Rocco Santangelo  
Instrumentation Project Leader  
Tecnimont SpA  
Italy

Mr. Thiago Augusto Rizzo Dos Santos  
Electrical Engineer  
Brazil

Mr. Ted H. Schnaare  
Director of Engineering  

Mr. William B. Scholten  
Engineer  

Mr. Mark S. Seekell  
I & C Technician  

Mr. Jose Ignacio Marti Sempere  
Director Comercial Adjunto  
TSK Electronica Y Electricidad SA  
Spain

D Grant Shannon  
President & CEO  
Benchmark Instrumentation & Analytical Svcs  
Canada

Mr. Rahul Chandramohan Shete  
Project Manager--Technical  
Softcon Systems Pvt Ltd  
India

Mr. Jiangang Shi  
I & C Engineer  
Kansas City Power & Light  
USA

Mr. Stephen H. Shore  
Sr Electrical Engineer Supervisor  
Zippo Manufacturing Co  
USA

Mr. Edward P. Shortoff, Jr.  
Electrical & Instrumentation  
USA

Mr. Chandra Shreesha  
Associate Vice President  
Yokogawa India Limited  
India

Mr. Alan W. Simmons  
I & C Engineer  
USA

Mr. Vijay Kumar Sinha  
Manager  

Mr. Thomas P. Smith  
Service Manager  
Altronic Inc  
USA

Mr. Jayson Richard Sorum  
Electronic Controls Technician  
USA

Mr. Robert Louis Speranza  
I & C Principal Engineer  
URS/Washington Division  
USA

Mr. Karthikeyan Srinivasan  
Assistant Vice President  
Reliance Infrastructure  
India

Mr. Brian L. Stenson  
Environmental Technician  
Atco Power  
Canada

Mr. Krishnamurthy Anant Subramanian  
Sales and Tendering  
Alstom Protects India Ltd  
India

Mr. Ronald B. Thomas  
Project Manager  
USA

Mr. Leandro Henrique Batista Torres  
Gerencia Em Sistema De Automacao  
USA

Mr. Ted W. Tucker  
Market Manager  
GT Concepts Inc  
USA

Mr. Jimmy Uhl  
Sales  
USA

Mr. Paul Valente  
Sales  
USA

Dr. H K. Verma  
Professor Department of EE  
Indian Institute of Technology Roorkee  
India

Mr. Ulisses Barcelos Viana  
Engenheiro  
Brazil

Mr. Ken L. Vogel  
Management  
USA

Mr. Robert C. Washington  
Sr I & C Engineer  
USA

Mr. Bruce E. Weber  
Sr I & C Engineer  
KCP & L  
USA

Mr. Keith E. Webster  
Engineer  
USA

Mr. Joe Weiss  
USA

Mr. Marty A. Wells  
I & C Specialist  
USA

Mr. Jim Van de Wetering  
Sales  

Mr. Allan Wiggins  
Project Engineer  
USA

Mr. Ryan Wilson  
Controls Engineer  
Muscatine Power & Water  
USA

Mr. Gary C. Yerby, P.E.  
Principal Engineer  
G C Yerby Engineering  
USA

Mr. Gary W. Yerger  
Project Manager  
USA

Mr. Alvin Zerangue  
Sr Engineer  

---

Mr. Hector E. Pena  
CEO Gerente General  
E S Instrumentation  
Colombia

Mr. Girishchandra K. Patel  
Sr Assistant Mechical Engineer  
USA

Mr. Alan W. Simmons  
I & C Engineer  
USA

Mr. Thomas P. Smith  
Service Manager  
Altronic Inc  
USA

Mr. Jayson Richard Sorum  
Electronic Controls Technician  
USA

Mr. Robert Louis Speranza  
I & C Principal Engineer  
URS/Washington Division  
USA

Mr. Karthikeyan Srinivasan  
Assistant Vice President  
Reliance Infrastructure  
India

Mr. Brian L. Stenson  
Environmental Technician  
Atco Power  
Canada

Mr. Krishnamurthy Anant Subramanian  
Sales and Tendering  
Alstom Protects India Ltd  
India

Mr. Ronald B. Thomas  
Project Manager  
USA

Mr. Leandro Henrique Batista Torres  
Gerencia Em Sistema De Automacao  
USA

Mr. Ted W. Tucker  
Market Manager  
GT Concepts Inc  
USA

Mr. Jimmy Uhl  
Sales  
USA

Mr. Paul Valente  
Sales  
USA

Dr. H K. Verma  
Professor Department of EE  
Indian Institute of Technology Roorkee  
India

Mr. Ulisses Barcelos Viana  
Engenheiro  
Brazil

Mr. Ken L. Vogel  
Management  
USA

Mr. Robert C. Washington  
Sr I & C Engineer  
USA

Mr. Bruce E. Weber  
Sr I & C Engineer  
KCP & L  
USA

Mr. Keith E. Webster  
Engineer  
USA

Mr. Joe Weiss  
USA

Mr. Marty A. Wells  
I & C Specialist  
USA

Mr. Jim Van de Wetering  
Sales  

Mr. Allan Wiggins  
Project Engineer  
USA

Mr. Ryan Wilson  
Controls Engineer  
Muscatine Power & Water  
USA

Mr. Gary C. Yerby, P.E.  
Principal Engineer  
G C Yerby Engineering  
USA

Mr. Gary W. Yerger  
Project Manager  
USA

Mr. Alvin Zerangue  
Sr Engineer  

---
Returning POWID Members for May–September 2009

Mr. Richard C. Andersen
Staff Electrical Engineer
Energizer Battery Manufacturing
USA

Mr. Kris Atanassov
Electrical Engineer
MWH
USA

Mr. Barry J. Basile, P.E.
Director Proposal Development

Mr. Gilbert H. Brittain
Consultant
USA

Mr. Douglas A. Comar
Controls Supervisor
Midland Cogeneration Venture
USA

Mr. Trevor L. Connor, P.E.
Sr I & C Specialist
ICS Innovative Control Solution
USA

Mr. Jeffrey G. Coulthurst
Electrical I & C Supervisor
Wisconsin Public Service

Mr. Larry E. Crye, CCST
Hydro Operator/Instrument & Control Tech
USA

Mr. Antonio Trueba De La Iglesia
Director
ATI Sistemas Sl
Spain

Mr. Richard B. Desmond
Principal Controls Engineer
Dominion Energy
USA

Mr. Gary L. Drew
Regional Sales Manager

Mr. Dudley Foreman
Consultant
USA

Mr. Robert D. Giese
Senior Electrical Engineer
USA

Mr. Oskar A. Granquist
Engineer
OG PAC Corp
USA

Mr. John Traver Martin Heinze, CCST
Instrument & Control Technician
XCEL Energy NSP Co
USA

Mr. Rich Hering
Discipline Director - Electrical

Mr. Todd Holden
Lead Electrical I & C
Amec Enc Services
Canada

Mr. Bruce N. Houston
Staff Instrument Engr
USA

Mr. Viktor Ivanov
USA

Mr. Danny F. Jacobs
Commissioning Manager

Mr. Christopher Jeffrey
Business Dev Mgr Automation Prod

Mr. David M. Karon
Engineering Associate
USA

Mr. Chandramouli Kasina
Sr Supdt
India

Mr. Ronald F. Keiderling, P.E.
Technical Services Supervisor
USA

Mr. Steve R. Logan
I & C Team Leader
USA

Mr. Wesley L. Lovett
Consultant
USA

Mr. Ben E. Martin
Vice President
USA

Mr. Lee McMullen
Senior Engineer
Hurst Technologies
USA

Mr. James E. Mitchem
Technical Services Manager
USA

Mr. Robert M. Myres
ICE Technician
USA

Mr. Allen L. Narverud
Sales Engineer

Mr. Edward R. Nugent
Strategic Account Manager
Caltrol

Mr. Michael L. Ortengren
Sales Representative
USA

Mr. John Parker
Engineer
USA

Mr. Dave E. Rabon
Instrument Technician
Pfizer Inc
USA

Mr. Donald Runnoe
USA

Mr. David A. Rush
I&C Technician

Mr. Patrick M. Ryan
Manager

Are you an ISA Member who is interested in helping others in the automation profession? Sharing your expertise is a great way to make a difference in another person’s life.

Become an ISA mentor!
Join ISA’s Mentor Program and help a young professional Member or an ISA Student Member in his or her career. Learn more about this online program at www.isa.org/mentor.
ISA POWID Executive Committee
May 2009 Meeting Minutes

Meeting: ISA Power Industry Division Executive Committee Meeting

Chairman: Cyrus Taft
Recorder: Don Labbe
Date/Time: 10 May 2009, 1:00 p.m. to 5:00 p.m., CDT
Location: McCormick Conference Center, Rosemount, Illinois

Attendees:
Members Present
Jim Batug
Bob Hubby
Roger Hull
Tim Hurst
Don Labbe
Daniel Lee
Bob Queenan
Leo Staples
Tom Stevenson
Cyrus Taft
Joe Vavrek
Denny Younie
Allan Zadiraka

Members Absent
Don Andrasik
Dan Antonellis
Don Christopher
Gary Cohee
Danny Crow
Jody Damron
Dale Evely
Ron Hicks
Aaron Hussey
Jason Makansi
Gordon McFarland
Jim Olson
David Roney
Michael Skoncey
Bill Sotos
Marjorie Widmeyer

Others Present
Rodney Jones

1. Call to Order
Cyrus Taft, ISA Power Industry Division Director, called the meeting to order at 1:16 p.m. CDT.

2. Introduction of Attendees
Don Labbe, POWID Secretary and Director-Elect, circulated the Meeting Attendance List and POWID Executive Committee Roster (no changes).

3. Review & Approve Agenda
The POWID Executive Committee Meeting Agenda previously distributed by email on 4/23/09 was distributed at the start of this meeting. The agenda was approved by voice vote.

4. Review & Approve Minutes of Last Meeting
The minutes for the POWID EXCOM meeting held on February 10, 2009, at ISA headquarters in RTP, 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 circulated at the meeting. With no changes to the minutes, the minutes were approved by voice vote.

5. Director Staff Reports
a) Division Report – Cyrus Taft reported on the following:
   a1) Power Division Annual Report
       Cyrus circulated the Power Division Annual Report that was submitted to ISA in February.
   a2) I&S Dept. 2008 Div. Communication Award
       Cyrus reported on the document prepared in support of consideration for the award.

b) Financial Reports
   Cyrus lead a brief discussion on the financial report leading to a request for the latest financial reports from ISA if ISA is still planning to issue quarterly reports.
   Action: Rodney Jones to provide latest financial report to the Director.

c) MOP Review
   Cyrus noted the last update to the MOP was 9/27/09 and the prior EXCOM meeting notes provided MOP review direction.
   Action: Don Labbe to coordinate an update to the MOP.

d) Nominating
   Dan Lee initiated a discussion on nominating EXCOM members:
   - The EXCOM board is limited to 32 members and currently has 2 openings.
   - The international nature of ISA suggests including international members of POWID EXCOM
   - Discussed adding international EXCOM member positions, but possible concerns cited over majority vote and quorum
   - Draft a letter of invitation for POWID EXCOM
     o Contact members who have been active with POWID symposium
     o Identify potential role of new international members, such as POWID representation at international EXPO conferences
   - Alan Zadiraka suggested an open invitation through the Newsletter particularly targeting younger membership.
   Action: Cyrus to prepare letter of invitation.
   Alan Zadiraka to draft an invitation article for the Newsletter
   Bob Hubby to explore membership from Italy and nuclear oriented members associated with ISA67.
   Gordon McFarland to derive a list of international members active in symposium over last 5 years.
6. Standards Committee Reports
   a) ISA67 Nuclear Power Plant Standards Committee – Bob Queenan (ISA67 Chair) stated that there are 4 active standards committees (67-01 to 67-04). Subsequent to the EXCOM meeting, the ISA67 committee meeting minutes were provided for information.
   b) ISA77 Fossil Fuel Power Plant Standards Committee – Dan Lee reported on the ISA77 committees that will meet tomorrow. The committee will begin re-affirmation of several ISA standards dated 2005. A new subcommittee entitled “Power Plant Automation (ISA TR77.22.01)” will meet for the first time. Subsequent to the EXCOM meeting, the ISA77 committee meeting minutes were provided for information.

7. Membership Service Committee Reports
   a) Honors & Awards – Michael Skoncey (POWID Honors and Awards Coordinator) was not in attendance but he did submit a report addressing the Hubby scholarship with a recommendation of reducing the paper work. There was some discussion of the challenges in finding candidates for the Achievement Award scholarship. Bob Hubby recommended that ISA be requested to identify scholarship candidates. Cyrus stated that he would circulate a new Achievement Award scholarship form.
      Action: Dan Lee to review Hubby scholarship.
   b) Membership – Gordon McFarland was not in attendance, but provided a membership report. The Division currently has increased its membership from 1926 to 2117 members which is a gain of 10% over the February report. We have approximately 450 student members. Gordon continues to send emails to members whose membership has lapsed and Bob Hubby stated that this service was noteworthy and effective in restoring members.
   c) Historian – Don Christopher, POWID Historian, was not in attendance, but did submit a report. Don has scanned in four conference proceedings corresponding to 1990, 92, 93 & 95 (POVID 30, 32, 33 & 35).
      Action: Dan Lee to produce individual PDF files for each paper from the scanned proceedings and submit to ISA for inclusion in the ISA technical paper database.
   d) Professional Development – Tom Stevenson was in attendance and reported that 467 PDH certificates were issued at the last POWID symposium representing 1168 PDH hours. Tom stated that the CCST and CAP programs are reported to be doing well and running ahead of schedule by ISA. The next ISA meeting on professional development is scheduled for Indianapolis.
   e) Section/Division Liaison – Bob Hubby, POWID Section/Division Liaison, provided a report. And will submit a copy to Gary Cohee for the POWID web site.
      Action: Bob Hubby to submit POWID Section/Division Liaison report for POWID web site.

8. Communication Committee Reports
   a) Newsletter – Dale Evely (POWID Newsletter Editor) was not in attendance, but provided a written report. The spring newsletter was distributed both electronically and in print form in April. The electronic distribution issue posed by the “opt out” option was resolved by ISA. Dale noted that the MOP needs to be modified to match the current newsletter schedule. Dale noted that the content for the summer newsletter is required by June 19th.
   b) Publicity – Joe Vavrek (Publicity Coordinator) was in attendance and did provide a verbal report. Joe noted that Power Magazine honored their commitment to publish POWID advertisements and cited the March issue including ISA POWID as a co-located event to EP. Joe suggested that future advertisements apply ISA POWID in lieu of just POWID. Joe planned to assess InTech and InTech e-news regarding POWID ads. Rodney stated that the symposium budget included ads in InTech and e-news and that the symposium was advertised quite faithfully. Jim Batug noted that EPRI did not appear to provide advertising for the symposium.
      Action: Joe Vavrek to get a count of POWID symposium ads in InTech and InTech e-news.
   c) Web Page - Gary Cohee (POWID WEB Page Coordinator) was not in attendance, but provided a written report. Gary reported that the POWID WEB page was up to date with the exception of the history info from Don Christopher. Some previously entered information seems to have been lost, probably due to ISA server problems. Rodney stated that POWID files on the ftp site have been backed up.
   d) External Marketing – Jason Makansi, External Marketing Coordinator, was not in attendance, but provided a brief report. Jason noted that there is no funding for external marketing, but Electric Power and Trade Fair provided ISA POWID symposium exposure.
   e) ISA Marketing - Cyrus reported the Spring Leaders meeting promoted section and division interaction. The business plan should promote POWID Division marketing. ISA is soliciting advertising ideas. A review of a prior marketing request put forth by Dan Lee should be undertaken. Cyrus noted that ISA should market the division more. Rodney Jones offered to provide a report of ISA marketing.
      Action: Rodney Jones to provide report of ISA marketing on behalf of POWID.
   Dan Lee to review a prior marketing request.

9. ISA POWID/EPRI Conferences (POWID Symposia)
   a) Rosemount, IL — 12–14 May 2009 — Leo Staples (General Chair) reported on the registration at this point (36 POWID only and 47 Dual EP/POWID). Leo stated that the confusion over the registration process had adversely impacted POWID registration. Leo will submit a report at the conclusion with recommendations for next year. There were 3 $2500 sponsors and 2 $1000 coffee break sponsors. The H&A will be held on Tuesday evening with exhibit floor receptions 4-6 on Tuesday and Wednesday. Due to the expected low ses-
sion attendance a free session pass to non-POWID delegates was discussed. Jim Batug proposed a motion to distribute a free session pass to non-POWID attendees with a limit of 1 session. Alan Zadira 2nd the motion and the motion carried on a voice vote. The Control system vendors on the exhibit floor were requested to make the free session passes available along with the program. Jim Batug reported that there were 58 presentations scheduled with 41 of these as full papers. There was 1 nuclear session and the remainder of the program was either general or fossil. There were 85 abstracts submitted initially, however all renewable papers were withdrawn. It was noted that there was no conference evaluation form, so Denny volunteered to develop a form for distribution during the symposium.

Action: Leo Staples to provide a summary report on the POWID 2009 symposium.

b) Baltimore, MD, May, 2010, Co-located with Electric Power – Tom Stevenson is General Chair for 2010. The MOU (Memorandum of Understanding) between ISA POWID and EP is only one year. A decision must be made by early June. A critique meeting will be held Thursday at 3 p.m. and a teleconference meeting at 3 p.m. the following Monday. Tim Hurst noted that ANS has an I&C conference this spring, therefore it was not feasible to promote a heavy nuclear program at POWID 2009. Tim is the ANS I&C and Human Factors Chair next year and he noted that there may be an opportunity to co-work with POWID.


10. ISA EXPO Conferences

a) Houston TX – 2009 – Danny Crow is the POWID Program Coordinator for ISA EXPO 2009 in Houston. Danny provided a brief report on the status.

b) Delhi India POWID Sub-section – Cyrus reported that the India New Delhi section formed a POWID sub-section and conducted a POWID symposium in April. There was some discussion of considering representation from India New Delhi on the POWID EXCOM.

Action: Dan Lee/Cyrus will request a recommendation for rules and regulations from the I&S Dept. Advisory committee meeting in Indianapolis in June and prepare a letter for the India New Delhi section.

c) Division Name Change and Logo – Cyrus reported that he has sent a new POWID logo to ISA marketing for consideration. The new logo would include “Automation” in the tag line.

d) Smart Grid subcommittee – Leo reported that the Smart Grid subcommittee was meeting Thursday afternoon. Issues to be addressed included cyber security, localized generation, labor demands, etc. Leo will report back to POWID on what POWID should do. It was noted that IEEE is taking aggressive action on Smart Grid. Tom Roxi, head of NERC cyber security is working with IEEE cyber security experts. Members of ISA99 committee are participating.

e) Creation of new technical list serves for POWID – Cyrus discussed the new technical list serves for POWID. The intent is to foster international relationships and attract younger members by making ISA’s presence on the web greater. Currently POWID has one list serve for the director. The plan is to create one or two technical list serves that can be applied to post technical questions with access restricted to POWID membership, such as the Westinghouse Users Group list serve. Bob Hubby noted web page intelligence and other search interests at large would be other valuable ISA web services. Cyrus is recommending ISA IT lead webinar for list serves. The list serve would be useful to ascertain the membership demographic and soliciting POWID participation at ISA EXPO Yapfest in Houston.

11. Old Business

a) Membership Survey – Don Andrasik, Membership Survey volunteer, was not in attendance, but provided a brief report after the symposium. The survey was sent out in April and there were 71 replies including 13 international members.

Action: Cyrus/Gary - Add a link of the Membership Survey to the POWID website.

b) Division Name Change and Logo – Cyrus reported that he has sent a new POWID logo to ISA marketing for consideration. The new logo would include “Automation” in the tag line.

c) Division Name Change and Logo – Cyrus reported that he has sent a new POWID logo to ISA marketing for consideration. The new logo would include “Automation” in the tag line.

d) Smart Grid subcommittee – Leo reported that the Smart Grid subcommittee was meeting Thursday afternoon. Issues to be addressed included cyber security, localized generation, labor demands, etc. Leo will report back to POWID on what POWID should do. It was noted that IEEE is taking aggressive action on Smart Grid. Tom Roxi, head of NERC cyber security is working with IEEE cyber security experts. Members of ISA99 committee are participating.

e) Creation of new technical list serves for POWID – Cyrus discussed the new technical list serves for POWID. The intent is to foster international relationships and attract younger members by making ISA’s presence on the web greater. Currently POWID has one list serve for the director. The plan is to create one or two technical list serves that can be applied to post technical questions with access restricted to POWID membership, such as the Westinghouse Users Group list serve. Bob Hubby noted web page intelligence and other search interests at large would be other valuable ISA web services. Cyrus is recommending ISA IT lead webinar for list serves. The list serve would be useful to ascertain the membership demographic and soliciting POWID participation at ISA EXPO Yapfest in Houston.

12. New Business

a) Strategic Planning Meeting Summary – A brief strategic planning meeting was held earlier in the day. The primary topics of discussion were the need for a model for POWID division interface to districts, international EXCOM members, WebEx meetings, and division representation at Yapfest. Another strategic planning meeting will be held in Houston.

13. Time & Date of Next Meeting

The next meeting of the Power Industry Division Executive Committee will be held on Monday 5 October 2009 from 1–5 p.m. at the Westin Galleria Hotel in Houston, TX. Some additional planning meetings will be held that morning. An agenda will be distributed about a month before the meeting.

14. Adjournment

A motion to adjourn was approved and the meeting was adjourned at 5:15 pm.

ISA67 Standards Committee Update

The minutes from the May 2009 ISA67 Nuclear Power Plant Standards Committee meeting were published in the Summer 2009 edition of the newsletter. A more recent update on this committee was not provided for this edition. If you have questions regarding this standards committee you can contact the committee chairperson, Bob Queenan, at rqueenan@curtisswright.com.

ISA77 Standards Committee Update

The minutes from the May 2009 ISA77 Fossil Fuel Power Plant Standards Committee meeting were published in the Summer 2009 edition of the newsletter. A more recent update on this committee was not provided for this edition. If you have questions regarding this standards committee you can contact the committee chairmen, Bob Hubby, at bob.hubby@verizon.net or Dan Lee at dan.lee@us.abb.com.
Human Factor Engineering & HSI Design in the US-APWR

Kenji Mashio
Mitsubishi Heavy Industries, LTD.
1-1, Wadasaki-cho 1-chome, Hyogo-ku, Kobe 652-8585 JAPAN
E-mail: kenji_mashio@mhi.co.jp

Key words:
The US-APWR, HFE, HSI, Compact console, Multi channel VDU, V&V
Abstract
Digitalized and computerized human system interface (HSI) system combined with digitalized I&C system is capability of a compact console with integrated functions, which can make operator potential human error and workload reduced.

The US-APWR (U.S. Advanced Pressurized Water Reactor by Mitsubishi Heavy Industries, Ltd.) HSI System is based on a HSI System developed with Japanese PWR utilities for nuclear power plants in Japan. We have developed an advanced HSI System that reflects past human factors studies and employs state of the art electronics technology.

The HSI System includes an operator console, a supervisor console and a Large Display Panel (LDP). It features soft controls for the manipulation through Visual Display Unit (VDUs) with touch panels.

The HSI System has been evaluated by Japanese utility operators using a prototype main control panel driven by a plant simulator.

Most of the HSI System is fully computerized, although there are some portions that utilize conventional switches and indicators. The fully computerized portion of the HSI System provides significant benefits to the safety of nuclear power, such as the reduction in operations and maintenance work load, which reduces the potential for human error. Based on the experience in Japan, US-APWR computerized digital HSI System improves the operability, reliability and availability of plant operations.

This paper describes the US-APWR HFE process, HSI design features and a strategy of V&V.
1. Introduction

The US-APWR Human System Interface (HSI) system is based on an advanced HSI system developed with Japanese PWR utilities for nuclear power plants in Japan. The HSI system has been developed in accordance with the design process of IEC-964 (Reference 6.1) and NUREG-0711 (Reference 6.2).

In this paper, the US-APWR HSI design process, the US-APWR HSI system features, and V&V plan are described.

2. Human Factor Engineering (HFE) design process

The US-APWR HSI System has been developed in accordance with all of the twelve elements in HFE design process described in NUREG-0711, Rev. 2.

Element 1 HFE Program Management
Element 2 Operating experience Review
Element 3 Functional Requirements Analysis and Function Allocation
Element 4 Task Analysis
Element 5 Staffing & Qualification
Element 6 Human Reliability Analysis
Element 7 Human-System Interface Design
Element 8 Procedure Development
Element 9 Training Program Development
Element 10 Human Factors Verification & Validation
Element 11 Design Implementation
Element 12 Human Performance Monitoring

Figure 2-1 shows the design process for the past developed HSI System and the relationship between the design steps and the twelve Human Factor Engineering (HFE) elements.

HFE elements E01, E02, E03, E04, E05, E06, E07, E08, E10 and E11 were included in the design process for Japanese utilities, Elements E09 and E12 were not part of the design process in Japan.
Table 2-1 compares the NUREG0711 HFE program elements to the elements in the HFE program implemented for Japanese PWRs. All elements except for E09 and E12 have been conducted during development stage and E09 is separately being developed in the actual design stages. This table also identifies additional program plan activities conducted for US applications.

As described above, the US-APWR HSI is designed conducting additional activities based on past implementation results including E09 and E12 which were separately developed in Japan.

For example, in the second element, Operating Experience Review (OER), we had analyzed the past significant human caused failures in the nuclear power plant including the Three Mile Island (TMI) accident and reflected these countermeasures in the HSI design (e.g., Alarm prioritization, etc.).

In addition, we have obtained additional OER from a review of recent significant human caused failures in US and have incorporated solutions into the design, where necessary. Figure 2-2 shows the process.

![Figure 2-1 HFE Design Process](image-url)
<table>
<thead>
<tr>
<th>NUREG-0711 Element</th>
<th>Plan for US Applications</th>
<th>Experience in Japanese PWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED1. HFE Program Management</td>
<td>We think Mitsubishi design process conforms to NUREG-0711 normally. We should consider handling of ED9 and ED12.</td>
<td>NUREG-0711 HFE elements, ED1, ED2, ED3, ED4, ED5, ED6, ED7, ED8. ED10 and ED11 were executed in the design process. ED9 and ED12 were out of scope (activity of power utility).</td>
</tr>
<tr>
<td>ED2. Operating Experience Review</td>
<td>Approach is same as Japanese PWR</td>
<td>Operation Experience is input information to the conceptual design phase.</td>
</tr>
<tr>
<td>ED3. Functional Requirements Analysis and Function Allocation</td>
<td>Approach is same as Japanese PWR</td>
<td>Functional requirements analysis and function allocation is considered in the conceptual design phase.</td>
</tr>
<tr>
<td>ED4. Task Analysis</td>
<td>Approach is same as Japanese PWR</td>
<td>CSD (Operational Sequence Diagram) was used in a gross and narrative task analysis, and Card's human information processing model was used in detail task analysis.</td>
</tr>
<tr>
<td>ED5. Staffing and Qualifications</td>
<td>We propose operation with two RO in compliance with 10CFR50.54</td>
<td>Design goal of operation with one RO</td>
</tr>
<tr>
<td>ED6. Human Reliability Analysis</td>
<td>We think to add other HRA method, such as ATHENA, for analyzing &quot;Commission Error&quot; in MOR</td>
<td>Mission and select errors were mainly analyzed. Human error probabilities were calculated using THERP for selected scenarios.</td>
</tr>
<tr>
<td>ED7. Human System Interface Design</td>
<td>Approach is same as Japanese PWR</td>
<td>Design plan was improved through iterative design process (design, prototyping, desktop evaluation, validation test).</td>
</tr>
<tr>
<td>ED8. Procedure Development</td>
<td>Approach is same as Japanese PWR</td>
<td>Operation Procedure was developed for dynamic validation test.</td>
</tr>
<tr>
<td>ED9. Training Program Development</td>
<td>Implementation Ran added</td>
<td>Out of scope in Japan</td>
</tr>
<tr>
<td>E10. Human Factors Verification and Validation</td>
<td>Approach is same as Japanese PWR</td>
<td>Two type of test was executed. One is static test using HSI module. The other is dynamic test using prototype HSI system and full scope plant simulator.</td>
</tr>
<tr>
<td>E11. Design Implementation</td>
<td>Implementation Ran added</td>
<td>Out of scope in Japan</td>
</tr>
<tr>
<td>E12. Human Performance Monitoring</td>
<td>Implementation Ran added</td>
<td>Out of scope in Japan</td>
</tr>
</tbody>
</table>
3. US-APWR HSI System Design Features

The HSI System introduces the use of soft (touch or click based) operation utilizing the computer-based HSI. Soft operations are performed by requesting an Operational visual display unit (VDU) screen on an Operational VDU and then touching or clicking an operation area of a soft switch displayed on the screen. The benefits of the soft operation are to reduce the operator’s workload compared with that of the conventional HSI by providing relevant process control information in integrated displays on VDUs and utilizing a compact console that minimizes required operator movement. The HSI System also provides operation support functions that utilize the computer to consolidate large amounts of data into meaningful information displays. These advanced features of the HSI System are expected to improve overall operator performance and reduce the potential for human error.

The HSI of the US-APWR utilizes various visual display devices, color-coding symbol-coding, etc. It is designed on the assumption of average visual ability by the plant operators (no weak visual power or color-blindness limitations).

The key features of the HSI System are summarized below, and explained in detail in the sections that follow;

- Compact plant operations console
- reduce MCR staffing & workload
  • Color graphic monitoring & control operator interface
  • Operator control using Multi-channel VDU configuration
  • Alarm display system with categorization and prioritization
  • Plant overview monitoring system using Large Display Panel
  • Computer based operating procedure system
  • Computerized operations support functions (e.g. OK monitor) to reduce workload and potential human error rate

3.1 Compact plant operations console

The compact plant operation console enables sit-down operation and reduces operator’s workload thereby main control room (MCR) staffing. That also makes MCR more compact and improves MCR habitability (i.e., possibility for reducing noise and improving operating crew communications.).

Figure 3.1 shows compact console arrangement in MCR. A conventional hard wired control panel spans approximately 19 yards (17 meters). On the other hand, the compact console takes less than half the width of a conventional panel.

The layout of the HSI System in the MCR is determined by the role assigned to each operator. The supervisor directs the operator in the conduct of plant operations and checks the operator’s actions. Accordingly, the supervisor console is located behind the operator console. The shift technical advisor advises the supervisor on safety-relevant operations and also monitors the operator’s actions. Therefore, the Shift Technical Advisor Console is located near the Supervisor Console and behind the Operator Console. The LDP provides the shared information to the operation personnel. Therefore, the LDP is located at the location where it is visible to all of the operation staff.

The distance between the Operator Console, the Supervisor Console, and the Shift Technical Advisor Console is defined considering walking passage and their ability to communicate verbally with each other over the ambient noise.

The distance between each console and the LDP and the size of the characters and symbols on the LDP are coordinated considering the visibility of the information displayed on the LDP from each console.
3.2 Multi-channel VDU

Multi-channel VDU (Operational VDU) has a capability for controlling and monitoring all non-safety and safety systems/components using integrated monitoring/controlling screens.

Operational VDU is classified as non-safety grade. In case of degraded conditions, safety VDU which is classified as safety grade, takes over safety related system/components monitoring and control.

Figure 3-2 shows an example of multi-channel VDU screen. Related monitoring information and soft controllers are integrated in one display and soft controllers including safety components pop up on the same screen.
3.3 Alarm Display system

The alarm system provides all information necessary for detecting abnormal plant conditions. The alarm system ensures that the operator can easily recognize the fault conditions even when the number of fault conditions or the severities of the faults are increasing.

The main features of the alarm system are as follows:

- Adequate information presentation that allows the operator to acknowledge and recognize alarm information and take appropriate corrective actions

- Establishment of an alarm prioritization system that allows the operator to identify the relevant and important alarm information and not have to deal with an “alarm avalanche”.

Distributed with permission of author(s) by ISA 2008
Presented at 18th Annual Joint ISA POWID/EPRI Controls & Instrumentation Conference; http://www.isa.org
- Implementation of a navigation system display that provides easy access from the alarm display to the relevant system display and the alarm response procedures.

These functions help the operator to identify and diagnose the transient condition causing the alarms and complete the necessary corrective actions.

(1) Alarm presentation

All alarm information is displayed on the alarm VDU, Large Display Panel (LDP) and the Operational VDU respectively.

On the alarm VDU, all alarms are categorized into four system categories (i.e., two primary systems, a turbine system and an electrical system) harmonizing the alarm initiation location on LDP and accommodating total alarm number distribution in one display at emergency plant mode. Alarms are recorded in each category display area in chronological order using color coding, blinking coding and audible tones.

On the LDP, all alarms are grouped in each system (i.e., reactor coolant system (RCS), residual heat removal (RHR), etc.) and these grouped alarms are located in the fixed position area of the LDP representing as the alarm tiles (system labels). (See Figure 3-6) The grouped alarm tiles (system labels) are also blinking and color-coded when the new alarm occurs. Primary parameter labels and component labels are also used for the individual alarm indications related with the parameters and components. These are also blinking and color coding when a new alarm related to the parameter or the component occurs.

Alarms are also shown in graphic displays on the Operational VDU representing the related parameter’s numerical value with red color and switch information (i.e., trip, power-off, etc.).

There are four alarm states – new, acknowledged, cleared, reset (normal).

  • New - The operator can become aware of a new alarm by the blinking display and audible tone, and recognize the new alarm information in the alarm VDU display.

  • Acknowledged - The operator can confirm (acknowledge) the new alarm by touching the new alarm display area (blinking area), which stops blinking and audible tone sounding on the Alarm VDU. Then the operator can call up the related alarm procedure display on the Operation Procedure VDU and the related operational display on the Operational VDU respectively directly by touching or clicking the alarm message display area (See (2) in Figure 3-3) on the Alarm VDU in order to diagnose and take actions smoothly. Acknowledged alarms are identifiable by continuous color indications.
• Cleared - When alarm conditions return to normal the alarm is displayed as cleared. Cleared alarms can be identifiable by low speed blinking and white color indications.

• Reset - Cleared alarms are manually reset by operator acknowledgement. Reset alarms are identifiable by turning to normal indication (i.e., no-indication on the Alarm display and normal color (gray color) on LDP).

Figure 3-3 Alarm VDU Screen Layout
(2) Alarm Prioritization

a. Prioritization Based on Specific Importance (Static Prioritization)

Many alarms are statically prioritized by importance based on plant impact including release of radioactive materials and the demand for operator action. The static priorities have six levels. Table 3-1 shows the static prioritization category. The prioritization levels are displayed on an alarm message area on the Alarm VDU.

b. Prioritization Based on Dynamic Prioritization (Dynamic Prioritization)

The priority of other alarms is dynamically determined by alarm processing logic which focuses on the relationship between each issued alarm based on physical relationships such as the plant process and equipment status. Based on that dynamic determination, each alarm is prioritized at the given moment to its importance. The dynamic priorities have three levels.

The prioritizations for all alarms are as follows:

- Priority Level 1 (alarm information; Need actions)
- Priority Level 2 (caution status information; Need acknowledgment but no need for actions)
- Priority Level 3 (status information; No need for actions nor acknowledgement)

The dynamic prioritization rules are simple, consistent and do not depend on the plant specific mode. In the dynamic prioritization, there are three rules:

- Higher prioritization rule: For multiple-setpoint alarms, lower importance alarms are regarded as status information when higher priority alarms are activated. For example, Figure 3-4 shows the tank level alarm which has multiple setpoints. (i.e., Low and Low-Low) In this case, the Low alarm is displayed as Priority 1 (alarm information) until the tank level achieves the Low-Low alarm setpoint. When the level achieves the Low-Low alarm setpoint, the Low-Low alarm is displayed as Priority 1 and the Low alarm is changed to Priority 3 (status information).

- Cause-consequence rule (Component level): For those alarms which have a relationship between "result" and "cause", the "result" alarm is regarded as status information when the "cause" alarm is activated. For example, Figure 3-4 shows the illustration of the fluid system. Normally the outlet pressure low alarm is Priority 1. However, whenever the pump is tripped the outlet pressure low alarm will also occur. Therefore, the low pressure alarm ("result" alarm) is regarded as Priority 3 (status information) when the pump is stopped by the interlock alarm (i.e., "cause" alarm) which is displayed as Priority 1 (alarm information).

- Mode rule: This is the Cause-consequence rule at the system level. For example, the charging pump trip alarms are regarded as Priority 3 (status information) when an SI signal is actuated. (See Figure 3-4)
<table>
<thead>
<tr>
<th>Priority</th>
<th>Primary System</th>
<th>Ventilation System</th>
<th>Turbine &amp; Electrical systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>ECCS Actuation</td>
<td>Alarms related with ECCS, C/N isolation signals</td>
<td>Safety System Activate</td>
</tr>
<tr>
<td>II</td>
<td>Reactor Trip</td>
<td>First out Alarms</td>
<td>-</td>
</tr>
<tr>
<td>III</td>
<td>Caution for ECCS Actuation</td>
<td>1. Malfunction alarms of ECCS actuation 2. Manual actuation alarms after ECCS actuation</td>
<td>Same as the Primary system</td>
</tr>
<tr>
<td>V(VHigh)</td>
<td>Actions for Operation</td>
<td>Alarms concerning caution system monitoring (including partial trip)</td>
<td>-</td>
</tr>
<tr>
<td>VI</td>
<td>Information Management</td>
<td>1. Local operating alarms 2. Alarms concerning plant maintenance 3. Alarms concerning testing</td>
<td>-</td>
</tr>
</tbody>
</table>
On the Alarm VDU, alarms are distinguished and displayed on each prioritization alarm page. For Priority 1 and 2 alarms, the operator needs to acknowledge new alarms so that when alarms move to Priority 1 and 2 pages, these alarms are blinking and audible on the new page. On the other hand, Priority 3 alarms are not acknowledged and because they do not need operator’s actions and confirmation. Avoiding new alarm acknowledgment and recognition on the blind pages, the prioritization page select button (i.e., Alarm group area in (4) on Figure 3-3) is blinking and continuing to sound until all alarms are recognized on each Prioritization alarm page. Alarm prioritization is also identifiable on the LDP representing the Priority color code which is the same as on the Alarm display. Regarding the group alarms, the higher priority color code in the same group is represented.

![Figure 3-4 Dynamic Alarm Prioritization](image)

**Figure 3-4 Dynamic Alarm Prioritization**
Figure 3-5 shows the effect introducing dynamic alarm prioritization system. At the conventional alarm presentation system, approximately 40 and over 100 alarms are displayed at reactor trip and ECCS (Safety Injection) mode respectively. Introducing the dynamic alarm prioritization system, less than 20 important alarms (red color alarms) are continuously identified and displayed on the Alarm VDU, which means operator acknowledges new alarms in one page without selecting another page.

![Figure 3-5 Prioritized Alarm effect during reactor trip and ECCS mode](image)

3.4 Plant overview monitoring system
Plant overview monitoring system provides operators continuously visible information via Large Display Panel (LDP).

The purpose is:
• To provide continuously visible information to the plant operator in order to ensure that the operator has available to all relevant plant information.
• To make plant information simultaneously available to all plant operating staff on duty and to support operator team activities
The large display panel for the US-APWR has four 100-inch diagonal screens. The sizes and locations of these screens may vary for operating plants based on physical limitations of the MCR.

The LDP comprises a fixed display area and a variable display area.

Fixed display area provides Spatially Dedicated Continuously Visible (SDCV) function, such as safety system bypass and inoperable indication (BISI), plant power indication, as well as all alarm information (important alarm alarms are assigned on mimic area, other alarms are shown as group alarm tiles on top screen area)

Variable display area displays;
• Graphic display selected by operator
• Graphic display displayed automatically based on plant or safety equipment state

Figure 3-6 shows information configuration on the LDP.

3.5 Computer based operating procedure display system

Computer based operating procedure is displayed on the dedicated VDU display (Procedure VDU). Each procedure is compatible with corresponding paper procedure which is used for backup of unexpected CBP failures. Procedure VDU is built in Operator console (2), Supervisor console, and STA console.

Computer based procedures features include:

• Navigation function from outside procedures (e.g. hyperlink navigation function requesting a related procedure by touching the alarm message on Alarm VDU)
• Procedure navigation functions within procedures (hierarchical structure links ,hyperlink to related procedure)
• Checkmark function (monitoring/acknowledging which procedure done.)

Figure 3-7 shows the procedure VDU display configuration.
Figure 3-6 Plant Overview information Configuration
Figure 3-7 Procedure VDU display Configuration

Distributed with permission of author(s) by ISA 2008
Presented at 18th Annual Joint ISA POWID/EPRI Controls & Instrumentation Conference; http://www.isa.org
4. HSI System Verification & Validation

US-APWR Verification & Validation (V&V) is performed using following approach

**Phase 1 (US Operator Accommodation Phase)**
Design evaluation of Japanese Total Digital HSI System converted to English in United States with US operators
- Design evaluation verification activities include Ergonomics Design Verification, Display
- Design Verification, Procedure design verification
  - Design evaluation validation using full scope dynamic simulator system

**Phase 2 (US-APWR HIS System V&V Phase)**
V&V using mockup and simulator reflecting Phase 1 results and US-APWR specific design

Figure 4-1 shows HSI V&V facilities. The US-APWR HSI system design is completed through V&V activities with US operators,
Figure 4-1 Overview of HSI V&amp;V Facilities
5. Conclusion

The HFE for the US-APWR was implemented based on the “Total Digital HSI system” previously developed and successfully implemented in Japan.

In this paper, the US-APWR HSI System design features are described including;
- Compact Console
- Multi-Channel VDU
- Alarm Display
- Plant overview monitoring system
- Computer Based Procedure Display

Finally, US-APWR V&V plan is introduced for precise US-APWR design

6. Reference

6.4 HSI System Description and HFE Process, MUAP-07007-NP (Non-Proprietary), Revision 1, Mitsubishi Heavy Industries, Tokyo, Japan, July 2007
6.5 Design Control Document for the Chapter 18 Human Factor Engineering, MUAP-DC18, Revision 0, Mitsubishi Heavy Industries, Tokyo, Japan, December 2008