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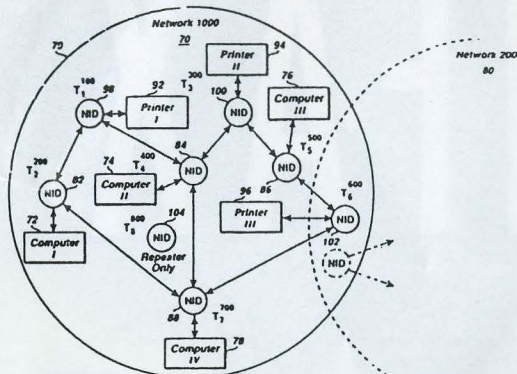
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January 2000

Volume 52, Issue 1

SCANFAX

Features

- 5 ISO Certification: Is it right for you?

Departments

- 4 Chairman's Message

UPCOMING EVENTS

- 11 *Chicago Power Engineering Society*
POSITIONING YOUR BUSINESS FOR DISTRIBUTED GENERATION
TECHNOLOGY ADVANCES
January 12, 2000
- 12 *IEEE-IAS/IES Joint Meeting with Northwest Subsection*
REDUCED VOLTAGE STARTING
January 19, 2000
- 13 *IEEE Chicago/Rockford Consultants' Network Meeting*
DESIGN REUSE AND VHDL
January 31, 2000
- 13 *Washington Awards Dinner*
DONNA SHIRLEY TO RECEIVE WASHINGTON AWARD
February 23, 2000
- 14 Professional and Business Directory
- 15 Employment Opportunities

CHICAGO SECTION EXECUTIVE COMMITTEE MEETING

Tuesday, January 11, 7:15 pm

DeVry, 1221 N. Swift Rd., Addison, IL

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Chairman's Message

The year 2000 has finally arrived. While issues surrounding the Y2K bug have occupied a lot of resources and personnel the past year, many other interesting events have taken place. Below is a brief "Year in Review" highlighting some activities and accomplishments that either took place, or were completed, in 1999.

- All IEEE members can now renew their membership via the World Wide Web.
- Pictures taken with the Hubble Space Telescope revealed that there could be 125 billion galaxies in the universe.
- The 104-year-old Reliance Building at State and Washington in Chicago reopened as the Hotel Burnham.
- Hewlett-Packard initiated the process to split into two companies. For the first phase, Agilent Technologies was formed as a subsidiary of HP. By May 2000, HP and Agilent Technologies will be separate companies. Agilent is

a test and measurement, semiconductor product, chemical analysis, and medical instrument business. HP will continue on as a computer and imaging company.

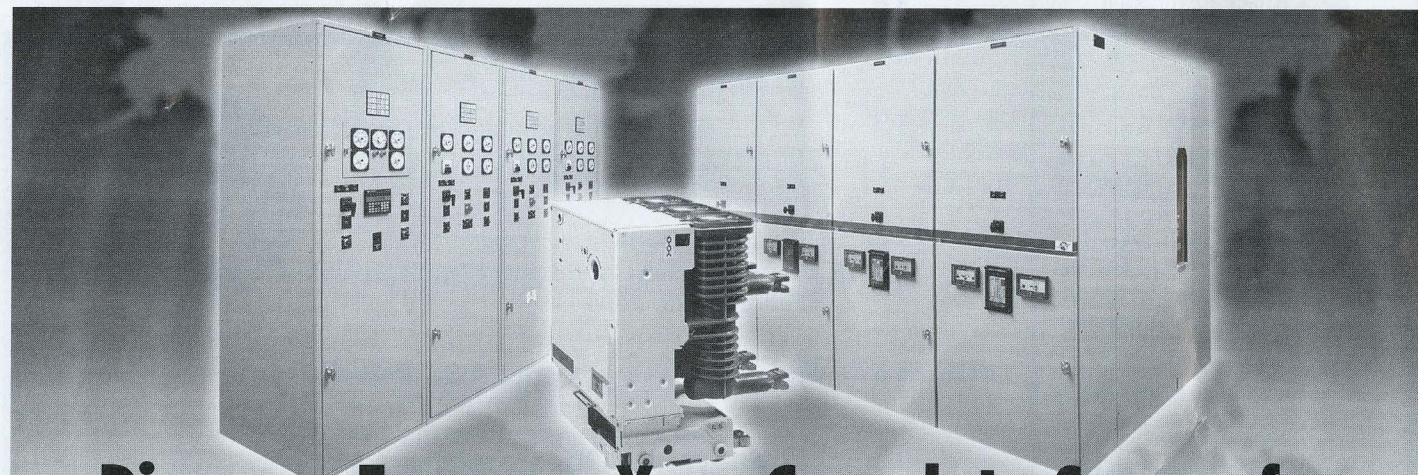
- The anti-personnel landmines treaty signed by 133 countries went into effect. This treaty commits countries never to use, develop, produce, stockpile or transfer anti-personnel mines.
- NASA launched the Mars Polar Lander for the second water mission to Mars.
- Siemens AG, Munich Germany, and Motorola Inc., produced the world's first fully functional chips using 300-mm silicon wafers.
- The Melissa computer virus was released on the Internet and forced many companies to shut down their electronic mail systems.
- NASA launched the Stardust spacecraft on a 7-year quest to gather dust from Comet Wild-2. This mission marks the first attempt to gather mate-

Edward G. Bogus, PhD.
IEEE Chicago Section, Chairman

rial from beyond the moon and the first time NASA dispatched a robot on an extraterrestrial pickup and delivery mission.

- Researchers at Mt. Sinai Hospital, Miami Beach FL, and Wake Forest University, Winston-Salem, NC developed a new way of detecting calcium-clogged arteries. The technique combines a general-purpose computer tomography scanner with an electrocardiograph machine.
- India joined the club of commercial satellite-launching nations with its launch of a rocket carrying South Korean and German research satellites.
- Lucent Technologies developed Packet-GSM technology that allows users to launch third-generation-like services combining voice, video, fax, and data on a modified second-generation network.

Continued on page 10



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ISO CERTIFICATION:

Is it right for you?

By Terri Biloff

Since the beginning of the industrial revolution, mankind has been striving for quality. ISO certifications helped instill that philosophy by providing a set of quality standards recognized by every industrialized country throughout the world.

ISO standards were created to provide assurances that those companies holding the certification abide by and adhere to internationally recognized quality standards.

Perhaps you have several reasons for considering ISO certification, but the main reasons should include:

- To improve customer satisfaction and relations
- To be recognized among your customers as well as by your competition
- To improve operational practices within your infrastructure

This is a very tedious process and therefore must be taken very seriously. Seeking certification simply because someone thinks it's a good idea may not be good enough to substantiate the investment of time, money and resources.

Getting started

Before you start any certification process, you need to bring together a dedicated team of people considered to be experts in your product or service. Once you've formed your team, decide which certification most closely matches your business objectives as it relates to quality issues. The most common certifications are:

ISO 9000 series—A Business Management System. This standard covers 20

main topics including but not limited to training, how to handle customer complaints and meeting customer expectations.

The ISO 9000 series itself is comprised of three main standard certifications:

- 1) ISO 9001-If you design or develop services or products. Also covers production, installation and servicing.
- 2) ISO 9002-If you produce, install and service products. Is similar to the ISO 9001, but excludes the design and development aspects.
- 3) ISO 9003-If your product quality can be assured through final inspection and testing. (Not highly used.)

ISO 14000—An Environmental Management System. This is currently a "pilot" program and at the time of this article was still being developed. This certificate will cover such standards as:

- 1) Environmental performance
- 2) Regulatory compliance
- 3) Pollution prevention

TickIT—A generic certification of the ISO 9000 series. It is mostly applied for by computer software companies. The company must be able to demonstrate that it meets the requirements of the ISO 9001 first.

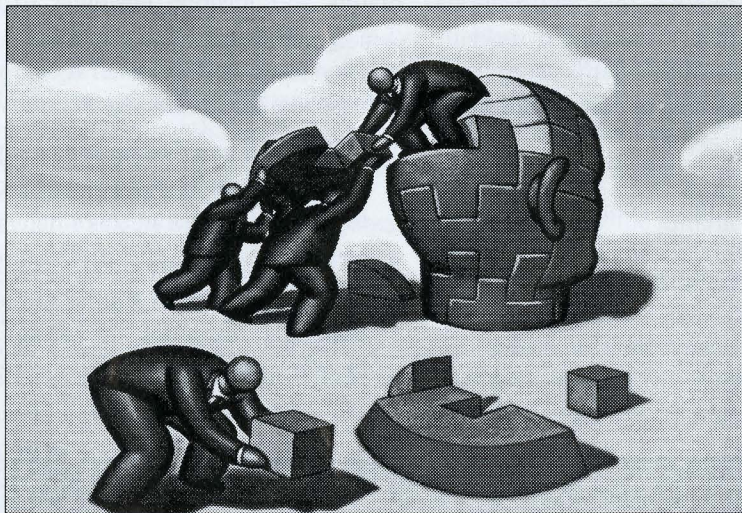
You should consider this certification if you perform one or all of the following:

- 1) Produce equipment which incorporates software
- 2) Provide archiving or storage services for electronic media
- 3) Provide configuration software

Continued on page 6.

Guidelines for applying for certification

The certification process can be grueling and time consuming. Being proactive from the beginning is essential to the success of the certification process. Some suggestions for getting through this process include:



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- 1) *Keep a sense of humor.* Certification is tedious and a rather boring process. But once you've achieved it you will be glad you went through the process.
- 2) *Establish a time frame for your certification.* This time frame should not be any longer than one year. Most companies I've spoken to agree that if your time line is too long, other projects will get in your way and you'll find yourself scrambling to try to get it done.

- 3) *Be sure upper management is on board with the certification process.* Delegating it to someone too low in the organization's infrastructure may not give you the expertise you need to complete the tasks. At least one member of upper management should be on the team assigned to the project.

- 4) *Treat it like a project.* Assign time lines, outline the deliverables and assign the resources needed just like any other project. Most companies' biggest mistake is they didn't give it the attention it deserved. As a result they either didn't pass the audit or were ill-prepared for the auditing process.

- 5) *Leverage your project by assigning several groups, each adding to the scope of the certification based on expertise.* Best practices can then be merged with your other documents.

- 6) *Assign a technical writer (or hire a consultant) to the project.* Technical writers think and write in terms of organization. You'll need that type of thought process when it comes to documenting your system, etc. Plan on committing at least part of their time to this project through the auditing process.

- 7) *Train everyone involved in the project on what ISO certification is and what the objectives are.* Once you have documented your system, training issues, etc, make sure this information is passed along to everyone in the company. This will help to avoid the inability to answer questions posed during the auditing process.

- 8) *Make sure you assign someone to the task of implementing all the processes you document.* Even the best documentation of your system and processes won't mean a thing if you have no one to implement it.

The Process

In order to prepare for certification (no matter what series you're applying for) there are basic steps that need to be followed.

Define your system

Your organization must document your entire system. From actual system to policies, operating procedures and all relevant tasks performed.

This includes but is not limited to:

- Defining the organizational structure
- Defining roles & responsibilities
- Identifying tasks performed and who performs them
- Documenting how knowledge is transferred to new employees
- Identifying your customers

Identify your management person

Whether this is a project manager, quality assurance manager or some other manager, this person is charged with the tasks of implementing any and all processes surrounding ISO certification. From managing the process of obtaining the deliverables to executing the registration process, this person must have the authority to make decisions and take action as needed during the preparation or registration for ISO certification.

Documentation management

Making sure your staff is using the right forms, correct versions (including drawings, procedures order forms, etc.) can be a very difficult task. Defining and/or implementing a system to track forms and versions is an important part of documentation management.

Document experience and training

You must update your records of your staff's experience, training received or schedule training. You must also document whether it's provided by the company, is "on the job" or is provided through self-study courses.

Understanding and documenting experience will help you identify whether further training is required

based on system or procedures changes and will ensure the continued growth of employees.

Conducting an internal audit

Once all systems, procedures and training issues have been documented, an internal quality audit should be conducted. This audit ensures all activities have been documented correctly (according to ISO standards manual) and prepares you for the "external audit" conducted by the ISO certifying body.

This process is important because as problems are identified they can easily be corrected internally, rather than having the external auditor identify them.

External auditing

The final stage is the assessment (or audit) by the certification body. The certification body verifies that your documentation addresses all of the requirements of the ISO standards. In addition they check to see that your corporate policies are that of what your customers expect.

If problems are identified during this stage, they are documented by the auditor. You are then required to comply to their questions within a certain time frame. It will be rechecked by the auditor

until he or she feels you have complied appropriately.

Choosing a reputable certification body

Not all certification bodies are recognized with an accreditation. To qualify for international recognition, the certification body must be accredited through a governing agency. In the United States it's the Department of Health. Without proper accreditation through the governing body, the certificate issued by the non-accredited bodies may not be valid.

A few questions you can ask to help determine if the certification body you are considering using is legitimate:

- 1) Do they hold an accreditation certificate by a recognized governing body? They should have a physical document to show this.
- 2) Are they ISO certified? Anyone who is ISO certified understands the process.
- 3) Certifying bodies are prevented from offering consultative services. If the auditor offers suggestions or identifies ways to improve a process, this is consulting services and it is likely they are not accredited.

Continued on page 8.

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ISO CERTIFICATION

Continued from page 7

- 4) Does the certifying body require an annual fee? Most accredited bodies do not require an annual fee. Therefore, if you're assessed an annual fee, this may be an indication they are not accredited.

Critical Success Factors

- Easy to read documentation for both the internal and external auditors
- Weekly meetings to keep project moving forward and on track
- Input from experts for each area being documented
- Technical documentation that caters to the auditor's senses
- Employment of an ISO consultant if you feel you don't have either the time or expertise to tackle the project yourself

The Deliverables

Generally when you implement ISO certification, there are several levels of documentation that result from your efforts.

- 1) *Quality manual*—contains policies relating to handling quality issues (ie; customer complaints, etc.)

- 2) *Procedure manual*—define roles and responsibilities within the organizations infrastructure and training issues
- 3) *Instruction manual*—defines all tasks performed by all employees
- 4) *System manual*—This may be a separate document or part of the instruction manual. This document defines your entire system in detail.

Although there are no set format guidelines to follow, I recommend creating workable, easy to update documents in a common application that everyone has available on their desktop.

You may want to consider organizing your documents by functional areas such as billing, shipping, etc. Or organize them by task or process. In any event, breaking down the document by defining a scope, purpose, definitions, responsibilities and procedures will help to maintain continuity among documents created by other team members.

Although there are several sections within the ISO certification manual which aids you in applying for certification, section four contains the substance of the standards.

It's the quality requirements and it's the entire basis of what ISO certification is about. There are approximately 20 areas of requirements that need to be

addressed in your quality manual document (mentioned above).

They include but are not limited to:

- *Management responsibility*—requires management to define, implement and communicate quality objectives. Periodic management reviews are required.
- *Quality system*—requires the creation and implementation of a quality manual (described briefly above)
- *Contract review*—requires the company to document customer orders
- *Design control*—requires documentation of quality measures in design, including input and output
- *Document control*—requires tracking and distribution of correct versions of forms and internal documents
- *Purchasing*—establishes a procedure for supplier review and monitoring
- *Process control*—formalizes and ensures controlled conditions for production installation of new processes
- *Inspection and testing*—establishes procedures for inspection and testing of incoming/outgoing products
- *Corrective action*—establishes and documents procedures for investigating complaints
- *Statistical techniques*—specifies the use of appropriate statistical techniques for verifying processes

Changes to ISO 9000 standards

Watch for upcoming changes to the ISO 9000 standards. I've gotten wind that the ISO 9000 series is currently being reviewed and may include merging all 9000 series into one single standard. In addition there will be increased emphasis on continual process improvements, and resource planning.

Next month:

Robotics and Automation

Some information provided by ISO governing bodies. Information outlined is not to be construed as the entire process. For more information on meeting ISO certification standards contact your local ISO institute.

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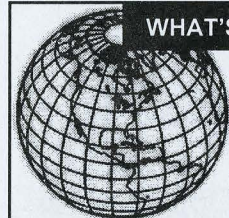
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IN MEMORIUM

Mr. Henry A. Malec passed away July 1999. His career was in Reliability and Quality. Henry was the chairman of the 3Com corporate-wide International Reliability Council, the IEEE Communications Society Quality Assurance Management Committee (1986-1988), and the Chicago Chapter of the IEEE Reliability Society. He also served three terms on the IEEE Reliability Society ADCOM. He had numerous publications including a historical perspective on communications reliability in the special 50th anniversary publication of the IEEE Transactions on Reliability.

Mr. Malec was a distinguished colleague and a good friend of the IEEE Reliability Society. Members of the IEEE Chicago Section extend their condolences to his family.

PRESIDENT'S MESSAGE

Continued from page 4

- Researchers at San Francisco State University, the Harvard-Smithsonian Center for Astrophysics, and the National Center for Atmospheric Research discovered a second solar system with three large planets orbiting a sun-like star in the constellation Andromeda.
- Judge Thomas Penfield Jackson issued an unfavorable ruling against Microsoft following antitrust proceedings that lasted 18 months. In the ruling, the judge found Microsoft had a monopoly in computer operating systems, abused that power, and harmed consumers.
- NASA launched a Delta-2 rocket carrying the Far Ultraviolet Spectroscopic Explorer telescope to look for early traces of the Big Bang.
- Pres. Bill Clinton signed legislation protecting companies against lawsuits stemming from Y2K computer breakdowns.
- Researchers at Carnegie Observatories, the Australian National University, and the University of Arizona put the age of the universe at 12 billion years. This reduced the 20-billion-year estimate of the 1980s and early '90s. Their measurements were made after studying 18 galaxies as far away as 65 million light years.
- US Air Force Colonel Eileen Collins became the first woman ever to command a crew in space. During the mission her crew placed the Chandra X-Ray Observatory into orbit.
- Sun Microsystems Inc. unveiled a technology that lets a desktop computer duplicate most functions of a PC or a workstation without requiring software of its own.
- Taiwan launched its first satellite atop a US Athena 1 rocket.
- Researchers at IBM's Almaden Research Lab developed a 5.5 Gb/cm² disk drive setting a new world-record for magnetic disk storage density.
- The last crew to inhabit Russia's space station Mir returned to Earth.
- Advanced Micro Devices Inc., developed a 650-MHz microprocessor chip, the Athlon. It was the highest performance device for x86-based high-end desktop systems, workstations, and servers. It outperformed Intel's 600-MHz Pentium III.
- Karl Suss celebrated its 50th anniversary. The company's current products range includes the world's fastest production mask aligners, spin coater products for high-end application markets, bonders and test equipment.
- Researchers at Toshiba Corp's Microelectronics Engineering Lab developed a large-scale integration chip that incorporates dynamic RAM and transfers data between its logic circuit and memory at a speed of 6.4 Gb/s.
- Confusion over English and metric units caused the loss of the Mars Climate Orbiter.
- IEEE members get worldwide access to IEEE Travel's negotiated discounted airline, hotel and car rental rates 24hr/day through a secure site on the World Wide Web.
- The Global Maritime Distress and Safety System (GMDSS) replaced the use of Morse Code for maritime distress and safety communications. The new system is based on satellite and terrestrial radio services.
- The Cassini-Huygens space probe swung by Earth to pick up a 5.5 km/s speed boost as it continues its five-year journey to Saturn.
- 300 bovine beauties grazed Chicago's downtown concrete pastures during a summer-long city-sponsored public art project.

The Chicago Electric Association Spring 2000 Course Semester is just around the corner, and we are offering many new interesting classes. The spring semester will begin the first week of February.

The courses offered include:

- ABC's of Electricity
- Electrical Code
- Fire Alarm & Detection Systems
- Blueprint Reading
- Computerized Estimating
- IES-Advanced Lighting
- Sales Training
- Public Speaking/Personal Communications
- Business Skills Seminars
- Chicago Code Update Seminars
- Introduction to Personal Computers

Courses are held in the evenings at the EA office: 8196 Cass Avenue, Darien, IL 60561. For further information on the upcoming semester or to register for a course, please contact the Electric Association office at:

630-724-0200



IEEE PES CHICAGO CHAPTER

Positioning Your Business for Distributed Generation Technology Advances

Wednesday,
January 12, 2000

LUNCH MEETING

Ed Lennox, Arthur Andersen Business Consulting, Energy Practice

About the Speaker: Ed Lennox is a management consultant in the Energy practice of Arthur Andersen Business Consulting. Before joining Andersen, Ed held power engineering positions in the R&D Division of S&C Electric Company and in the Engineering Services Group of Skidmore, Owings and Merrill. He holds Bachelor and Master of Science degrees in Electrical Engineering and a Master of Science degree in General Engineering from the University of Illinois at Urbana-Champaign (UIUC). His thesis works focused on power engineering, control theory and mechanical dynamics. Ed holds an MBA from the University of Chicago full-time program with concentrations in finance and general management. He is a recipient of the 1997 UIUC Granger Award for Power Engineering Excellence, and a member of academic honor societies. Ed is a licensed Professional Engineer in the State of Illinois and a member of the Institute of Electrical and Electronics Engineers.

About the topic: Distributed Generation (DG) has become the catchall name for a set of technologies that provide energy to loads in a geographically dispersed context. The promise of DG technology proponents lies little short of the complete transformation of the electric utility industry. However, DG devices face an increasingly efficient electric commodity market and a century-old first-mover advantage held by existing utilities.

Strategic planning is the process through which a business positions itself to defend against future threats and

exploit future opportunities. For all businesses involved in energy markets, this process must account for potential DG technology advances. However, the uncertainty inherent in forecasting technology changes confounds the planning process and often leads to the formation of internal factions holding extreme points of view.

For proper positioning to occur, decisions must be made in a prejudicial-free manner. This presentation will give a brief overview of DG technologies and introduce uncertainty-adjusted quantitative models to estimate the impact of DG developments. A methodology will be explained to appropriately weight DG-specific variables against the balance of the electric commodity landscape. The result is a de-biased probabilistic estimation of DG's future that enables a scenario-based strategic planning process customizable for business segments within the energy industry.

Location: Chicago Bar Association, 321 South Plymouth Court (Near Jackson & Dearborn), Chicago, IL 60604.

Time: Social: 11:30 am
Lunch: 12:00 pm
Presentation: 12:15 pm
Adjourn: 1:00 pm

Reservations: Lunch tickets can be purchased in the lobby bookstore (\$10.50). Please call the IEEE Business Office at (800) 898-IEEE to make your reservation.

For more information, please visit the Chicago Chapter IEEE PES web site: www.ece.iit.edu/~flueck/chicago_pes/

Save this date: Saturday, April 15, 2000

Announcing the Tentative Plans for the 2000 Annual IEEE Chicago Section Awards Banquet

The Awards Banquet Committee has chosen Saturday, April 15, 2000 for this event, so mark your 2000 calendars. It will be held at the Fountain Blue Restaurant in Des Plaines, the same location as last year. Names of honorees will be announced at a later date.

We Need Your Help!

Our Banquet Committee membership has been shrinking due to retirement of several of our members. We need you to join us in our endeavor to make the 2000 Awards Banquet a great success. Recent graduates are particularly welcome to our monthly dinner meetings where our plans are developed.

For more information: Please contact Joe Feitler, Secretary and Publicity Chair of the 1999/2000 Awards Banquet Committee, 708-383-8773 (evenings) or jfeitler@megsinet.net

DINNER PRESENTATION

Paul Sneed, Steve Koch—Production Specialists

About the topic: Reduced voltage starting is important to minimize inrush current when starting motors. Excessive current can cause wear on the motor and increase power demand. Companies are switching to reduced voltage starting to decrease maintenance and utility costs. Reduced voltage starting is ideal for motor driven blowers, centrifugal pumps, refrigeration compressors, and similar apparatus requiring a low starting torque. The different types of reduced voltage starters are auto-transformer, part-winding, wye-delta, and solid state.

Reduced voltage starting involves stepping the voltage up to the maximum over a period of time which keeps the inrush current to lower than 250% of the operating current. This type of starting allows the motor to accelerate smoothly up to full speed.

The improvements in solid state technology have increased the effectiveness of reduced voltage starting. Solid state starters operate by pulsing voltage into the motor to regulate speed and inrush current for better performance and controllability than auto-transformer, part-winding,

and wye-delta starters. Some new solid state starters are virtually the same size as an equivalent across the line IEC starter and cost only a little more.

Location: Como Inn, 564 North Milwaukee Ave., Chicago. *Directions: The Como Inn is located on Milwaukee Ave. just off the Kennedy Expressway (I-90/94) near Grand Ave. and Halsted St.*

Time: Social: 5:30 pm
Dinner: 6:00 pm
Presentation: 7:00 pm

Cost: Your cost includes the presentation and your choice of chicken (\$25) or pasta (\$20)—4 course dinner.

Reservations: Please call the IEEE Business Office at (800) 898-IEEE or (630) 724-0200 with your entree preference on or before December 15th.

NOTE: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting. The upcoming 1999-2000 IEEE-IAS meeting dates are: Feb. 19th, March 15th, and April 12th.

IEEE IAS/IES JOINT MEETING WITH NORTHWEST SUBSECTION

Reduced Voltage Starting

Wednesday,
January 19, 2000

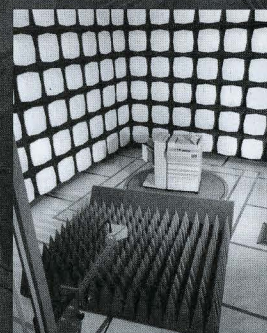
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IEEE CHICAGO/ ROCKFORD CONSULTANTS' NETWORK

Design Reuse and VHDL

Monday,
January 31, 2000

WASHINGTON AWARDS DINNER

Donna Shirley to Receive Washington Award

Tuesday,
February 23, 2000

Bob Abrant—Electronic Engineering Consultant

The Chicago/Rockford IEEE Consultants' Network will be meeting on Monday, January 31, 2000, 7:30 - 9:00 PM at the Palatine Public Library, 700 North Court, Palatine, IL 847-358-1216.

Preceding the meeting, we will be getting together for our group dinner. We will meet at Bakers Square at 6:15 PM. It is located at 270 E. Northwest Highway and North Court, just south of the library.

You are invited to join us for the optional informal dinner. We order individually from the menu. We plan to finish dinner by 7:20 PM. The meeting is two blocks from Bakers Square. Reservations are not required.

About the topic: In addition to networking and sharing leads and referrals, there is usually a guest speaker. The speaker will be Bob Abrant and his topic will be "Design Reuse and VHDL."

As system and integrated circuit complexities continue to increase and time-to-market requirements cause the design cycle time to decrease, design reuse plays an important role in the development of complex products. At the same time high quality standards must be maintained. The authoring of reusable system blocks must be considered throughout the entire design cycle to guarantee consistent

design practices, and to assure smooth integration with other blocks. This presentation will introduce design reuse challenges and will look at VHDL as a tool to aid in the design, documentation, and reusability of system functions.

About the speaker: Bob Abrant specializes in electronic engineering consulting. He has more than twenty years of experience in the complete electronic design cycle, from system requirements through ASIC implementation. The majority of his background is in the telecommunications field with both design and management experience. Other areas of expertise include fault tolerant systems, intelligent controllers, firmware, test software, and ASIC design.

Bob received his BSEE and MSEE from Illinois Institute of Technology. He is a licensed Professional Engineer and a member of the IEEE and the IEEE Chicago/Rockford Consultants' Network.

For more information: Members and non-members are invited to both the meeting and the optional dinner.

The Network can be reached at: g.l.blank@ieee.org

AWARDS DINNER

Donna Shirley, former manager of the \$150million/year Mars Exploration Program Office at the Jet Propulsion Laboratory in Pasadena, Ca will receive one of engineering's most prestigious honors, the Washington Award. Ms Shirley managed the team building Sojourner, the Microver, which was landed by the Mars Pathfinder project on the surface of Mars on July 4, 1997.

Ms Shirley, who recently retired from JPL after 32 years, was also the Chief Engineer of the Cassini Project, a \$1.6 billion project to explore Saturn. Other positions included Manager of JPL's Space Station Program, Manager of the Mission Design Section, and Project Engineer for the Mariner 10 mission to Venus and Mercury.

The award will be presented to Ms Shirley during National Engineers week at the banquet to be held Tuesday evening February 23, 2000 at the Union League Club of Chicago. The IEEE is a sponsoring

society of this annual event. The Chicago Section in showing support of this prestigious award is arranging tables for our members so we can be seated together.

Location: Union League Club, 65 W. Jackson Blvd., Chicago, IL 60604

Time: Social: 5:30 pm
Dinner: 7:00 pm

Cost: Tickets are \$65 each.

Reservations: Please call Dennis Lamont at (847) 398-4510.

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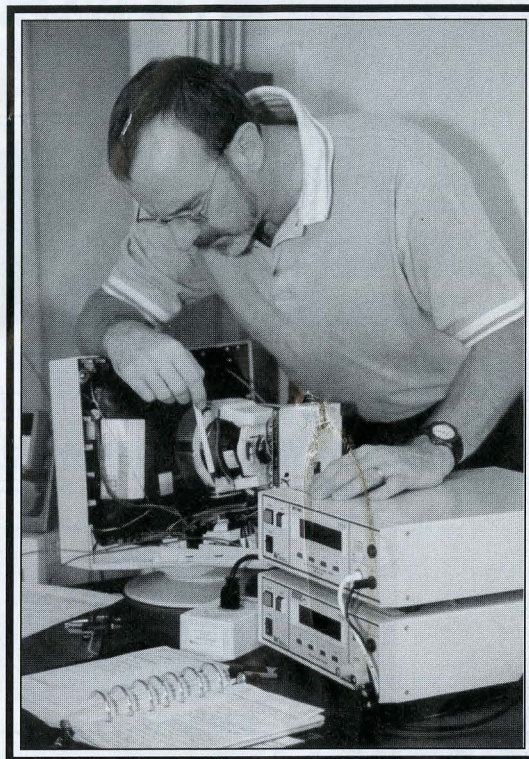
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