

SCANFAX

December 2000

Volume 52, Issue 10



IEEE

Networking the World™

A publication of the
Institute of Electrical & Electronics Engineers
— Chicago Section —



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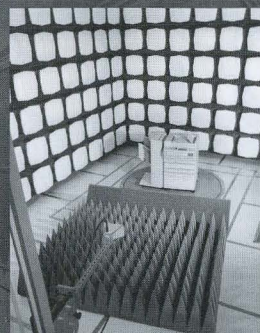
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CHICAGO SECTION EXECUTIVE COMMITTEE MEETING

Tuesday, December 12 2000, 6:30 pm

DeVry DuPage, Room TBA, 1221 N. Swift Road, Addison, IL

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Chairman's Message

Patrick Murphy, E.E., P.E.
IEEE Chicago Section, Chairman

The late November through December time period is for me one of the busiest times of the year. I am shopping for the holidays, attending gatherings of friends and business associates, maintaining work schedules and solving problems. Under those conditions, it is easy to forget about those who are in

need of things that many of us have in relative abundance.

I urge all Chicago Section IEEE members to take time this season to remember all those who support and care for those in need. Also, remember those that, through circumstance, are in need of help and

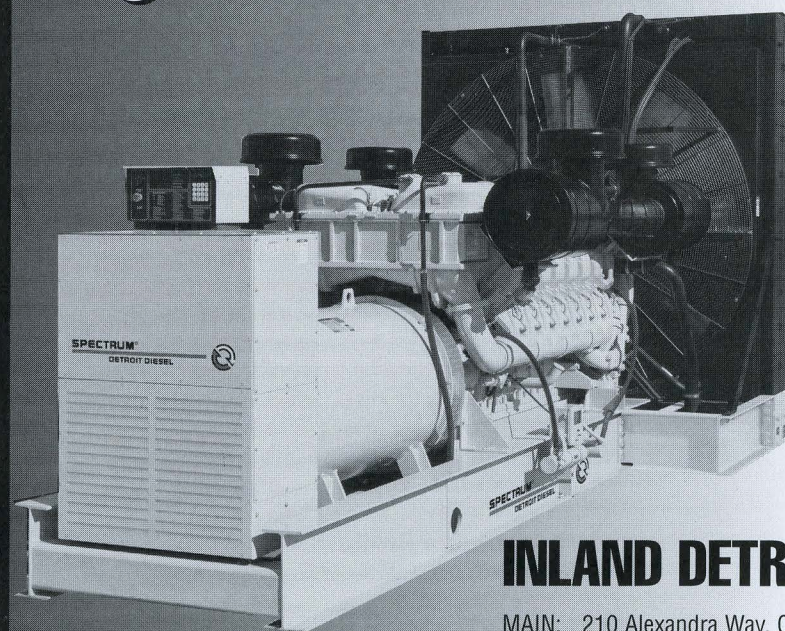
the organizations that need our support to care for them. During this holiday season, I hope that each of you will experience the joy that comes from loving and the peace that comes from trusting.

Pat Murphy EE PE, Chairman
IEEE Chicago Section

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The Digital Consumer

By Terri Biloff

Nothing has had as big an impact on consumer electronics as digital technology. This technology is changing the way we communicate, evolving into a globally digital focused world.

Probably the two most familiar to us is the digital phone and digital camera. Designed to enhance our lifestyles, the cellular phone has grown dramatically in the past ten years and has become a booming \$11 billion market. The ability to communicate with others without a physical connection through a phone line has greatly improved the efficiency of communication both in the corporate world and in the private sector.

Digital Phone Technology

Cellular phones, in their simplest form, are really 2-way radios. However, cell phones have a greater range than 2-way radios. Their honeycomb like cells within the phone commands a network control station.

The GSM (Global System for Mobile Communications) network is comprised of three parts. The Mobile Station (MS) is similar to a cordless phone with a whole lot more features, the Base Transceiver Station (BTS) controls the connection with the mobile station, and the Base Station Controller (BSC) controls multiple Base Transceiver Stations.

Mobile Station

A Digital Mobile Phone and a SIM (Subscriber Identity Module) make up the Mobile Station. The SIM is a card that fits into your handset and is one of two sizes, either full

size (like a credit card), or a smaller plug-in version. The SIM microprocessor is based on a silicon chip which is designed to tolerate temperatures between -25 degrees and +70 degrees and humidity levels of 85%.

Silicon is fragile. If the card is tampered with, it can be rendered useless. The SIM card contains all of your identification details such as your subscriber identity, billing and roaming information.

Base Transceiver Station

The Base Transceiver Station consists of a radio transceiver with an antenna that covers a single cell. It handles the communica-

tions with the Mobile Station (MS) via radio interface. All Base Transceiver Stations are connected together to allow you to move from one cell to another.

Base Station Controller

The Base Station Controller manages multiple Base Stations, it keeps an eye on each call and decides when to pass the call off to another Base Station Controller.

Several Base Station Controllers are controlled by the Mobile Service Switching Center (MSC), which manages the communications between Mobile Station users and the networks. The Mobile

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Switching Center is the interface between the base station system and the switching subsystem of the Mobile Phone Network. It also generates all billing records and ensures that all usage is directed to the appropriate account.

Roaming continues to be a problem in the digital world as the industry struggles to develop standards that are widespread. Currently, the Analog System has well established tower networks which provide greater accessibility to the largest group of cell phone users. Digital phones are being pushed into the market, slowly replacing the old Analog devices.

Digital phones give customers the latest, most advanced digital technology available in the market today. The GSM network offers a wider range of additional value added services which the Analog-based technologies can never hope to offer.

GSM network simplifies data transmission between laptop and palmtop computers allowing them to be connected to GSM phones from anywhere. GSM also provides integrated voice mail, high-speed data fax,

paging and short message service capabilities.

Digital offers the best security and privacy features available with the GSM network. The encryption scrambles the digitized voice transmission between the handset and the GSM network transmission site. This scrambling is hard to trace and nearly impossible to unscramble without the encryption code stored in the SIM card of the transmitting phone.

The other hot consumer product is the digital camera. As the digital photography revolution begins to gather momentum, experienced photographers and novices are dabbling in this new technology.

Digital Camera Technology

Digital photography begins with capturing images in a digital format. You can get digital images either by taking photographs with a film camera and then scanning the prints, or by using a digital camera. Digital cameras are one of the most revolutionary technologies since the instant camera. No film and no developing means electronic pictures are available to anyone immediately. The instant availability of pictures is not a new

concept, we had that with the Polaroid cameras for years, but the ability to manipulate and change a photo image is a revolution of its own.

Once these images are captured, digital photographs are already in a format that makes them incredibly easy to distribute and use. With many digital cameras you can immediately see your images on the LCS screen on the back of your camera, or you can transfer the image to your personal computer.

Digital cameras are very much like the 35mm cameras. They both have a lens, an aperture, and a shutter. The lens brings light from the scene into focus inside the camera so the image can be exposed. The aperture is a hole that controls the amount of light entering the camera. The shutter opens and closes to control the length of time the light enters.

Instead of film, digital cameras use a solid-state device called an image sensor. On the surface of fingernail-sized silicon chips is a grid containing hundreds of photosensitive pixels. Pixels on a image sensor can only capture brightness, not color.

They only record gray scales of 256 tones ranging from pure white to pure black. Since daylight is made up of red, green and blue light, placing these colors over the individual pixels on the image sensor creates color images. Then through a computer aided process, these colors are added to the image.

There are several types of digital cameras:

Point and Shoot They are rather large and heavy and a bit inconvenient, but work well for novices to the technology. The photos from these cameras may not be quite as good, but they can go anywhere. The resolution in most images from these cameras is rather low and as a result limits the printed output to a 4x6 image. Despite this, the images are ideal for small production documents like newsletters and web pages.

Multi-Megapixel The next level above the Point and Shoot is a family of cameras with over 1-million pixels. These higher resolutions are combined with more advanced features. This is one of the fastest growing cat-

egory of digital cameras because they appeal to serious photographers who like to have creative control of their camera settings.

Digital Video Digital video cameras shoot at 30 frames per second and captures 1800 images per minute. With the latest digital video cameras, you don't have to digitize frames because they are already captured in the digital format. These cameras are capable of shooting short video sequences and still images.

Digital File Formats

Over the years, a large number of file formats have been developed to store photographs and other bit-mapped images. Every format has its own unique characteristics, which may or may not make them your desired choice.

• **JPEG (Joint Photographic Experts Group)** Is the most popular format used for storage of photo images. The JPEG format is optimized for the display of images and doesn't work well with text. Digital cameras

allow this format and offer choices between lower or high image compression, based on the quality of image required.

• **TIFF (Tag Image File Format)** Developed by Aldus Corporation for saving images created by scanners, TIFF's allow photo editing and is widely used by desktop publishers. Occasionally there are problems with compatibility, but overall this is a good format to use.

• **MPEG (Motion Picture Expert Group)** This format is a compressed audio/video format. Developed for computers primarily, some digital cameras use this format to capture short audio/video. The problem is that the image quality is not as good as that of a VHS tape.

Manufacturers like Nokia®, Motorola®, Ericsson® and Sony® have all jumped at the opportunity to gain market share with digital products. You can find hundreds of different models of digital cameras and phones in a variety of price ranges. The hard part is deciding which one is right for you. ■

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IEEE EMC CHICAGO SECTION

Mode Stirred Technology

Wednesday,
December 13, 2000

EVENING MEETING

You are all invited to
our December Chicago
IEEE EMC Chapter meeting...

Wednesday,
December 13, 2000

Speaker:
Joe Weibler, ETS-Lindgren

Topic:
MODE STIRRED TECHNOLOGY

7:15 PM Social Time
7:30 PM Program

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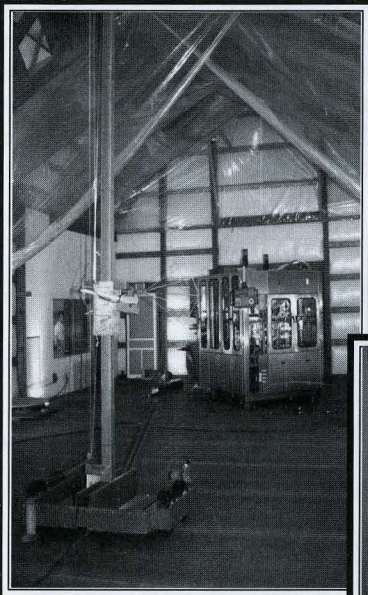
See our web site for further details:
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Calendar of Events

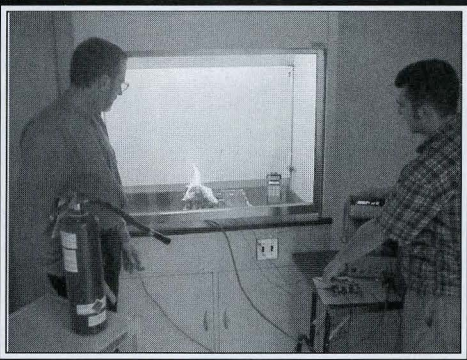
Date	Event
December 12	Chicago Section Executive Committee Meeting
December 13	IEEE EMC Chicago Section MODE STIRRED TECHNOLOGY
December 13	IEEE Power Engineering Society DESIGN/BUILD FOR ELECTRICAL PROJECTS — ADVANTAGES AND PITFALLS
December 19	EMB ODYSSEY CHRISTMAS SOCIAL

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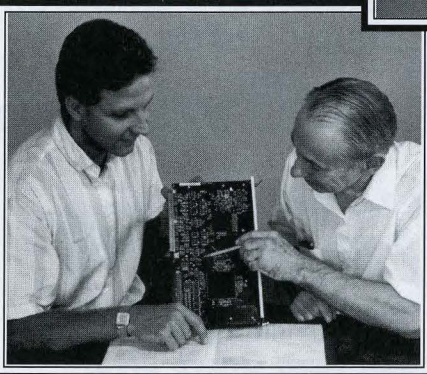
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January Issue	November 25
February Issue	December 25
March Issue	January 25
April Issue	February 25
May Issue	March 25
June Issue	April 25
September Issue	July 25
October Issue	August 25
November Issue	September 25
December Issue	October 25

CHICAGO CHAPTER OF THE IEEE POWER ENGINEERING SOCIETY

Design/Build for Electrical Projects— Advantages and Pitfalls

Wednesday,
December 13, 2000

Gary Pence, Associate Vice President, Burns & McDonnell

About the Topic:

Mr. Pence will cover common questions that arise
during design/build projects including:

- The design engineers role in traditional
"design-bid" projects.
- What is "design/build"?
- Why design/build is becoming increasingly popular
as a project delivery method.
- How is the design engineer's role effected?
- Are there ethical issues?
- What can we do to maintain our professional
values as the design/builders?
- Examples of recent electrical design/build projects.

About the Speaker:

Gary W. Pence, Associate Vice President, earned a
BS degree in electrical engineering from the University
of Missouri. He joined Burns & McDonnell in 1976
where he has held several key positions. His respon-
sibilities have included organization management,
project management, project development and detailed
design. He is currently manager of operations for
Burns & McDonnell's Transmission & Distribution

Division which includes oversight of high voltage
design/build projects. He is a member of NSPE, MSPE,
and IEEE. He is a registered professional engineer in
Utah, Illinois and Florida.

Location:

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

Time:

11:30 Social
12:00 Lunch (optional)
12:15 Presentation
1:00 Adjourn

Reservations:

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

Information:

Please visit the Chicago Chapter IEEE PES web site:
www.ece.iit.edu/~flueck/chicago_pes/

EVENING MEETING

We survived Y2K, but will we survive HIPAA?
Now that everyone has recovered from Y2K, its time
to turn our attention to the next set of challenges
down the road for healthcare technology: HIPAA

The Health Insurance Portability and Availability
Act of 1996 has been lurking in the background waiting
to pounce as soon as the Y2K bug was exterminated.
There are both hardware and software ramifications
so no one needs to feel left out. And just when we
thought we had figured out the 187 page Act, Congress
is threatening to "clarify" it. And if they don't someone
else in DC will. The EMB Society in Chicago pro-
vided necessary information to area members years
before the Y2K bug became a media darling. Get in
on the ground floor of HIPAA response so you can be
proactive not reactive.

Not everything is legislative! Advances in elec-
trochemical "machines" may provide some of the
major breakthroughs, especially in rehabilitative
medicine. As microprocessors and wireless technology
evolve, the possibilities are endless.

The EMB Society is looking forward to the real
start of the new millennium with election of officers

for the new term and setting the agenda for 2001.
Elections will be held in November for Society Chair
and Vice-Chair, Secretary-Treasurer for 2001. Elections
will be held in November. Other positions have been
filled sporadically as needed. This is an excellent oppor-
tunity for professional growth and to participate in
setting the direction of the organization.

Suggestions for 2001 meeting topics are needed.
Without a national or international meeting to worry
about this coming year (that we know of), we will have
the flexibility to set the tone of topics for presentations. To
get the best people, we need to start early with planning.

Students, getting involved is a great way to start
networking. Make contacts with professionals that
you may be dealing with after graduation.

Meetings will be held at the Addition Campus of
DeVry Institute, 1221 Swift Road, from 7:15 to 9:15pm.
Meeting Room information is not available, but will
be posted in the lobby. (DeVry is located between
Army Trail Road and Lake Street, adjacent to I355,
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Connie Kelly (847) 297-6610, (800) 406-8927—pager,
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2001: EMB ODYSSEY

Christmas Social

Tuesday,
December 19, 2000

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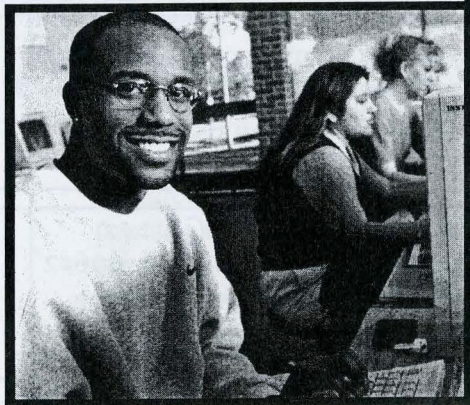
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