



THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

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August 2000

FWCS Power Engineering/Industry Applications Chapter Plant Tour & Presentation by Beckwith Electric Company

Date: Thursday, August 24, 2000

Time: 4:30 PM

Location: Beckwith Electric Company
6190-118th Avenue North, Largo (south of Ulmerton Road, near Honeywell)

Reservations

Required: Dee Kourounis at 727-545-7671. Bring a guest; non-members welcome!

Speaker: Mark Dixon

Manager for Autodaptive[®] Systems, Beckwith Electric

Cost: \$10.00 for members, \$20.00 for non-members



Beckwith Electric is a leading manufacturer of tapchanger and capacitor controls, protective relays, and equipment for system restoration, synchronizing, and motor bus transfer, along with custom systems. Incorporated in 1967 by Robert W. Beckwith, Beckwith Electric remains a privately-owned corporation, owned by the Beckwith family. The facility is a 48,320 square foot building that was rebuilt after a 1992 tornado destroyed the previous facility.

The speaker is Mark Dixon, Manager for Autodaptive[®] Systems, who has 23 years of experience with various manufacturers providing products, systems and services to the electrical power generation and distribution industry. The presentation discusses Beckwith Electric's Autodaptive[®] Volt/VAr Management System. Distribution system losses are significantly reduced by managing VARs in the distribution system through coordinated adaptive control of capacitor controls and LTC controls. Reduction in losses, reduction of tap-change operations and reduction of maintenance significantly impact system efficiency and reduce operating costs. The Autodaptive solution provides an innovative means to achieve all these things. From the consumer's point of view, the voltage profile from substation to distribution feeder end is substantially flattened and the quality of service provided is improved. The presentation covers an economic evaluation model that approximates the typical financial impact to a utility using an Autodaptive Volt/VAr Management System.

From Tampa, take I-275 exit to Ulmerton Road, Go east and turn South on the 66th Street. Turn east at the traffic light on the 118th Avenue North and go all the way toward the end is the Beckwith Electric.

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Chair's Comment

by Al Rosenheck

Do we have an adequate number of qualified Americans to fill existing high-tech jobs? The latest group to join in the dialogue is the Coalition for Fair Employment in Silicon Valley, a group claiming to represent thousands of minority professionals claiming there are already far more Americans to fill these jobs than we need. The coalition with the support of the Congressional Black Caucus is actively lobbying against efforts to double the number in the special visa program.

Whatever your thoughts on this issue, there is little doubt that the visa program will be expanded in some way to bring in foreign workers. Currently US industry estimates there are currently some 800,000 high tech job vacancies and strongly support the increase. The US Bureau for Labor Statistics has projected that over the decade ending in 2008 there will be a need for 1.7 million additional computer engineers, programmers and analysts. The American Electronics Association estimates high tech degrees awarded in 1997 were down 2% since 1990. Both the main line political parties support the need for more high tech workers.

We are going through a worldwide technological revolution, led to a great degree by our national technical community. To maintain this momentum and to promote and protect our high tech work force, we need to encourage our young people to want to become engineers. To lead this effort, the IEEE has brought onto their staff a Pre-college Education Projects Manager, Doug Gorham. We introduced Doug in last months *Signal* newsletter. Two of Doug's areas of focus will be to promote the collaboration between engineers and educators and improve technological literacy. Doug is a Florida West Coast resident and hopes to put together a local program with our Section that can be used as a national model.

If you are willing to join this significant educational/technological project, show your support by contacting Doug Gorham at d.g.gorham@staff.ieee.org. or (941) 753-4758 for more information.

Life Fellow

by Bob Ashley

Florida West Coast Section and the Life Members Chapter will have a Joint-meeting at the Sarasota Yacht Club, at noon on Thursday, September 21, 2000.

Life Member Tom Hyltin agreed to facilitate our September meeting of the Life Member Chapter. Tom can have us as his guests at the Sarasota Yacht Club.

The cost for this meeting including meal will be approximate \$15.00. Please come and join us, spouses are welcome!

IEEE-Florida West Coast Section
MTT/AP/ED August Meeting
“Beat the Heat” Summer Chill Series:
System on a Chip, Part 5
(An EDS Videotape Short Course)

DATE: Tuesday, August 15, 2000

TIME: 6:00 pm

LOCATION: Raytheon Systems Company St. Petersburg
1501 72nd Street North, St. Petersburg
Gill Robb Wilson Conference Room - 2nd Floor Engineering

RESERVATION: Give name & country of citizenship with Greg Bonaguide at (727) 302-3367.
Email: g.bonaguide@ieee.org.
Bring a guest, non-members welcome!
Refreshments will be provided.

ABSTRACT:

The scaling of silicon technology below 0.25um is characterized by aggressive exploitation of device technology and the integration of “new” materials such as copper, low dielectric constant insulators, and SOI substrates to extract greater performance. In spite of technological hurdles, the trend towards miniaturization and lower operating voltages permits an ever-increasing degree of functional integration with the potential for dramatic improvements in performance, cost and power at the systems level. SOC designers must functionally integrate disparate elements such as logic, analog, and memory circuits. This course attempts to address these different requirements and the methods to meld them into a complete and meaningful single chip solution. In cases where the technology does not permit, a single chip-like approach may be needed.

This final lecture of the series focuses on the structures and process directions used to accommodate SOC packages.

Tape 5: “Packaging Options for System-on-a-Chip” (6:00 PM – running time 1 hour)

DIRECTIONS:

From Tampa, take I-75 South to I-275 south across Tampa Bay to Exit 12 (22nd Ave N.). From Sarasota, take I-75 North to I-275 north over the Sunshine Skyway Bridge to Exit 12 (22nd Ave N.). Turn west on 22nd Ave. past Tyrone Mall to 72nd Street N. Turn left at the traffic light to the Engineering building. Park in the lot farthest south of complex. The meeting will be held in the Gill Robb Wilson Conference Room – 2nd Floor Engineering.

ITT Industries/DISCOVER Magazine Engineering Survey Identifies Future Challenges

The results of a recent ITT Industries/DISCOVER Magazine Engineering Survey were released to coincide with the DISCOVER Awards for Technological Innovation. The survey's predictions were highlighted at a gala awards ceremony and weekend tech "summit" at Disney's Epcot in Orlando, Florida on 23-24 June. The survey reveals that engineering experts see finding new energy sources and supplying the world with clean water as the top challenges the engineering community will face in the 21st century.

Four hundred engineers from various disciplines including electrical, civil, chemical and mechanical engineering participated in the telephone survey conducted by Ketchum, the ITT Industries public-relations agency.

According to the respondents, the greatest challenges that engineers will face in the 21st century are:

- Finding new energy sources
- Supplying the world with clean water
- Designing products so that they do not harm the environment
- Exploring deeper into space
- Curing diseases and prolonging life with biomedical engineering
- Planning cities and allocating resources to accommodate the growing population

When asked what field of engineering they specialized in, 19.8 percent of the survey's respondents said electrical engineering, second only to mechanical engineering at 23.8 percent.

When the electrical engineers were asked "**what will be the greatest challenge solved by electrical engineers in the 21st century?**" they responded:

- 27.6% Developing new engineering sources
- 22.4 Communication
- 13.8 Development of computer technology and skills
- 10.3 Nanotechnology and miniaturization
- 6.9 Integrating technology and human tissue
- 5.2 Biomedical Research/Engineering
- 3.4 Fair compensation for work
- 3.4 Governmental Integration
- 1.7 Space travel and exploration
- 3.4 Other
- 1.7 No response

The ITT Industries/DISCOVER Engineering Survey and the events surrounding the tech "summit" at Epcot underscore the cooperative efforts of industry, academia, government agencies, and the public sector to recognize the ways in which engineers and innovators contribute to a better world.

For full ITT Industries/DISCOVER Engineering Survey results, please contact Dianna Chapman, Ketchum at Dianna.Chapman@ketchum.com.

The majority of the ITT Industries/Discover Engineering Survey sample was provided by the following societies - IEEE-USA, American Institute of Chemical Engineers (AICE), American Society of Civil Engineers (ASCE), and American Society of Mechanical Engineers (ASME) - and was coordinated by the American Association of Engineering Societies. Other respondents were culled from past winners of the Discover Awards for Technological Innovation.

To view the entire news release, visit <http://www.ittind.com/new/NEW-PRES.HTM>

Brain Teaser Challenge Column

by Butch Shadwell

July BTC Solution

First, in order to analyze Greta's pulley problem, you had to ignore all friction in the pulleys and any stretch in the rope. Then it was simply a matter of counting the supporting strands between the pulleys. If you were able to follow the bouncing explanation, then you would have arrived at three supporting strands. Since we know that the tension on the rope is 60 pounds, then the maximum load that could be lifted is three times this amount, or 180 pounds. Since the rope that Greta pulled out of the pulleys was 60 inches, then when this amount was divided by three (each strand must shorten by one third of this amount so the total is 60), the load had been raised 20 inches. One may also note that the work into the system equals the work out, 3600 pound-inches.

I want to thank all of you readers who have been so good as to send me your answers to the BTCs. I always find them interesting and usually educational. I wish there were a way to recognize all of you. At this time let me say that one of the most educational respondents I have had the pleasure of reading, is Dean Edmonds. He may be a retired professor, but he is still tutoring me.

August BTC

On the 10:00pm flight from Atlanta to Jacksonville, having had my earlier flight cancelled for lack of profitability, I had just settled in to enjoy my half ounce of trail mix and container of artificial fruit drink. We hadn't quite reached our cruising altitude of 27,000 feet, but we were high enough to become a flaming pile of twisted metal if we were to go down, when I noticed a strange commotion toward the front of the aircraft. I could just make out the pale features of the flight attendant, but at this point I was willing to attribute her strained grimace to a recent dose of passenger rage. As I continued to watch, I could see she was wearing out her right index finger on the front panel of the videotape machine. As the seconds passed, her efforts to make the uncaring machine respond to her will became more frantic. Concerned that this escalation might result in the destruction of one of her carefully manicured nails, I decided to see if I could be of some assistance. After all, my nails needed work anyway. To my surprise, when I inquired as to why the tape machine was so important, she explained that the pilots had both suddenly succumbed to an attack of narcolepsy, and the only hope for our survival was the emergency, self paced, flight instructions on tape. To my surprise, she explained that the FCC had decided to require every commercial jet to carry these tapes in case of a shortage of conscious pilots. To make a long story short, I was able to save hundreds of lives because I realized that one of the passengers was video taping the attractive flight attendant while she was trying to activate the ESPFIOT. His infrared range finder was sending conflicting commands to the machine causing it to not respond to the front panel control. As a pastry chef was safely landing our plane, having completed the video course in record time, the BTC for this month came to me. How is it that infrared camera range finders are able to work outdoors where there is so much light noise?

Questions or comments to the Brain Teaser Challenge, please contact Butch Shadwell at 904-223-4465 (v), 904-223-4510 (fax), b.shadwell@ieee.org (email), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.ccse.net/~butchs/>)

Coming in October PES/IAS Meeting!

Florida West Coast Section will hold a joint meeting with ASME on Orthopedic Engineering on Wednesday, October 11, 2000. Our guest speaker is ASME Distinguished Lecturer Karen Warden from Case Western Reserve University.

Topics will be presented at this meeting including the advances in musculoskeletal biomechanics, synthetic biomaterials, implant design development and their performances.

Presenter: Ms. Karen Warden

Date/Time: Wednesday, October 11, 2000, tentatively schedule for 6:00PM

Location: Radisson Bay Harbor Inn 2 miles west of the Tampa International airport

Career Opportunities

Beckwith Electric Co., Inc., located in Largo, Florida, is a leading manufacturer of innovative high quality products, technical services and solutions for the electric utility industry. We are seeking qualified candidates for the following positions.

Software Engineers

Develops Windows programming using Visual C++. Researches, designs, and develops Windows/ NT programs, in conjunction with hardware product development to implement tasks, such as data acquisition, display and data setting with transformer and capacitor control and protection products. BSEE with 3-5 years in software coding using C, C++ and Assembly language. Two years experience on C++ Windows Graphical User Interface (GUI) programming with object-oriented methodologies. Familiar with high speed serial communication protocols.

Research Engineers

Engineer to work on research projects; first project relating to the measurement of earth's electromagnetic resonance. Position will consist of gathering data and writing programs for these projects. Four year degree in Applied Physics or Electrical Engineering with training in using various instruments, meters, scopes, etc. No experience required.

Entry Level Engineers

Responsible for building and testing prototypes in the lab for products relating to the power utility industry. Bachelor's degree in Electrical Engineering or Communications Engineering. No experience necessary.

Communications Engineers

Electrical engineer familiar with wireless digital technology, cellular phones/pagers to design and implement digital data communications. Should have knowledge of modern modem technology and be able to develop proprietary protocols for use with internally developed products. Should be able to use and implement standard protocols and be able to code and embed standard data transmission techniques including error checking. BSEE/BSCS and 5 years experience. Must be familiar with digital data transmission for energy management systems and radio control of a wide spectrum of applications.

Engineering Tech II

Performs routine tasks in testing engineering prototypes. Type testing which includes EMC (Electromagnetic Compatibility), Hypot, transient, environmental, and complex functional test routines. In addition, perform the following on solid state and digital electronic equipment: installation, repair and troubleshooting assemblies to the component level. AA, certificate in electronics or equivalent from two-year college or technical school and one to three years experience in an electronics test environment and/or electric utility control and protective relaying; or equivalent combination of education and experience.

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The 20 Greatest Engineering Achievements of the 20th Century Include 13 from IEEE Technologies

1. **Electrification**
2. Automobile
3. Airplane
4. Safe and abundant water
5. **Electronics**
6. **Radio and Television**
7. Agricultural Mechanization
8. **Computers**
9. **Telephone**
10. **Air Conditioning and Refrigeration**
11. Interstate Highways
12. **Space Exploration**
13. **Internet**
14. **Imaging Technologies**
15. **Household Appliances**
16. **Health Technologies**
17. Petroleum and Gas Technologies
18. **Laser and Fiber Optics**
19. **Nuclear Technologies**
20. High Performance Materials

2000 Review Seminars For PE Electrical and EIT/FE October 27 & 28 Examinations

Review seminars for the PE (Electrical) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will begin:

**Tuesday, August 1st for the EIT/FE Exam
&
Thursday, August 3rd for the EE Exam**

Seminars are conducted from 7-10 P.M. (Tues or Thurs) for ten weeks. The registration fee is \$225 and includes text. The seminars will tentatively be held at the TECO Data Center in Ybor City.

To register, contact: Alan M. Keith, P.E., PO Box 14042, (EC51), St Pete, Florida 33733

Alan.M.Keith@fpc.com

R&D Consultant Wanted

Small Clearwater electronics manufacturer seeks Electrical Engineers (EE) to help modify existing products and work on new product development.

Analog and digital experience required. Strong hardware skills important - we have an excellent firmware engineer. Experience with **Motorola MC68HC705C8** processor helpful.

Please Call Clayton Burton at (727) 556-2682

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August 2000 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
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13	14	15 <i>MTT/AP/ED "Beat the Heat" Summer Series Video course 6:00PM</i>	16	17	18	19
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