The Florida West Coast Section of the IEEE
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THE SUNCOAST IEEE SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

http://ewh.ieee.org/r3/floridawc | Volume 46 - No. 3 | March 2003

Southcon Sails into Tampa - March 19-20, 2003

Sponsored by

Since its founding in 1981, Southcon has been Florida's prime source of information on new products and technologies to drive forward the State's exhilarating high technology industries. In the Spring of 2003, for the first time in Southcon's history, the event will take place in Tampa, Florida.

An Event for the Entire Engineering Team

Who Attends Southcon?

- Design/Component Engineers
- Test Engineers
- R&D Engineers
- Buyers and Product Specifiers
- Production/Manufacturing Engineers
- Mechanical Engineers
- QC/QA Engineers
- Technical and Corporate Managers

What You'll See

Exhibits - a wide array of products and services including:

- Design and Component Technology Products
- Test & Measurement, Instrumentation
- Production and Packaging

Conference - sponsored by IEEE

Southcon/2003 will feature a dynamic conference program featuring Engineering-related course topics. Topics currently being considered include:

- Lead-Free Process & Assembly
- Advanced Signal Processing
- Design for Testability
- Lean Processing in Manufacturin g Operations
- SMT - Principals & Practice
- Analog Electronic Design
- Design for Manufacturability
- High-Frequency Digital Design
- SMT-Design for Manufacturability, Test&Repair

Plus...A Purchasing Conference for Electronics Buyers. Please check out the following website for more details.

http://www.southcon.org/

THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues.

All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month. Address all correspondence to:

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Chair's Comment

By John Conrad

As you read this newsletter you will probably have already heard that our annual awards banquet was a resounding success. We honored Al Rosenheck as the Section's Engineer of the Year, John Luce as the PES Chapter Engineer of the Year and Greg Price as Student of the Year in the elegant surroundings of the A La Carte Pavilion with about 320 engineers, spouses, vendors and sponsors in attendance. Due to the tragic accident of the Shuttle Columbia, our featured speaker form NASA, Ms. Jan Corbin, was unable to attend but at short notice Dr. Reginal Vachon the ASME national President-elect stepped in and entertained our guests. This collaboration of Engineering Societies in the Tampa Bay area is going from strength to strength due to diligent hard work of the banquet committee. ASME, SOLE, ASHRAE, AFE and IEEE all consider this banquet to be a showcase for local Engineering talent and this view was endorsed by the members of the IEEE Florida Council who also attended the event.

The day after the banquet I attended the Florida Council meeting that was held here in Tampa. I was joined by Jim Howard, Jim Beall and Richard Beatie as we listened to the representatives of the eleven other Florida Section describe their achievements and problems as they go about their section business. We are not alone when we wrestle with the issue of paper versus electronic newsletters, or when we struggle to improve member participation at chapter meetings. The Florida Council is an invaluable resource for ideas and assistance when it comes to seeking help with any type of problem. I encourage all of you to consider joining me at the March Florida Council which is being held here in Tampa once again on March 19th. Hopefully all 2,300 of you will not choose to attend the Council meeting but three or four would be very welcome as observers. All 2,300 of you would be welcome at SouthCon which is on the same day and is free if you register beforehand on the web!

Finally I would like to mention Ralph Painter, our Section Treasurer, who once again has given his time to the Teacher in Service program and then donated his $500 stipend to the Section. Thank you Ralph.

SouthCon VHDL Tutorials

The local chapter of the IEEE Computer Society will present three full day tutorials at SouthCon in Tampa .

Mar. 18th: FPGA Design with VHDL - Basics for Design Engineers
Mar. 19th: FPGA Design with VHDL - Advanced Topics
Mar. 20th: FPGA Design with VHDL - Verification

See details and register online at the SouthCon web site at www.southcon.org. The cost of each tutorial is $330. Lunch is included. The proceeds will be donated equally to the local Computer Society/AESS chapter and to the Programmable Logic User Group (www.pl-ug.org)

Contact Jack Killingsworth at j.killingsworth@ieee.org for more information.

Vibration Effects on Crystal Controlled Oscillators and Crystal Filters

MTT/AP/ED Chapter Meeting

Date/Time : Tuesday, March 18, 2003, 6:00 PM

Speakers: Kenneth Jensen, TRAK Microwave Corporation, Tampa, Florida
Finn Jensen, TRAK Microwave Corporation, Tampa, Florida
Paul Szydlowski, Sypris Electronics. Tampa, Florida
Mark Blechinger, Tampa, Florida

ABSTRACT:
Vibrational energy can play a major factor in the wireless field as well as in the space and military product industry. It is easy to understand that products for military aircraft require operation in high G (acceleration) environments. However, designers may not realize that even satellites have some level of sine vibration related to the repositioning of solar radiators and deflectors. In crystal oscillators and crystal filters, even small levels of vibration can generate spurious signals at an offset frequency equal to the vibration frequency. These spurious signals can cause device and the system performance degradation. This presentation will endeavor to present the basics of predicting the spurious levels generated by vibration in crystal oscillators and crystal filters. Calculations using Excel worksheets will be shown in the presentation as well as empirical test data. Information will also be presented related to predicting phase noise induced by random vibration.

BIOGRAPHIES:

Mr. Kenneth Jensen has worked at TRAK Microwave for more than 24 years. He has spent much of his career at TRAK designing crystal oscillators and frequency sources which are multiplied up from a lower crystal oscillator frequency. Mr. Jensen studied Electrical Engineering at Case Western Reserve University in Cleveland, Ohio. He is a member of the IEEE and has attended many IEEE sponsored seminars and symposiums.

Mr. Finn Jensen has worked at Trak Microwave for more than 18 years, first as a technician and now as an engineer. He graduated from Tampa Technical Institute in 1984 with an Associates Degree in Electronics and he is currently working toward a Bachelors Degree in Electrical Engineering. Finn's main interest is high performance oscillators, with an emphasis on low phase noise designs. He has presented several papers on phase noise and vibration at IEEE sponsored events. He is an IEEE Member.

Mr. Mark Blechinger graduated from the University of South Florida in 1998 with a Master of Science degree in Mechanical Engineering, with an emphasis on dynamics and vibration. He was employed with Trak Microwave for about 4½ half years working as an analyst and electronics packaging engineer with government and aerospace electronic applications. Mark began his technical schooling by entering the U.S. Navy for 6 years as an electronics technician after high school. After military service, Mark started attending college and was employed as an engineering intern/technician at Critikon, Inc. in Tampa working in the development of electronic medical devices. He worked at Critikon for approximately 10 years until moving on to TECO for about 1½ years as a Mechanical Engineering Consultant analyzing rotating machinery vibration problems while completing his graduate work at USF.

Mr. Paul Szydlowski has over 12 years of experience in the design and manufacturing of DOD and aerospace electronics. His core background has been in electro-mechanical packaging design with a wide range of experience including mechanical analysis, design & drafting, and manufacturing processes. He is currently working for Sypris Electronics in Tampa, Florida as a Sr. Systems Engineer. His duties include requirements generation & management and support to hardware manufacturing and design.

LOCATION: TRAK Microwave Corporation
4726 Eisenhower Blvd., Tampa, FL
For driving directions, contact Shawn O'Brien

PLEASE RSVP: Leave name & country of citizenship with Shawn O'Brien at (727) 302-3493.
Email: shawn_k_obrien@raytheon.com
Bring a guest; non-members welcome!

IEEE Florida West Coast Section

GOLD and PACE

Present

Graduate Degree Options

with Dr. Kenneth Buckle, Ph.D. PE

Associate Professor and Graduate Coordinator
Electrical Engineering Department
USF College of Engineering

Date:	Tuesday, March 25, 2003
Time:	Social/Refreshments – 6:00 PM, Presentation – 6:30 PM
Place:	Room ENB261, Second Floor, Engineering Building II, USF, Tampa
Admission:	Student Members - $5; Professional Members - $10; Non-members - $15
Parking:	$2.50 (Tag must be purchased at the main entrance gate)
RSVP:	Dennis Trask at d.trask@ieee.org or (727) 773-4685

Is your career stagnating? Are you having difficulty finding a job that utilizes your talents? Are potential employers looking for experience that you don't have? Perhaps a Masters or Doctorate degree can help set you apart from other job seekers. In this presentation, Dr. Buckle takes the mystery out of going back to school.

Presentation Outline:

1. Areas of graduate study in Electrical Engineering at USF
2. Degree requirements and length of time to degree
3. Admission requirements
4. Part time study through the FEEDS program
5. Answer any questions

University of South Florida USF

Students Corner

By Angela Alexander

Starting in the fall, the student branch began offering software workshops to students. This spring we added a Fourier transform workshop, based on feedback from members. The workshops have been well-received, both by the students and professors. Pictured to the right is IEEE student member Nick Nezis leading a workshop on PSpice. The end of this month, we will have our first ever Charity Video Game Tournament, with proceeds from registration fees going to charity. Students will compete on selected video games in a double-elimination tournament. The competition will be held 28 March on campus in the Fishbowl. IEEE Student Branch would like to offer a special congratulation to Greg Price for his recent recognition as IEEE-FWCS Student of the Year at Celebrate Engineers Week Banquet. Way to go, Greg - you earned it! Please see page 6 for photos of the banquet.

IEEE Student member Nick Nezis leads the workshop on PSpice at Tampa campus of University of South Florida

IEEE Florida West Coast Section & MTT/AP/ED Society

Presents

5th Annual Wireless and Microwave Technology Forum 2003

April 11-12, 2003
University of South Florida
Tampa, Florida

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Webmaster:

G. Montgomery
montgomery@eng.usf.edu

The 5th annual WAMI Forum will bring together expertise from industry and academia to discuss, capture, and present the current state of the innovative and highly active wireless and microwave industry.

The Forum seeks to present the changing face of wireless and microwave technology and offer a glimpse of the future for this exciting field. The Forum is an excellent opportunity for researchers and engineers to meet each other and share new developments and opportunities. Overview talks discussing current and emerging trends are usually the highlight of the meeting.

Date: **Saturday, April 12, 2003**

Place: **Embassy Suites, USF Campus**

Time: **Registration begins at 8:00 am.**
Presentations and Panel Sessions from 8:30 am to 4:00 pm,
Social Hour starts at 5:00 pm.

All participants are cordially invited to a reception and dinner on Friday, April 11 starting at 5:30 pm. The reception will feature USF Wireless and Microwave (WAMI) graduate students presenting their research in several poster presentations. The dinner will begin at 6:30 pm.

Format and agenda for 1999-2003 forum events can be obtained at: http://ee.eng.usf.edu/WAMI/forums.html.

The WAMI Center

USF University of South Florida

Center for Wireless and Microwave Information Systems

Photos from Celebrate Engineers Week Banquet at A La Carte Event Pavilion Tampa, Florida 02-07-2003

Emcee of the evening – Mr. Dick Crippen

IEEE FWCS Engineer of the Year Mr. Albert Rosenheck presented by Section Chair Mr. John Conrad

< IEEE FWCS PES /IAS Chapter Engineer of the Year – Mr. John Luce presented by PES/IAS Chapter Chair Mr. Art Nordlinger

> IEEE FWCS Student Engineer of the Year Mr. Gregory D. Price presented by Section Student Mentor Mr. James Howard

Lignell Awards are presented to three surrounding counties' Outstanding Teachers by Honeywell and Seminole Electric Cooperative Inc. Representatives - l to r: Lee Williams of Honeywell, Lee Ogden of Centennial Middle School, Edward Ham of Osceole High School, Bradley Smrstick of Tampa Bay Technical High School, Joe Welborn of Seminole Electric, and Ben Simmons of Honeywell.

Celebrating Engineers Week Banquet Committee – l to r: John Trezza, Paul Wieloszynski, Quang Tang, John Conrad, Al Kurzenhauser, Michele Smith, Bill Adkins, Cliff Powell, Martha Ginn, Bob Yunk, Richard Beatie, Mike Colitz, and PJ Crespo.

Brain Teaser Challenge Column

By Butch Shadwell

February BTC Solution

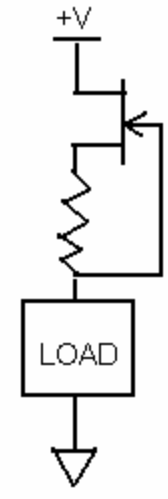
At the time I'm writing this I haven't received any responses to last month's BTC about the simple constant current source. It might be because I may have sent the column out too late for some of the newsletter editors to get it in. As I sit down to calculate the correct answer, I see that the part I specified, the 2N5457, may not have been the best choice as the spec sheet shows a rather wide range of V(GSoff) values. In case you are not all experienced with this class of transistor, it is an N channel JFET. That means that there is an actual PN junction between the gate and the channel N silicon. MOSFETs have an insulation layer. When the gate is not biased the channel (drain to source) conducts the most. Then, as the gate junction is reverse biased the conduction decreases as the channel is electro-statically pinched off. For N channel transistors, the source goes toward the negative supply voltage. So for an N channel JFET, the gate must become more negative than the source for the device to reach pinch off. This voltage is called V(GSoff). For this exercise I am going to use the family of curves for the part with a V(GSoff)= -3.5v. I will accept answers from readers using any of the three values offered. These parts also have a fairly high transconductance (Gm), measured in mhos. That is the change in channel current divided by the controlling change in Vgs, gate to source bias voltage. This is all very analogous to using a vacuum tube triode.

The question was to design the simplest 0.5 mA constant current source knowing you had a 2N5457 among other electronic components. Well, if one puts a resistor between the source and the gate and passes current from the drain to the gate terminal on the FET, as the current flows through the channel and then through the resistor to the gate terminal and then on to the load, that current flow causes the gate voltage to become more negative than the source. If we check our family of curves, we see that Vgs=-2.4v at 0.5 mA. So to make a 0.5mA current source, we would use a 4800 ohm resistor in the configuration described above. But I bet you already knew that.

March BTC

Tempus fugit as they say. Sometimes it seems to fly a little too fast. I have been promising one of my power friends that I was going to do a per unit power distribution problem, but I can't get it together for this month. May be next time. This time I'm going to talk about woodworking. I have several friends who are really into woodworking. One of them had so much special woodworking equipment installed in his garage that he had to have his power drop increased to the next higher current rating. He's just a few amps short of getting his own transformer. One day while putting a desk together he found he needed to apply about 200 lbs of force to get the dadoes to seat all the way. Being a rather slight fellow, he decided to use a wedge to multiply his force. If we assume that he got the friction on both sides of this wedge down to zero, what was the angle at the sharp tip of the wedge to let him complete this task with only 25 pounds of force? For extra credit, how far did he have to drive this wedge to move the load one inch?

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



March 2003 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4 *IEEE FWCS EXCOM Meeting at 5:30pm TECO Plaza*	5	6	7	8
9	10	11	12	13	14	15
16	17	18 *MTT/AP/ED Chapter Meeting "Oscillators & Filters", 6:00PM*	19 *Southcon 2003 Tampa Convention Center*	20 *Southcon 2003 Tampa Convention Center*	21	22
23 30	24 31	25 *GOLD &PACE Meeting, "USF Graduate Degree Options", 6PM*	26	27	28	29

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Southcon®/2003
March 19-20, 2003
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Tampa, Florida

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