

Preview Program

Northcon®/2002

the Northwest's OEM Electronics Event
for Design, Manufacturing & Test Engineers

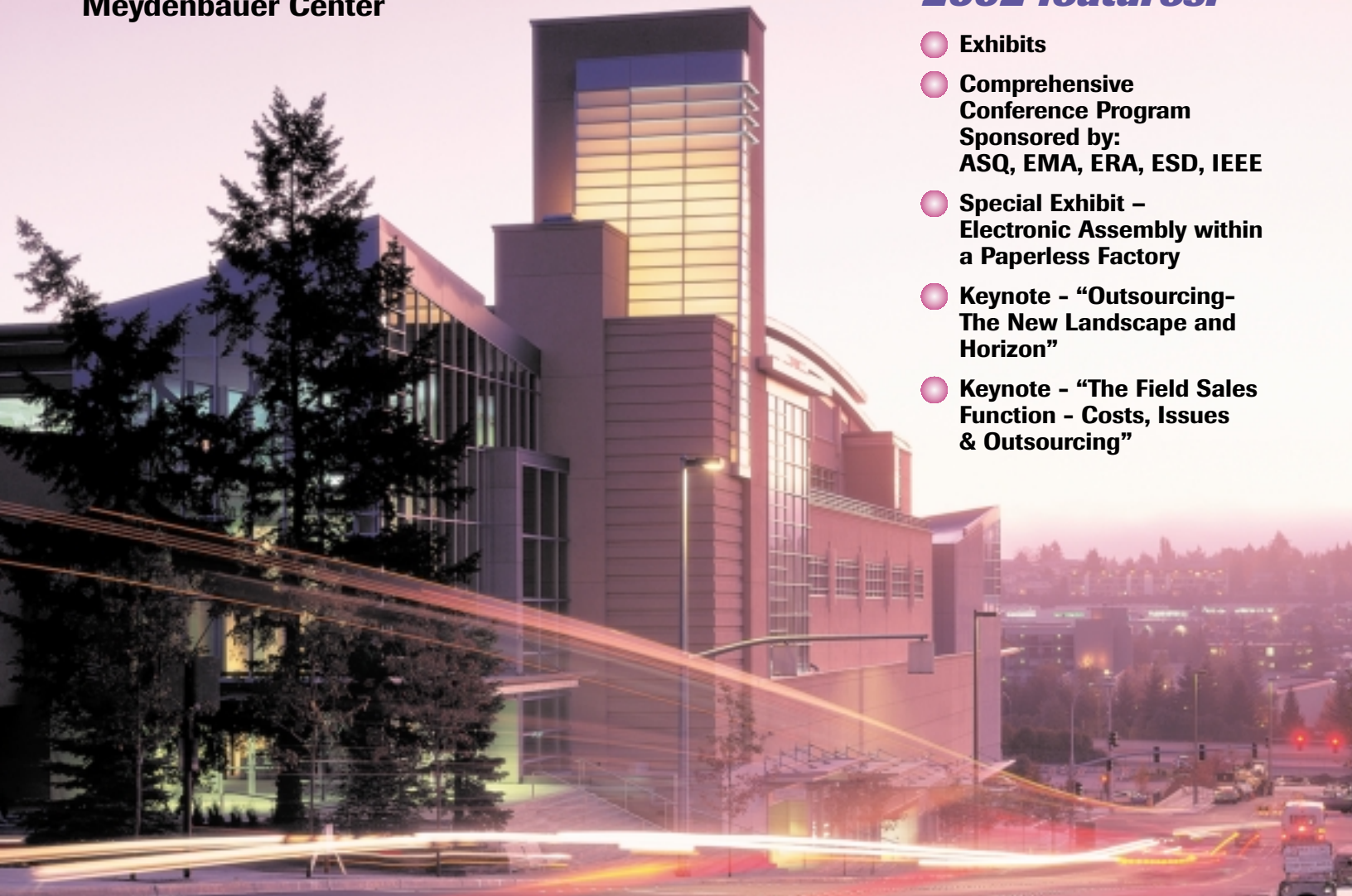
**Register
to Win a
DVD Player
or Palm Pilot**

***Returns to Bellevue, Washington
Heart of the Northwest's High Tech Corridor***

**October 23-24, 2002
Meydenbauer Center**

2002 features:

- Exhibits
- Comprehensive Conference Program
Sponsored by:
ASQ, EMA, ERA, ESD, IEEE
- Special Exhibit –
Electronic Assembly within
a Paperless Factory
- Keynote – “Outsourcing-
The New Landscape and
Horizon”
- Keynote – “The Field Sales
Function - Costs, Issues
& Outsourcing”



 **IEEE** Seattle Section

 **ERA** Pacific Northwest

 **EMA** Washington Chapter

 **ESD** Northwest Electrostatic Discharge Association

 **ASQ** Seattle Section

Free Admission to Exhibits - www.northcon.org

An Industry Event Sponsored by Industry Celebrating 20 Years

**Shorter design cycles...
tighter budgets...
increased competition.**

In today's challenging economic climate, you're being asked to do more, in less time, with far fewer resources.

For 20 years, electronics professionals have turned to Northcon for "one-stop" solutions to complex problems. Northcon's unparalleled product demonstrations, vendor exhibits and high quality conference sessions offer answers and solutions for the entire design and manufacturing team. Best of all, it takes place in one location – *minimizing the amount of time away from the office.*



Meet face to face with people that have the answers

Who Attends Northcon

- Design/Component Engineers
- Production/Manufacturing Engineers
- Test Engineers
- Mechanical Engineers
- R&D Specialists
- QC/QA & Packaging Engineers
- Purchasing Professionals
- Engineering & Corporate Managers
- Design/Component Engineers

Why Northcon

- **Reduce Product Costs – Find new Sources of Supply**
- **Product Knowledge – Directly from the Manufacturer**
Get answers to technical questions directly from the people that have the answers.
- **Earn CEUs at a Low Cost**
IACET CEUs are awarded for all courses and workshops.
- **Learn What's Happening in Your Industry**
Stay in touch with your industry...learn about the trends, changes and opportunities that can have an impact on your professional career.
- **Meet Engineer-to-Engineer in a Creative Environment**
Meet face-to-face with your peers – exchange information and share ideas...away from the office, in a creative environment.

Exhibit Hours

Wednesday, October 23
10am - 4pm

Thursday, October 24
10am - 4pm

Conference Hours

October 22, Tuesday
9am - 4pm

October 23, Wednesday
9am - 5pm

October 24, Thursday
9am - 5pm

Need a Hotel Room during Northcon?

Visit the Northcon website for discount hotel info & reservations,
or call 800-877-2668 x 242 or 310-524-4100

www.northcon.org • 800-877-2668 / 310-524-4100

See, Touch and Compare . . . Some of the companies you'll see at Northcon 2002

A&J Cases	General Tool And Supply Co.
A-Laser, Inc.	H.H. Bauer & Associates, Inc.
Ad-Print Markings Ltd.	Halbar-RTS, Inc.
Adhesa-Plate Manufacturing	Halco
Advanced Quality Sales	Hamamatsu Corporation
AEI Components	Hardigg Cases
AEGIS	Hardigg Storm Cases
Allied Components	Hoffman Enclosures
Altron, Inc.	IEEE, Seattle Section
Ametek-Rotron	Intertek Testing Services/ ETL Semko
APC	Johnson Components
Arconix Group	Juki
Asemco	Kepeco
ASQ, Seattle Section	Kinetics Cases
Astec	Kirkhill Rubber Company
B & J - USA	KY Seritech
The Bergquist Co.	LaCroix Industries
BTU	Lakeside Representatives
Buckhorn Material Handling Systems	lianli industrial
CAE Northwest	Mill Max
Cambridge Accusense	Mold rite, Inc.
Cascade Tek	Monitor Products Co.
Celeasco	MOUSER ELECTRONICS
Central Semiconductor Corp	MYDATA Automation
Cherry Electrical Products	National Wire and Cable
Chicago Case	Nidec
Cinch Connectors	Northwest EMC
Circuit CAM	Optical Polymers International
CKC Laboratories, Inc.	OZ / Gedney
Coast Wire & Plastic Tech., Inc.	Packaging Resources
Cobro Buyers Directory	Panduit
Conductive Technologies	Parker Cases
Cooper Electronic Technologies	Parylene Engineering
CSMI	Pelican Cases
CTS	The Pentagon Company
DA/PRO Rubber, Inc.	Phihong USA Corp.
Data Circuit Systems	Platt Cases
Dynapace	Qualitel Corporation
ebm Industries	R-Stahl
Edak/Zargas Aluminum Cases	S.S.I. Cable Corporation
Ekra	Scandic Springs, Inc.
Ellsworth Adhesive Systems	Schippers & Crew, Inc.
EMA, Washington Chapter	SKB
Enigma Interconnect Inc.	Solid State Devices, Inc.
EPCOS	Sparkle Power Inc.
ERA, Pacific Northwest Chapter	Sprague-Goodman
ESD Northwest	ST Microelectronics
ESF Industries, Inc.	Streckfuss
Ewing/Foley	Synergy Systems
Fairchild Imaging	Techsystems Northwest
Fischer Connectors	Thin Film Technology Corporation
Flambeau Products	Thordarson Inc.
Flambeau Products	Tritek NW
Fosta-Tek Optics, Inc.	TT Electronics IRC
Fulcrum Associates	W.L. Gore & Associates
Gems Sensors	Zippertubing Co.

Northcon Special Exhibit Electronic Assembly within a Paperless Factory sponsored by EMA



EMA presents this year's special exhibit. The special exhibit, provided by Techsystems NW, Asemco, Inc. and Fulcrum Associates will demonstrate a completely automated line for assembling complex mixed technology circuit boards within a paperless environment. Quick changeover, flexibility, and paperless monitoring of the production floor will be highlighted.

Attendees will witness electronic data transfer to process specific sections of the assembly line (real-time) as ECN's are introduced to the assembly in process.

Top manufacturers providing equipment for the Special Exhibit include:

- AEGIS - Circuit CAM Software
- Asemco, Inc.
- BTU - reflow ovens
- Dynapace - conveyors
- Ekra - screen printers
- Fulcrum Associates - software
- Juki - pick & place
- Streckfuss

Northcon/2002 Conference Program

Low-Cost Industry Sponsored Conference Program

This three-day conference with special events and short courses has been developed by a consortium of industry organizations and volunteers to meet the needs of today's design, manufacturing, test, quality and purchasing professionals.



IEEE is an Authorized CEU Provider of the International Association for Continuing Education and Training (IACET)

CEU's are available for technical conference attendance. The IEEE is an authorized CEU Provider of the International Association for Continuing Education and Training. CEU credits, where available, are indicated with the individual course descriptions.



Register Early and SAVE \$\$\$

Pre-registration is strongly encouraged, and a conference registration form is attached to this booklet. On-site registration will be accepted on a first-come, first-serve basis with no guarantee of classroom space or course material availability. (Advance registration rates are effective through October 4. Beginning October 5 the cost of each course increases by \$50.)

Note: Sponsored Events Are Available to All Northcon Attendees
All paid (SC) courses include lunch

 **Sponsored by ASQ**

SC1 **Thursday, October 24, 2002**
2:00 pm - 5:00 pm

Upgrading Your System to AS9100:2001 (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. John A. Graham,
President, Fulcrum Associates, LLC

This course will offer a plan for upgrading an AS9100:1999 quality system to AS9100:2001 (Rev A) requirements. Techniques for improving quality system effectiveness by focusing on processes that are used daily; process modeling and flowchart documentation techniques for modifying an existing quality system structure to a business system orientation; and methods for moving from an AS9100:1999 element focused documentation orientation to an AS9100:2001 process orientation without having to scrap current documentation will be explained.


SC2 **Wednesday, October 23, 2002**
2:00 pm - 5:00 pm

Upgrading Your System to ISO 9000:2000 (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. John A. Graham,
President, Fulcrum Associates, LLC

Methods for improving the effectiveness of your quality system while upgrading it to the new ISO 9000:2000 standard and integrating quality throughout your company will be detailed.

 **Sponsored by EMA**

SC3 **Thursday, October 24, 2002**
9:00 am - Noon

Managing Information - The Paperless Factory (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. John A. Graham, *President, Fulcrum Associates, LLC*

Learn how to design a communication system using conventional technology that will eliminate or substantially reduce the need for paper. Use the Microsoft Office Suite and Windows 2000 as the basis for implementing an effective and efficient document and data control system.

SC4 **Thursday, October 24, 2002**
2:00 pm - 5:00 pm

Process Development and Qualification (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Dennis M. Davis,
Independent Industry Consultant

This course will examine process development and qualification for purchasing, master scheduling, material delivery, manufacturing, packaging and shipping processes. A coherent strategy for developing, documenting and qualifying the processes needed for a manufacturing facility will be presented.

 **Sponsored by ERA**

SC5 **Wednesday, October 23, 2002**
2:00 pm - 5:00 pm

The Basics of Electronic Components (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Jim Carroll, *Halbar RTS*

Nontechnical individuals working in the electronics industry need to understand the parts used in their products, and must be able to work effectively with associated technical personnel. From the basic concepts and terminology of electronics (AC, DC, voltage, current, and wattage) to a thorough but easy-to-follow study of the most common electronic components (capacitors, resistors, inductors/transformers, relays, diodes, mosfets, IGBTs, memory), this course will give you an understanding of the terminology, types, uses, packages and operation of the various devices.

 **Sponsored by ESD Northwest**

SC6 **Thursday, October 24, 2002**
9:00 am - 1:00 pm

ESD Control on the Factory Floor (4 Hrs.)

Fee: \$160 (.4 CEUs will be awarded.)

Instructors: Mr. Ivan Guss,
ESD Consultants -
Mr. James Dull, *President, Static Technology, Inc.,*

This course will explore techniques for reducing ESD damage. The static control measures of grounding, shielding, ionization, testing, training and auditing will be detailed. Fundamentals of air ionization, application and performance testing will be reviewed, and attendees will understand what to look for in performing ESD audits to assure that procedures are being followed.

IEEE Sponsored by IEEE

SC7 Wednesday, October 23, 2002
9:00 am - 5:00 pm

EMC Essentials - Shielding and Grounding (6 Hrs.)

(Organized by IEEE EMC Society)

Fee: \$310 (.6 CEUs will be awarded.)

Instructor: Mr. Colin E. Brench,
Principal Member, Technical Staff,
Compaq Computer Corp.

Shielding and grounding will be explained from fundamental principles through traditional design methodologies. Ignoring the fact that these two areas are tied together can result in poor EMC performance. Advanced concepts will be presented to help those involved in leading edge design develop their expertise.

SC8 Thursday, October 24, 2002
9:00 am - Noon

EMC Modeling - A Practical Introduction (3 Hrs.)

(Organized by IEEE EMC Society)

Fee: \$255 (Includes Book) (.3 CEUs will be awarded.)

Instructor: Mr. Colin E. Brench,
Principal Member, Technical Staff,
Compaq Computer Corp.

The application of computational electromagnetics to real EMC design problems is an emerging and powerful technology. Relying on existing rules of thumb and traditional design equations often is not cost-effective. Basic techniques will be described to set the stage for the heart of the course - EMC model development. A number of examples will be used to highlight some of the important aspects of CEM in EMC.

SC9 Wednesday, October 23, 2002
2:00 pm - 5:00 pm

IEEE 802.11 Wireless LAN Technology (3 Hrs.)

(Organized by IEEE Oregon Section and IEEE Seattle Section)

Fee: \$210 (Includes Book) (.3 CEUs will be awarded.)

Instructors: Mr. John E. Blyler, Sr. Technology Editor, *Wireless Systems Design Magazine* - Dr. Rob Roy, Co-founder and Senior Director of *Business Development & Technology Strategy*, *Mobilian Corp.* - Mr. Todd Stockert, Software R&D Engineer, *Agilent Technologies*, *Electronic Product Solutions Div.*, *Signal Analysis Product Generation Unit*

The major aspects of the IEEE 802.11 (Wi-Fi) family of wireless networking standards will be introduced, and the various efforts and state of deployment will be described. The basic protocol physical and MAC layers for 802.11a, b, and new g services will be presented. Coexistence with other wireless networks (e.g. Bluetooth, Hiperlan) will be discussed.

SC10 Thursday, October 24, 2002
9:00 am - Noon

Opto-Electronic Design Considerations (3 Hrs.)

(Organized by IEEE Seattle Section)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Percy F. (Butch) Shadwell, Jr.,
Principal Consultant, *Shadwell Technical Services*

This course will explore the opto-electronic design problem domain. Optical data transmission through open space will be emphasized, and specific design solutions for reducing product costs and shortening R&D time in opto-electronic design will be offered. You'll understand how to read specifications to insure component performance and applicability to the problem domain.

SC11 Thursday, October 24, 2002
2:00 pm - 5:00 pm

PCB and Backplane Signal Integrity in a GigaBit World (3 Hrs.)

(Organized by IEEE EMC Society)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Franz Gisin, Director, *Backplane Design Technology and Signal Integrity Design*, *Sanmina / SCI Systems*

This course explains how PCB and backplane materials (conductors & dielectrics), interconnect geometries (traces

& vias) and manufacturing processes (mixed dielectric stackups & micro-vias) impact the signal integrity of gigabit/second transmission lines structures commonly found in FibreChannel, Gigabit Ethernet, and Infiniband architectures.

SC12 Wednesday, October 23, 2002
9:00 am - Noon

Simple Network Management Protocol (SNMP) Technology Overview (3 Hrs.)

(Organized by IEEE Seattle Section)

Fee: \$160 (.6 CEUs will be awarded.)

Instructor: Mr. Larry R. Walsh,
President, *Chateau Systems, Inc.*

This course will provide an overview of SNMP terminology and will give attendees the information necessary to make technology choices. The viewpoint is that of a technical practitioner who develops MIB (management information base) specifications and the agents who manage such data. Mainstream usage will be emphasized.

SC13 Tuesday, October 22, 2002
9:00 am - 4:00 pm

Supply Management Fundamentals (6 Hrs.)

(Organized by IEEE Oregon Section)

Fee: \$360 (Includes Book) (.6 CEUs will be awarded.)

Instructor: Mr. Greg Hutchins, P.E., *Engineering Principal, Working It, LLC*

Supply management has become a core, competitive organizational area as more companies outsource non-core activities. This practical, value-laden workshop offers practical tools, tips and techniques for aligning supply management processes with strategic initiatives and goals; starting and managing a supply development process; moving from a low-price and product-based relationship to a value-added relationship; managing supply risks throughout the supply development lifecycle and improving supply base maturity and capability.

Design Courses

SC14 Wednesday, October 23, 2002
9:00 am - 5:00 pm

Advanced Signal Conditioning Design (6 Hrs.)

Fee: \$310 (.6 CEUs will be awarded.)

Instructors: Mr. Ronald Mancini,
Applications Engineer, *Texas Instruments, Inc.*
Mr. Charles Wray, Member Technical Staff
Texas Instruments, Inc.,
Advanced Analog Products

This course, in five sections, will describe the fundamental tools used in designing analog circuits. Sections one and two will explain and develop the tools that will be used and applied in sections three, four and five where the same

approach to designing signal-conditioning circuits will be applied in three different ways.

SC15 Tuesday, October 22, 2002
9:00 am - 4:00 pm

Analog Electronic Design (6 Hrs.)

Fee: \$310 (.6 CEUs will be awarded.)

Instructors: Mr. Ronald Mancini,
Applications Engineer, *Texas Instruments, Inc.* -
Mr. Charles Wray, Member Technical Staff,
Texas Instruments, Inc.,
Advanced Analog Products

This introductory-level course will teach analog electronics from the basics to the latest analog applications including high-frequency amplifiers, data converters, single-supply op amps, and low power circuits.

SC16 Wednesday, October 23, 2002
2:00 pm - 5:00 pm

Ball Grid Arrays: Principles and Practice (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Ray P. Prasad,
P.E., President, *BeamWorks, Inc.*

Design Courses

BGA technology offers benefits such as real estate savings, high yield and better electrical performance. BGA and CSP are leading edge packaging technologies. Implementing BGA and CSP also mean dealing with existing mixed technologies (standard SMT, fine-pitch and through-hole) on the same board. This course will identify technical BGA design and manufacturing issues that must be resolved for effective implementation on mixed technology boards

SC17 Thursday, October 24, 2002
2:00 pm - 5:00 pm

Electronic Interconnection Technologies (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Joe Fjelstad,
Sr. Consultant, J.C. Fjelstad & Assoc.

A brief but comprehensive overview of the hierarchy of electronic interconnections from the IC to the wall socket with emphasis on key technologies including IC packaging, HDI substrates, backplanes and connectors.

SC18 Tuesday & Wednesday,
October 22 & 23, 2002
9:00 am - 5:00 pm

High-Frequency Digital Design and PCB Layout (12 Hrs.)

Fee: \$685 (Includes Book)

(1.2 CEUs will be awarded.)

Instructor: Mr. Robert Hanson, *President, AmeriCom Test & SMT Technology, Inc.*

Design concerns of high-speed digital designs (crosstalk, ground bounce, metastability, reflections, terminations, bypassing, clock control and how to design to eliminate their negative effects on signal integrity will be explored. How to control Zo, PB stack/layout and logic parameters also will be covered.

SC19 Tuesday, October 22, 2002
9:00 am - 4:00 pm

Logic Design with CPLDs, FPGAs and ASICs (6 Hrs.)

Fee: \$310 (.6 CEUs will be awarded.)

Instructor: Mr. Ken Coffman, *Technical Sales Engineer, ES/Chase Co.*

Architectures and successful design methods for CPLD, FPGA, gate array and ASIC conversions will be explored. Attendees will be exposed to modern device architectures and proven design methods.

SC20 Thursday, October 24, 2002
9:00 am - Noon

Power Supply Topologies - An Introduction (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Ken Coffman, *Technical Sales Engineer, ES/Chase Co.*

An introduction to power supply AC/DC and DC/DC technologies, course topics will include power tradeoffs, discussion and analysis of common power supply topologies, and an intuitive approach to understanding power supply circuitry.

SC21 Thursday, October 24, 2002
2:00 pm - 5:00 pm

Using Reprogrammable Microcontrollers to Enhance Product Design and Functionality (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Rodger Ritchey, *Applications Manager, Microchip Technology, Inc.*

This course will examine Flash microcontrollers and how they can be used to enhance product design. Real-world design examples will serve as the basis for the discussion. All of the concepts, technology and material on reprogrammable technology discussed here can be applied to any microcontroller manufacturer's products.

SC22 Wednesday, October 23, 2002
9:00 am - 5:00 pm

VHDL and Verilog Synthesis (6 Hrs.)

Fee: \$365 (Includes Book)
(.6 CEUs will be awarded.)

Instructor: Mr. Ken Coffman, *Technical Sales Engineer, ES/Chase Co.*

HDL topics including device architectures and successful design capture methods will be explored.

Design/Manufacture/Test

SC23 Wednesday, October 23, 2002
9:00 am - Noon

Design for Built-In Self-Test (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Louis Y. Ungar,
President, A.T.E. Solutions, Inc.

This course will offer tools for going beyond the testability techniques offered by boundary scan and create not only self-testable ICs and systems, but also use BIST to deal with many board-level faults.

SC24 Tuesday, October 22, 2002
9:00 am - 4:00 pm

Design for Testability (6 Hrs.)

Fee: \$310 (.6 CEUs will be awarded.)

Instructor: Mr. Louis Y. Ungar,
President, A.T.E. Solutions, Inc.

Techniques including boundary scan will be explored as a means of giving test a fighting chance in finding and diagnosing faults in today's ever-more-complex circuitry.

SC25 Thursday, October 24, 2002
2:00 pm - 5:00 pm

EMC Standards and Regulations - The Impact on Design and Test (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructors: Mr. Todd Robinson, *Sales & Marketing Manager, CKC Laboratories, Inc.* -
Mr. Chris Kendall, *Principal Consultant and CEO,*

CKC Laboratories, Inc. - Mr. Ghery Pettit,
Corporate EMC Engineer, Intel Corp.

This course will explore international standards and compliance processes for electromagnetic compatibility (EMC) in the U.S., EU, Australia, Japan, Taiwan, Korea and other countries. Self-declaration versus agency approvals will be discussed, as well as the FCC TCB certification and EU R&TTE processes for transmitters.

SC26 Tuesday, October 22, 2002
9:00 am - 4:00 pm

Six Sigma - Implementation for Real Results (6 Hrs.)

Fee: \$310 (.6 CEUs will be awarded.)

Instructor: Mr. Praveen Gupta, *Partner, Quality Technology Company*

This course offers a practical approach for successfully implementing Six Sigma by understanding how quality and profitability can go hand in hand, and explores how to establish dramatic improvement objectives and implement the appropriate performance measurements. Mathematical basis, methods, measurement and necessary tools to implement Six Sigma will be given.

SC27 Tuesday, October 22, 2002
1:00 pm - 4:00 pm

SMT - Design for Manufacturability, Test & Repair (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Ray P. Prasad,
P.E., President, BeamWorks, Inc.

Technical issues in SMT, BGA and fine-pitch technology

design and manufacture that should be understood for effective implementation of SMT and newer packaging technologies will be explored. Factors in selecting appropriate components and DFM-related issues in qualifying a subcontractor will be discussed along with techniques to help insure that boards are designed for manufacturability and yield.

SC28 Thursday, October 24, 2002
9:00 am - 5:00 pm

SMT Implementation with New Process Technologies (6 Hrs.)

Fee: \$310 (.6 CEUs will be awarded.)

Instructor: Mr. Robert Hanson, *President, AmeriCom Test & SMT Technology, Inc.*

Essential concerns when manufacturing a high-density, double-sided designs will be explored along with BGA, double-sided reflow, printing very fine pitch, selective soldering, odd form and no-lead soldering issues.

SC29 Wednesday, October 23, 2002
9:00 am - Noon

SMT - Troubleshooting Yield Problems (3 Hrs.)

Fee: \$160 (.3 CEUs will be awarded.)

Instructor: Mr. Ray P. Prasad,
P.E., President, BeamWorks, Inc.

This course will focus on identifying and correcting SMT assembly problems related to the three major areas of SMT defects - design, assembly and incoming material quality. By offering a step-by-step method for investigating the assembly process (related problems and remedies), the information gained in this course will help you achieve high-yield manufacturing.

First Name _____		Last Name _____	
Job Title _____		E-mail _____	
Company _____			
Mailing Address _____		Mail Stop _____	
City _____	State _____	Zip _____	Country _____
() _____		() _____	
Telephone _____		Fax _____	
I am a member of (or referred by): <input type="checkbox"/> HA IEEE <input type="checkbox"/> HD ASQ <input type="checkbox"/> HB EMA <input type="checkbox"/> HE ESD <input type="checkbox"/> HC ERA <input type="checkbox"/> HF None			

Priority Number

5-90125

How to Register

Mail Deadline - September 13, 2002

Northcon/2002
1230 Rosecrans Ave., Suite 100
Manhattan Beach, California 90266

FAX Deadline - October 20, 2002

310-643-7328
Please do not both fax and mail

Electronically www.northcon.org

After September 13, 2002 badges will be held for pick-up at the advance registration counter.

On-Site

Bring this form with you to Northcon/2002 for FREE admittance.

Register Early: Prices shown are effective through October 4, 2002. Beginning October 5, the cost of "SC" events will increase by \$50 each. Corporate discounts available for multiple registrants. Call for information.

_____ **Northcon Exhibits (Weds. and Thurs.- October 23-24)** No Charge

_____ **Keynote K1 - Wed. - October 23 - 8:30 am - 10:00 am** \$10 \$ _____

_____ **Keynote K2 - Thurs. - October 24 - 8:30 am - 10:00 am** \$10 \$ _____

Subtotal _____

Conference Program Courses (All courses shown below include box lunch)

_____ SC1 (\$160)	_____ SC9 (\$210*)	_____ SC16 (\$310)	_____ SC23 (\$160)
_____ SC2 (\$160)	_____ SC10 (\$160)	_____ SC17 (\$160)	_____ SC24 (\$310)
_____ SC3 (\$160)	_____ SC11 (\$160)	_____ SC18 (\$685*)	_____ SC25 (\$160)
_____ SC4 (\$160)	_____ SC12 (\$160)	_____ SC19 (\$310)	_____ SC26 (\$310)
_____ SC5 (\$160)	_____ SC13 (\$360*)	_____ SC20 (\$160)	_____ SC27 (\$160)
_____ SC6 (\$160)	_____ SC14 (\$310)	_____ SC21 (\$160)	_____ SC28 (\$310)
_____ SC7 (\$310)	_____ SC15 (\$310)	_____ SC22 (\$365*)	_____ SC29 (\$160)
_____ SC8 (\$255*)			

Subtotal _____

* Includes Book

Grand Total \$ _____

Method of Payment

___ Check (payable to Northcon 2002).

___ I agree to pay the grand total amount according to my credit card issuer (circle one) VISA MC AMEX

Card No. _____ CVV2 No.** _____ Expiration Date _____

Name appearing on card (Printed) _____ (Signature) _____

Billing address of card _____
(Street/City/State/Zip)

**For Visa and Mastercard - the CVV2 number appears on the back of the card in the signature area.

American Express cards do not contain this number.

Please note: Your credit card statement will show "ECI - Electronic Conventions, Inc." as the payee - not "Northcon 2002".

Persons under 18 years of age not admitted. Students 18 or older admitted on Thursday, October 24 only.

Special Assistance: If you require special assistance covered under the Americans with Disabilities Act, please call (800) 877-2668, Ext. 218 by October 5, 2002.

**For Complete Conference Information and Registration visit www.northcon.org
or call 800-877-2668 • 310-524-4100**

K1**Keynote****Wednesday, October 23, 2002**
8:30 am - 10:00 am

Outsourcing - The New Landscape and Horizon

Fee: \$10 (Includes Continental Breakfast)**Speaker:** Mr. David North, *Vice President, Business Development, Qualitel Corp.*

Outsourcing just changed! Outsourcing changed radically for many users and providers of electronics manufacturing services when the economy crashed. Did the economy cause it, or just trigger it? Who benefitted and who got hurt? How is outsourcing different today than it was a year ago, and where is it headed from here? Electronics manufacturing outsourcing isn't just a topic for contract manufacturers and their customers. Equipment and component manufacturers, sales representatives, distributors, professional service firms, banks, governments and many others are players. All play key roles in shaping outsourcing, how it works and the consequences - good and bad - for all involved. Better understanding of our roles and how we each influence mutual success will make outsourcing work as a more rewarding strategy for customers, and a more rewarding livelihood for contract manufacturers and all of the suppliers of goods and services that support them. This provocative keynote challenges the electronics industry to adapt to a new landscape, and prepare for a new horizon of outsourcing. Eyes will be raised; feathers will be ruffled; and new insights, challenges and information will be openly discussed.

K2**Keynote****Thursday, October 24, 2002**
8:30 am - 10:00 am

The Field Sales Function - Costs, Issues, and Outsourcing

Fee: \$10 (Includes Continental Breakfast)**Speaker:** Mr. Raymond J. Hall, *Executive Vice President & CEO, Electronic Representatives Association Int'l*

This presentation focuses on today's field sales and specifically the outsourcing of the field sales function to professional field sales organizations (manufacturers representatives). Special attention will be paid to "the function under fire" - i.e., from customers (trying to cut out the field sales function and therefore the commission), from distributors (trying to take over the field sales function and get the commissions), and even from some manufacturers (trying to find ways to cut that commission, take over house accounts or keep larger and larger portions of split commissions). Electronics has become a truly global industry. Tracking products, applying split credits, consolidations, line conflicts and instant international communications are just a few of the issues that impact the effectiveness of today's field sales. Attendees will receive an incisive overview of these critical issues and an insider's current perspectives on the world of outsourced field sales.

REGISTER TO WIN A DVD PLAYER OR PALM PILOT**Northcon[®]**1230 Rosecrans Ave., Suite 100
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