The 15th Annual
applied ergonomics
CONFERENCE 2012
Practitioners talking with practitioners

MARCH 26-29, 2012
NASHVILLE, TN | GAYLORD OPRYLAND RESORT & CONVENTION CENTER

ON-SITE CONFERENCE BROCHURE

www.appliedergoconference.org
Whereas, The Institute of Industrial Engineers will host its fifteenth annual Applied Ergonomics Conference in Nashville, Tennessee, March 26–29, 2012; and

Whereas, Ergonomics is a critical component for having a productive, safe and healthy work environment; and

Whereas, The Applied Ergonomics Conference is committed to advancing the profession of ergonomics and educating the business and academic communities about the latest tools, techniques and applications in the field of ergonomics.

Now, therefore, be it resolved that I, Karl F. Dean, Mayor of the Metropolitan Government of Nashville and Davidson County, do hereby join the Institute of Industrial Engineers in recognizing Ergonomics Day on March 27, 2012.

I have hereunto set my hand on this 27th day of March, 2012.

Karl F. Dean
Mayor
WELCOME

Welcome to the 2012 Applied Ergonomics Conference and to Nashville, Tennessee!

This week you have the opportunity to network and learn from other ergonomics practitioners. You will discover tips, tools and connections to help you work smarter, and you can benchmark your efforts with the best ergonomics practitioners in the world.

This is the only conference focused on how ergonomics works in the real world to improve health, human factors, processes, and safety in a variety of environments. You will be able to select from more than 80 high-quality educational and master track sessions; take part in dynamic roundtable discussions; explore an exhibit hall filled with solution-oriented vendors; visit the Poster Session in the exhibit hall; listen to and learn from industry-leading keynote speakers; and participate in facility tours to see “applied ergonomics in action.”

In the exhibit hall, you will find 37 Ergo Cup® finalists from a variety of industries around the world ready to show you their innovative solutions to ergonomics issues in their workplaces.

Attendees told us what they wanted. And we listened. The Applied Ergonomics Conference Committee has spent months conducting research to identify ways to make our conference better than ever. We interviewed numerous attendees, talked with industry experts, benchmarked other conferences and developed an entirely new approach to enhance this already highly acclaimed event.

We invite you to take full advantage of this opportunity to interact with colleagues, industry peers, mentors, exhibitors and Ergo Cup® finalists. Take time to listen and talk to the speakers and your peers about ideas you can adapt to your organization’s unique requirements.

Thank you for attending the conference.

2012 Conference Chairs
Teresa A. Bellingar, Ph.D., A.E.P.
Conference Chair
Haworth Inc.

Gary B. Orr, P.E., C.P.E.
Outgoing Conference Chair
Johns Hopkins University Applied Physics Laboratory

Sandra Woolley, Ph.D., C.P.E.
Incoming Conference Chair
Mayo Clinic

MEET THE AEC LEADERSHIP TEAM
Teresa Bellingar, Ph.D., A.E.P., Haworth Inc.
Bill Boyd, CIH, CSP, C.P.E., CNA Companies
Don Greene, P.E., CAE, Institute of Industrial Engineers
Gary Orr, P.E., C.P.E., Johns Hopkins University Applied Physics Laboratory
Sandra Woolley, Ph.D., C.P.E., Mayo Clinic

SPECIAL THANK YOU TO OUR SPONSORS

SPONSORS:

PARTICIPATING ORGANIZATIONS:

WWW.APPLIEDERGOCONFERENCE.ORG | 3
## SCHEDULE-AT-A-GLANCE

### Monday, March 26

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>7 a.m. – 8 a.m.</td>
<td>Coffee Service</td>
<td>Ryman Studio Foyer</td>
</tr>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
<td>Ryman B2 Registration Desk</td>
</tr>
<tr>
<td>8 a.m. – Noon</td>
<td>A.M. Pre-Conference Workshops (Additional Fee Required)</td>
<td>Ryman Studio DE, Ryman Studio FG, Ryman Studio HI</td>
</tr>
<tr>
<td>11 a.m. – 4 p.m.</td>
<td>Exhibitors, Ergo Cup and Poster Presenters Setup</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>1 p.m. – 5 p.m.</td>
<td>P.M. Pre-Conference Workshops (Additional Fee Required)</td>
<td>Ryman Studio DE, Ryman Studio FG, Ryman Studio HI</td>
</tr>
<tr>
<td>5 p.m. – 7 p.m.</td>
<td>Welcome Reception in the Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
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### Tuesday, March 27

<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>7 a.m. – 8 a.m.</td>
<td>Coffee Service</td>
<td>Tennessee Ballroom Foyer, Ryman Ballroom Foyer</td>
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<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
<td>Ryman B2 Registration Desk</td>
</tr>
<tr>
<td>7:15 a.m. – 7:45 a.m.</td>
<td>First-Time Attendee Orientation</td>
<td>Tennessee Ballroom CDE</td>
</tr>
<tr>
<td>7:15 a.m. – 7:45 a.m.</td>
<td>Speaker – Moderator Briefing – Tuesday A.M. Sessions</td>
<td>Ryman Studio J</td>
</tr>
<tr>
<td>8 a.m. – 9:30 a.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
</tr>
<tr>
<td>9:45 a.m. – 10:45 a.m.</td>
<td>Keynote Presentation – Don Chaffin, The University of Michigan</td>
<td>Tennessee Ballroom CDE</td>
</tr>
<tr>
<td>10:45 a.m. – Noon</td>
<td>Poster Session in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits and Ergo Cup in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>11 a.m. – 11:30 a.m.</td>
<td>Speaker – Moderator Briefing - Tuesday P.M. Sessions</td>
<td>Ryman Studio J</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>1:30 p.m. – 4 p.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
</tr>
<tr>
<td>4 p.m. – 5:30 p.m.</td>
<td>Networking Reception in the Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>6:30 p.m.</td>
<td>Night of Country Fun (Additional fee required – SOLD OUT)</td>
<td>Depart from Magnolia Entrance</td>
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### Wednesday, March 28

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<td>Registration Desk Open</td>
<td>Ryman B2 Registration Desk</td>
</tr>
<tr>
<td>7 a.m. – 8 a.m.</td>
<td>Roundtable - Office Ergonomic Equipment Evaluation</td>
<td>Ryman Studio DE</td>
</tr>
<tr>
<td>7:15 a.m. – 7:45 a.m.</td>
<td>Speaker – Moderator Briefing – Wednesday A.M. Sessions</td>
<td>Ryman Studio J</td>
</tr>
<tr>
<td>8 a.m. – 9:30 a.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
</tr>
<tr>
<td>9:45 a.m. – 10:45 a.m.</td>
<td>Keynote Presentation – R. Davis Layne, VPPPA Inc.</td>
<td>Tennessee Ballroom CDE</td>
</tr>
<tr>
<td>10:45 a.m. – Noon</td>
<td>Poster Session in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits and Ergo Cup in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>11 a.m. – 11:30 a.m.</td>
<td>Speaker – Moderator Briefing – Wednesday, 1:30 p.m. Sessions</td>
<td>Ryman Studio J</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch for sale in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>11:30 a.m. – Noon</td>
<td>Speaker – Moderator Briefing – Wednesday, 3:30 p.m. Sessions</td>
<td>Ryman Studio J</td>
</tr>
<tr>
<td>Noon – 1:15 p.m.</td>
<td>Ergo Quiz Bowl in Exhibit Hall</td>
<td>Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>1:30 p.m. – 3 p.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
</tr>
<tr>
<td>3 p.m. – 3:30 p.m.</td>
<td>Ergo Quiz Bowl Finals</td>
<td>Tennessee A</td>
</tr>
<tr>
<td>3:30 p.m. – 5 p.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
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</table>
**Thursday, March 29**

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<thead>
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</tr>
<tr>
<td>7 a.m. – 1:30 p.m</td>
<td>Registration Desk Open</td>
<td>Ryman B2 Registration Desk</td>
</tr>
<tr>
<td>7:15 a.m. – 7:45 a.m.</td>
<td>Speaker – Moderator Briefing – Thursday A.M. Sessions</td>
<td>Ryman Studio J</td>
</tr>
<tr>
<td>8 a.m. – 9:30 a.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
</tr>
<tr>
<td>9:30 a.m. – 10 a.m.</td>
<td>Break</td>
<td>Tennessee Ballroom Foyer, Ryman Ballroom Foyer</td>
</tr>
<tr>
<td>10 a.m. – 11:30 a.m.</td>
<td>Concurrent Sessions</td>
<td>Tennessee A, Tennessee B, Ryman Ballroom BC, Ryman Ballroom EF, Ryman Studio BC</td>
</tr>
<tr>
<td>11:45 a.m. – 1:30 p.m</td>
<td>Lunch &amp; Awards Ceremony (Ergo Cup® Competition, Practitioner and Student Awards – ticket required)</td>
<td>Tennessee Ballroom CDE</td>
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**Advertisement**

Are you searching for ergonomics training that will make a difference?

With hands-on training in both industrial and office ergonomics, our onsite workshops can give you the tools you need to make your company safer and more productive.

Visit us at the Applied Ergonomics Conference

Booth #307 to learn more

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[www.TheErgonomicsCenter.com](http://www.TheErgonomicsCenter.com)

919-515-2052
PRE-CONFERENCE WORKSHOPS

Monday, March 26 | 8 a.m. – Noon | Ryman Studio DE
**PREPARING FOR THE CERTIFIED PROFESSIONAL ERGONOMIST EXAM**
Peter Budnick, Ergoweb
Presenting this workshop on behalf of The Foundation for Professional Ergonomics
Intermediate/Advanced level

This workshop will help individuals be better prepared to pass a BCPE exam. It will cover: how exams are structured; recommended reference materials to review; example questions and general exam content; and suggestions for preparations.

Monday, March 26 | 8 a.m. – Noon | Ryman Studio FG
**ERGO 101: THE BASICS OF ERGONOMICS**
W. Gary Allread, The Ohio State University
Basic level

Continuing an Applied Ergonomics Conference tradition of offering conference registrants a low-cost, high-quality seminar, this session is intended to help those who are new to the ergonomics discipline or have ergonomics responsibilities. This workshop will provide an introduction to fundamental ergonomic principles, emphasize the identification of risk factors, and review the elements of effective ergonomic processes. Examples and case studies from a variety of industrial settings will be reviewed, as will those pertaining to office ergonomic issues.

Monday, March 26 | 8 a.m. – Noon | Ryman Studio HI
**MASTERING THE TOOLS OF OUR TRADE: A PRACTITIONER’S GUIDE TO ERGONOMICS JOB ANALYSES**
Dave Alexander and Miriam Joffe, Auburn Engineers
Intermediate/Advanced level

For the practicing ergonomist, job analysis can take many forms. From simple observation to detailed formulas, each has its benefits in today’s busy business culture. The challenge arises when the ergonomist’s time is limited by other job constraints and when job analysis responsibilities are assigned to company teams of line workers or engineers. Team members may not know which analysis tool to use. They may be able to gather data but not know how to compare results of one tool to another or how to synthesize results into meaningful solutions and implementation plans.

This seminar will help the ergonomics expert filter through many of the common analysis options and uses a higher level of technology to centrally manage ergonomics-related problem identification, efficient job/task analysis, cost-effective solution development, and product design in single and multi-site companies.

Monday, March 26 | 1 p.m. – 5 p.m. | Ryman Studio DE
**APPLICATION OF NEW ERGONOMIC TOOLS AND METHODS TO THE LEAN, ERGONOMICS & SIX SIGMA PROCESS**
Ben Zavitz, General Dynamics, and Scott Smith, Lockton Insurance Brokers
Intermediate level

Lean Six Sigma is a management approach often used to improve the quality and efficiency of manufacturing processes. This workshop will describe various new ergonomic tools and methods that have been designed specifically for use in industrial lean, ergonomics and Six Sigma activities. These include: control charts for tracking injury data; ergonomic fish bone diagrams for identifying root causes; productivity assessments that align with ergonomic risk factors; sigma calculators related to ergonomic risk factors; problem solution matrices to categorize solutions and develop improvement plans; and ROI calculations. This workshop will make use of several examples and case studies to illustrate these new methods.

Monday, March 26 | 1 p.m. – 5 p.m. | Ryman Studio FG
**EVIDENCE-BASED RETURN TO WORK APPROACH FOR WORKERS WITH MSDS**
Sonia Paquette, American Board of Vocational Experts
Intermediate/Advanced level

To reduce the length of MSD-related work absences, companies are increasingly adopting return-to-work measures such as “temporary assignment” or “modified work” duties. Although these rehabilitation strategies yield better results than strictly medical approaches, many companies struggle to identify, assign, and follow-up on tasks suitable for workers with MSDs. This workshop will lead participants through the steps of implementing an algorithm to facilitate the return-to-work of an injured worker.

Participants will learn how to: estimate the physical demands of work tasks proposed for temporary assignment; submit a temporary assignment proposal to the treating physician based on this evaluation; and obtain the treating physician’s recommendations about the temporary work restrictions that apply to the injured worker.

Monday, March 26 | 1 p.m. – 5 p.m. | Ryman Studio HI
**MANAGING AN ERGONOMICS PROGRAM**
James Mallon, Humantech
All levels

Challenges common to ergonomics programs are sustaining the program activities, results over time, and demonstrating the value of the program. A significant factor in successful ergonomics programs is establishing a management system for ongoing sponsorship, leadership, and accountability for the program by senior management. In this workshop, you will learn the strategy to achieve support for your ergonomics efforts and how to sustain your success. Learn to: select the critical elements of an ergonomics improvement process; establish goals and metrics to track the progress of ergonomics efforts; identify resources and develop a support infrastructure for your organization’s ergonomics efforts; and leverage the results of ergonomic assessments to sustain the momentum of the program.
FACILITY TOURS

CUMMINS FILTRATION
Monday, March 26, 10:30 a.m. – 4:30 p.m.
(Lunch will be provided by Cummins on site.)
Fee: $75

The Cummins Cookeville facility has more than 400,000 square feet and makes filters for heavy-duty trucks and mining equipment. Visitors will be able to see several material handling improvements as well as a unique method of setting up sit/stand computer workstations. See how Cummins developed solutions for 23-pound packing filters and how they were able to reduce the risk of handling metal shells, which has reduced its recordable rate by more than 50 percent in the last few years. The travel time to the facility is approximately 90 minutes.

TYSON FRESH MEATS
Wednesday, March 28, 9 a.m. – 11:30 a.m.
Fee: $45

Tyson’s Goodlettsville facility covers almost 500,000 square feet, and most of the space is used during daily operations. As you tour the plant, you will see engineering controls and processes that have reduced or even eliminated the amount of manual labor needed to do certain jobs. We will witness some mechanical changes to certain jobs that have reduced injuries up to 90 percent in the last two years.

GAYLORD OPRYLAND LAUNDRY FACILITY
Wednesday, March 28, 10 a.m. – 11:30 a.m.
SOLD OUT

Gaylord Opryland is the flagship property of Gaylord Hotels. It offers 2,881 sleeping rooms, more than 600,000 square feet of meeting space and 9 acres of indoor botanical gardens, waterways and waterfalls. Participants will see processes within the laundry and uniform facility that have helped in productivity and efficiencies. They will see how the equipment works and learn about the history of the laundry and the automation changes made to reduce risk factors.

*Restrictions and attire regulations for each tour are on the AEC 2012 website.

NETWORKING EVENTS

MONDAY, MARCH 26
WELCOME RECEPTION IN THE EXHIBIT HALL
Ryman Exhibit Hall B1-2
Join your colleagues as we kick off the conference!

TUESDAY, MARCH 27
NETWORKING RECEPTION IN THE EXHIBIT HALL
Ryman Exhibit Hall B1-2
Join your colleagues and view the latest in ergonomic solutions and the Ergo Cup® competition.

TUESDAY, MARCH 27
NIGHT OF COUNTRY FUN — SOLD OUT
Don’t miss this fabulous opportunity to experience the best of Nashville. This year’s AEC Networking Event is a night of country fun starting with dinner at the famous Jack’s Bar-B-Que followed by live music and line-dancing at none other than the Wildhorse Saloon. Transportation will be provided and will depart from the Magnolia Entrance.

WEDNESDAY, MARCH 28
ERGO QUIZ BOWL CONTEST
The ultimate ergo challenge! Teams will compete in their knowledge of ergonomics facts, fiction and folklore!

Preliminary round: Wednesday, March 28, Noon-1:15 p.m. in the Exhibit Hall. The top two teams will advance to the finals!
Finals: Wednesday, March 28, 3 p.m. in the Tennessee A Ballroom. Come cheer for your favorite team!

WEDNESDAY, MARCH 28
DUTCH TREAT DINNERS
The AEC Networking Committee invites all attendees to join them on Wednesday, March 28 for an evening of networking and meeting new friends. Reservations will be made at select local restaurants. Sign-up sheets will be available on site at the conference registration desk for each restaurant. Participants are responsible for the cost of their own dinner and transportation.

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To deliver a first-class ergonomics program you need the support of a first-class product.

Since 1994 Workstation Safety Plus has been selected as the system of choice by experts in many of the world’s leading organizations.

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MONDAY, MARCH 26

7 a.m. – 8 a.m. Coffee Service - Ryman Studio Foyer
7 a.m. – 5 p.m. Registration Desk Open - Ryman B2 Registration Desk

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<tr>
<th>Room</th>
<th>Preparing for the Certified Professional Ergonomist Exam</th>
<th>Ergo 101: The Basics of Ergonomics</th>
<th>Mastering the Tools of Our Trade: A Practitioner’s Guide to Ergonomics Job Analyses</th>
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<td>8 a.m. – Noon</td>
<td>Peter Budnick, Ergoweb Presenting this workshop on Behalf of The Foundation for Professional Ergonomics</td>
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</table>
11 a.m. – 4 p.m. Exhibitors, Ergo Cup and Poster Presenters Setup - Ryman Exhibit Hall B1-2
1 p.m. – 5 p.m. Application of New Ergonomic Tools and Methods to the Lean, Ergonomics & Six Sigma Process | Evidence-Based Return to Work Approach for Workers with MSDs | Managing an Ergonomics Program |
| Ben Zavit, General Dynamics, and Scott Smith, Lockton Insurance Brokers | Sonia Paquette, American Board of Vocational Experts | Walt Rostykus, Humantech |
5 p.m. – 7 p.m. Welcome Reception in the Exhibit Hall – Ryman Exhibit Hall B1-2

TUESDAY, MARCH 27

7 a.m. – 8 a.m. Coffee Service - Tennessee Ballroom Foyer, Ryman Ballroom Foyer
7 a.m. – 5 p.m. Registration Desk Open - Ryman B2 Registration Desk
7:15 a.m. – 7:45 a.m. First-Time Attendee Orientation - Tennessee Ballroom CDE
7:15 a.m. – 7:45 a.m. Speaker – Moderator Briefing - Ryman Studio J (A.M. sessions)

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<th>Track</th>
<th>Manufacturing Applications and Case Studies</th>
<th>Diverse and Global Workforce</th>
<th>Ergonomics Programs</th>
<th>Office Ergonomics</th>
<th>Roundtable</th>
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<tr>
<td>Room</td>
<td>Tennessee Ballroom A</td>
<td>Tennessee Ballroom B</td>
<td>Ryman Ballroom BC</td>
<td>Ryman Ballroom EF</td>
<td>Ryman Studio BC</td>
</tr>
<tr>
<td>Modulators</td>
<td>Paul Adams Jose Banaag</td>
<td>Gary Allread Mike Heembrock</td>
<td>Tom DeRoos Student Moderator - Alicia Fernandez</td>
<td>Miriam Joffe Kelly O’Connor</td>
<td>Scott Smith</td>
</tr>
<tr>
<td>8 a.m. – 9:30 a.m. Session Coordinator: Mark Bender</td>
<td>The Neat Seat Rachel Reed, Gulfstream Aerospace (All)</td>
<td>Implementing Ergonomics Programs in a Large, Global, Diverse Company Lisa Brooks, General Electric (All)</td>
<td>Ergonomics: Recognizing and Reducing Risk Trent Shuford, InjuryFree Inc. (I)</td>
<td>FEATURING SPEAKER: Applying Ergonomics in Extremely Physically Demanding Jobs Scott Smith, Lockton Insurance Brokers</td>
<td></td>
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<tr>
<td>8 a.m. – 8:25 a.m.</td>
<td>C-5 Engine Stands with Ergonomic Features Christopher Westbrook and Christina Honea, Robins Air Force Base (B)</td>
<td>Overcoming Challenges of Implementing an Ergonomics Process with a Global Workforce Mirtha Perazza, The Ergonomics Center of North Carolina (All)</td>
<td>Effectively Engaging Management and Employees to Reduce CTD Risk and Injuries in the Office Environment Bruce Smith and Joyce Witham, Liberty Mutual Insurance Company (B)</td>
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<td>9 a.m. – 9:30 a.m.</td>
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### TUESDAY, MARCH 27 (CONTINUED)

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<td>Speaker – Moderator Briefing - Ryman Studio J (P.M. sessions)</td>
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<tr>
<td>11:15 a.m. – 11:55 a.m.</td>
<td>Lunch in Exhibit Hall – Ryman Exhibit Hall B1-2</td>
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<tr>
<td><strong>Track</strong></td>
<td><strong>Manufacturing Applications and Case Studies</strong></td>
</tr>
<tr>
<td><strong>Room</strong></td>
<td><strong>Tennessee Ballroom A</strong></td>
</tr>
<tr>
<td><strong>Moderators</strong></td>
<td><strong>Jessica Ellison Sandra Sellers</strong></td>
</tr>
<tr>
<td>1:30 p.m. – 4 p.m.</td>
<td>Session Coordinators: Deepesh Desai (Mfg/ Design) &amp; Brian Roberts (Programs &amp; AR)</td>
</tr>
<tr>
<td>1:30 p.m. – 1:55 p.m.</td>
<td>Integrating Lean into the Ergonomics Solution Development Process - Daniel Gottesman, The Boeing Company (I)</td>
</tr>
<tr>
<td>2 p.m. – 2:25 p.m.</td>
<td>Ergonomics Lean Event: An Industrial Case Study at R&amp;B Wagner - Carrie Schuel, Concordia University Wisconsin and Synergistic Solutions LLC (B)</td>
</tr>
<tr>
<td>2:30 p.m. – 2:55 p.m.</td>
<td>Ergonomic Design Guidelines for Process and Product Engineers - Deepesh Desai, Humantech Inc. (All)</td>
</tr>
<tr>
<td>3 p.m. – 3:25 p.m.</td>
<td>Exploring the Impact of UAV Interfaces on Pilot Workload, Situation Awareness and Usability - Lesley Strawderman, Mississippi State University (All)</td>
</tr>
<tr>
<td>3:25 p.m. – 4 p.m.</td>
<td>One Year Follow-up Case Study: Water Meter Reader/ Installer Problems and Solutions - Ivana Wireman, Ohio Bureau of Workers’ Compensation (I)</td>
</tr>
<tr>
<td><strong>Design, Product Design and Evaluation and Modeling</strong></td>
<td><strong>Ergonomics Programs</strong></td>
</tr>
<tr>
<td><strong>Room</strong></td>
<td><strong>Tennessee Ballroom B</strong></td>
</tr>
<tr>
<td><strong>Moderators</strong></td>
<td><strong>Jose Banaag Student Moderator - Nirathi Keerthi Govindu</strong></td>
</tr>
<tr>
<td>1:30 p.m. – 2 p.m.</td>
<td>Measuring Task Time Without Worker Knowledge - Paul Adams, Applied Safety and Ergonomics Inc. (A)</td>
</tr>
<tr>
<td>2 p.m. – 2:25 p.m.</td>
<td>Improving System Performance Through Human Performance Optimization: Incorporating Ergonomics to Engineering System Design and Improvement - Abraham Robledo Gallegos, Kysor Warren (I)</td>
</tr>
<tr>
<td>2:30 p.m. – 2:55 p.m.</td>
<td>Toyota’s Use of Audit Findings to Drive Continuous Ergonomics Program Improvement - Marisol Barrero, Toyota Motor Engineering &amp; Manufacturing, North America (All)</td>
</tr>
<tr>
<td>3 p.m. – 3:25 p.m.</td>
<td>Integrated Virtual Reality Training: The Biomechanical and Cognitive Implications of Design - Richard Stone, Iowa State University (I)</td>
</tr>
<tr>
<td>3:25 p.m. – 4 p.m.</td>
<td>Auditing Ergonomics Systems, Part 2 - Stephen Jenkins Auburn Engineers (I)</td>
</tr>
<tr>
<td><strong>Ergonomics Programs</strong></td>
<td><strong>Applied Research</strong></td>
</tr>
<tr>
<td><strong>Room</strong></td>
<td><strong>Ryman Ballroom BC</strong></td>
</tr>
<tr>
<td><strong>Moderators</strong></td>
<td><strong>Tom DeRoo Karen Harrington</strong></td>
</tr>
<tr>
<td>1:30 p.m. – 2:25 p.m.</td>
<td>Employee Near Miss System - David Jackson and Matt Walker, Bridgestone (B)</td>
</tr>
<tr>
<td>2:30 p.m. – 2:55 p.m.</td>
<td>Functional Disability and Return to Work - Mary Hughes, Fort Healthcare (B)</td>
</tr>
<tr>
<td>3 p.m. – 3:25 p.m.</td>
<td>Avoid the Lean Manufacturing Injury Explosion! - Jack Kester, Argonne National Laboratory (I)</td>
</tr>
<tr>
<td><strong>Ergonomics Programs</strong></td>
<td><strong>Roundtable</strong></td>
</tr>
<tr>
<td><strong>Room</strong></td>
<td><strong>Ryman Ballroom EF</strong></td>
</tr>
<tr>
<td><strong>Moderators</strong></td>
<td><strong>Keith White Sandra Woolley</strong></td>
</tr>
<tr>
<td>2:30 p.m. – 2:55 p.m.</td>
<td>Ergonomics In Action Training Program - Michelle Garner-Janna, Cummins Inc. (All)</td>
</tr>
<tr>
<td>3 p.m. – 3:25 p.m.</td>
<td>Development and Application of a Human Factors Failure Mode and Effects Analysis - Edward Lin, Research In Motion (I)</td>
</tr>
<tr>
<td><strong>Ergonomics Programs</strong></td>
<td><strong>Healthcare Ergonomics: Growing Trends and Solutions</strong></td>
</tr>
<tr>
<td><strong>Room</strong></td>
<td><strong>Ryman Studio BC</strong></td>
</tr>
<tr>
<td><strong>Moderators</strong></td>
<td><strong>Susan Murphey Janet Person</strong></td>
</tr>
<tr>
<td>2:30 p.m. – 2:55 p.m.</td>
<td>Ergonomic Technical Development Process - Glenn Harrington, Ford Motor Company (A)</td>
</tr>
<tr>
<td>3 p.m. – 3:25 p.m.</td>
<td>Ford Motor Company Global Assembly Ergonomic Technical Development Process - Glenn Harrington, Ford Motor Company (A)</td>
</tr>
<tr>
<td>3:25 p.m. – 4 p.m.</td>
<td>Developing a Usability Assessment Framework of Information Visualization Techniques in Healthcare - Quaneisha Jenkins-Penha and Steven Jiang, North Carolina A&amp;T State University (All)</td>
</tr>
</tbody>
</table>

**Legends for levels:**
- B = Basic
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<table>
<thead>
<tr>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>4 p.m. – 5:30 p.m.</td>
<td>Networking Reception in the Exhibit Hall – Ryman Exhibit Hall B1-2</td>
</tr>
<tr>
<td>6:30 p.m.</td>
<td>Night of Country Fun – additional fee required – SOLD OUT - Depart from Magnolia Entrance</td>
</tr>
</tbody>
</table>
### WEDNESDAY, MARCH 28

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7 a.m. – 8 a.m.</td>
<td>Coffee Service - Tennessee Ballroom Foyer</td>
<td>Tennessee Ballroom A</td>
<td>Barbara Peck, Ginni Thomas</td>
</tr>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open - Ryman B2 Registration Desk</td>
<td>Tennessee Ballroom B</td>
<td>Jose Banaag, Tom DeRoo</td>
</tr>
<tr>
<td>7 a.m. – 8 a.m.</td>
<td>Roundtable: <strong>Office Ergonomic Equipment Evaluation</strong> – Miriam Joffe, Auburn Engineers, Janet Peterson, JP Ergonomics, and Ben Zavitz, General Dynamics - Ryman Studio DE</td>
<td>Ryman Ballroom BC</td>
<td>Karen Harrington, Tina Minter</td>
</tr>
<tr>
<td>7:15 – 7:45 a.m.</td>
<td>Speaker – Moderator Briefing - Ryman Studio J (AM sessions)</td>
<td>Ryman Ballroom EF</td>
<td>Pam Dwyer</td>
</tr>
<tr>
<td>8 a.m. – 5 p.m.</td>
<td>Successful Ergo Team – Tutorial Series</td>
<td>Ryman Studio BC</td>
<td>Catherine Rae</td>
</tr>
<tr>
<td>8 a.m. – 9:30 a.m.</td>
<td><strong>ErgoGreen: Combining Ergonomics and Sustainability</strong> - Davana Pilczuk, Gulfstream Aerospace Corporation (B)</td>
<td>Tennessee Ballroom A</td>
<td>Paul Adams</td>
</tr>
<tr>
<td>8 a.m. – 8:25 a.m.</td>
<td><strong>FEATURED SPEAKER:</strong> Having Trouble Implementing an Ergonomics Program? Consider Partnering with Quality - Sandra Woolley, Mayo Clinic (I)</td>
<td>Tennessee Ballroom B</td>
<td></td>
</tr>
<tr>
<td>8:30 a.m. – 8:55 a.m.</td>
<td><strong>Change is Good – Guiding Your Workers toward Electronic Pipettes</strong> - Melissa Afterman, VSI Risk Management &amp; Ergonomics Inc. (I)</td>
<td>Ryman Ballroom BC</td>
<td></td>
</tr>
<tr>
<td>9 a.m. – 9:30 a.m.</td>
<td><strong>How Technology was Used in a Participatory Program to Drive Down Ergonomic Risks</strong> - Paula Lewis, EORM (All)</td>
<td>Ryman Ballroom EF</td>
<td></td>
</tr>
<tr>
<td>9:45 a.m. – 10:45 a.m.</td>
<td><strong>Keynote Presentation</strong> - R. Davis Layne, VPPPA Inc. - Tennessee Ballroom CDE</td>
<td>Ryman Studio BC</td>
<td></td>
</tr>
<tr>
<td>10:45 a.m. – 11:15 a.m.</td>
<td><strong>Exhibits and Ergo Cup in Exhibit Hall</strong> - Ryman Exhibit Hall B 1-2</td>
<td>Ryman Studio BC</td>
<td></td>
</tr>
<tr>
<td>11 a.m. – 11:30 a.m.</td>
<td><strong>Speaker – Moderator Briefing</strong> - Ryman Studio J (1:30 p.m. sessions)</td>
<td>Ryman Studio BC</td>
<td></td>
</tr>
<tr>
<td>11:15 a.m. – 11:30 a.m.</td>
<td><strong>Lunch for Sale in Exhibit Hall</strong> - Ryman Exhibit Hall B 1-2</td>
<td>Ryman Studio BC</td>
<td></td>
</tr>
<tr>
<td>11:30 a.m. – Noon</td>
<td><strong>Speaker – Moderator Briefing</strong> - Ryman Studio J (3:30 p.m. sessions)</td>
<td>Ryman Studio BC</td>
<td></td>
</tr>
<tr>
<td>Noon – 1:15 p.m.</td>
<td><strong>Ergo Quiz Bowl in Exhibit Hall</strong> - Ryman Exhibit Hall B 1-2</td>
<td>Ryman Studio BC</td>
<td></td>
</tr>
</tbody>
</table>

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### Track: Manufacturing Applications and Case Studies

**Room:** Tennessee Ballroom A

**Moderators:** Sandra Sellers, Mike Berno

- **1:30 p.m. – 3 p.m.:**
  **FEATURED SPEAKER:** 
  VPPPA and OSHA Strategies for Reducing Incidents
  R. Davis Layne, VPPPA, and Patrick Kapust, OSHA

- **2 p.m. – 2:25 p.m.:**
  **Putting the “E” Back into Safety:**
  Ergonomics in 2012 and Beyond
  Jeffrey Smagacz, Risk Management Group (I)

- **2:30 p.m. – 3 p.m.:**
  **Behavior Engineering:**
  Design Your Workplace to Promote Safe Behaviors
  Jack Kester, Ergonomics Advanced Laboratory (I)

- **3 p.m. – 3:30 p.m.:**
  **Ergo Quiz Bowl Finals** – Tennessee Ballroom A

### Track: Design, Product Design and Evaluation and Modeling

**Room:** Tennessee Ballroom B

**Moderators:** David Rose, Jessica Kornfeld

- **1:30 p.m. – 1:55 p.m.:**
  **Usability Selection, Testing & Design:**
  Applications and Examples
  Jeannie Iverson, VSI Risk Management & Ergonomics Inc. (All levels)

- **2 p.m. – 2:25 p.m.:**
  **New Flooring Technology Improves Workplace Warehouse Ergonomics**
  Greg Doppler, Cornerstone Specialty Wood Products LLC (All)

- **2:30 p.m. – 3 p.m.:**
  **Behavior Engineering:**
  Design Your Workplace to Promote Safe Behaviors
  Jack Kester, Argonne National Laboratory (I)

- **3 – 3:30 p.m.:**
  **Ergo Bowl Finals** – Tennessee Ballroom A

### Track: Office Ergonomics

**Room:** Ryman Ballroom BC

**Moderators:** Tom DeRoos, Student Moderator – Jyll Kinney

- **1:30 p.m. – 1:55 p.m.:**
  **Today’s Ergonomics:**
  Jerome Congleton, Texas A&M University (All)

- **2 p.m. – 2:25 p.m.:**
  **Conventional Wisdom vs. Current Ergonomics Thinking**
  Gene Kay, ErgoAdvocate (B)

- **2:30 p.m. – 3 p.m.:**
  **Ergonomic Solutions:**
  Fad vs. Fact
  Deepesh Desai, Humantech (All)

- **3 p.m. – 3:30 p.m.:**
  **Effects of Portable Computing Devices and Work Environments on Muscle Activation**
  Abigail Werth, Mississippi State University (All)

### Track: Applied Research

**Room:** Ryman Ballroom EF

**Moderators:** Paul Adams, Greg Griffith

- **1:30 p.m. – 1:55 p.m.:**
  **Impact of Dispatch Communication and Display Characteristics on Law Enforcement Patrol Situation Awareness**
  Teena Garrison, Center for Advanced Vehicular Systems (I)

- **2 p.m. – 2:25 p.m.:**
  **Health Effects of Standing Mobile**
  Computer Workstations on Nurses
  Farman Moayed, Indiana State University (I)

- **2:30 p.m. – 3 p.m.:**
  **Ergonomics of Gloves:**
  Fad vs. Fact
  Deepesh Desai, Humantech (All)

- **3 p.m. – 3:30 p.m.:**
  **Effects of Portable Computing Devices and Work Environments on Muscle Activation**
  Abigail Werth, Mississippi State University (All)

### Track: Roundtable

**Room:** Ryman Studio BC

**Moderators:** Jose Banaag

- **1:30 p.m. – 1:55 p.m.:**
  **How Do You Keep Your Ergo Program Fresh and Avoid Going into a Plateau/Slump?**
  Jose Banaag, Honda of America Mfg. Inc.
### Thursday, March 29

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>7 a.m. – 8 a.m.</td>
<td>Coffee Service - Tennessee Ballroom Foyer, Ryman Ballroom Foyer</td>
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<td>7 a.m. – 1:30 p.m.</td>
<td>Registration Desk - Ryman B2 Registration Desk</td>
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<tr>
<td>7:15 – 7:45 a.m.</td>
<td>Speaker – Moderator Briefing - Ryman Studio J (AM sessions)</td>
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</table>

#### Tracks

<table>
<thead>
<tr>
<th>Track</th>
<th>Potpourri</th>
<th>Diverse and Global Workforce</th>
<th>Ergonomic Programs</th>
<th>Applied Research</th>
<th>Master Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>Tennessee Ballroom A</td>
<td>Tennessee Ballroom B</td>
<td>Ryman Ballroom BC</td>
<td>Ryman Ballroom EF</td>
<td>Ryman Studio BC</td>
</tr>
<tr>
<td>Moderators</td>
<td>Bill Matarazzo</td>
<td>Tom DeRoos Student Moderator – Jyll Kinney</td>
<td>Sandra Woolley Student Moderator – Alicia Fernandez</td>
<td>Glenn Harrington</td>
<td>Paul Schwab</td>
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<tr>
<td>8 a.m. – 9:30 a.m.</td>
<td>FEATURING SPEAKER: Becoming a Certified Professional Ergonomist Bill Boyd, CNA (All)</td>
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<tr>
<td></td>
<td>Session Coordinator: David Rose</td>
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<tr>
<td>8 a.m. – 8:25 a.m.</td>
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<tr>
<td>8:30 a.m. – 8:55 a.m.</td>
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</tbody>
</table>
| 9 a.m. – 9:30 a.m. | An Integrated Approach: Ergonomics and Wellness  
  Jill Kelby, Kelby Ergo Design (All)                  |
| 9:30 a.m. – 10 a.m. |                                                                                           |
| 10 a.m. – 11:30 a.m. | Leading and Motivating a Successful Ergonomics Team  
  Jeff Hoyle, The Ergonomics Center of North Carolina (B) |
| 10 a.m. – 10:25 a.m. |                                                                                           |
| 10:30 a.m. – 10:55 a.m. | Making Ergonomics Education Palatable: Customized Training for Different Audiences in the Grocery Industry  
  Blake Novoa, Eastern Washington University (All) | |
| 11 a.m. – 11:30 a.m. | Employee Modified Workstations: How to Support the Natural Ergonomists  
  Kevin Barefield, Gulfstream Aerospace Corporation (B) |
| 11:45 a.m. – 1:30 p.m. | Lunch & Awards Ceremony - Ergo Cup® Competition, Practitioner and Student Awards - Tennessee Ballroom CDE |

#### Session Coordinator:
- Maury Nussbaum
- Julia Abate
- Dana Root
- Barbara Peck

#### Moderators:
- Bill Matarazzo
- Tom DeRoos
- Sandra Woolley
- Glenn Harrington
- Paul Schwab
- Bill Boyd
- CNA
- Alicia Fernandez
- Dana Root
- Catherine Rae
- Drew Bosen
- Paula Lewis
- Jyll Kinney
- Bill Boyd
- CNA

#### Sessions
- **FEATURING SPEAKER: Becoming a Certified Professional Ergonomist**
  - Bill Boyd, CNA (All)
- **Session Coordinator:**
  - David Rose

#### Additional Information
- **Event:**
  - Tennessee Ballroom Foyer
  - Ryman Ballroom Foyer
  - Registration Desk
  - Ryman B2 Registration Desk
  - Ryman Studio J
  - Tennessee Ballroom A
  - Tennessee Ballroom B
  - Ryman Ballroom BC
  - Ryman Ballroom EF
  - Ryman Studio BC
  - Tennessee Ballroom CDE

#### Details
- **Tracks:**
  - Potpourri
  - Diverse and Global Workforce
  - Ergonomic Programs
  - Applied Research
  - Master Track
- **Rooms:**
  - Tennessee Ballroom A
  - Tennessee Ballroom B
  - Ryman Ballroom BC
  - Ryman Ballroom EF
  - Ryman Studio BC
  - Tennessee Ballroom CDE
- **Moderators:**
  - Bill Matarazzo
  - Tom DeRoos
  - Sandra Woolley
  - Glenn Harrington
  - Paul Schwab
  - Bill Boyd
  - CNA
  - Alicia Fernandez
  - Dana Root
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  - Jyll Kinney
  - Bill Boyd
  - CNA

#### Event Schedule
- **7 a.m. – 8 a.m.**
  - Coffee Service - Tennessee Ballroom Foyer
- **7 a.m. – 1:30 p.m.**
  - Registration Desk - Ryman B2 Registration Desk
- **7:15 – 7:45 a.m.**
  - Speaker – Moderator Briefing - Ryman Studio J (AM sessions)
- **8 a.m. – 9:30 a.m.**
  - FEATURING SPEAKER: Becoming a Certified Professional Ergonomist Bill Boyd, CNA (All)
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  - Session Coordinator:
- **8:30 a.m. – 8:55 a.m.**
  - Session Coordinator:
- **9 a.m. – 9:30 a.m.**
  - An Integrated Approach: Ergonomics and Wellness  
    Jill Kelby, Kelby Ergo Design (All)
- **9:30 a.m. – 10 a.m.**
  - Break
- **10 a.m. – 11:30 a.m.**
  - Leading and Motivating a Successful Ergonomics Team  
    Jeff Hoyle, The Ergonomics Center of North Carolina (B)
  - Session Coordinator: Maury Nussbaum
- **10 a.m. – 10:25 a.m.**
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#### Contact Information
- **Website:** [www.appliedergoconference.org](http://www.appliedergoconference.org)
**CONFERENCE PRESENTATION TRACKS**

**APPLIED (TRANSLATIONAL) RESEARCH**
The purpose of this session is to bring information to participants regarding the study of applied interventions, industry research in lab and field settings, and the testing of new methods in the ergonomics field under translational conditions.

**DESIGN, PRODUCT DESIGN AND EVALUATION AND MODELING**
This track focuses on the application of ergonomic principles to the design of work areas, equipment, tools, software interfaces and manufactured products throughout the design process. This track includes both the design of the end product and the way humans interact with product during the manufacturing or fabrication process. The topics covered in this track may include user research, ethnography, computer-aided design, digital human modeling and usability testing.

**DIVERSE AND GLOBAL WORKFORCE (AGAIN, OBESITY, GLOBAL WORKFORCE)**
This track explores changes such as aging, obesity and health issues in the workforce and ways employers and suppliers are dealing with these changes. Sub-topics include identification of trends, workplace issues and methods used to accommodate an ever-changing workforce. This track also encompasses the challenges faced by global institutions when dealing with workers and customers around the world with diverse ages, physical attributes and cultural backgrounds.

**ERGONOMICS PROGRAMS/POLICIES/AUDITING THE ERGONOMICS PROCESS**
This track will provide information on designs, implementations and practical approaches for several different components of a comprehensive ergonomics program. Topics covered in this track may include securing management leadership and employee ownership for your ergonomics program, managing ergonomic injuries and illnesses and return-to-work programs, and integrating ergonomics into facility change processes and systems and criteria for identifying and prioritizing ergonomics concerns.

**MANUFACTURING APPLICATIONS AND CASE STUDIES**
This track focuses on the practical applications of ergonomics in manufacturing settings. Practitioners and Ergo Cup teams from a diverse range of industries will share case studies and information on how they have successfully used sound ergonomics principles to improve the safety and productivity of their workplaces. Although your industry may differ from those presented, the ergonomics solutions and the application of ergonomic principles shared may be transferred to your operations and address the challenges you face.

**MASTER TRACK DESCRIPTION**
Master Track sessions are a forum for expert level ergonomics professionals to share their knowledge and experience on selected topics with participants. The format consists of 3-4 panelists, typically from different organizations or disciplines, who each give short 10-minute overviews of their experiences on a single topic followed by an open Q&A panel discussion with session attendees.

**OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS**
This track will explore the implementation of ergonomics programs and ergonomic solutions in all types of office environments, from standard office buildings to home offices and call centers. This track will explore how to overcome the challenges faced when implementing office ergonomic programs and processes, and examine case studies illustrating how office ergonomic programs may prevent injury and increase productivity in the workplace. Marketing and securing support from both management and employees for office ergonomics programs may also be discussed.

**POTPOURRI**
This track highlights a virtual cornucopia of subjects and applications that you can take back to your company. Topics included in this track are ergonomic issues associated with nontraditional workforces, such as construction, maintenance workers, and field service workers; healthcare, including patient handling, facilities design, and other allied healthcare challenges; and issues encountered in the retail industry.

**ROUNDTABLE**
Roundtable discussions are a great forum to discuss current topics in ergonomics with an emphasis on group sharing and learning from each other. Participants will share their ideas, case studies, success stories and brainstorm challenges and solutions related to the specific topic. Each roundtable is facilitated by an experienced ergonomist.

**SUCCESSFUL ERGO TEAMS – TUTORIAL SERIES**
This track will focus on the skills needed for ergo teams to be successful. Topics included in this track cover team member selection strategies, training topics and methodologies, holding successful team meetings, strategies for gaining management support, ergonomic analysis tools for teams, plantwide awareness initiatives, maintaining the enthusiasm and drive of your ergonomics team, and much more.
MASTER TRACK SESSION

Master Track sessions are a forum for expert level ergonomics professionals to share their knowledge and experience on selected topics with participants. The format consists of 3-4 panelists, typically from different organizations or disciplines, who each give short 10-minute overviews of their experiences on a single topic followed by an open Q&A panel discussion with session attendees.

Wednesday, March 28 | 8 a.m. - 9:30 a.m. | Ryman Studio BC
USING LEAN MANUFACTURING TO LEVERAGE YOUR ERGONOMICS PROGRAM
Keith White and Steven Derrick, Lennox International Inc.
Jeff Smagacz, Risk Management Group
Ben Zavitz, General Dynamics
Advanced level

Lean manufacturing strives to minimize waste and inefficiencies in the manufacturing process, which includes job activities that are not optimized for the workers. Ergonomists have the same goals and can use lean manufacturing principles to help justify job task and work area changes. A panelist of experienced experts will discuss how the application of lean manufacturing principles was used to solve ergonomics-related problems in the workplace and will share lessons learned.

Wednesday, March 28 | 3:30 - 5 p.m. | Ryman Studio BC
OBESITY IN THE WORKPLACE: CHALLENGES AND SOLUTIONS
Mark Benden, Texas A & M
Drew Bossen, Atlas
Lora Cavuoto, Virginia Tech
Advanced level

An expert panel will discuss problems and costs associated with an increasingly obese and sedentary worker population. The panelist will also offer solutions for employers to accommodate workers and strategies to promote weight loss and avoidance of weight gain.

Thursday, March 29 | 8 a.m. - 9:30 a.m. | Ryman Studio BC
RISK ASSESSMENT TOOLS
Gary Allread, The Ohio State University
David Alexander, Auburn Engineers
Peter Budnick, Ergoweb
Advanced level

An expert panel will discuss use and misuse of existing risk assessment tools, their reliability and new tools.
ROUND TABLE DISCUSSIONS

Tuesday, March 27 | 8 a.m. - 9:30 a.m. | Ryman Studio BC
**APPLYING ERGONOMICS IN EXTREMELY PHYSICALLY DEMANDING JOBS**
Scott Smith, Lockton Insurance Brokers LLC

The application of traditional ergonomic approaches and methods in environments that are extremely physically demanding is often not practical or effective.

Participants will share their experiences of how to effectively apply ergonomics to tough environments where many of the jobs have multiple ergonomic risk factors at high levels of risk.

Tuesday, March 27 | 2:30 p.m. – 4 p.m. | Ryman Studio BC
**HEALTHCARE ERGONOMICS: GROWING TRENDS AND SOLUTIONS**
Susan Murphey, Essential WorkWellness
Janet Peterson, JP Ergonomics

What are the latest trends in healthcare ergonomics? Are ergonomic issues seen as just one more expense or as a cost-effective method for reducing overall costs to provide quality patient care and safety and minimize/avoid medical errors? Bring your challenges in healthcare ergonomics to discuss in this Roundtable and share experiences with your colleagues.

Wednesday, March 28 | 7 a.m. - 8 a.m. | Ryman Studio E
**OFFICE ERGONOMIC EQUIPMENT EVALUATION**
Janet Peterson, JP Ergonomics
Miriam Joffe, Auburn Engineers
Ben Zavitz, Bath Iron Works / General Dynamics

All levels

Three pieces of office equipment that are often/always needed [chairs, mice and keyboard trays] will be discussed and evaluated in this hands-on Roundtable session. You will have an opportunity to compare/contrast different pieces of equipment as well as discuss which features of each item are the most desirable from an ergonomic perspective.

Wednesday, March 28 | 1:30 - 3 p.m. | Ryman Studio BC
**HOW DO YOU KEEP YOUR ERGO PROGRAM FRESH AND AVOID GOING INTO A PLATEAU/SLUMP?**
Jose Banaag, Honda of America Mfg. Inc.

All levels

You’ve had an ergonomics program in your company now for several years and it feels “stale.” You’re noticing that employees don’t seem to be as interested or engaged in ergonomic issues. What can you do? This Roundtable session is designed to find out what others have done to invigorate their ergonomics programs. Share your successes and your frustrations. There may be some resources out there of which you are unaware that can assist you in your efforts.

Thursday, March 29 | 10 a.m. - 11:30 a.m. | Ryman Studio BC
**HOW DO ERGONOMICS FIT INTO A WELLNESS PROGRAM?**
Davana Pilczuk, Gulfstream Aerospace Corporation

All levels

With an aging workforce and increases in corporate healthcare costs, many companies are integrating wellness initiatives into their safety and health and ergonomics programs. Participants will share their experiences of how to integrate issues like musculoskeletal and joint health, obesity, metabolic syndrome, stretching, exercise and other wellness topics into their ergonomics programs.
**ERGO CUP® COMPETITION**

The internationally recognized Ergo Cup® competition, sponsored by the Ergonomics Center of North Carolina and Edward P. Fitts Department of Industrial and Systems Engineering at North Carolina State University and presented by IIE, provides an exciting opportunity for companies to highlight their successful ergonomic solutions.

The general theme across all Ergo Cup categories is innovation.

**ERGO CUP® CATEGORIES**

Three Ergo Cup® awards are presented annually for outstanding solutions through training, engineering and teamwork.

**TEAM-DRIVEN WORKPLACE SOLUTIONS - NEW ADDITION TO CATEGORY!**

Two Ergo Cups will be offered in this category: one for organizations who conduct internal Ergo Cup competitions and another for those who do not. The criteria for the Team-Driven Workplace Solutions are the same for both groups.

At least 75 percent of the problem-solving effort is conducted by in-house individuals whose primary responsibilities involve production and maintenance. Some technical support by in-house health and safety, engineering/ergonomist staff is permitted as members of the team or as support of the team. Support from outside consultants is permitted but only company representatives are permitted on the presentation team if selected as an Ergo Cup contestant.

- The solution is a newly created device or process.
- The solution was created or significantly improved through study and experimentation.
- The solution is simple and straightforward.
- The solution provides an attractive return on investment and explains its financial success.
- The solution significantly reduces or eliminates ergonomic risk.
- The quality of the presentation was excellent including problem statement, clear descriptions and metrics with visuals.

**ENGINEERING/ERGONOMIST-DRIVEN WORKPLACE SOLUTIONS**

At least 75 percent of the problem-solving effort is conducted by in-house engineers and ergonomists. Some technical support from outside consultants is permitted, but most activities are conducted by in-house resources. Only company representatives are permitted on the presentation team if selected as an Ergo Cup contestant.

- The solution is a newly created device or process.
- The solution was created or significantly improved through study and experimentation.
- The solution is simple and straightforward.
- The solution provides an attractive return on investment and explains its financial success.
- The solution significantly reduces or eliminates ergonomic risk.
- The quality of the presentation was excellent including problem statement, clear descriptions and metrics with visuals.

**ERGONOMICS PROGRAM IMPROVEMENT INITIATIVES**

Must be a planned ergonomics program improvement initiative, process or management system designed to improve the effectiveness of a location’s overall comprehensive ergonomics program. Examples include, but are not limited to: ergonomic training programs, incorporation of ergonomics into change management systems, ergonomics risk assessment processes, ergonomic prioritization systems, return-to-work programs, office ergonomics programs and ergonomics programs designed for mobile and/or telecommuter employees.

- The program improvement initiative is innovative.
- The program improvement initiative had clear measurable performance objectives, and they were met.
- The program improvement approach is simple and straightforward.
- The program improvement is sustainable.
- The program improvement initiative led to significant ergonomics solutions or prevention of risk exposures in the workplace.
- The program improvement initiative led to business gains (attractive return on investment) and/or reduction in disability costs.
- The quality of the presentation was excellent including problem statement, clear descriptions, and metrics with visuals.

**ERGO CUP® AWARD EVALUATION CRITERIA**

**Innovation**

The entry represents newly created devices or processes (for workplace solutions), delivery approaches (in the case of training), or was created or significantly improved through study and experimentation.

**Simplicity**

The solution or training is simple and straightforward.

**Cost savings**

The entry provides an attractive return on investment (ROI).

**Ergonomic risk**

The solution or education approach significantly reduces or eliminates ergonomic risk.

**Presentation quality**

The problem, solution, and impact are clear.

The Ergo Cup winners are selected by an invited panel of judges. Each team will be presented with a plaque in recognition of their participation.

**Ergo Excellence Awards**

In addition to the Ergo Cup®, five Ergo Excellence awards are bestowed. The Ergo Excellence awards are chosen by ballot of all conference attendees. The criteria for these awards are the same as for the Ergo Cup.
APPLICATION OF AN ERGONOMICS MANAGEMENT SYSTEM
Toyota Motor Engineering & Manufacturing North America Inc. (TEMA)
Toyota Motor Manufacturing, West Virginia Inc. (TMMWV)
Booth # 325

Using a systematic ergonomics management system, based on the principles of Toyota’s problem solving and utilizing in-house developed ergonomic assessment tools, this team was able to accurately identify and resolve ergonomic hazards with measurable improvements in risk reduction, quality, and efficiency.

THE ADVENTURES OF ERGOMAN
Toyota Motor Engineering & Manufacturing North America Inc. (TEMA)
Toyota Motor Manufacturing, Alabama Inc. (TMMAL)
Booth # 327

Production Team Members (TMs) receive an annual two-hour ergonomics training class. Training entails recognizing awkward postures. The tool utilized was the Hit List (Humantech Inc. copyright 1998), noting risk factors like “Butts Up” (bending), “Contact” (contact stress), and “Bad Vibes” (vibration). Despite catchy phrases, TMs were unenthusiastic and had trouble remembering. The Adventures of Ergoman, a comic-strip campaign, was created to engage TMs. Ergoman is a superhero who, along with his sidekick Yokoten (Japanese for “sharing improvements”), defends TMs from evil awkward postures. All 10 Hit List postures have Villains associated with them, including “Evil Dr. Buttsup” (crawls while crouched), “Touch” (many arms), and “Heavy Metal” (vibrating character). TMs are charged with helping Ergoman drive the villains away by implementing countermeasures.

IN THE BEGINNING … THERE WAS ERGO: MIGRATING ERGO UPSTREAM
DOE Joint Genome Institute
Booth # 420

The Department of Energy Joint Genome Institute (JGI) is in a constant state of evolution as it seeks to produce science in a safe and efficient way. In the past, ergonomics was often addressed as a reaction. We realized that by addressing ergonomics earlier, it would have a greater impact. JGI has accomplished this by using a Lean Six Sigma approach to strategic planning when bringing on new staff and new technologies.

ERGO@HOME - PROVIDING ERGONOMICS SUPPORT FOR THE TELECOMMUTER
GE Healthcare IT
Booth # 422

The GE Healthcare IT Seattle site has a large remote employee population (approximately 25% of the headcount). No remote, proactive ergonomic program was in place. Ergonomic support was entirely reactive and as a result injuries and concerns were increasing. The project leveraged a policy that defined remote employee eligibility, home office safety and ergonomics requirements. A deployment lead and site facilitator worked in tandem to deploy desktop accessories and chairs, based on feedback from a survey and an online self-evaluation tool. The multi-check, needs-based deployment process provided strong cost control (< $5K), limiting expenditures and improving workstations for 94 people.

BUILDING A SUSTAINABLE OFFICE ERGO PROGRAM: REACHING REMOTE EMPLOYEES
RIM
Booth # 424

Over the course of two years the Global Ergonomics Team at RIM has developed and implemented a sustainable Office Ergonomics Program that ensures all workers globally, including home workers and remote employees, have access to the same services as employees working out of company headquarters. The program was developed with sustainability as a principle focus. The team utilized in-house technology to develop a number of online resources that are applicable and accessible to all employees. Overall, all RIM employees now have access to services and resources that are applicable to them, assist in meeting legal compliance and promote a safe and healthy work environment.

ASSOCIATE TRAINING FACILITY
Honda of America Mfg. Inc.
Booth # 426

The team established an off-line training center where associates will spend two weeks learning all aspects of their assigned processes. This center simulates actual line conditions, complete with adjustable stands and platforms. The associates learn the steps of the process on a static unit, and then gradually learn to the proper pace during the two-week training period. Once the associates finally work at the production floor, an online trainer continues to work with them for at least one week for verification of the proper ergonomic techniques and adjustments of stands and platforms that associates learned while at the training center.

ERGO CAPTAINS - IDENTIFY, ASSESS AND ADDRESS
Hyundai Motor Manufacturing of Alabama
Booth # 427

Hyundai of Alabama employs approximately 2,800 Team Members, all of which are represented by a single Ergonomic Specialist; so how does one specialist teach, assess workstations, make process improvements and create and sustain an ergonomic culture? Simple: Enlist the help of the resident experts. The Ergo Captain Program was designed to teach ergonomic principles such as posture identification, upper body mechanics, process improvements ideas and stretching to Team Members, Team Leaders, Group Leaders, Assistant Managers, Managers, and Senior Managers. The Team Members that receive the training are titled as Ergo Captains. This program has several vital pieces to make it successful. 1. Ergonomics Training 2. Ergonomics users’ manual / refresher guide (written / compiled by in-house Ergonomic Specialist 3. Physical Demand Analysis is used to assist with RTW, job rotation, and custom making Physical Therapy / Work Conditioning programs. 4. Facility-wide stretching program. Captains are resident leaders of this program. 5. Introduction of an on-site Early Intervention Clinic (as a result of the Ergo Captain program) 6. Introduction of an on-site Fitness Center (as a result of the Ergo Captain program) 7. Communicate through a monthly newsletter titled “Captain’s Corner.”
ENGINE ASSEMBLY GASKET SEPARATOR

Honda of America MFG., Inc.
Booth # 403

Engine Assembly associates have trouble separating, counting and installing single layer gaskets. Associates use a pinch grip with a 30-degree sideways motion about the wrist to separate and grasp single gaskets for installation. The need to wear gloves as personal protective equipment further exacerbated the situation. Aside from the ergonomic concerns, associates had to perform several online and off-line inventory checks due to double gasket installation and due to supply count discrepancies. The team then designed a device that uses a magnetic field to help separate the gaskets in a uniform distance, making it easier to grab and install single gaskets.

RING GEAR DEBURRING FIXTURE

The Timken Company
Booth # 405

Timken Aerospace Transmissions created a unique fixture that improved how we process a large (nearly 3 ft diameter) gear of a helicopter gearbox. We changed from a horizontal arrangement to a vertical design. The deburring process was a very labor intensive operation that required an associate to stand and bend for several hours while reaching in an awkward manner. The solution virtually eliminated or greatly reduced all ergonomic risk factors while reducing the cycle time, further enhanced quality and made the process safer.

TRIGGER DEVICE TO CONVERT PISTOL GRIP TOOL TO INLINE TOOL

Nexteer Automotive
Booth # 407

The team developed an innovative trigger device, for use with a pistol grip air driver, to permit the operator to use the pistol grip tool as an inline tool. This eliminated severe upper arm abduction and wrist flexion required to vertically drive screws with a pistol grip tool in steering column assembly. The trigger device eliminated the need to purchase new inline tools at a cost of over $3,000 each and resulted in a 2% improvement in cycle time.

COPPER BAR HANDLING SOLUTION

GE Energy Industrial Solutions
Booth # 409

At GE Energy Industrial Solutions, Bielsko-Biała, Poland, copper bar handling was a two-step operation including both safety and ergonomics hazards. The first phase of the operation required use of a crane to move full copper bar sets. The second phase of the operation required employees to repeatedly manually lift and position individual copper bars weighing 20-40 kg. We created a solution that eliminated both crane and manual copper bar lifting using a table system that incorporated pneumatics and rollers. In addition to eliminating the safety and ergonomics risks in the operation, cycle time was decreased by nearly 90%!

BOWL RING HANDLING OPERATION

Lilly
Booth # 411

Removing and cleaning the bowl ring of a Fluid Bed Dryer was redesigned using hierarchy of controls: Elimination, Engineering, and Administrative. Creativity and “in house” modifications allowed the delivery of solution that simplified a challenging task, by eliminating all manual handling requirements and awkward postures, and improved productivity in a very cost effective way.

TIRE CART FOR BOM TIRE BUILDING MACHINES

SAVA Tires
Booth # 413

Our “BOM-type” tire building machines are among the oldest truck tire building machines in our plant. They compare poorly with our more modern models not just in relation to safety and ergonomics but also productivity, waste, quality, etc. This also affects employee morale. Imagine you are a worker on the old BOM model and you must produce tires of a similar quality and quantity to those produced on the newer models. Tire building machines are very expensive and cannot be easily replaced. For these reasons we organized an ergonomic team event involving assessment and solution implementation on BOM machines. Our team designed special carts for transporting newly made tires to the conveyor system, eliminating lifting, carrying and several bad postures. These efforts have been successful with improved ergonomic conditions, improved worker morale, easier quality inspections and recognition within our corporate organization.

IN THE BUFF

Bridgestone
Booth # 417

In the Curing/Final department’s Innerliner Buff/Rework Booth, teammates are required to manually load tires onto a lift stand and then repair damaged portions of tires. Once the tires are lifted into the proper work height, they must be manually rotated to put the damaged section of the tire in the work zone. The tires weigh between 105 lbs and 270 lbs each. The tires are rotated using passive rollers and the force applied to the tire with the teammate’s upper extremity. After a shoulder injury occurred, our team jumped into action.

“FISETTE 2000” TOOL FOR MECHANIZED GRINDING

Bath Iron Works / General Dynamics
Booth # 419

Preparing steel for welding and fabrication requires manual hand grinding using high vibratory tools and is very labor intensive and time consuming. Working with employees on their ideas and concepts, a simple mechanical grinding tool was designed and built in-house using existing tools and materials. This mechanized grinding solution allows employees to grind steel “hands-free” using mechanical means; instead of holding a vibrating tool in their hands. The solution not only eliminates the ergonomic risk, but also improved productivity by 50%.

TABLE TOP COUNTERSINK

Spirit AeroSystems
Booth # 421

Ergonomic analyses found that manual countersinking through inconel (steel material) was a high risk for ergonomic injuries. The old method of countersinking required repeated excessive manual force using a pistol-grip drill motor and extreme shoulder abduction. Task access required working from a three-stepper to maximize the mechanics’ leverage. The repetitive nature of the task, 240 forceful exertions per part, did not allow the mechanic adequate musculoskeletal recovery time. The solution resulted in a 92% ergonomic injury risk reduction. Other production improvements in quality, delivery, and cost were realized as well.
Countersinking 200 holes in graphite composite material requires a steady upper extremity force applied to a pistol grip drill motor. The process creates a small micron dust which requires constant vacuum suction to prevent respiration by workers. Back muscles were stressed when accomplishing the force applied to the drill motor while maintaining the static positioning of the vacuum shroud. Ergonomic job analyses showed high injury risk factors for both upper extremities and lower back.

**WORKPLACE SOLUTIONS I - TEAM-DRIVEN WORKPLACE SOLUTIONS**

**NEAT SEAT**
*Gulfstream Aerospace Corporation*
Booth # 110

The Neat Seat is a padded box with 3 different sized sides. Mechanics use it to sit on while doing their work. It can be flipped to accommodate any size person or job height, effectively becoming an adjustable height chair with no moving parts. The Neat Seat can also be used as a work table and has a cutout to place FOD. It was made with surplus aluminum honeycomb, making it light and inexpensive.

**ERGONOMIC RISK REDUCTION LEADS INCREASE OF PRODUCTION PRODUCTIVITY AND SAVINGS**
*Ethicon*
Booth # 112

One of biggest ergo high risk operations that Cordis de Mexico had was carding. The operation is located in the Diagnostic Catheter area. The Diagnostic catheter is one of the oldest products produced in Cordis de Mexico. The area has 5 production lines, and each line produces around 6,000 catheters per day in one shift. On each line we had 3 stations dedicated to performing the carding operation. This in turn presented ergonomic risks as follows: neck problems, sitting posture issues, hand and wrist twisting motions.

**EASY DOES IT!**
*Honda of South Carolina Mfg. Inc.*
Booth # 116

Ergonomic risk assessments exposed four ergonomic concerns at Honda of South Carolina in the fuel tank vacuum grommet installation assembly. The ergonomic risk assessment identified poor body postures in the lower back and upper body, high vertical reach and non-neutral hand and wrist postures. The department team leader and team assistant completely redesigned the process and tools eliminating the ergonomic risk factors. As an added benefit from the countermeasure activity, the process efficiency was improved by 15 seconds per part. All the tools and fixtures were designed, tested and implemented by the team assistant and process associate.

**LEADING EDGE TRIM TOOL**
*Gulfstream Aerospace*
Booth # 122

This will showcase a tool that was developed and designed in house by Danny Smalley of Gulfstream Aerospace. The tool is true definition of an ERGO-Lean initiative and has expanded to many other areas of manufacturing where trimming operations are conducted. The response from the mechanics... “It’s like going from a non-motorized push mower, to an industrial self propelled! It just glides.”

**TURNTABLE AND BOX USED IN COMPOSITE, AIRCRAFT PARTS MANUFACTURING**
*Gulfstream Aerospace Corporation*
Booth # 425

Ergonomics Best Practice will show problem, solution, risk analysis, benefits, and team members by using before and after photographs and text and actual turntable, blocks, and “homemade” box used to improve composite, aircraft parts manufacturing. These improvements were from raising molds and parts and therefore making it easier to reach and rotate molds and parts.

**KAIZEN PROJECTS REDUCE ERGONOMIC RISK IN HANDLING MATERIAL**
*Ethicon Inc.*
Booth # 124

The site manufactures different types of suture for human use. When the manufacturing process is complete the sutures are placed into a shipping container and shipped to the U.S. to be sterilized and distributed. Each Friday, after the last shipment for the week, the suture that is manufactured during the remainder of the day will have to wait until Monday due to the hours of operation for customs department over the weekend. There is a special suture that we manufacture that requires a special storage to prevent the aging effect of the suture over the weekend. This suture is stored in an area called “Dry Hold” over the weekend, and then it is shipped on the following Monday to continue the process. The “Dry Hold” is a room with a control environment to prevent the aging effect of the suture. The movement of the shipping cases to the “Dry Hold” is made with a portable lift table. Once the shipping cases are in the “Dry Hold” the cases are placed in the rack and the portable lift table is returned to each production area. On Sunday the shipping cases are removing from the “Dry Hold” and placed on a pallet to be ready to be shipped on Monday morning.

**DIP LINE HOOK CLEANING PROCESS**
*Tyler Union, a Division of McWane Inc.*
Booth # 125

The hooks used to hang castings on our dip lines acquire paint buildup over a short period of time. The buildup has to be cleaned off to prevent the hazard of the castings not being fully set on the hooks, which can result in the casting falling and possibly injuring an employee. This cleaning process requires employees to remove the hooks from the line and clean them using a hammer to beat the dried paint from the hooks. Our goal is to reduce the repetition and force used in this process.

**THE SPOOL HANDLER: A SIMPLE AND UNIQUE SOLUTION TO THE HANDLING OF SPOOLS**
*Cordis Corporation*
Booth # 127

Spools are used to dispense raw material for production. As demand for components incremented, so did the need for additional spools and with that, the handling of them. The majority of spools were handled manually by pushing/pulling and rolling the spool by hand or foot. The weight of a fully loaded spool may vary in the range of 100 to 400 pounds. This manual method has the following ergonomic risks: back strain/stretch, back bending, shoulder abduction/flexion, finger press force, foot crushing, and/or spool crushing onto employee; all these aggravated by repetition. The key objective of this project was to implement a simple, reliable, and ergonomically safe way to transport the spools by hand when fully loaded in the weight range described above.
LEAN TRANSFORMATION LEADS TO ERGONOMIC RISK REDUCTION

Ethicon Endo-Surgery Inc.
Booth # 128

As part of the strategy of Lean transformation each line needs to be evaluated to identify and reduce the different types of wastes generated by it. One of the key objectives of this project was to implement practical changes to reduce ergonomic risk factors associated with the operators’ movements, and at the same time eliminate waste from the manufacturing process to increase production volumes.

WORKPLACE SOLUTIONS II (ENGINEERING/ERGONOMIST-DRIVEN WORKPLACE SOLUTIONS)

GE90 SWING ARM STORAGE SYSTEM

GE Aviation
Booth # 123

The GE90 is the largest aircraft engine assembled at GE Aviation in Durham, North Carolina. The GE90 Swing Arm Storage System is a sleek, innovative solution to store six stages of GE90 Low Pressure Turbine (LPT) bladed discs. This design has improved ergonomics, material presentation, and employee morale. Its proven success on the GE90 Program has led to a variety of different applications across the Durham Engine Facility.

“RUNNING” WITH THE BULLS - TECHNICIANS IMPROVE MATERIAL FLOW PROCESS

Ethicon Endo-Surgery Inc.
Booth # 222

“Running” with the bulls is a transport process, specifically designed to easily fit production flow including staging and lane design, to eliminate manual handling of heavy critical bulk material, thereby reducing ergonomic risk and travel time while maintaining safety and quality. This process improved the location and staging of materials for easier access, eliminated manually flipping rolls, met constraints of an air wash station, reduced heavy push forces, met height requirements of roll replenishment for machines, improved change over time, and was well accepted by end users. This process provided a 99.9% ergonomic improvement and $108,094.34 cost savings. *Risk is always inherent; however this solution has been developed to engineer out all of the original ergonomic risk factors.

FLEX METAL LINE REEL CARRIER

Swagelok Company
Booth # 223

Swagelok associates had been pushing reels of metal hoses weighing 96 to 220 pounds on small dollies from the storage area to the assembly cell, about 30 feet away. This was done 12-18 times per day. Engineering designed two custom racks that can hold up to four different sized reels at one time. The new racks have easy rolling, lockable castors and large handles at both ends facilitating safe and easy movement. With the reels at the assembly cell, associates only need to move the rack to change the hose size. Reels are easily loaded/unloaded onto the racks using a modified mechanical lift.

TOOL TITANS

Spirit AeroSystems
Booth # 224

Manual drilling of (32 holes x 6 steps x 2 sides = 384 drilled/reamed) resulted in out-of-spec holes and presented a high risk of ergonomic injuries due to process access. To address the issue, a compact hydraulic power assist drill motor system was developed to fit in the tight space that was beyond the capabilities of existing off-the-shelf power feed systems. This solution eliminates the awkward postures and manual forces associated with the task. Benefits include a significant risk reduction, injury-avoidance, and process labor hour savings. In addition, an increase in part quality and cycle time are realized as rework is eliminated.

HAND FINISHING ELIMINATION INITIATIVE

EHS - Boeing Fabrication
Booth # 225

Reduce injuries and cost while improving quality and accelerating product flow by eliminating or significantly reducing Hand Finishing / Hand Sanding of metallic product. Developed a standard process that focuses on modern machining technologies to transfer work currently performed manually from hand finishers onto NC machines.

TIRE INSTALL

Caterpillar Inc.
Booth # 226

The process to install each truck tire during assembly requires a great deal of skill, experience and attention to detail. Furthermore, the process contained significant ergonomic risk related to manually turning the tire and the risk of serious or fatal injury from knocking the truck off its stand. The team tested multiple solutions prior to the implementation of the final solution. The new rack and tire lift have prevented injuries, improved velocity, and now is being replicated across the factory.

ZERO GRAVITY TOOL FOR OVERHEAD TORQUE OPERATIONS

The Boeing Company
Booth # 227

This is a custom portable tool system that integrates an off the shelf Atlas Copco DS9 torque tool and Equipois zero gravity arm with a custom torque reaction bar on a mobile base. This system was designed for torque fastening during the mechanical joining of the wing to the fuselage for the Boeing 737 airplane. This tool allows for multiple sequences of torqueing fasteners, either inboard to outboard or forward to aft to accommodate highly flexible needs from the manufacturing mechanics. The tool provides a lean and ergonomic solution that was specifically designed to reduce risk of injuries. Boeing Engineering and Ergonomics partnered to prototype this tool and provide a model for tool engineering to reproduce.

GONE IN A FLASH! PLASTIC FLASH REMOVAL TOOL

Nexteer Automotive
Booth # 322

A putty knife style tool was used to remove plastic flash from a metal steering column capsule that had a total of eight points where excess injected plastic resulted in flash. The operator grasped the capsule in one hand while using the putty knife to repeatedly strike the flash to remove it. This resulted in static awkward hand/wrist postures and posed quality concerns where the operator was striking the part. Engineering solved this problem by taking an old pistol grip harness connector tool, removing the tooling, and adding new tooling that removes the four points of flash with one squeezing motion. The tool was designed to be within Nexteer ergonomic hand tool guidelines and resulted in a 60% reduction in cycle time.
Honda’s East Liberty Plant primarily produces crossover utility vehicles that have electric-powered tailgates. Prior to installation of the battery, associates use a disposable rope attached to the tailgate latch to open the tailgate. Associates have smashed their fingers, broken the rope and even lost the rope inside the vehicle while opening and closing the tailgate. The team developed a portable harness fixture, which they installed in the vehicle. This allows associates to use the tailgate latch switch outside the vehicle to open the tailgate. This eliminates all ergonomic and safety risks, as well as the cost of disposable ropes.

“THINKING INSIDE OF THE BOX” - MACHINED PARTS CLEANING DEVICE
Nexteer Automotive
Booth # 324

Steering gear pinions were cleaned with a hand-held compressed air gun after the machining process. This resulted in static awkward hand postures, increased noise levels, oil splatter around the workstation, and oil mist inhalation. Engineering designed a “cleaning box,” resembling a suitcase, where the operator simply opens the lid of the device and inserts the machined pinion into a fixture. Once the lid is closed, compressed air is blown on the pinion spinning and cleaning it. The oil blown off of the pinion is recycled into the machine. The “cleaning box” eliminated risk for MSDs, reduced noise levels, eliminated oil spatter and mist, and reduced cycle time.

HOSE TAB BRACKET BENDING TOOL
Nexteer Automotive
Booth # 326

The bending and securing of tab brackets to hydraulic hoses was done by folding and repetitively banging the top of the bracket with the tip of manual pliers. At a volume of 80 pieces a day, the constant impact to hand and wrist plus the high risk of injury to the operators raised concerns to the engineering team. Through analysis of potential solutions, the team designed a low cost fully mechanical device to secure the tab bracket to the hose. This reduced cycle-time by 20% and avoided the potential cost of a serious injury to the operators’ hands.
Don B. Chaffin  
**R.G. Snyder Distinguished University Professor Emeritus of Industrial & Operations Engineering, Biomedical Engineering, and Occupational & Environmental Health Sciences University of Michigan**  
**Tuesday, March 27 | 9:45 a.m.**

Don will describe the building of a new digital manufacturing infrastructure that will make it easier to bring ergonomics into small to medium-sized enterprises. In addition to faculty posts at UM, he has served as chair of the Department of Industrial and Operations Engineering and director of the Center for Ergonomics. In 1998, he founded and directed the Human Motion Simulation Laboratory in the Center for Ergonomics until his retirement in 2007. Prior to his academic career, he worked as a quality engineer at GM and a systems analyst at the Bendix Corp. He is a fellow in seven organizations, serves on advisory boards for the National Academy of Science, and earned the National Engineering Award from AAES for lifetime achievement and leadership in the field of ergonomics.

Raymond Davis Layne  
**Executive Director VPPPA**  
**Wednesday, March 28 | 9:45 a.m.**

Ray will discuss how to recognize musculoskeletal disorders as they develop and target basic changes that can reduce MSD risk. He will also provide an overview of how far the field of ergonomics has come and the challenges that must be faced in the future. As executive director of the Voluntary Protection Programs Participants’ Association (VPPPA), he is responsible for the guidance of the VPPPA National Office in Falls Church, Va. VPPPA is a nonprofit leader for safety and health excellence through cooperation among communities, workers, industries and governments. Layne previously worked for OSHA as a member of the Senior Executive Service and received the Presidential Rank Award. In 2010, he was named one of the 50 most influential leaders in the environment, health and safety field by EHS Today.

**CREATIVENESS IN ERGONOMICS AWARDS**

Each year, GOErgo and the Applied Ergonomics Conference Committee present these two awards for ergonomics creativity, and it is always one of the highlights of the conference. These awards will be presented during the Awards Luncheon on Thursday, March 29.

**THE CE STUDENT OF THE YEAR AWARD**  
Sponsored by CNA Insurance Co., recognizes achievements in ergonomics application or research, including process improvement, education, applied instrumentation and product development.

**JAMES STAFFORD**  
Texas A&M University, College Station, TX

**THE CE PRACTITIONER OF THE YEAR AWARD**  
Sponsored by Liberty Mutual Insurance Co., this award recognizes achievements in the creative application of ergonomics, including process improvement, education, applied instrumentation and product development.

**DAVANA PILCUZ, PH.D.**  
Gulfstream Aerospace Corporation, Savannah, GA
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THE NEAT SEAT
Rachel Reed, Gulfstream Aerospace (All Levels)

While performing work in the cabin of the aircraft, mechanics had to either kneel down or squat and bend forward for hours to complete avionics and interior refurbishment work on the inside panels. This created contact stress, awkward posture, fatigue, and complaints. By creating a padded box with three different sized sides, mechanics can now use it to sit on while doing their work. It can be flipped to accommodate any size person or job height, can be used as a work table and has a cutout place to place any foreign object debris while working. It is made out of surplus aluminum honeycomb, making it light and inexpensive. Its implementation mitigated risk of injury, improved quality of work, increased productivity, and eliminated complaints from a largely affected population. Its concept is a great one for any industry.

IMPLEMENTING ERGONOMICS PROGRAMS IN A LARGE, GLOBAL, DIVERSE COMPANY
Lisa Brooks, GE

ERGONOMICS: RECOGNIZING AND REDUCING RISK
Trent Shuford, InjuryFree, Inc.
Intermediate level

Within this presentation, SH&E professionals will gain an understanding of key areas that are most affected by repetitive/overuse job tasks. Common musculoskeletal and repetitive stress disorders will be described with an emphasis on mastering early symptom recognition and on incorporating this knowledge in safety programs. The SH&E professional will be provided with materials and ideas to develop awareness amongst workers, to mitigate risk and enhance injury prevention strategies. Ergonomic assessments that have measuring and tracking systems are fundamental in effective solution implementation. An effective ergonomic assessment tool should note and prioritize tasks according to level of risk, with hazards detailed and dollars/time loss evaluated. A good assessment tool should also record safety recommendations, solution implementation, and the impact of the solutions implemented. Unfortunately, too often do ergonomic assessment tools miss one more of these steps, and often go unnoticed until an injury occurs.

A WORK SYSTEMS DESIGN APPROACH TO OFFICE ERGONOMICS FOR BETTER SAFETY, HEALTH, AND PRODUCTIVITY
Michelle Robertson, Liberty Mutual Research Institute for Safety

This presentation focuses on programmatic issues related to designing office ergonomics programs and creating a corporate culture that embraces injury-free environments. Using a macroergonomic model we examined the effects of flexible workspace and training, on musculoskeletal health and workers’ performance. We hypothesized that these interventions would provide the worker with knowledge and skills resulting in increased health and performance compared to a control group. Following the intervention, there was significant increase in ergonomic knowledge and awareness. Self-reported work-related MSDs significantly decreased for the workplace change and training group relative to a no intervention control group. Business process efficiency, environmental satisfaction and ergonomic culture positively increased for both the workplace change only and the training and workplace change groups as compared to the control group. Similar studies will be highlighted on the importance of applying a systems approach in designing office ergonomics programs to create safe and productive work environments.

APPLYING ERGONOMICS IN EXTREMELY PHYSICALLY DEMANDING JOBS
Scott Smith, Lockton Insurance Brokers LLC

The application of traditional ergonomic approaches and methods in environments that are extremely physically demanding is often not practical or effective. Participants will share their experiences of how to effectively apply ergonomics to tough environments where many of the jobs have multiple ergonomic risk factors at high levels of risk.
**TUESDAY, MARCH 27 | 8:30 A.M.**

**Manufacturing Applications and Case Studies Track | Tennessee A Ballroom | 8:30 a.m. – 8:55 a.m.**

**C-5 ENGINE STANDS WITH ERGONOMIC FEATURES**
Christopher Westbrook and Christina Honea, Robins Air Force Base
Basic level

Robins AFB identified a need for safe fall-protection equipment for the shop mechanics performing maintenance on C-5 engines. Mechanics were performing work in awkward, non-ergonomic, and unsafe conditions. - A team was formed consisting of safety, mechanics, engineering, and vendor personnel to develop the concept of these one-of-kind stands, to design the stands, and perfect the stands during design reviews even after prototype implementation. - The significance of these stands is that the mechanics are now within compliance of fall-protection standards while performing their jobs. An additional aspect includes ergonomic features factored into the design and constructed on the stands. These customized stands are positioned adjacent to the engine dollies and eliminate the safety risks from the workers standing on the structures of the engine dollies to perform maintenance. Ergonomic features of the stands resulted in a significantly increased safety environment and also improved the mechanics’ quality of work.

**Diverse and Global Workforce Track | Tennessee B | 8:30 a.m. – 8:55 a.m.**

**OVERCOMING THE CHALLENGES OF IMPLEMENTING AN ERGONOMICS PROCESS WITH A GLOBAL WORKFORCE**
Mirtha Perazza, The Ergonomics Center of North Carolina
All Levels

Implementing an ergonomics program in your company can sometimes be a challenge just by trying to obtain management engagement, identify key resources and create an effective process. Imagine that in addition, you have to create a program that works for your entire global workforce, with sites outside of the U.S. It is not an impossible task, but it is definitely a challenge that requires you to look at all of the differences that can affect the elements of your program: from your training approach to the analytical approach used to assess the risk factors considering the different working practices, conditions, and workforce characteristics and understanding the applicable labor laws. Understanding the challenges ahead of time will be the key to implementing a truly effective and successful global ergonomics program. Examples of strategies and controls implemented in textile/sewing manufacturers located in Honduras and Dominican Republic will be presented.

**Ergonomics Programs Track | Ryman Ballroom BC | 8:30 a.m. – 8:55 a.m.**

**EFFECTIVELY ENGAGING MANAGEMENT AND EMPLOYEES TO REDUCE CTD RISK AND INJURIES IN THE OFFICE ENVIRONMENT**
Bruce Smith and Joyce Witham, Liberty Mutual Insurance Company
Basic level

Liberty Mutual Group includes a U.S. and global population of more than 45,000 employees providing insurance and financial services for businesses and personal protection. One of the Commercial business units includes over 8,000 employees across the U.S., working out of 200 offices and as telecommuters. The primary work-related injury source for this group is repetitive motion due to frequent interaction with computers and laptops. Over the course of the last few years the safety manager of this business unit created an awareness of the issue, obtained support from senior management and engaged employees at all levels to successfully reduce risk and injuries related to CTDs. A Safety Council Steering Committee provided management leadership to set goals and direction for the business unit safety efforts. Programs were designed to address risk assessment, education and training, equipment standards, purchasing procedures, and direct employee engagement. Over the course of three years the employee CTD incident rate dropped a dramatic 57%, and feedback from managers and employees suggest they value attention to their health and well-being. Operationally, the reduction of lost work days means improved productivity and resources can be applied to other key parts of the operation.

**TUESDAY, MARCH 27 | 9 A.M.**

**Manufacturing Applications and Case Studies Track | Tennessee A Ballroom | 9 a.m. – 9:25 a.m.**

**INTEGRATING ERGONOMICS INTO THE PEPSICO ERGONOMICS PROGRAM**
Jeffrey Smagacz, Risk Management Group
Intermediate level

While many methods are used to implement the concepts of Lean Manufacturing, one of the more popular is the Kaizen event. Kaizen events are focused, continuous improvement workshops using hourly employees and technical staff to drive real-time, low cost, impactful improvements. Kaizen events provide a tremendous opportunity for improving ergonomics in the workplace and can result in a tremendous reduction of motion waste and ergonomic risk exposure. Case studies have demonstrated that production efficiency can be increased up to 60% and ergonomic risk can be reduced significantly without large capital expenditures. Partnering with health and safety professionals, Kaizen Events further reduce workplace safety incidents by up to 50%. In addition, the Kaizen event is an excellent vehicle to generate enthusiasm, improve direct engagement, and build credibility among the participants.
TUESDAY, MARCH 27 | 9 A.M.

Diverse and Global Workforce Track | Tennessee B | 9 a.m. – 9:30 a.m.

**LESSONS LEARNED FROM TRANSLATING AND PROVIDING ERGONOMICS TRAINING IN SPANISH**
Richard Marklin, Marquette University
All Levels

The number of ethnic minorities entering the United States labor force continues to rise dramatically, and it is estimated that Spanish is the first or second language of 35-45 million people who live in the U.S. In addition, most companies know that, to remain competitive into today’s global market, a high priority needs to be placed on health and safety initiatives. This requires effective communication of safe working practices to employees. This presentation will detail the important lessons learned during a project that involved both the translation of ergonomics training materials into Spanish as well as the verbal presentation of this information. This talk will also describe how written handouts differ across languages, how training length is affected, and how presentation styles must be altered to best convey ergonomics knowledge to employees from diverse backgrounds.

Ergonomics Programs Track | Ryman Ballroom BC | 9 a.m. – 9:30 a.m.

**ERGONOMIC PROCESSES: BENCHMARKING FROM THE INDUSTRY LEADERS**
Josh Kerst, Humantech
All Levels

This session will review the elements and practices of world-class ergonomic programs of leading companies captured during a 2011 benchmarking study. The results of a recent extensive benchmarking study will be summarized presenting current best practices and pitfalls to avoid. Participants will learn proven and cutting-edge approaches to successfully managing ergonomics in the workplace. The recent distress in the economy has and will continue to affect the workplace and the manner in which work is completed. The approach used to manage ergonomic injuries and their costs vary widely by company, industry, and country. And, while there is no standard on which to judge the best method, a cross-industry benchmarking study aids understanding how companies are approaching this important workplace safety issue. As a result of the presentation, attendees will better understand the approaches used to manage ergonomics; have a method to evaluate their ergonomics process and compare it to current best practice; and identify gaps and strengths in their current ergonomics process.

Office Ergonomics Track | Ryman Ballroom EF | 9 a.m. – 9:30 a.m.

**OFFICE ERGONOMICS: SOLUTION FOR A GEOGRAPHICALLY DISPERSED WORKFORCE**
Drew Bossen, Atlas Ergonomics
Intermediate level

The deployment of a sustainable office ergonomic strategy within a geographically dispersed workforce can be a challenging task for any large, multi-city organization. Matching the appropriate level of interventional resource against the apparent risk at hand is a difficult balance. Too much direct, hands-on service, derived from an internal team or from an external resource can quickly become an expensive line item to any safety budget. In contrast, passive software packages can be exceptional for the inquisitive learner but can fall far short for passive or unknowledgeable work associates. The key is striking a balance between the relative risk of the situation and the required level of knowledge/service required to resolve this issue. This presentation will review the ergonomic implementation strategy of one of the nations’ largest financial institutions. Their program encompasses coverage of greater than 230,000 employees deployed over 2,500 individual locations across the country. It will demonstrate a tiered approach to intervention based upon the risk of the work associate. The presentation will provide insight into the inherent challenges that an organization this size comes up against with implementation and deployment along with the successes they have garnered.

TUESDAY, MARCH 27 | 1:30 P.M.

Manufacturing Applications and Case Studies Track | Tennessee A | 1:30 p.m. – 1:55 p.m.

**MEASURING TASK TIME WITHOUT WORKER KNOWLEDGE**
Paul Adams and Michael Lau, Applied Safety and Ergonomics Inc.
Advanced level

Industrial engineers have been timing workers for decades to set standards and measure performance. Lean manufacturing, as well as wage and hour litigation, has created renewed interest in time study. Ergonomists also need task time to assess physiological stress. Workers often change their pace and methods when they know they are being timed. This observer effect threatens the integrity and validity of time study data, but the use of performance rating to correct for variable work pacing relies on expertise that few ergonomists possess. ASE regularly works with clients who need various activities timed, but who do not want the subjects to be aware that they are indeed the subjects of a time study. In this presentation, ASE’s project leader for time studies will share strategies and techniques that ergonomists and engineers can use to reduce participant awareness and bias.
TUESDAY, MARCH 27 | 1:30 P.M.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 1:30 p.m. – 2:25 p.m.

**FEATURED SPEAKERS**

**A Q & A SESSION WITH THE KEYNOTE PRESENTER**
Don Chaffin, University of Michigan
Basic level

Ergonomics Programs Track | Ryman Ballroom BC | 1:30 p.m. – 2:25 p.m.

**EMPLOYEE NEAR MISS SYSTEM**
David Jackson and Matt Walker, Bridgestone
Basic level

The Warren Bridgestone Tire plant has always believed that the number one asset to achieving success is their employees. From the very start of this plant they developed the “Star Team” concept, which empowered floor level employees to have an industrial engineer mindset. This concept allows the employees to achieve their highest potential for continuous improvement and problem solving.

The RTM (report type monitoring) system is just one of the many tools that allows employees to report an issue that is not to standard or suggest a better way to do their job. Management receives automatic emails once a report card is generated and the process moves through several automated steps before it is closed. The employee who submits the report card can see what action has been taken with their report card at any given time.

This system has greatly enhanced the number of report cards submitted and is becoming the model for other Bridgestone facilities.

Applied Research Track | Ryman Ballroom EF | 1:30 p.m. – 1:55 p.m.

**ERGONOMIC JOB ANALYSIS TOOLS, INCLUDING ERGONOMICS FREeware**
David Alexander, Auburn Engineers Inc.
All Levels

Ergonomic job analysis has progressed with the development and use of specific screening or analysis tools like NIOSH, RULA, WISHA, etc. This presentation will provide a review of these tools and will instruct when and how to use these tools. Importantly, there are now many free ergonomics job analysis tools available, and these will be identified and demonstrated. Finally, a look at the next generation of ergonomics job analysis tools will be provided. Topic & motivation: Ergonomics continues to be an important, yet largely ill-defined, area of safety and health. This workshop will provide an overview of common and emerging ergonomics job analysis tools, it will show their relative strengths and weaknesses, and it will provide access to these tools online, including many that are freeware.

TUESDAY, MARCH 27 | 2 P.M.

Manufacturing Applications and Case Studies Track | Tennessee A | 2 p.m. – 2:25 p.m.

**INTEGRATING LEAN INTO THE ERGONOMICS SOLUTION DEVELOPMENT PROCESS**
Daniel Gottesman, The Boeing Company
Intermediate level

We will explore the application of lean principles and techniques to situations where ergonomics risk has been identified. One aspect of this is understanding and language ergonomics risk as waste. We will explore ways that ergonomics risk may be mapped to recognized categories of waste used in the lean lexicon. Looking at an existing process through a lean lens will allow us to go beyond accustomed boundaries and to identify additional waste. An optimal solution will address both the ergonomics risk and the other identified waste simultaneously. Using such a lean informed approach, including using the language of lean, can help us create better, more durable and easier to implement solutions.

Ergonomics Programs Track | Ryman Ballroom BC | 2 p.m. – 2:25 p.m.

**ERGONOMICS IN ACTION TRAINING PROGRAM**
Michelle Garner-Janna, Cummins Inc.
All Levels

Over the past 15 years Cummins Inc. has developed and fine-tuned a training course for ergonomics and is used to develop effective trainers through a process of certification. This 20-hour class provides an introduction to ergonomics and teaches how to perform a systematic ergonomic analysis as well as provides several tools in the analysis stage to develop ergonomic solutions. The course is a very hands-on approach and allows students to work on solving actual ergonomic issues as they learn.
TUESDAY, MARCH 27 | 2 P.M.

Applied Research Track | Ryman Ballroom EF | 2 p.m. – 2:25 p.m.

**DEVELOPMENT AND APPLICATION OF A HUMAN FACTORS FAILURE MODE AND EFFECTS ANALYSIS**
Edward Lin, Research In Motion
Intermediate level

Failure mode and effects analysis (FMEA) is commonly used by engineers to define potential failure modes with a product, process, or system. In an effort to proactively reduce the risk of MSDs during the design phase, a human factors FMEA (HF - FMEA) was developed to identify, quantify and prioritize risk factors. The fundamental FMEA categories (Severity, Occurrence, and Detection) and scoring (1-10) were maintained, along with the RPN action limit of 100. A team of ergonomists developed the HF-FMEA by incorporating ergonomics principles into a quality FMEA. During initial testing, tasks evaluated by a quality FMEA and HF-FMEA, showed corresponding RPN scores for most failure modes, with only a couple of opposing scores. In these early trials it appears there is a possible correlation between product quality and human factors. Developing an engineering tool that considers human factors is a success toward incorporating ergonomics in the design of assembling products.

TUESDAY, MARCH 27 | 2:30 P.M.

Manufacturing Applications and Case Studies Track | Tennessee A | 2:30 p.m. – 2:55 p.m.

**ERGONOMIC LEAN EVENT: AN INDUSTRIAL CASE STUDY AT R & B WAGNER**
Carrie Scheel, Concordia University Wisconsin and Synergistic Solutions LLC
Basic level

Kaizen events have long been used to implement lean manufacturing methods. These events can also be used to evaluate and implement ergonomics within the workplace. This session will identify the step-by-step process used by R&B Wagner, a metal fabricating manufacturer, during a kaizen event with an ergonomics focus while using lean principles. The methods used to prepare and collect data prior to and following the event, education of the participants in the process, and outcomes (short and long-term changes) will be shared. Significant reductions in identified ergonomic risk factors, floor space, waste, and improved productivity were accomplished through completion of this event. This case example can be used by other companies to facilitate changes in their ergonomic processes and in lowering their long-term risk for musculoskeletal injuries.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 2:30 p.m. – 2:55 p.m.

**IMPROVING SYSTEM PERFORMANCE THROUGH HUMAN PERFORMANCE OPTIMIZATION - INCORPORATING ERGONOMICS TO ENGINEERING SYSTEM DESIGN AND IMPROVEMENT**
Abraham Robledo Gallegos, Kysor Warren
Intermediate level

Human performance optimization can be accomplished by improving the interactions that humans have with other system components. Better human interactions can be accomplished by improving human knowledge, motivating humans using positive reinforcement/leadership, and improving interaction ergonomic conditions. This presentation/paper focuses on improving interaction ergonomic conditions by developing a methodology to incorporate ergonomic considerations to any engineering system design or improvement. In order to do so, the author creates the awkwardness principle, which states that if a human-system interaction is or feels awkward, it tends to be a system waste or inefficiency, and it is often associated to an ergonomic concern. Therefore, to avoid awkward interactions, ergonomics are considered to any engineering system design or improvement. In order to do so, the author creates the awkwardness principle, which states that if a human-system interaction is or feels awkward, it tends to be a system waste or inefficiency, and it is often associated to an ergonomic concern. Then human-system awkward interactions are ranked in terms of ergonomic risk assessment and system constraints in order to create a matrix that groups them to facilitate the selection of the ones whose elimination or improvement implementation have better returns on risk reduction and overall system performance.

Ergonomics Programs Track | Ryman Ballroom BC | 2:30 p.m. – 2:55 p.m.

**FUNCTIONAL DISABILITY AND RETURN TO WORK**
Mary Hughes, Fort Healthcare
Basic

All too often, when looking at the issue of disability-related workplace modifications and accommodations, we only see the obvious, whether it’s the employee’s presentation or the diagnosis. This can result in a frustrating and costly trial and error approach to find a solution. This session will present a process for looking beyond the diagnosis and focusing on function, and the impact of functional limitations on the job. Once the functional limitations are defined and understood, the ergonomics of fitting the workplace to the worker can proceed.

Applied Research Track | Ryman Ballroom EF | 2:30 p.m. – 2:55 p.m.

**AVOID THE LEAN MANUFACTURING INJURY EXPLOSION!**
Jack Kester, Argonne National Laboratory
Intermediate level

Recent studies show increasing workers' compensation cost trends as manufacturers implement lean manufacturing concepts. Learn why musculoskeletal disorders (MSDs) proliferate in the lean environment and how to manage these costs by integrating ergonomics into the lean process. This presentation uses research and case studies to illustrate the total financial impact of lean concepts and what leading manufacturers have done to adjust their lean processes to reduce MSD incidence rates while achieving their lean efficiencies.
TUESDAY, MARCH 27 | 2:30 P.M.

Roundtable Discussion | Ryman Ballroom BC | 2:30 p.m. – 4 p.m.

HEALTHCARE ERGONOMICS: GROWING TRENDS AND SOLUTIONS
Susan Murphey, Essential WorkWellness
Janet Peterson, JP Ergonomics

What are the latest trends in healthcare ergonomics? Are ergonomic issues seen as just one more expense or as a cost-effective method for reducing overall costs to provide quality patient care, patient safety and minimize/avoid medical errors? Bring your challenges in healthcare ergonomics to discuss in this roundtable and share experiences with your colleagues.

TUESDAY, MARCH 27 | 3 P.M.

Manufacturing Applications and Case Studies Track | Tennessee A | 3 p.m. – 3:25 p.m.

ERGONOMIC DESIGN GUIDELINES FOR PROCESS AND PRODUCT ENGINEERS
Deepesh Desai, Humantech Inc.
All Levels

This session will help participants learn and share the latest ergonomic design principles with their process and product engineers. Also, the principles to consider while establishing ergonomic design guidelines such as using functional anthropometry rather than static anthropometry. Ergonomic design guidelines will be provided that engineers can immediately apply to their current projects and their work environment. Guidelines will be provided for workstation heights and reaches and manual material handling hand tools. In addition, time savings for each design guidelines will be quantified and shared.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 3 p.m. – 3:25 p.m.

EXPLORING THE IMPACT OF UAV INTERFACES ON PILOT WORKLOAD, SITUATION AWARENESS, AND USABILITY
Lesley Strawderman, Mississippi State University
All Levels

The use of unmanned aerial vehicles (UAVs) has become more widespread as technology advances. With the expansion of UAV programs, there is a critical need to ensure effective vehicle operations, from both a user and mission standpoint. Addressing human factors issues; such as training, interface design, information processing, and skill transfer; will promote UAV flights with minimal pilot error and optimum pilot and UAV performance. Three UAV pilot interfaces were evaluated and performance (e.g., response time) and pilot perceived usability, mental workload, and situation awareness were quantified. Results indicate that interface design does significantly impact pilot performance and perceptions. Various demographic factors, particularly flight training and flight experience, also had a significant impact on results. Detailed descriptions of the UAV interfaces and eye tracking videos from data collection will also be presented.

Ergonomics Programs Track | Ryman Ballroom BC | 3 p.m. – 3:25 p.m.

TOYOTA’S USE OF AUDIT FINDINGS TO DRIVE CONTINUOUS ERGONOMICS PROGRAM IMPROVEMENT
Marisol Barrero, Toyota Motor Engineering & Manufacturing, North America
All Levels

In 2008 Toyota Motor Engineering & Manufacturing, North America (TEMA) passed the North American Ergonomics Policy to set regional standardization in ergonomics and establish a world-class ergonomics program at all 14 of its vehicle assembly and component part manufacturing facilities. Following the Plan-Do-Check-Act cycle, ergonomics program auditing began in 2010 to check program implementation. This presentation will emphasize how auditing is being utilized to not only assure conformance to policy and maintain ergonomics program consistency, but also to develop resources that address regional needs and improve overall program effectiveness. Discussion will focus on how the ergonomics audit process can be used to drive continuous improvement at other Toyota facilities.

Applied Research Track | Ryman Ballroom EF | 3 p.m. – 3:25 p.m.

FORD MOTOR COMPANY GLOBAL ASSEMBLY ERGONOMIC TECHNICAL DEVELOPMENT PROCESS
Glenn Harrington, Ford Motor Company
Advanced level

The key to Ford Motor Company’s Global Assembly Ergonomic Process is to communicate pertinent ergonomic specifications to product design engineers in the design phase of any new product. Automotive tasks often require data and tools specific to assembly demands, beyond that which exists in generic ergo assessment tools (i.e., NIOSH, TLV). The objective of the Global Assembly Ergonomic Technical Development process is to service ergonomic process through specification development, work methods and analysis techniques. Systematic review of global ergonomic program issues identifies gaps in existing data and ergonomic assessment tools. Individual issues are prioritized based upon multinomial risk factor classification. The technical development process involves literature review, benchmarking, historical issue investigation, injury data analysis, global manufacturing assumptions and technical research resources (i.e., motion capture, EMG). Process outputs include: product design and manufacturing specifications, ergonomic analysis techniques and tool development, and digital human model development.
ONE YEAR FOLLOW-UP CASE STUDY: WATER METER READER/INSTALLER PROBLEMS AND SOLUTIONS

Ivana Wireman, Ohio Bureau of Workers’ Compensation
Intermediate level

Montgomery County Water Services (MCWS) utilized Ohio BWC (OBWC) ergonomics services to evaluate their water meter reader and leak detection tasks which were fraught with ergonomic hazards. These employees visit 200-250 addresses each day and lift 10-lb. cast iron metal covers known as Ford box lids throughout each shift. To open/close the metal covers the employees use a Ford box key which requires repetitive forceful exertions measuring 20 lbs-force. MDS risk factors were identified using the OBWC risk factor checklist. Interventions were chosen based on feasibility, cost, and quality measures. Funding from the Ohio BWC Safety Grant$ Program was utilized to pay for 66% of the total cost of the recommended interventions. The results of the implemented solutions following a one-year period are presented in this case study with impact on the workers’ well-being and the employer’s loss experience, productivity, quality and cost/benefit measures.

INTEGRATED VIRTUAL REALITY TRAINING: THE BIOMECHANICAL AND COGNITIVE IMPLICATIONS OF DESIGN

Richard Stone, Iowa State University
Intermediate level

This study demonstrates that the use of virtual reality integrated training can have significant advantages over traditional training methods in the domain of weld training. Participants in this study were randomly assigned to one of two separate training courses taught by sanctioned AWS (American Welding Society) CWIs (certified welding instructors); the duration of each course was two weeks. Participants in both groups were evaluated in terms of their cognitive and physiological parameters, total training time exposure, and welding certification awards. The four weld types taught in this study (1F, 1G, 3F and 3G) each represented a distinctively different level of difficulty and required the development of specialized knowledge and skills. Upon completion of their training for a specific weld type, participants were given the opportunity to test for the corresponding welding certification. Results showed that participants in the virtual reality integrated training group (VR50) performed as well as, and in some cases significantly outperformed, the traditional welding training group (TW). The VR50 group was found to have a 41.6% increase in overall earning of certifications over the TW group. These findings strongly support the use of VR integrated training in the welding industry.

AUDITING ERGONOMICS SYSTEMS, PART 2

Stephen Jenkins, Auburn Engineers
Intermediate level

Ergonomics systems are composed of many components. We audited these components for several reasons: to ensure compliance with minimum corporate requirements, to determine effectiveness, and to compare one site with another. Objective criteria are important, as are systematic audit processes. The results should be easy to understand, thus allowing corrective action to occur resulting in continuous improvement for an ergonomics component. The session will examine different audit processes and tools to help participants identify the best approaches to measure and improve their ergonomics systems.

DEVELOPING A USABILITY ASSESSMENT FRAMEWORK OF INFORMATION VISUALIZATION TECHNIQUES IN HEALTHCARE

Quaneisha Jenkins-Penha and Steven Jiang, North Carolina A&T State University
All Levels

Emergency departments collect various data to make decisions in regards to patient healthcare as quickly and efficiently as possible. Major challenges to developing a decision support for a healthcare information system include the types of data acquired, the amount, its dynamic characteristics, and how to display that data. For this project an interface prototype was developed and a heuristic evaluation for usability issues was performed. Future work includes empirical study measuring mental workload, performance measurements, and eye tracking metrics. In addition, focus groups and case studies will allow for the collection of qualitative user data and field testing with domain experts. Various visualization techniques can be used to support healthcare professionals in visualizing patterns in hospital data that can be helpful in the decision making process. Implementation of various support tools with visualization techniques in complex healthcare systems is difficult to achieve and thus an evaluation of techniques is needed.
**WEDNESDAY, MARCH 28 | 7 A.M.**

**Roundtable Discussion | Ryman Studio DE | 7 a.m. - 8 a.m.**

**OFFICE ERGONOMIC EQUIPMENT EVALUATION**
Janet Peterson, JP Ergonomics  
Miriam Joffe, Auburn Engineers  
Ben Zavitiz, Bath Iron Works / General Dynamics  
All levels

Three pieces of office equipment that are often/always needed [chairs, mice and keyboard trays] will be discussed and evaluated in this hands-on roundtable session. You will have an opportunity to compare/contrast different pieces of equipment as well as discuss which features of each item are the most desirable from an ergonomics perspective.

**WEDNESDAY, MARCH 28 | 8 A.M.**

**Successful Ergo Teams - Tutorial Series Track | Tennessee A | 8 a.m. – 8:25 a.m.**

**ERGOGREEN: COMBINING ERGONOMICS AND SUSTAINABILITY**
Davana Pilczuk and Kevin Barefield, Gulfstream Aerospace Corporation  
Basic level

At first glance, sustainability and ergonomics seem like two completely, unrelated disciplines. One focuses on protecting the natural environment through reduction of material usage, reusing items for different functions, and recycling items in order to cut down on waste production. Ergonomics focuses on protecting people and reducing the occurrence of musculoskeletal injuries while finding productivity and quality gains. Gulfstream Aerospace has created a new concept called ErgoGreen, a way to marry both ergo and sustainability, get buy-in from the employees, financial support from management, and all while protecting both people and planet. The concept is simple: use scrap material or other sustainable means to solve ergo problems. Our engineers now use scrap materials found in dumpsters, piles of wood pallets, and scrap from our woodshop to make ergo solutions. The ideas are highly creative, incredibly low cost, and the impact has been companywide in less than eight months time. ErgoGreen: protecting people and planet. Audience will perform a hands-on lesson in creating sustainable, ergo solutions.

**Ergonomics Program Track | Tennessee B | 8 a.m. - 8:55 a.m.**

**FEATURED SPEAKER**

**HAVING TROUBLE IMPLEMENTING AN ERGONOMICS PROGRAM? CONSIDER PARTNERING WITH QUALITY**
Sandra Woolley, Mayo Clinic  
Intermediate level

This presentation will describe how the same approach to an employee-involved ergonomic program in two areas of the same healthcare facility was met with very different success. The facility has 20 safety teams; safety and ergonomic initiatives are typically driven through these teams. A proactive ergonomics program, entitled the “nasty jobs” was initiated within Linen & Central Services. This participatory ergonomics program resulted in a 35% reduction in the incidence of musculoskeletal disorders in one year. When the same program was rolled out to the surgical services group it struggled to get off the ground. The quality group was simultaneously involved with a large employee-driven core collaborative program (The core is where surgical instruments/supplies are cleaned and readied for surgery). By partnering with the quality initiative, which was supported by upper management, ergonomics was able to participate in not only lean process improvements but also implementing the nasty jobs program.

**Potpourri Track | Ryman Ballroom BC | 8 a.m. – 8:25 a.m.**

**SIX WAYS TO MANAGE LABORATORY ERGONOMICS MORE EFFICIENTLY**
Jessica Ellison, EORM  
Basic level

Navigating the prevention of repetitive motion injuries in the lab requires more than providing industry standard personal protective equipment. It requires evaluating each employee and their lab setup, analyzing how that employee uses their equipment, determining where injuries may occur, and adjusting either the task, equipment or work practice. Managing these tasks and following up with at-risk employees can become truly overwhelming if the right resources and processes are not consistently, economically and effectively established. This presentation will outline six best practices for improving the efficiency and manageability of a laboratory ergonomics program. Through this discussion, “real-world” examples will be explained and demonstrated.
### Applied Research Track | Ryman Ballroom E | 8 a.m. – 8:25 a.m.

**CAN A SEAT PAD LOWER WHOLE BODY VIBRATION EXPOSURE AND REDUCE REPORTED BACK PAIN?**

Steven Chervak, U.S. Army Public Health Command  
Basic level

A seat pad (SP) was evaluated for whole body vibration (WBV) and potential to reduce back pain. A military vehicle was instrumented with accelerometers placed on the driver and front passenger seats, both above and below the SP. The vehicle was evaluated over five test tracks. WBV data was collected and processed according to ISO 2631-1:1997. In a separate part of the study, military drivers who did and did not use the SP rated their back pain (1=low pain, 10=extreme pain) before and after each driving mission. Military vehicle WBV (acceleration) was 0.310 m/sec\(^2\) with the pad and 0.255 m/sec\(^2\) without it (p=0.02). Back pain ratings by the non SP user group doubled after missions (2.4±1.7 to 4.9±2.2), while those of the SP user group remained unchanged (3.0±2.7 versus 3.0±2.8) (interaction p<0.01). Despite the acceleration data, the SP was successful in ameliorating back pain among soldiers during long-distance driving missions.

### Master Track | Ryman Studio BC | 8 a.m. - 9:30 a.m.

**USING LEAN MANUFACTURING TO LEVERAGE YOUR ERGONOMICS PROGRAM**

Keith White and Steven Derrick, Lennox International Inc.  
Jeoff Smagacz, Risk Management Group  
Ben Zavitz, General Dynamics  
Advanced level

Lean manufacturing strives to minimize waste and inefficiencies in the manufacturing process which includes job activities that are not optimized for the workers. Ergonomists have the same goals and can use lean manufacturing principles to help justify job task and work area changes. A panel of experienced experts will discuss how the application of lean manufacturing principles was used to solve ergonomics-related problems in the workplace and will share lessons learned.

### Successful Ergo Teams - Tutorial Series Track | Tennessee A | 8:30 a.m. – 8:55 a.m.

**HOW UC ERGONOMISTS EVALUATED A HIGH RISK OCCUPATION AND DEVELOPED INJURY REDUCTION STRATEGIES**

Mallory Lynch, University of California at Berkeley  
Intermediate level

In 2010-2011, ergonomists from the University of California, with 10 campuses/5 medical centers and over 150,000 employees, evaluated custodial work, one of their high risk-for-injury occupations, with the goal of developing, implementing and evaluating injury reduction strategies. A very systematic approach was used to meet the project objectives, including: developing a project charter; evaluating injury data and applicable research; implementing communication strategies to allow system-wide participation; developing and implementing questionnaires; organizing project team and delegating tasks; writing reference documents including: best practice bulletins, recommended product sheets and design guidelines for new construction and existing buildings. This project resulted in processes that can help guide future ergonomic teams working in large, complex organizations.

### Potpourri Track | Ryman Ballroom BC | 8:30 a.m. – 8:55 a.m.

**CHANGE IS GOOD - GUIDING YOUR WORKERS TOWARD ELECTRONIC PIPETTES**

Melissa Afterman, VSI Risk Management & Ergonomics Inc.  
Intermediate level

If you have laboratories at your site, you most likely have pipettes. And if you have a lab ergo program, you most likely recommend electronic pipettes. But do your workers actually use them? The information in this session is built from years of asking people to change, but not feeling satisfied with the results. The training materials and strategies developed for a large pharmaceutical company will be shared, with the goal of breaking down the barriers of using electronic pipettes. It is easy to make ergonomics recommendations, but managing change and affecting implementation can help take your ergonomics program to the next level.
WEDNESDAY, MARCH 28 | 8:30 A.M.

Applied Research Track | Ryman Ballroom EF | 8:30 a.m. – 8:55 a.m.

IMPACT OF PARTICIPATORY ERGONOMICS IN A LONG-TERM HEALTHCARE SETTING

D. Darren MacDonald, Tekto Inc.
Intermediate level

Musculoskeletal injuries are a global dilemma and one of the more effective means to tackle this problem is through participatory ergonomics. The objective in this particular study is to investigate the impact these particular participatory interventions have on the factors of musculoskeletal health and organizational readiness in a long-term care health facility in Nova Scotia. The results from this study found a significant decrease in the musculoskeletal workload as a result of the intervention. There was a noted improvement found in some key readiness components as a result of implementing a participatory ergonomics process. Lastly, the level of bodily pain experienced by participants was significantly higher than the mean pain level of the Canadian population. The information obtained from this investigation would suggest that the use of participatory ergonomics initiatives could have a positive impact on musculoskeletal health and assist with implementing change in workplaces.

WEDNESDAY, MARCH 28 | 9 A.M.

Successful Ergo Teams - Tutorial Series Track | Tennessee A | 9 a.m. – 9:30 a.m.

HOW TECHNOLOGY WAS USED IN A PARTICIPATORY PROGRAM TO DRIVE DOWN ERGONOMIC RISKS

Paula Lewis, EORM
All Levels

The management of office ergonomic risks can be costly and time intensive. Many times as safety professionals and ergonomists our involvement is reactive, participation is limited, and we are engaged only after there’s a report of discomfort. This session will review how one company is proactively addressing their office ergonomic risks through the use of a participatory program and an online self-assessment tool. This session will review how one company implemented a program and overcame challenges, resulting in reducing their ergonomic risk by more than 50 percent over a 12-month period. Lessons learned will also be shared.

Ergonomics Program Track | Tennessee B | 9 - 9:30 a.m.

QUALITY THROUGH ERGONOMICS

Bart Beasley, Gulfstream Aerospace Corporation
All Levels

In an effort to gain support and resources for vital ergonomics programs aimed at reducing the risk of potential ergonomic injuries, ergonomics professionals often include the positive impacts to quality and productivity in their request(s) to senior leadership teams. The positive impacts to quality and productivity are often communicated as secondary impacts while the main focus is reducing the risk of ergonomics related injuries. In this presentation, we reverse the focus from injury prevention to quality improvement and gain the necessary support and resources needed to gain support, resources and implement your ergonomics programs. The truth is, senior leadership teams are convinced that injury prevention is needed and understand that injury costs have a negative impact on the bottom line. However, the metrics are not always quantifiable. It is hard for them to see their return on investment (ROI). When we change the focus to quality and productivity improvements, it is easier to qualify and quantify the ROI. As ergonomics professionals, we know that an organization will experience negative quality and productivity impacts prior to experiencing injury epidemics thus resulting in high cost and increased waste. Improve quality, improve productivity, and ergonomic injuries are reduced. By concentrating resources on improving quality and productivity using lean Six Sigma tools and language, we will speak to the needs of leadership teams more effectively. We can also qualify and quantify the needs of ergonomics programs more effectively. In the end, we can accomplish what we set out to do in the first place: reduce injuries and ensure that our workforce is healthy beyond the gates of the workplace.

Potpourri Track | Ryman Ballroom BC | 9 - 9:30 a.m.

ERGONOMIC UPGRADES IN AN ANIMAL HANDLING FACILITY

Erica King, Duke University
Intermediate level

The Duke University and Health System Division of Laboratory Animal Resources (DLAR) had the highest injury rate in the University and Health System with a DART rate in 2007 of 26.13. It also had poor morale and safety culture. After administrative changes and the formation of a safety/ergonomics committee, many safety and ergonomic improvements have been made divisionwide. Improvements include job reclassification, changes with PPE, and small (equipment maintenance) to large (large-scale installation of delayed closing doors) engineering controls. The DART rate went from 26.13 in 2007 to 8.85 in 2010. It continues to trend down. This presentation details some of the significant ergonomic upgrades that have been made at the Duke University and Health System DLAR facility. These upgrades have been made after the institution of a safety/ergonomics committee, which along with management support, has been very successful in making a safe work environment a top priority.
Applied Research Track | Ryman Ballroom EF | 9 - 9:30 a.m.

**STUDENT-LED ERGONOMIC ASSESSMENTS AND THE VALUE-ADDED FOR INDUSTRY PARTNERS**

Kristen Miller and Mark Benden, Texas A&M Health Science Center
All Levels

Following requests from various industries, graduate students were assigned upper extremity risk reduction projects to reduce the number and severity of hand, arm and shoulder injuries and illnesses that were the main source of occupational recordables for the facility. The students collected injury/illness data, interviewed employees and management, immersed themselves in the process, captured video and still images for analysis and performed multiple solving sessions related to root causes of injury that were identified during their study. Once a clear direction was formed, the class turned their attention to development of solutions with clear return on investment that could be articulated to management and embraced by the employees. The details of the process improvements, quality upgrades and injury/illness reductions are presented here as a case study in applied ergonomics as an example of industry/university collaboration.

WEDNESDAY, MARCH 28 | 1:30 P.M.

Manufacturing Applications and Case Studies Track | Tennessee A | 1:30 p.m. – 2:25 p.m.

**FEATURED SPEAKERS**

**VPPA AND OSHA STRATEGIES FOR REDUCING INCIDENTS**

R. Davis Layne, VPPA, and Patrick Kapust, OSHA

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 1:30 p.m. – 1:55 p.m.

**USABILITY SELECTION, TESTING & DESIGN: APPLICATIONS AND EXAMPLES**

Jeannie Iverson, VSI Risk Management & Ergonomics Inc.
All levels

Hand tools and other peripherals can pose a challenge for you and your staff if not selected correctly. Therefore, identifying the correct tool for the job to optimize both your boys physical and functional work profile is vital to your company’s operation and management of its injury rates. This presentation will discuss the “golden rules” of successful usability selections, testing and design as it applies to its users. Photographs illustrating actual fieldwork studies of office, manufacturing and industrial work environments will depict the pitfalls and successes as they relate to the user’s interaction to experience.

Office Ergonomics Track | Ryman Ballroom BC | 1:30 p.m. – 1:55 p.m.

**TODAY’S ERGONOMICS**

Jerome Congleton, Texas A&M University System Health Science Center School of Rural Public Health
All Levels

Today’s ergonomics is designed to increase ergonomic awareness in and out of the workplace by exploring new technology such as tablets, readers and smart phones, their use and place in the work environment, as well as the ever-changing workplace including trends in the office and telecommuting. The presentation will look at the principles of ergonomics, the consequences of neglecting an office ergonomics program, creative, cost-effective approaches to proactively address ergonomic problems, and workstation design through innovative office furniture.

Applied Research Track | Ryman Ballroom EF | 1:30 p.m. – 1:55 p.m.

**IMPACT OF DISPATCH COMMUNICATION AND DISPLAY CHARACTERISTICS ON LAW ENFORCEMENT PATROL SITUATION AWARENESS**

Teena Garrison, Center for Advanced Vehicular Systems
Intermediate level

Law enforcement patrol is a complex and demanding task in which the vehicle functions as an officer’s “mobile office.” In this mobile office, officers must communicate with dispatch and other officers while driving and remaining vigilant. For this project, two experimental manipulations were used to assess certain conditions impacting the use of in-vehicle communications equipment: communication type, specifically coded language (e.g. 10-4) versus natural language (e.g. Acknowledged), and the presence or absence of a computer display containing important details from dispatch. Our results indicate that when the use of coded language is paired with the use of a display echoing communication with dispatch or when natural language is used without such a display, accuracy on a test of situation awareness was similar to a control condition without distraction. This provides evidence that police departments should be made more aware of how certain technologies and practices interact.
WEDNESDAY, MARCH 28 | 1:30 P.M.

Roundtable Discussions | Ryman Studio BC | 1:30 p.m. - 3 p.m.

**HOW DO YOU KEEP YOUR ERGO PROGRAM FRESH AND AVOID GOING INTO A PLATEAU/SLUMP?**
Jose Banaag, Honda of America Mfg. Inc.
All levels

You’ve had an ergonomics program in your company now for several years and it feels “stale.” You’re noticing that employees don’t seem to be as interested or engaged in ergonomic issues. What can you do? This roundtable session is designed to find out what others have done to invigorate their ergonomics programs. Share your successes and your frustrations. There may be some resources out there of which you are unaware that can assist you in your efforts.

WEDNESDAY, MARCH 28 | 2 P.M.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 2 p.m. – 2:25 p.m.

**NEW FLOORING TECHNOLOGY IMPROVES WORKPLACE WAREHOUSE ERGONOMICS**
Greg Doppler, Cornerstone Specialty Wood Products LLC
All Levels

According to the 2010 Bureau of Labor Statistics, there were over 10,000 cases of lost time injuries in 2009 in warehouses across the United States. A significant number of these injuries may have occurred due to the use of ergonomically unfriendly flooring surfaces in warehouse environments. This highly illustrated session will explore the three main types of flooring that are used in warehouses today and focus on the use of engineered wood products as a resilient flooring system. Recent independent studies conducted by the Institute for Ergonomics at The Ohio State University show a significant ergonomic advantage in the use of engineered wood products instead of either concrete or bar grate. In addition to ergonomic benefits, the economic and environmental aspects of the flooring choices will be discussed in detail as well.

Office Ergonomics Track | Ryman Ballroom BC | 2 p.m. – 2:25 p.m.

**CONVENTIONAL WISDOM VS. CURRENT ERGONOMICS THINKING**
Gene Kay, ErgoAdvocate
Basic level

Much misinformation persists regarding positioning for computer users. Examples include the strong belief that the monitor must be placed at eye-level, and in the case of neck pain, the monitor needs to go even higher. Or the belief that the 90-90-90 upright seated posture is the one correct way to sit. In many cases clear scientific evidence supports changing this rigid outdated thinking. See how there are better ways of working. Learn about the sweet-spot for visual work, and learn how to reduce spinal loading and compression while seated. The presenter brings his experiences from many years in a Global 100 ergonomics program and from his work in a neurology-chronic Pain program.

Applied Research Track | Ryman Ballroom E | 2 p.m. – 2:25 p.m.

**HEALTH EFFECTS OF STANDING MOBILE COMPUTER WORKSTATIONS ON NURSES**
Farman Moayed, Indiana State University
Intermediate level

Previous studies have shown correlation between working on computer workstations and musculoskeletal disorders (MSDs) and were focused on general workforce and seated/stationary computer workstations. But there have been few studies about standing mobile computer workstations and their health effects. Here the goal was to investigate the health effects of standing mobile computer workstations among nurses. A case-control study was conducted among nurses to investigate the correlation between ergonomic features of mobile workstations and MSD symptoms. The results of this project were mostly inconclusive (statistically insignificant) due to small sample size. However, there could be other confounding factors that can affect the outcome, e.g., it seems that the content of the task can determine if nurses choose to work on a stationary workstation or standing/mobile workstations. This means that the health effects of ergonomic mobile workstations should also be analyzed within the context of nurses’ jobs and the general clinical workflow.
PUTTING THE “E” BACK INTO SAFETY: ERGONOMICS IN 2012 AND BEYOND
Jeffrey Smagacz, Risk Management Group
Intermediate level

Today’s market for ergonomics engineering is emerging again, driven by a recovering economy, strength in the manufacturing sectors, and latent demand from two years of restraint in commissioning such services. In this presentation, learn new ergonomics strategies, tactics and trends you can leverage to drive exceptional safety and business performance. Several examples will be shared from clients ranging from healthcare to building products. A self-assessment will be provided to help participants gauge their approaches and effectiveness.

BEHAVIOR ENGINEERING: DESIGN YOUR WORKPLACE TO PROMOTE SAFE BEHAVIORS
Jack Kester, Argonne National Laboratory
Intermediate

Everyone is talking about behavior safety these days, often promising workers’ compensation cost reductions of as much as 70%. Unfortunately, even the best behavior safety process will not be effective if your workplace is not designed to promote safe behaviors. In this session, you will learn about the role of workplace design in the behavior safety process; common workplace design issues and their impact on employee behaviors; engineering design concepts that positively impact employee behaviors; and methods for integrating ergonomics into the behavior safety process.

ERGONOMIC SOLUTIONS: FAD VS. FACT
Deepesh Desai, Humantech
All Levels

For many of us, finding the right solution to address an ergonomics issue can be challenging. Whether you are implementing a new product, work practice control, or administrative solution, it is not always easy to differentiate a passing “fad” from a proven solution or “fact.” Lately, when it comes to new products on the market, everything seems to be “ergonomic.” With the lack of a governing body for ergonomic products, the use of the term “ergonomic” is often a marketing ploy to sell products, which results in the erosion of the perceived scientific validity of our profession. This presentation will focus on determining if the hype surrounding many ergonomic solutions stands up to actual scientific criteria. Topics will include, but are not limited to, Swiss ball seating, treadmill workstations, back belts for lifting in the office, stretching programs, ergonomic keyboards, and various types of input devices (e.g., mouse).

EFFECTS OF PORTABLE COMPUTING DEVICES AND WORK ENVIRONMENTS ON MUSCLE ACTIVATION
Abigail Werth, Mississippi State University
All Levels

Advances in technology have allowed portable computing devices to be used in nontraditional work environments. Few studies exist that have quantified ergonomic exposures during the use of portable devices in nontraditional work environments and any resultant potential increases in work-related musculoskeletal disorder (WMSD) risk. For this study, 12 participants typed on a laptop, netbook and slate computer in two different work environments (an adjustable workstation and sofa). Muscle activation (% of maximum exertion), measured using surface EMG for the flexor and extensor carpi radialis, upper trapezius and sternocleidomastoid, was quantified. Findings indicate that there is a difference in the level of activation based on the type of device and an interaction between muscle and workstation. This suggests that when designing portable computing devices, the different potential settings the devices could be used in should be taken into account to reduce specific WMSDs.
MANUFACTURING APPLICATIONS AND CASE STUDIES TRACK | TENNESSEE A | 3:30 P.M. – 3:55 P.M.

THE IMPACT OF OHIO BWC FUNDED ERGONOMIC INTERVENTIONS ON CLAIMS REDUCTION AND RETURN ON INVESTMENT
Mireya Springer and Michael Lampl, Ohio Bureau of Workers’ Compensation
All Levels

The preferred approach to the prevention and control of musculoskeletal disorders (MSDs) in the workplace is to design the job taking into account the capabilities and limitations of the worker. Jobs should be designed to minimize MSD risk factors, such as excessive forces, awkward postures and repetitive motions. The Ohio Bureau of Workers’ Compensation (BWC) Safety Grant program has provided funding to companies over the past 11 years to assist in reducing the risk of MSDs in the workplace. As part of the program, BWC collects data to assess the reduction in exposure to MSDs as a result of the interventions. This data includes the cost of the intervention, number of employees affected by the intervention, number of hours worked, and injury data. This data is used to determine the injury rates before and after the intervention along with the ROI for the implementation of the intervention.

This presentation will summarize the results of the most frequently applied for ergonomic interventions. The safety grant applicants represent a variety of industries, including construction, manufacturing, healthcare, and public employees. While the ROI varies by type of intervention, on average the data shows that ROI for 11 types of interventions (1,318 interventions) range between 6 and 31 months. Examples of these interventions include lift tables, manlifts, and powered cots.

DESIGN, PRODUCT DESIGN AND EVALUATION AND MODELING TRACK | TENNESSEE B | 3:30 P.M. – 3:55 P.M.

AN ERGONOMIC ANALYSIS OF USER POSTURES ON THE PERFORMANCE OF HYDRAULIC EXCAVATOR OPERATORS USING DIGITAL HUMAN MODELING
Joseph Akyeampong, North Carolina A&T State University
Basic level

The design of the human-machine interface (HMI) can play a significant role in determining the effectiveness of fluid power systems, like hydraulic excavators. Effective HMIs are characterized by factors that enhance operator/job performance such as sufficient information feedback, intuitive displays and controls, and an ergonomic cab. A combination of various system elements must be carefully analyzed in order to understand the effectiveness of the cab designs. One significant aspect is how the operator’s posture affects their performance. In this work, an ergonomic analysis of different operator postures and how they impact operator performance was performed on a simulated Deere D-Series hydraulic excavator using the digital human modeling software, Jack®. A comfort assessment for each posture was obtained and the findings are intended to provide input to system designers on the aspects of the cab that must be improved in order to yield more ergonomic cab designs and improve system performance.

OFFICE ERGONOMICS TRACK | RYMAN BALLROOM BC | 3:30 P.M. – 3:55 P.M.

REDUCING WORKERS COMPENSATION RISK WITH A RIGOROUS APPROACH TO WORKSTATION DESIGN
Woody Dwyer, Travelers
All Levels

Soft tissue injuries, which generate millions of dollars in workers’ compensation claims every year, are painful for workers and frustrating for employers because of the medical uncertainty that often surrounds their diagnosis and treatment. Back strain, carpal tunnel syndrome and other musculoskeletal complaints can bring a worker’s productivity to a halt. The first line of defense and the best way to manage soft tissue risk is to avoid these injuries to start with by having appropriate workstations that reduce strain and encourage healthy alignment of bodies. Today’s healthcare companies may presume that during either new construction or renovation, proper ergonomic design will be built in to a project automatically. Unfortunately, such is not the case. Workstation design and equipment purchased are often found to be inadequate after installation is complete and employees begin to use them.
The presentation will include three parts: An overview of the ergonomics of gloves, results of a study of the potential impact of using single and double gloves on worker’s performance and comfort in the semiconductor industry, and general recommendation for gloved work including handle design. The study is an experimental investigation that investigated the effect on workers’ performance and comfort in four glove-conditions: bare hands without gloves, single vinyl gloves, latex rubber gloves over vinyl gloves, and tri-polymer gloves over vinyl gloves. Also, each glove condition was examined under wet and dry conditions. Three basic tests were devised: (1) carrying out a test-task, (2) using a testing rig to assess the subject’s ability to exert pull-down forces while using a power grip, and (3) using the same test rig to assess the ability of the subject to exert a pull-down force while using a pinch grip. The test rig included dimensionally identical end effectors made of polypropylene, stainless steel, and Teflon®. Sixteen male and seven female workers participated in the study. Results indicated that using gloves increased the level of effort exerted, reduced comfort, and reduced the sense of security during the test-task. The ability to exert pull-down forces using both power and pinch grips was reduced by different degrees for the single and double-glove conditions and was affected by the different materials of the end effectors. It was concluded that wearing gloves may reduce the workers’ capacity to perform material handling tasks. Moreover, it can be concluded that the effects of using gloves is a function of the type and characteristics of the material handled, therefore future investigations are recommended.
Office Ergonomics Track | Ryman Ballroom BC | 4 p.m. – 4:25 p.m.

TELECOMMUTING WITH TODAY’S TECHNOLOGY
Miriam Joffe, Auburn Engineers
Intermediate level

People across the country are working at home for a variety of reasons such as lowering the corporate carbon footprint, accommodating parents of young children, driving distance and time/fuel costs, working between classes, and illness or physical limitations to name a few. As part of program development to monitor and manage risk, policies and guidelines should be developed that protect the employee while balancing the economic and logistic concerns of the company. This presentation will explore policy considerations for equipment needs, workstation assessments options, communication and psychosocial implications.

Applied Research Track | Ryman Ballroom EF | 4 p.m. - 4:25 p.m.

FINGER FORCE REDUCTION THROUGH PROPER GLOVE MATERIAL SELECTION
Brett Besser, U.S. Department of Labor - SLTC
All Levels

Gloves are used in many grinding and buffing tasks to protect the hands from contact with heated parts as well as a from task debris and dirt. This presentation describes experiments performed to determine the increase in finger force based on the type of gloves used. It was found the thoughtful selection of glove material could reduce the finger force significantly.

Manufacturing Applications and Case Studies Track | Tennessee A | 4:30 p.m. – 5 p.m.

KEEP THE METAL POURING: PROACTIVE ERGONOMICS FOR FOUNDRIES
Jill Kelby, Kelby Ergo Design
All Levels

Foundries present a unique environment in which there are many safety risk factors and therefore great opportunities to reduce injuries while improving productivity and quality. Not only are reducing injuries a goal, but there is also a need to improve process efficiency and reduce part defects and rework. This session will present the reasons why an ergonomics program was needed, the barriers experienced in implementation and the results seen in injuries, productivity and part defect rate. The lessons learned in the foundry can be applied to other foundries and manufacturing settings.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 4:30 p.m. – 5 p.m.

ERGONOMICS AND SIX SIGMA: REDUCING HIGH INSERTION EFFORT FASTENERS AT FORD MOTOR COMPANY
Glenn Harrington, Ford Motor Company
All Levels

Two key elements of any successful ergonomics program are the early, proactive identification of issues and the development of and adherence to ergonomic design specifications by design engineers. Failure to identify issues early in the design process increases the risk of injury to the operator and results in late and costly design changes. The presentation will discuss a black belt project, and the Six Sigma analysis tools that were used to identify, analyze, develop and implement process improvements to resolve the issue of high insertion efforts on end-item fasteners at Ford Motor Company. The presentation will discuss the Six Sigma approach that was used to ultimately update and improve the fastener release process. The process improvements are aimed at eliminating the release of new, high insertion effort fasteners thus reducing the risk of injury to the operators.

Office Ergonomics Track | Ryman Ballroom BC | 4:30 p.m. – 5 p.m.

INTEGRATED WORKPLACE (IWP) INFLUENCE ON OCCUPATIONAL INJURY AND ILLNESS
Steven Schwartz, Eli Lilly and Company
All Levels

Eli Lilly and Company (Lilly) moved from a purely “resident” office structure to a more mobile (integrated, hot-desk) work style to increase collaboration while decreasing operating expenses associated with office space (reduced total area) and inter-office moves. Significant effort was placed into the ergonomic design criteria of new adjustable desks, new chairs, and an assortment of external devices (an Ergo on the Go Kit) for each employee. Unfortunately, the rate of injuries and illnesses began to increase for this workforce population. A 65 team was commissioned in February 2011 to determine the causal factors for these events, to develop a comprehensive data set, including survey, focus group, and ethnography studies. The team was then tasked with generating a list of countermeasures aimed at addressing each of the factors identified; the final list of recommendations was approved in May 2011. Implementation is currently underway (as of September 2011) with the results to be evaluated toward the end of the year. This presentation would cover the problem statement, 65 team activities, and post-implementation results.
Applied Research Track | Ryman Ballroom EF | 4:30 p.m. – 5 p.m.

**USING JOINT MOVEMENT ANALYSIS TO ELUCIDATE WORKPLACE RISKS**

Kevin Tesh, J&J Medical Ltd.
Basic level

Johnson & Johnson Medical Limited has been using assessment tools to identify ergonomic risks but these are limited due to the repetitiveness and varied task components in manual attaching and winding jobs. In order to elucidate a more thorough risk profile, joint movement analysis equipment was used to measure workplace postures. Studies to measure real-time postures in the neck, forearm and wrist joints showed joints were working within the desired design range for the job tasks although some auxiliary tasks resulted in more excessive postures. Modifications to the layout of the workstation and training sessions allowed the working methods to be modified and repeat recordings showed lower risk profiles. These studies not only allowed more accurate ergonomic assessments to be obtained but permitted a comparison of working techniques to optimize the working methods for training and improve the efficiency of the assembly process.

THURSDAY, MARCH 29 | 8 A.M.

Potpourri Track | Tennessee A | 8 a.m. – 8:55 a.m.

**FEATURED SPEAKER**

**BECOMING A CERTIFIED PROFESSIONAL ERGONOMIST**

Bill Boyd, CNA
All Levels

There are over 1,000 professionals who are certified professional ergonomists. This session will deal with the need for certification, the benefits along with the process of becoming a certified professional ergonomist.

Diverse and Global Workforce Track | Tennessee B | 8 a.m. – 8:25 a.m.

**OPTIMIZING AND DESIGNING FOR AN AGING POPULATION IN THE WORKPLACE**

Josh Kerst, Humantech
All Levels

There is no getting around it – every industry, occupation, and employer has faced the challenges of an aging workforce. This session addresses myths and facts about performance changes as we age and highlights ergonomic design considerations to ensure the workplace best fits people of all ages and capabilities. This session will explore the dynamics of an aging workforce and the role ergonomics can play in maximizing their potential. Participants will understand the impact on workers’ output as they age and how to ergonomically design for an aging workforce to reduce their potential for injury. This session will also help you identify ergonomic improvements to accommodate the needs of the aging workforce. You’ll learn to use ergonomic assessment tools that proactively consider the physiological changes that occur as we age, and what ergonomic improvements address these changes.

Ergonomics Programs Track | Ryman Ballroom BC | 8 a.m. - 8:25 a.m.

**THE PERFECT BLEND: INTEGRATING LEAN AND ERGONOMICS**

Susan Murphey, Essential WorkWellness
Advanced level

Industry trends show more companies are making work processes lean; however, that doesn’t necessarily bring about ergonomic changes. There is nothing more wasteful to an organization than workers who are injured or working in chronic pain. When you combine lean and ergonomics, you have the perfect blend for improved productivity, quality of work and employee engagement. This lecture will provide an overview of how lean tools such as value stream mapping, 5S and A3 problem solving can be applied to ergonomics.

Applied Research Track | Ryman Ballroom EF | 8 a.m. – 8:25 a.m.

**USE OF HEART RATE DATA AND METABOLIC MODELS TO VALIDATE CHANGES IN CREW SIZE**

Paul Adams, Applied Safety & Ergonomics
All levels

Reducing costs in manufacturing is nothing new, and many employers have engaged in cost-cutting with renewed vigor as a result of lean manufacturing. Reductions in crew size have frequently resulted, although not without opposition from workers. When an employer attempted to reduce the production crew size from four to three, the presenting ergonomist was called upon to help resolve the ensuing grievance. In this case study, the method and supporting science applied to settle the dispute are discussed. The result was readily accepted by all parties, and one life was potentially saved. Although this presentation was presented at a previous Applied Ergonomics Conference, the content is as relevant today as when originally developed.
THURSDAY, MARCH 29 | 8 A.M.

Master Track | Ryman Studio BC | 8 a.m. - 9:30 a.m.

RISK ASSESSMENT TOOLS
Gary Allread, The Ohio State University
David Alexander, Auburn Engineers
Peter Budnick, Ergoweb
Advanced level

An expert panel will discuss use and misuse of existing risk assessment tools, their reliability and new tools.

THURSDAY, MARCH 29 | 8:30 A.M.

Diverse and Global Workforce Track | Tennessee B | 8:30 a.m. - 8:55 a.m.

OCCUPATIONAL ISSUES RELATED TO WORKER OBESITY
Lora Cavuoto, Virginia Tech
Basic level

Work-related musculoskeletal disorders (WMSDs) present a serious challenge in the workplace due to the associated economic burden and adverse effects on workers. The increasing prevalence of obesity in the workforce may be associated with an increase in the future incidence and cost of workplace injuries. Obesity can modify job demands and affect worker capacity in terms of muscular function, but there is a lack of empirical studies quantifying the work-relevant (or ergonomic) impacts of obesity, specifically related to work task demands, capacities, and their potential imbalance. We review existing research, highlighting the likely increased mechanical demands that occur with obesity and the differences in strength and muscle-level physiology. In addition, we discuss potential ergonomic implications with respect to fatigue, performance, and injury risk. Finally, we provide ideas for future research, focusing on the need for workplace redesign to account for changing workforce demographics.

Ergonomics Programs Track | Ryman Ballroom BC | 8:30 a.m. - 8:55 a.m.

LEVERAGING SUSTAINABILITY TO INCREASE THE VALUE OF YOUR ERGONOMIC PROGRAM
Paula Lewis, EORM
All Levels

As times change, so does the way we manage and view our ergonomic programs as they relate to the bigger picture. As corporate sustainability programs continue to gain momentum, there will be increased transparency of programs’ effectiveness to internal and external stakeholders such as the public and senior management. For years, as safety professionals and ergonomists we have known and understood the importance of obtaining executive/senior management support for our programs. In this presentation you will learn how you can tap into the corporate sustainability movement to raise your program’s visibility up to executive / senior management and demonstrate that the ergonomic function is a tool for business value creation.

Applied Research Track | Ryman Ballroom EF | 8:30 a.m. - 8:55 a.m.

INVESTIGATING ASSOCIATIONS BETWEEN PSYCHOSOCIAL FACTORS AND LOW BACK PAIN SEVERITY IN WORKERS
Nirathi Keerthi Govindu, Mississippi State University
All Levels

Low back pain (LBP) remains the most commonly reported non-fatal occupational injury despite a wealth of research on potential risk factors. Most research has focused on occupational or work-related factors, though research has indicated that psychosocial risk factors may play a prominent role in LBP development. Specifically, psychosocial factors have been cited as a primary factor in the transition of acute to chronic LBP. In this study, the relationship between responses on two validated psychosocial questionnaires (the Perceived Stress Questionnaire and the Job Content Questionnaire) and self-reported LBP severity levels and the Oswestry Disability Index questionnaire were quantified in a population of 8 chronic LBP sufferers. Results indicate that perceived stress (r = 0.74), job satisfaction (r = 0.80) and social support (r = 0.83) are strongly correlated with LBP severity. Intervention efforts aimed at reducing perceived exposure to these factors can be targeted to reduce self-reports of LBP severity.
In this study, differences in six expert and six novice carpenters’ shoulder muscles during two simulated work tasks (deck building and picket insertion) were investigated. Surface EMG readings of the anterior, middle, and posterior deltoid and trapezius were measured. The effects of experience level, task, and muscle type on mean and peak EMG measures were analyzed. Novices tended to exhibit higher levels of muscle activity for both tasks and all muscles. The percentage of time spent under different exertion levels was also analyzed, with novices spending a significantly larger percent of time at higher exertion levels. These findings indicate that novices may be at an increased risk of injury early in their work life cycle.
Successful Ergo Teams - Tutorial Series Track | Tennessee A | 10 a.m. - 10:25 a.m.

LEADING AND MOTIVATING A SUCCESSFUL ERGONOMICS TEAM

Jeff Hoyle, The Ergonomics Center of North Carolina
Basic level

Many companies do not have or cannot maintain successful ergonomics teams within their facilities. The goal of this presentation is to share helpful tips on how to organize, lead, and motivate a successful ergonomics team. World-class companies have been polled to share strategies on how to select and organize an ergonomics team, how to run successful team meetings, and how to promote and sustain motivation among team members. Strategies on how to maximize the success of your ergonomics teams and potential pitfalls to avoid will be discussed. Ergonomics teams can be successfully implemented and maintained through the application of discussed strategies.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 10 a.m. - 10:55 a.m.

FEATURED SPEAKERS
GLOBAL ERGONOMICS AND THE WIRED WORLD: CHALLENGES AND OPPORTUNITIES

Peter Budnick, Ergoweb Inc.
All levels

The Web. Email. Google. Twitter. LinkedIn. YouTube. Facebook. Electronic meeting systems. Online training. Webinars. Skype and other live streaming systems. These are just a few of the evolving tools we can use to grow ergonomics awareness, application and effectiveness. Like all tools, however, each has a purpose; some fit better than others; and some may be of little productive use whatsoever.

Drawing on his experiences with Web-enabled systems and professional collaboration networks (social media); Peter Budnick will review some of the available technologies and share examples of successes and failures in their use. Budnick will also reflect on the necessity and application of such “electronic ergonomics” applications as they relate to the size and complexity of an organization, recognizing that they may be burdensome and unnecessary to some, and extremely useful and effective for others.

He’ll close his presentation with a broad view that considers the impact of these technologies on global ergonomics. Electronic ergonomics tools can clearly improve performance for ergonomists in multinational corporations, but, drawing on his experience with the nonprofit Ergonomists Without Borders project, he’ll also explore their role in bringing ergonomics to small and individual enterprises on a local scale, most anywhere in the world.

Office Ergonomics Track | Ryman Ballroom BC | 10 a.m. - 10:25 a.m.

SIT/STAND WORKSTATIONS: ARE THEY HELPFUL OR JUST TRENDY?

Janet Peterson, JP Ergonomics
All Levels

There is increasing demand on the part of employees for a sit/stand workstation. Is there evidence to support the value of a sit/stand workstation? What, if any, are the ergonomic risk factors that are reduced with a sit/stand workstation? Which individuals would benefit most from a sit/stand workstation? And, what options exist, equipment-wise, to configure a sit/stand workstation? This presentation will address all of these questions in an interactive format.

Potpourri Track | Ryman Ballroom EF | 10 a.m. - 10:25 a.m.

LEGAL CONSIDERATIONS OF PRE-WORK SCREENING

Drew Bossen, Atlas Ergonomics
Intermediate level

Increasing numbers of organization are utilizing pre-work screen (PWS) processes to verify that their respective hires have the physical capabilities to perform the work at hand. This session will examine the issues an organization should be aware of when considering, designing, testing and implementing a pre-work screens process. In addition, we will provide an in-depth discussion of the legal issues related to federal employment guidelines, disparate impact, and interactions with employers. Case studies will demonstrate the importance of understanding the legal risks, illustrating real-world positive outcomes and consequences. This program will provide the participants a working knowledge of the screening process and how they might consider the implementation of such programming within their organizations.
Roundtable Discussion | 10 a.m. - 11:30 a.m. | Ryman Studio BC

HOW DOES ERGONOMICS FIT INTO A WELLNESS PROGRAM?
Davana Pilczuk, Gulfstream Aerospace Corporation
All levels

With an aging workforce and increases in corporate healthcare costs, many companies are integrating wellness initiatives into their safety and health and ergonomics programs. Participants will share their experiences of how to integrate issues like musculoskeletal and joint health, obesity, metabolic syndrome, stretching, exercise and other wellness topics into their ergonomics programs.

Successful Ergo Teams - Tutorial Series Track | Tennessee A | 10:30 - 10:55 a.m.

MAKING ERGONOMICS EDUCATION PALATABLE: CUSTOMIZED TRAINING FOR DIFFERENT AUDIENCES IN THE GROCERY INDUSTRY
Blake Novoa, Eastern Washington University
All Levels

Participatory ergonomics programs are effective in reducing the risk of work-related musculoskeletal disorders. A key component of these programs is education of management and employees about task-specific risk factors and ergonomic principles. For maximum effectiveness, it is critical that these educational programs are understood and accepted by all members of an organization. Educational programs must be created for all groups within an organization, from new employees to senior executives. The purpose of this presentation is to show how a participatory ergonomics education program was created and modified for different audiences including new employees, store safety committees, and upper level management. Learning management software and face-to-face training sessions were utilized to create different training modules with varying amounts of detail and key points appropriate to each audience. These educational programs are currently being used as a part of a study implementing a participatory ergonomics program within a local grocery chain.

Office Ergonomics Track | Ryman Ballroom BC | 10:30 a.m. - 10:55 a.m.

OFFICE INACTIVITY AND THE “SITTING DISEASE” TSUNAMI
Gene Kay, ErgoAdvocate
Basic level

Metabolic syndrome has been called “sitting disease” in the popular literature. This session will explore the twin epidemics of obesity and inactivity in Western society. These two conditions are expected to cause a considerable impact to healthcare expenses. Learn about the population studies showing that extensive sitting causes a 50% increased risk of early death. Attendees will learn the basic causes and physiology of sitting disease and will learn about a number of approaches that can be used to mitigate the potential impact of this cluster of diseases.

Potpourri Track | Ryman Ballroom EF | 10:30 a.m. - 10:55 a.m.

ERGONOMICS AND PRODUCTIVITY
Bill Boyd, CNA
All levels

This presentation reviews several actual examples in manufacturing facilities involving material handling and ergonomics-related issues and the impact with productivity and injuries. Principles of quality management are discussed as they relate to the benefits of an ergonomics program that encompasses workplace injury reduction while improving productivity.
THURSDAY, MARCH 29 | 11 A.M.

Successful Ergo Teams - Tutorial Series Track | Tennessee A | 11 a.m. - 11:30 a.m.

EMPLOYEE-MODIFIED WORKSTATIONS: HOW TO SUPPORT THE NATURAL ERGONOMISTS
Kevin Barefield, Gulfstream Aerospace Corporation
Basic level

Employees make modifications to tools and workstations for a number of reasons, often to reduce discomfort or to make tasks easier. Examples of employee-modified workstations range from padding a tool handle to re-arranging a workstation layout. These modifications are performed on the employees own initiative and are, at best, ignored by management, or at worst, actively discouraged by management. A new approach to actively identify employees who are making very creative, cost-effective workplace modifications is underway at Gulfstream. This approach provides training, formal evaluation tools and a budget that will empower these “natural ergonomists” to continue their ergonomic risk mitigation in a more formal way.

Design, Product Design and Evaluation and Modeling Track | Tennessee B | 11 a.m. - 11:30 a.m.

APPLICATION OF ERGONOMICS IN THE DESIGN PHASE OF A NEW PRODUCTION PROCESS
Sandra Sellers and William Peck, Honda of America Mfg. Inc.
Intermediate level

The presenters will share the process used to negotiate ergonomics into the final design of the new Instrument Panel Paint Line at Honda of America Manufacturing Inc.’s East Liberty Automotive Plant. Presenters will discuss the process of specification development, including how the specification included a balanced approach between ergonomics, general safety, functionality and maintenance accessibility while minimizing the cost impact to the company.

Office Ergonomics Programs and Applications | Ryman Ballroom BC | 11 a.m. - 11:30 a.m.

VIRTUAL OFFICE ERGONOMICS
Thomas Hilgen, Marsh USA Inc.
All Levels

Virtual office ergonomics, a process of providing immediate, real-time ergonomics assistance to office-based associates at any location or environment, will be presented. Two multi-year case studies in geographically diversified businesses will be presented to describe the process, the results and the return-on-investment (ROI) of telephonic ergonomics evaluations. Companies using this process have experienced significant reductions in musculoskeletal disorders and affected associate discomfort levels. Over the past year, over 99% of all intakes resolved employee discomfort without escalation to an on-site evaluation or workers’ compensation claim. Based on this data, our clients average an annual ROI around 10:1.

Potpourri Track | Ryman Ballroom EF | 11 a.m. - 11:30 a.m.

FLEET ERGONOMICS IN A LARGE UTILITY
Arnie Neustaetter, Pacific Gas and Electric Co.
All Levels

This session will describe how PG&E, with over 10,000 vehicles, has created a process to evaluate the ergonomic risks associated with driving, material transport and use of heavy equipment and construction vehicles. Discussion includes policy development and a set of tools used to train ergonomic evaluators for this specialty. Specific take-aways are interventions for seating, transport mechanisms for heavy equipment, material transport, step and trailer design and vehicle entry/exit. Computer mount systems in construction and other vehicles are reviewed. This topic applies to anyone who drives a vehicle or is involved in fleet safety.
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PRE-CONFERENCE WORKSHOPS
Gary Allread, Institute for Ergonomics

ROUNDTABLE DISCUSSIONS
Ben Zavitz, General Dynamics
Janet Peterson, J.P. Ergonomic Consulting

STUDENT PARTICIPATION
Kristen Miller, Texas A&M University
AN EVALUATION OF THE USE AND MISUSE OF BACKPACKS IN SCHOOL CHILDREN IN MEXICO
Jorge Alberto Galvez Choy and Francisco Eduardo Giron Flores, Instituto Tecnologico de Ciudad Madero

This research refers to the growing concern among parents and scholars with respect to the negative consequences that might arise in school children due to the weight carried in backpacks. For this purpose, we identify and analyze the different anthropometric variables of the students, the physical characteristics and design of the backpacks and patterns of use of such products. The research will present the appropriate weight range that can be loaded into the backpack without discomfort or injuries in the lumbar region of school children. In addition, recommendations will be presented regarding which backpack design is best suited to be used to mitigate the consequences that might arise from being overweight and how they should use it correctly.

EMBEDDING ERGONOMICS EDUCATION: A CASE STUDY FROM INFORMATION TECHNOLOGY (IT)
Rich Halstead-Nussloch, Southern Polytechnic State University

Introduction: Degrees in ergonomics and allied areas are well described through accreditation criteria, e.g., the ABET criteria for applied science programs. When ergonomics is embedded and not the degree, the criteria are not as clear.

Approach: A case study guided selection and development of curriculum materials for an update to embed HCI and ergonomics within an IT course.

Discussion: The ABET criteria require ergonomics and HCI be covered in the IT undergraduate degree with little guidance. Since most IT is done in offices with computing equipment, we have decided to meet the requirement by covering office ergonomics.

Significance: The poster will provide recommendations for ergonomics educators, designers and practitioners on successfully embedding ergonomics education.

Summary: A case study and examples of embedding ergonomics education are covered and will aid ergonomics education for new employee office ergonomics training or non-ergonomics degree program outcomes such as for a baccalaureate degree in IT.

A STUDY ON DEVELOPMENT OF ALARM SOUND FOR SHIP BRIDGE ALERT MANAGEMENT SYSTEM
Ha Wook Hyun and Hongtae Kim, Korea Ocean Research & Development Institute

With the advancement of modern technology, various kinds of navigating equipment have been developed. However, still human errors have constantly caused marine accidents. Marine accidents resulted from human errors in various circumstances such as the vessel operator’s errors to recognize the situation wrongly or phenomena mistakenly. There are many kinds of physical signals coming out of navigating equipment in the ship bridge, and in fact, that alert sound warning danger cannot deliver the dangerous situation of the ship accurately to the vessel operator. Therefore, this study aims to develop the alert sound of the Ship Bridge Alert Management system which allows the vessel operators to recognize the alert sound intuitively. For the research, the alert sound previously used in the ship bridge was analyzed acoustically, and experimental research was conducted to develop complex alert sound using voice and auditory icons.

EFFECTS OF SCHOOLBAG LOADS AND CARRYING APPROACHES ON POSTURAL AND MYOELECTRICAL RESPONSES OF THE CHILDREN
Brandon Lin, National Cheng Kung University

The use of schoolbags has attracted attention from the public and media as a result of the widespread anecdotal concerns regarding its adverse health effects. The objective of this study was to examine how the weight and type of schoolbag affect the posture and myoelectrical activity of children in various usage situations. Subjects between the ages of 10 and 11 were recruited to use three types of schoolbags with the weight varied from 0% of body weight (BW) to 20% BW during level walking and stair climbing. Surface electromyography (EMG) and 3-D motion capture were used to monitor the postural and muscle activity of children, as well as subjective ratings of perceived exertion. The results demonstrated the scientific evidence of how schoolbags influence the musculoskeletal system of children. The regulatory agency could find this as a valuable source while setting the recommended guidance for schoolbag usage.
ERGO QUICKIE: VISUAL ERGONOMIC ASSESSMENT FOR INDUSTRIAL EMPLOYEES
Rachel McKelvey, General Electric

A visual ergonomic assessment tool was made for use by employees during continuous improvement (lean) activities. This is to ensure that employees take method into consideration during modifications or problem-solving activities. The process of tool development and results from use will be discussed. Copies of the assessment tool will be provided.

ASSOCIATIONS BETWEEN SURGEON SELF-REPORTED INJURY/IllNESS AND SURGEON PERCEPTION AS AN OUTCOME OF PERFORMING LAPAROSCOPY
Kristen Miller, Texas A&M Health Science Center

While laparoscopic procedures significantly benefit patients in terms of decreased recovery times and improved outcomes, they contribute to mental fatigue and musculoskeletal problems among surgeons. Currently, there is a gap in knowledge regarding a surgeons’ individual assessment of the operating room. A new survey instrument solicited information from surgeons regarding surgeon demographics, perception, frequency of operating room equipment adjustment and self-reported symptoms. Surgeons responded to questions addressing safety, ergonomics and fatigue in the operating room using a 5-point Likert scale that included the option “undecided.” Surgeons that responded “undecided” were more likely to experience symptoms of injury/illness than respondents who were able to assess the features of their operating room. This study supports hypotheses that surgeons are experiencing body part discomfort and indicators of surgeon fatigue that may be associated with performing laparoscopy. Results suggest that awareness, knowledge and utilization of ergonomic principles are associated with surgeons’ risk of symptoms during laparoscopy.

STRONG ARM, ERGONOMIC LIFT ASSIST GARMENT
Sean Petterson, Strong Arm Technologies
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ERGONOMICS AND LEAN MANUFACTURING: A REAL-WORLD EXAMPLE OF A BEAUTIFUL FRIENDSHIP
Elizabeth Sirianni and Rachel McKelvey, General Electric

A joint ergo/lean event focused on an idea of utilizing carts for stations, along with identifying other areas of opportunity for improvement. The event pulled in operators, engineers, ergonomics and lean to ensure zero high-risk ergo operations through the use of lean principles through completion of ergonomic analysis, downtime review, value stream mapping, muda identification, 7 ways, work simulations with operators, time studies, etc. This team learned key lessons that led to a solution for this work area.

ERGONOMICS THROUGH THE EYES OF FIRST-YEAR ENGINEERS
Tyler Mueller, Gulfstream Aerospace Corporation

Ergonomics within a corporate setting encompasses many aspects that graduating students never truly understand until they’re within a professional work environment. The concepts students study in the classroom provide the fundamental foundation of ergonomics. However, as young engineers, they will confront financial boundaries, workforce interactions, and safety concerns that will require them to develop effective strategies to achieve solutions. For our presentation, our group of young engineers will discuss the restrictions and thought process we encounter in a large manufacturing facility. Topics that will be covered include budgeting, scheduling, workforce relationships, interactions with vendors, and the balance between design vs. redesign. The discussion will provide an inside look from a voice that is not always addressed or heard in the world of large corporations. Our primary objective will be to present an accurate account of academic knowledge to real-world application.
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The Ergonomics Center of North Carolina | Booth #307

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www.kinesis.com
sales@kinesis.com

OccFit Solutions | Booth # 311
OccFit Solutions is the Rite-Fit to common workplace complaints. Certified fitters travel on-site to educate and measure for custom fit products. Designed to increase worker productivity and decrease work related injuries and the time plus cost associated with these injuries. Products include compression socks, orthotics and custom hearing protection.

125 Commerce Park Rd. Suite 105
Mooresville, NC 28117
P: (704) 799-2873
F: (704) 663-4379
www.occfitsolutions.com

Power Pusher | Booth # 418
Power Pusher manufactures a complete line of battery-powered material handling equipment that includes Power Pusher, Super Pusher, Power Tug and more for moving carts and equipment on wheels or casters. A wide range of attachments and options are available to fit all applications. Custom modifications are also available from the factory.

1425 Stagecoach Road
Shakopee, Minnesota 55379
P: (952) 445-8295 x109
www.powerpusher.com
jadams@nustarinc.com

Remedy Interactive | Booth # 103
Remedy Interactive provides Fortune 500 companies and other organizations with scalable, web-based software solutions, including OES Office, RSI Guard, iMitigate, and Cartevia for office and laboratory environments that keep employees injury-free and productive, while improving ergonomics processes and collaboration amongst Safety, HR and Risk Managers.

1 Harbor Drive, Suite #200
Sausalito, CA 94975
P: 800-776-5545 | (415) 322-6433
F: (415) 331-3864
www.remedyinteractive.com

Spenco Medical Corporation | Booth # 105
Spenco Medical Corporation was founded in 1967 by Dr. Wayman Spence, a renowned foot care specialist. For more than 40 years, Spenco Medical Corporation has focused on innovative product development and superior service to differentiate itself in the occupational, sports, foot care and medical markets.

6301 Imperial Drive
Waco, TX 76712
P: (800) 877-3626 | (254) 772-6000
F: (254) 751-3310
www.spenco.com
spenco@spenco.com
University of Michigan  | Booth #211
Ergonomic job analysis and design software developed by the University of Michigan Center for Ergonomics will be explained and demonstrated. Information will be available about continuing education and academic training opportunities in ergonomics and other occupational health and safety sciences.

1205 Beal Avenue
Ann Arbor, MI 48109
P: (734) 763-2243
F: (734) 764-3451
www.centerforergonomics.org
centerforergonomics@umich.edu

System Logistics Corporation | Booth # 406
System Logistics is a leading provider of automated material handling systems for warehouses, distribution centers and manufacturing operations worldwide. Our team is dedicated to creating customized material handling systems and storage solutions that fit your needs and will grow with you in the future.

90 Alfred Plourde Parkway
Lewiston, ME 04241
P: (207) 784-1381
F: (207) 786-0271
www.systemlogistics.com

Voluntary Protection Programs Participants’ Association, Inc. (VPPPA) | Booth # 213
The Voluntary Protection Programs Participants’ Association, Inc. (VPPPA) is a membership-based organization dedicated to workplace safety and health protection through cooperation among labor, management and government. VPPPA offers national and regional conferences, best practice sharing, workshops, webinars, publications and mentoring services to support worksites improving their safety and health program.

7600-E Leesburg Pike, Ste. 100
Falls Church, VA 22043
P: (703) 761-1146
F: (703) 761-1148
www.vpppa.org

Wellnomics Ltd | Booth # 208
Wellnomics Ltd provides organizations with scalable software solutions to streamline their office ergonomics programme. Solutions include web based workstation assessment, ergonomics training plus WorkPACE breaks and exercises software. Enabling organizations to; identify workplace risk, automate and manage injury prevention programs, create highly effective strategies that lead to risk reduction.

Level 1, 114 Montreal Street
PO Box 31281
Christchurch, 8444
New Zealand
www.wellnomics.com

Vu Ryte, Inc. | Booth # 321
Vu Ryte manufactures and distributes the world’s best office ergonomic solutions. Our irrefutable passion centers around monitor and source document positioning.

1530 SSW Loop 323 Suite 111
Tyler, TX 75701
P: (800) 678-2629
F: (903) 510-2978

GOErgo | Booth # 312
GOErgo, the Global Organization of Ergonomics, is a worldwide resource for the ergonomics profession dedicated solely to the support of the profession and individuals involved with improving workplace performance, quality, sustainability and employee availability.

3577 Parkway Lane
Suite 200
Norcross, GA 30092
P: (770) 449-0461
www.go-ergo.org
Go-Ergo@iienet.org

Working Concepts | Booth # 319
We design and manufacture ergonomic knee protection and standing mats. Our products are Soft Knees no strap knee pads, Ergokneel Kneeling Mats and Extreme Standing Mats for standing with our pain.

PO Box 1345
Gresham Oregon 97080
P: (503) 663-3374
F: (503) 663-1437
www.softknees.com
info@softknees.com
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Heart to Heart Challenge
GOLF CLINIC AND TOURNAMENT
April 2, 2012
Country Club of the South | Atlanta, GA
www.iienet.org/etconference

ENTERPRISE
TRANSFORMATION
CONFERENCE 2012
April 3-4, 2012
The Westin Buckhead Atlanta | Atlanta, GA
www.iienet.org/etconference

ANNUAL
IE CONFERENCE & EXPO | 2012
May 19-23, 2012
Hilton Bonnet Creek | Orlando, FL
www.iienet.org/annual

BEST PRACTICES IN
ERGONOMICS
APPLIED TO RETAIL & DISTRIBUTION
July 23, 2012
Hilton Minneapolis/St. Paul Airport
Bloomington, MN
www.iienet.org/ergoretail

ENGINEERING
LEAN & SIX SIGMA
CONFERENCE 2012
October 1-3, 2012
The Seelbach Hilton | Louisville, KY
www.iienet.org/leansixsigma

BEST PRACTICES IN APPLYING
LEAN & SIX SIGMA
TO HEALTHCARE
October 29, 2012
Georgia International Convention Center
College Park, GA (Atlanta)
www.iienet.org/isshealthcare

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