The Ultimate Ergonomic Solution
Clinically Proven to be Superior to Matting

Visit our Booth #116 to receive a FREE sample pair (subject to availability)

- Original Patented* Dual Layer 100% Memory Foam Technology
- Ergonomically Designed by a Podiatrist
- Clinically Proven and Field Tested to Reduce Pain and Fatigue

RESOLVING ERGONOMIC ISSUES - PRODUCT BENEFITS & SOLUTION

REDUCE
- Risks
- Injury rates and medical costs
- Muscle fatigue
- Foot, knee, hip, and back pain

INCREASE
- Productivity
- Comfort and well-being
- Balance Reactions

ERGONOMICS

Knee: 39%
Back: 46%
Foot: 59%

*Ongoing field tests show an average of 35% reduction in pain

ADVANTAGES OVER STANDARD ANTI-FATIGUE FLOOR MATTING
- Personalized Comfort Zone For All Workers (Stationary & Mobile)
- Direct Contact With The Body Inside Footwear
- Reduce the Risk of Slips, Trips or Falls
- Cost Effective Alternative & Lower Cost of Maintenance
- No Installation Required & Can Be Implemented Instantly
- Various Budgets Can Be Used (PPE, Wellness, Footwear & Matting)

ANTI-FATIGUE MATTING IN YOUR BOOTS®

CAUTION: AVOID CHEAP IMITATIONS & OVERPRICED SUBSTITUTES

MEGAmemory. Copyright ©2015
Welcome to the 18th Annual Applied Ergonomics Conference!

With more than 70 sessions and multiple networking events, you will have plenty of opportunities to share best practices in ergonomics, healthcare, safety and human factors and risk management with peers from across the country and around the world.

Highlights include –

» Eleven tracks and dozens of sessions addressing the latest issues in ergonomics and human factors

» The world-renowned Ergo Cup® competition demonstrations and awards presentation

» Keynote speakers Joe Jordan, director, Initial Phase Operations, Gulfstream Aerospace, and William Boyd, senior vice president, Risk Control, CNA Insurance

» Networking events including receptions, an unforgettable evening of country music at the Grand Ole Opry and the Ergo Quiz Bowl Contest

» Six pre-conference workshops

» Facility tours at Hendrickson Trailer Commercial Vehicle Systems and Cummins Cookeville

» The Creativeness in Ergonomics Practitioner of the Year and Student of the Year awards presentation

» Exhibits from top ergonomics and human factors organizations and university programs

Thank you for joining us for the premier ergonomics event of the year. This year’s conference schedule is packed with demonstrations of great ergo solutions and thought-provoking discussions that you will use throughout your career.
Meet the 18th Annual Applied Ergonomics Conference Committee.

Conference Chair: Sandra Woolley, Mayo Clinic
Conference Past Chair: Teresa Bellingar, Haworth Inc.
Incoming Conference Chair: Brian Roberts, CNA Insurance

Ergo Cup®
Co-Chair: Monica Matlis, Axendia Inc.
Co-Chair: Wayne Maynard, Liberty Mutual Insurance
Gary Allread, The Ohio State University
Marisol Barrero, Toyota Motor Engineering & Manufacturing North America
David Brodie, Cargill
Jessica Ellison, EORM
Vic Garrison, Liberty Mutual Insurance
Dan Gottesman, The Boeing Company
Paul Grenier, CNA Insurance
David Hayes, Tyson Foods Inc.
Jeffrey Hoyle, The Ergonomics Center of North Carolina
Miriam Joffe, The Boeing Company
Josh Kerst, Humantech Inc.
William Lenharth, University of New Hampshire
Gopal Ramachandran, GE Transportation
Don Robinson, Norfolk Southern
Karl Siegfried, MEMIC
David Trippany, Steelcase Inc.
Thomas Varghese, United Technologies
Holly Wick, 3M Center

Facility Tours
Co-Chair: Paul Schwab, Texas Instruments
Co-Chair: Joe Wallace, CNA Insurance

GOErgo Community
Co-Chair: Rich Halstead-Nussloch, Southern Polytechnic State University
Co-Chair: Joanna Sznejder, DOL/OSHA
Jennifer Rappaport, JR Ergonomics

International Outreach
Co-Chair: Marise Carroll, Ergonomics Consultant
Co-Chair: Keith White, Lennox International Inc.
Nicolas De Cuadra, Ergoindustrial
Lucy Hart, The Global Group
Patricia Hope, Essar
Katharine Metters, Posturite Ltd.
Isabel Nunes, UNIDEMI
Eliel Soares Orenha, Faculdade de Odontologia de Bauru (FOB)
Rodrigo Marcel Pereira, Ergocenter Brazil
Michael Porter, Auburn University
Paul Schwab, Texas Instruments
Tim Severino, Heatcraft Australia
Brian Sherman, GlaxoSmithKline

Keynote
Chair: Gary Orr, OSHA

Networking
Co-Chair: Mike Lampl, Ohio BWC
Co-Chair: Susan Murphye, Essential WorkWellness
Holly Duhamel, Chrysler
Janet Peterson, JP Ergonomics

Pre-Conference Workshops
Co-Chair: Miriam Joffe, The Boeing Company
Co-Chair: Kim Monroe, KM Ergonomics LLC

Programs
Co-Chair: Julia Abate, SAS Institute Inc.
Co-Chair: Mark Benden, Texas A&M University
Paul Adams, Applied Safety & Ergonomics
Lisa Brooks, General Electric
Tom DeRoos, Tyson Foods
Jim Galante, EASE Council
Rich Halstead-Nussloch, Southern Polytechnic State University
Jessica Hardy, Caterpillar Inc.
Neely Ketzler, Auburn University
Meghan Kress, ESIS
Ranjana Mehta, Texas A&M University
Tina Minter, Chubb Insurance
Mirtha Perazza, The Ergonomics Center of North Carolina
Abraham Robledo, Heatcraft
Carrie Scheel, Concordia University
Sandra Smithson-Sellers, Honda of America

Roundtable
Co-Chair: Davana Pilczuk, Gulfstream Aerospace
Co-Chair: Ben Zavitz, General Dynamics Bath Iron Works Shipyard
Amanda Kauder, Heatcraft Worldwide Refrigeration

Social Media
Chair: Nancy Laurie, Wegmans Food Market Inc.

Student/New Professional
Co-Chair: Bill Boyd, CNA Insurance
Co-Chair: Neely Ketzler, Auburn University

Webinars
Chair: Depeesh Desai, Humantech Inc.

AEC Leadership Team
Teresa Bellingar, Haworth Inc.
Don Greene, IIE
Doug Long, IIE
Gary Orr, OSHA
Brian Roberts, CNA Insurance
Sandra Woolley, Mayo Clinic
18TH ANNUAL APPLIED ERGONOMICS CONFERENCE COMMITTEE

Conference Chair
Sandra Woolley, Mayo Clinic

Conference Past Chair
Teresa Bellingar, Haworth Inc.

Conference Incoming Chair
Brian Roberts, CNA Insurance

Conference Chair
Sandra Woolley, Mayo Clinic

Facility Tours Chair
Paul Schwab, Texas Instruments

Facility Tours Chair
Joe Wallace, CNA Insurance

GOErgo Community Chair
Joanna Sznajder, DOL/OSHA

GOErgo Community Chair
Rich Halstead-Nussloch, Southern Polytechnic State University

Ergo Cup Chair
Wayne Maynard, Liberty Mutual Insurance

Ergo Cup Chair
Monica Matlis, Axendia Inc.

Keynote Chair
Gary Orr, OSHA

Networking Chair
Mike Lampl, Ohio BWC

Networking Chair
Susan Murphy, Essential WorkWellness

Pre-Conference Workshops Chair
Miri Jaffe, The Boeing Company

International Outreach Chair
Marise Carroll, Ergonomics Consultant

International Outreach Chair
Keith White, Lennox International Inc.

Keynote Chair
Gary Orr, OSHA

Networking Chair
Mike Lampl, Ohio BWC

Networking Chair
Susan Murphy, Essential WorkWellness

Pre-Conference Workshops Chair
Miri Jaffe, The Boeing Company

Pre-Conference Workshops Chair
Kim Monroe, KM Ergonomics LLC

Programs Chair
Julia Abate, SAS Institute Inc.

Programs Chair
Mark Benden, Texas A&M University

Roundtables Chair
Ben Zavitz, Bath Iron Works

Roundtables Chair
Davana Pilczuk, Gulfstream Aerospace

Social Media
Nancy Laurie, Wegmans Food Market Inc.

Student/New Professional Chair
Neely Ketzler, Auburn University

Student/New Professional Chair
Bill Boyd, CNA Insurance

Webinars
Depeesh Desai, Humantech Inc.
KEYNOTE SPEAKERS

JOE JORDAN
Director, Initial Phase Operations
Gulfstream Aerospace
Tuesday, March 17 | 9:45 – 10:45 a.m.

Joe Jordan is the director of Initial Phase Operations for Gulfstream Aerospace located in Savannah, Ga., and is responsible for more than 1,300 employees. He has been with Gulfstream for 13 years and is responsible for the tactical, strategic and process technology activities for the G450 and G550 aircraft. Before coming to Gulfstream, he was an operations executive for 20-plus years for General Electric, working in five different businesses in eight locations. He has global experience working in union and nonunion operations, defense and commercial contracts, and long and short cycle time manufacturing. Under his guidance, his operations teams place a heavy focus on lean Six Sigma, continuous improvement, ergonomics and customer satisfaction. Jordan received a B.S. in business administration from Kings College. He was appointed to the Penn State University MMM Academic Advisory Board in 2007 and the Savannah Chamber of Commerce as manufacturing vice chair in 2007.

WILLIAM BOYD
Senior Vice President, Risk Control
CNA Insurance
Wednesday, March 18 | 9:45 – 10:45 a.m.

As senior vice president, William Boyd is responsible for the risk control function for CNA Insurance (CNA), with a professional staff of 300 professionals in the delivery of customer occupational health and safety services. CNA provides insurance protection to more than one million businesses and professionals in the U.S. and internationally. Boyd is a member of the American Academy of Industrial Hygiene and former chair of the Applied Ergonomics Conference. He previously served on the board of directors for the Board of Certified Professional Ergonomists and has been an American Society of Safety Engineers member since 1982. Boyd is a delegate to the National Safety Council and a member of the Underwriters Laboratory Commercial Insurance Council. He is a certified industrial hygienist, certified safety professional, certified professional ergonomist and an Underwriters Laboratory-recognized risk engineer. Boyd has a B.S. degree in chemistry from Austin Peay State University and an M.S. degree in occupational safety from the University of Tennessee. He has more than 35 years of experience in the health and safety profession and frequently speaks on issues involving quality, productivity and the impact in health and safety.
STAY ON TOP OF THE SAFETY INDUSTRY BY SUBSCRIBING TO...

INDUSTRIAL HYGIENE NEWS (IHN)

Occupational Safety
Instrumentation
Indoor Air Quality

• Check out the Online Directory for all of your safety equipment needs at www.safetyonlinedirectory.com

“Providing Solutions for Safety in the Workplace. Stay Compliant with OSHA regulations.”

TO LEARN MORE ABOUT IHN VISIT OUR WEBSITE AT:
www.industrialhygienenews.com

FIND US ON FACEBOOK AT Industrial Hygiene News
FOLLOW US ON TWITTER AT IndusHygienNews

OUR WEBSITE FEATURES
Article Archives • Online Buyer’s Guide • Monthly E-Newsletter • Digital Issue • Product Selection Charts
<table>
<thead>
<tr>
<th>Day, Date, Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday, March 16</strong></td>
<td></td>
</tr>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
</tr>
<tr>
<td>8 a.m. – Noon</td>
<td>Pre-conference Workshops — additional fee required</td>
</tr>
<tr>
<td>11 a.m. – 4 p.m.</td>
<td>Exhibitors, Ergo Cup® and Poster Presenters Setup</td>
</tr>
<tr>
<td>1 – 5 p.m.</td>
<td>Pre-conference Workshops — additional fee required</td>
</tr>
<tr>
<td>5 – 7 p.m.</td>
<td>Welcome Reception</td>
</tr>
<tr>
<td><strong>Tuesday, March 17</strong></td>
<td></td>
</tr>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
</tr>
<tr>
<td>7:15 – 7:45 a.m.</td>
<td>First-Time Attendee Orientation</td>
</tr>
<tr>
<td>8 – 9:30 a.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td>9:45 – 10:45 a.m.</td>
<td>Keynote Presentation — Joe Jordan, Director, Initial Phase Operations, Gulfstream Aerospace</td>
</tr>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits, Ergo Cup® and Poster Session (dedicated time)</td>
</tr>
<tr>
<td>10:45 a.m. – 5:30 p.m.</td>
<td>Exhibits, Ergo Cup® and Poster Session</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch</td>
</tr>
<tr>
<td>1:30 – 3:30 p.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td>3:30 – 4 p.m.</td>
<td>Ergo Quiz Bowl — Round 1</td>
</tr>
<tr>
<td>4 – 5:30 p.m.</td>
<td>Networking Reception</td>
</tr>
<tr>
<td>6:15 p.m.</td>
<td>A Night at the Opry – An evening of country music at the Grand Ole Opry! — additional fee required</td>
</tr>
<tr>
<td><strong>Wednesday, March 18</strong></td>
<td></td>
</tr>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
</tr>
<tr>
<td>8 – 9:30 a.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td>8:30 a.m. – 4:30 p.m.</td>
<td>Ergonomics Innovation on the Shop Floor - A One-day Event</td>
</tr>
<tr>
<td>9:45 – 10:45 a.m.</td>
<td>Keynote Presentation — William Boyd, Senior Vice President, Risk Control, CNA Insurance</td>
</tr>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits, Ergo Cup® and Poster Session in the Exhibit Hall</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch Available for Sale in the Exhibit Hall</td>
</tr>
<tr>
<td>1:30 – 3 p.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td>3 – 3:30 p.m.</td>
<td>Ergo Quiz Bowl — Round 2</td>
</tr>
<tr>
<td>3:30 – 5 p.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td><strong>Thursday, March 19</strong></td>
<td></td>
</tr>
<tr>
<td>7 a.m. – 1:30 p.m.</td>
<td>Registration Desk Open</td>
</tr>
<tr>
<td>8 – 9:30 a.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td>9:30 – 10 a.m.</td>
<td>Ergo Quiz Bowl Finals</td>
</tr>
<tr>
<td>10 – 11:30 a.m.</td>
<td>Concurrent Sessions</td>
</tr>
<tr>
<td>11:45 a.m. – 1:30 p.m.</td>
<td>Lunch &amp; Awards Ceremony: Ergo Cup® Competition and Practitioner and Student Awards — additional fee required</td>
</tr>
</tbody>
</table>

*Schedule subject to change
# EXHIBITOR & ERGO CUP® SCHEDULE

<table>
<thead>
<tr>
<th><strong>Monday, March 16</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11 a.m. – 4 p.m.</td>
<td>Exhibitors, Ergo Cup® and Poster Presenters Installation and Setup</td>
</tr>
<tr>
<td>5 – 7 p.m.</td>
<td>Welcome Reception in the Exhibit Hall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tuesday, March 17</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45 a.m. – 5:30 p.m.</td>
<td>Exhibit Hall Open</td>
</tr>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits, Ergo Cup® and Poster Session in Exhibit Hall (dedicated time)</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch in the Exhibit Hall</td>
</tr>
<tr>
<td>4 – 5:30 p.m.</td>
<td>Networking Reception in the Exhibit Hall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Wednesday, March 18</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits, Ergo Cup® and Poster Session in Exhibit Hall (dedicated time)</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch Available for Sale in the Exhibit Hall</td>
</tr>
<tr>
<td>1:15 – 4 p.m.</td>
<td>Exhibitors, Ergo Cup® and Poster Presenters Dismantling and Move-Out</td>
</tr>
</tbody>
</table>

# THANK YOU TO OUR SPONSORS

# INTERNATIONAL ALLIANCE PARTNERS

- Association of Chartered Physiotherapists in Occupational Health and Ergonomics (ACPOHE)
- ABRAFIT
- Brazilian Association of Consulting Companies in Health and Safety at Work – ABRESST
- British Safety Industry Federation (BSIF)
- Croatian Ergonomics Society
- Czech Ergonomic Society (CES)
- Ergo Center of Brazil
- Ergonomics Society of Taiwan
- FISO Ibero-American Foundation of Occupational Safety and Health
- Hong Kong Ergonomics Society (HKES)
- The Human Factors and Ergonomics Society of the Philippines
- IEDUV
- Indonesian Ergonomics Society/Perhimpunan ErgonomiIndonesia (PEI)
- The Inter-Regional (Russian) Ergonomics Association (IREA)
- The Institute of Ergonomics & Human Factors
- The Japan Ergonomics Society (JES)
- Latvian Ergonomics Society (LES)
- Polish Ergonomics Society
- The Portuguese Ergonomics Association (APERGO)
- The Portuguese Society of Occupational Safety and Hygiene (SPOSHO)
- The Swiss Ergonomics Association
- The Tunisian Ergonomics Society (STE)
- UNIDEMI
- The Asociación Uruguaya de Ergonomia(AUDERGO)/Uruguayan Ergonomics Association
- The Workplace Safety and Health (WSH)
- Zero Accidents

# SPONSORS

![CNA](image1)
![Ergonomics Center](image2)
![GE](image3)
![humanTech](image4)
![Liberty Mutual](image5)

# ALLIANCE PARTNERS

![ASSE](image6)
![BCPE](image7)
![IHN Hyperiotherapy News](image8)
![MHI](image9)
![Medical Mutual of Ohio](image10)
Monday, March 16

Welcome Reception
Exhibit Hall
5 – 7 p.m.
Join your colleagues as we kick off the conference!

Tuesday, March 17

Exhibits, Ergo Cup® and Poster Session
Exhibit Hall
10:45 a.m. – 1:15 p.m.

Ergo Quiz Bowl Contest – Round 1
Room 110-111
3:30 - 4 p.m.
The ultimate ergo challenge! You can be either a contestant or a spectator in this fast-paced quiz game. Teams will compete in their knowledge of ergonomics facts, fiction and folklore. Open to all attendees. Gather your co-workers, colleagues and students and register today. Spots are limited.

Networking Reception
Exhibit Hall
4 – 5:30 p.m.
Connect with your colleagues while viewing the latest in ergonomics solutions and the Ergo Cup® competition.

A Night at the Opry
6:15 p.m. departure from hotel
Join your colleagues as we travel to the Grand Ole Opry for an unforgettable evening of country music! The Opry presents the new stars, superstars and legends of country music at the historic Grand Ole Opry House. Unlike a typical concert, the Opry presents eight or more artists on each show, giving the audience a sample of each artist’s musical style. Today, people in every corner of the globe recognize the Grand Ole Opry as the show that made country music famous. There’s nothing else quite like it. Advanced registration required. No on-site tickets available.

Wednesday, March 18

Exhibits, Ergo Cup® and Poster Session
Exhibit Hall
10:45 a.m. – 1:15 p.m.

Ergo Quiz Bowl Contest - Round 2
Room 110-111
3 – 3:30 p.m.

Thursday, March 19

Ergo Quiz Bowl Contest - Finals
Room 110-111
9:30 – 10 a.m.

Lunch & Awards Ceremony
West/Center Ballroom
11:45 a.m. - 1:30 p.m.
Ergo Cup® Competition, Creativeness in Ergonomics Practitioner and Student awards will be presented. Advanced registration required.
PRE-CONFERENCE WORKSHOPS

All workshops will be held Monday, March 16, and require advanced registration.

8 a.m. – Noon

Ergo 101: The Basics of Ergonomics | Room 102
Presenters: Gary Allread, Institute for Ergonomics, The Ohio State University, and Kerith Stender, Los Alamos National Laboratory

This session is intended to help those who are new to the ergonomics discipline, have ergonomics responsibilities or need a refresher on ergonomics principles. It will provide an introduction to fundamental ergonomics concepts, emphasize the identification of risk factors and provide an overview of the elements of effective ergonomics processes. Examples and case studies from a variety of industrial settings will be reviewed, as will those pertaining to office ergonomics issues.

Medical Causation | Room 103
Presenter: Vic Zuccarello, Bio-Ergonomics Inc.

The role that healthcare providers fill in industry continues to expand as insurance companies, attorneys, physicians and employers realize the unique combination of skills that occupational therapists, physical therapists, nurses and other health disciplines bring to the table. Especially true with OTs and PTs, few professions combine the principles of anatomy, physiology, kinesiology and task analysis in the same way these occupations do in day-to-day practice. The applied distillation of all of these skills, when combined with workers’ compensation law, is increasingly called into practice when the healthcare provider performs an ergonomics assessment in a case involving medical causation. This presentation describes the healthcare provider’s role in this process and outlines the manner in which these assessments are performed.

Cart Design, Testing and Policy | Room 104
Presenters: Keith White and Abraham Robledo, Lennox International, and Larry McAdam, Ford Motor Company

Product movement, especially for part delivery, is often performed manually with a cart. This workshop explores manual movement considerations for cart design, periodic testing and guideline/policy implementation. Included in the workshop:
- Handle selection, handle height, castor selection and design review
- Using the Snook-Ciriello tables to know your push/pull limits
- Cart checks including periodic retest and daily checks
- Developing a facility cart guideline or implementing as a policy

1 – 5 p.m.

BCPE Exam Prep - What to Expect on the Revised Exam | Room 102
Presenter: Sheree Gibson, Ergonomics Applications

This workshop will better prepare you to pass exams given by the Board of Certification in Professional Ergonomics. It will provide an introduction to the new BCPE Ergonomist Formation Model, which is the basis for the body of knowledge necessary to become certified as an ergonomics or human factors professional. During this workshop, the instructor will provide a description of the required and elective elements of the formation model. She will also provide a review of exam format and emphasize two areas that often present problems for candidates: statistics and design. Participants will be encouraged to ask questions and discuss the example questions.

Leadership in Ergonomics: Overcoming the Hurdles of an Ergonomics Program | Room 103
Presenters: Davana Pilczuk and Kevin Barefield, Gulfstream Aerospace

Most ergonomics programs focus on the analytical processes needed to conduct job evaluations, implement solutions, prioritize ergo projects and find budgets to fund projects. What most people are not taught are the hidden strategies that make these initiatives move more smoothly. Leadership skills provide you with the fundamentals of how to sell your program and actually get traction and forward movement. This workshop will provide you with the structure needed to make your ergonomics program highly successful. You will learn four key strategies often lacking in programs that can actually move your program to the next level regardless of if you are a beginner or have had an established program.

Available Ergonomic Assessment Tools and their Application | Room 104
Presenters: Neely Ketzler and Richard Sesek, Auburn University

Many times ergonomic assessment is tasked to persons with limited ergonomics experience. This is a hands-on session to teach novice and intermediate practitioners additional ergonomic assessment skills. Many different ergonomic assessment tools will be presented that are used to assess risks in the workplace. A combination of pre-recorded tasks and interactive activities will be used to demonstrate the use of the tools. Users will be guided in the selection of ergonomic assessment tools to evaluate a variety of jobs. The most commonly used ergonomic assessment tools as well as emerging tools will be addressed. Online and mobile versions of many assessment tools will also be considered.
Facility tours offer an in-depth, behind-the-scenes look at ergonomics in action at facilities in a variety of industries. An additional fee and advanced registration is required. All tours take place Monday, March 16 and depart from the Renaissance Nashville Hotel lobby.

11 a.m. – 2:30 p.m.  
**Hendrickson Trailer Commercial Vehicle Systems**

There will be a brief presentation by the Ergo team discussing the team composition, objective, activities and training. Following that presentation the tour attendees will see three specific work centers where engineering controls have been implemented to address identified ergonomic constraints. Other discussions will be centered on administrative/work practice and PPE controls implemented to improve unsafe ergonomic work practices.

Tour restrictions: No cameras or camera phones are permitted on the production floor during the tour. All tour attendees will be required to wear steel-toe shoes, safety glasses and hearing protection on the production floor. No shorts or sleeveless shirts are permitted in the manufacturing area. No firearms or weapons are allowed on company premises.

12:30 – 5 p.m.  
**Cummins Cookeville**

Tour attendees can expect to see multiple air, lube and fuel filters being made and learn the purpose of each filter and their expected performance. Attendees will specifically see the following ergonomic features and improvements:

- Manual material handling improvement on air filters line
- Lean ergonomics work cell redesign
- New process tooling improvement
- Small, just-do-it ergo improvements throughout the shop floor

Tour restrictions: Safety glasses must be worn in the operating plant at all times. Cell phone and camera use is prohibited. High-heel, open-toe, or open-backed shoes are prohibited in the operating plant. Loose clothing, including jewelry, must not be worn in the production areas. Headphones or other listening devices cannot be used in the operating areas.

---

The internationally recognized Ergo Cup® competition, sponsored by the Ergonomics Center of North Carolina and the 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 ergonomics solutions. The general theme across all Ergo Cup® categories is innovation.

Entries will be on display in the Exhibit Hall throughout the conference. Winners will be announced Thursday, March 19, at the special awards luncheon.

Five Ergo Cup awards are presented annually for outstanding solutions through training, engineering and teamwork:

- Team-driven workplace solutions
- Team-driven workplace solutions with internal competitions
- Engineering/ergonomist-driven workplace solutions
- Engineering/ergonomist-driven workplace solutions with internal competitions
- Ergonomics program improvement initiatives

---

**ERGO CUP®**

---

www.appliedergoconference.org
AWARDS

Each year, GOErgo and the Applied Ergonomics Conference Committee present two awards for ergonomics creativity, and it is always one of the highlights of the conference. Winners will receive the awards Thursday, March 19, at a special awards luncheon that requires advanced registration.

The Creativeness in Ergonomics Practitioner of the Year Award
Sponsored by Liberty Mutual

This award recognizes achievements in the creative application of ergonomics, including process improvement, education, applied instrumentation and product development.
WINNER: TBD

The Creativeness in Ergonomics Student of the Year Award
Sponsored by CNA Insurance

This award recognizes achievements in ergonomics application or research, including process improvement, education, applied instrumentation and product development.
WINNER: TBD

STUDENT ACTIVITIES

Two-Day Student Track
Back by popular demand! This special two-day track designed for students will include a student/mentor program, the first-time attendee orientation, networking receptions with industry leaders and more.

You will also have the opportunity to choose from more than 70 high-quality educational sessions relative to ergonomics in the workplace. The conference also offers events designed specifically for networking that allow students to interact with leaders of the industry. Business casual attire is required. See student track matrix on Page 14.
### STUDENT TRACK

**Monday, March 16**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 6 p.m.</td>
<td>Student/Mentor Networking during the Exhibit Hall Reception</td>
<td>West Exhibit Hall</td>
</tr>
</tbody>
</table>

**Tuesday, March 17**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – 9:30 a.m.</td>
<td>Student Mock Interviews</td>
<td>Room 102</td>
</tr>
<tr>
<td>1:30 – 3 p.m.</td>
<td>A Day in the Life of a Professional Ergonomist – A Panel Discussion</td>
<td>Room 102</td>
</tr>
<tr>
<td>3:15 – 3:30 p.m.</td>
<td>Social Media Discussion</td>
<td>Room 102</td>
</tr>
</tbody>
</table>

**Wednesday, March 18**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 – 3 p.m.</td>
<td>A Day in the Life of a Professional Ergonomist – A Panel Discussion</td>
<td>Room 102</td>
</tr>
</tbody>
</table>

**Monday, March 16**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
<td>Room 102</td>
</tr>
<tr>
<td>8 a.m. – Noon</td>
<td>Ergo 101: The Basics of Ergonomics</td>
<td>Room 102</td>
</tr>
<tr>
<td>8 a.m. – Noon</td>
<td>Medical Causation</td>
<td>Room 103</td>
</tr>
<tr>
<td>11 a.m. – 4 p.m.</td>
<td>Exhibitors, Ergo Cup and Poster Presenters Set-up</td>
<td>Room 104</td>
</tr>
<tr>
<td>1 – 5 p.m.</td>
<td>BCPE Exam Prep – What to Expect on the Revised Exam</td>
<td>Room 102</td>
</tr>
<tr>
<td>1 – 5 p.m.</td>
<td>Leadership in Ergonomics: Overcoming the Hurdles of an Ergonomics Program</td>
<td>Room 103</td>
</tr>
<tr>
<td>4:30 p.m.</td>
<td>Poster Check-in</td>
<td>Room 104</td>
</tr>
<tr>
<td>5 – 7 p.m.</td>
<td>Welcome Reception</td>
<td>Room 104</td>
</tr>
</tbody>
</table>
Tuesday, March 17

7 a.m. – 5 p.m. | Registration Desk Open | West Exhibit Hall Foyer
7:15 – 7:45 a.m. | First-Time Attendee Orientation | Room 206
7 – 7:30 a.m. | Speaker – Moderator Check-in and Briefing for 8 a.m. Sessions | Room 110-111

8 – 9:30 a.m. (Extended Sessions)

**Session Coordinator:** Tom DeRoos

<table>
<thead>
<tr>
<th>D</th>
<th>E</th>
<th>TT</th>
<th>OE</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design, Product Design and Evaluation and Modeling Track</td>
<td>Ergonomics Programs Track</td>
<td>Tools and Technologies for Practitioners Track</td>
<td>Office Ergonomics Programs and Applications Track</td>
<td>Master Track</td>
</tr>
<tr>
<td>Room 206</td>
<td>Room 205</td>
<td>Room 204</td>
<td>Room 209-210</td>
<td>Room 108-109</td>
</tr>
<tr>
<td>From Simulation to Reality- Using Virtual Assembly Tools to Design Manufacturing Systems</td>
<td>A New Model for Successful Safe Patient Handling Programs</td>
<td>Low-Tech@Work: Ergonomics Analysis Tools for Low-Skill Ergonomics Teams</td>
<td>Overview of Peripheral Use Studies: Keyboards, Mice and Mobile Devices and the Habits They Promote Users to Develop Due to their Design</td>
<td>Managing Ergonomics Programs: Lessons Learned</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>TT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have You Hugged Your Engineer Today?</td>
<td>Instituting POWERLIFT® at a Distribution Center</td>
</tr>
<tr>
<td>Marisol Barrero and Kristi Kappes, Toyota Motor Engineering &amp; Manufacturing North America Inc. (TEMA)</td>
<td>Nancy Laurie, Wegmans Food Markets</td>
</tr>
<tr>
<td>Mike Schaefer, Risk Management Consultants Ltd.</td>
<td>Accessibility and More through Ergonomics: The Case for Inclusive Design Research</td>
</tr>
<tr>
<td>Clive D’Souza, University of Michigan</td>
<td>What Do You Stand For? An Ergonomic Review of Latest Sit vs. Stand Evidence and Unique Applications</td>
</tr>
</tbody>
</table>

9:45 – 10:45 a.m. | Keynote Presentation – Joe Jordan, Director, Initial Phase Operations, Gulfstream Aerospace | West Exhibit Hall
10:45 a.m. – 1:15 p.m. | Exhibits and Ergo Cup | West Exhibit Hall
11 – 11:30 a.m. | Speaker – Moderator Check-in and Briefing for 1:30 p.m. Sessions | Room 110-111
11:15 a.m. – 1:15 p.m. | Lunch | West Exhibit Hall
Noon – 1:15 p.m. | Poster Session | West Exhibit Hall

For more detailed information on each talk, please visit the online interactive schedule at [www.xcdsystem.com/appliedergo/proceedings](http://www.xcdsystem.com/appliedergo/proceedings).
### Tuesday, March 17

<table>
<thead>
<tr>
<th><strong>OE</strong></th>
<th><strong>E</strong></th>
<th><strong>D</strong></th>
<th><strong>AR</strong></th>
<th><strong>R/M</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Office Ergonomics Programs and Applications Track</strong></td>
<td><strong>Ergonomics Programs Track</strong></td>
<td><strong>Design, Product Design and Evaluation and Modeling Track</strong></td>
<td><strong>Applied (Translational) Research Track</strong></td>
<td><strong>Round Table/ Master Track Combo</strong></td>
</tr>
<tr>
<td><strong>Room 206</strong></td>
<td><strong>Room 205</strong></td>
<td><strong>Room 204</strong></td>
<td><strong>Room 209-210</strong></td>
<td><strong>Room 108-109</strong></td>
</tr>
<tr>
<td>Cultural Complexity: Why Shoe Choice and Cord Messiness May Wreck an Office Ergonomic Program’s Success</td>
<td>Managing a Global Ergonomics Improvement Initiative - Parker Hannifin Corporation</td>
<td>Keynote Q &amp; A with Joe Jordan</td>
<td>Active Workstations and their Effect on Performance and Biomechanics</td>
<td>Risk Assessment Tools and Methods</td>
</tr>
<tr>
<td>1:30 – 3:30 p.m.</td>
<td>Using Metrics to Obtain Positive Outcomes for Your Ergonomic Program</td>
<td>A Case Study of New Tools and Technologies for Ergonomic Assessment and Analysis</td>
<td>Comparison of Muscle Activity During Cutting Tasks with Several Tools</td>
<td>Panelists: Allison Stephens, Ford Motor Company; Ranjana Mehta, Texas A&amp;M Ergonomics Center; and Jim Potvin, McMaster University</td>
</tr>
<tr>
<td>Gregory Garrett and Mark Benden, Texas A&amp;M Ergonomics Center EDH Department School of Public Health</td>
<td>Jeannie Iverson, VSI Risk Management &amp; Ergonomics Inc.</td>
<td>Neely Ketzler, Auburn University</td>
<td>Benjamin Tucker and Dan Anton, Eastern Washington University</td>
<td>Patricia Holdaway, SAS Institute</td>
</tr>
<tr>
<td>Patricia Holdaway, SAS Institute</td>
<td>David Alexander, Auburn Engineers Inc.</td>
<td>Jeffrey Smagacz, Risk Management Group Inc.</td>
<td>Chandrasekaran Jayaraman, University of Illinois Urbana-Champaign</td>
<td></td>
</tr>
<tr>
<td>3:30 – 4 p.m.</td>
<td>Key Inputs to Calculating the ROI of an Ergonomics Program</td>
<td>Ergonomic Design of a Retail Bakery: Bridging the Gap Between Productivity and Ergonomics</td>
<td>3:30 – 4 p.m. Ergo Quiz Bowl Round 1</td>
<td>Room 108-109</td>
</tr>
<tr>
<td>Six Sigma Approach to Improving your Office Ergonomics Process</td>
<td>Key Inputs to Calculating the ROI of an Ergonomics Program</td>
<td>Ergonomic Design of a Retail Bakery: Bridging the Gap Between Productivity and Ergonomics</td>
<td>4 – 5:30 p.m. Networking Reception</td>
<td>West Exhibit Hall</td>
</tr>
<tr>
<td>Tony Silva, Atlas Ergonomics</td>
<td>Key Inputs to Calculating the ROI of an Ergonomics Program</td>
<td>Ergonomic Design of a Retail Bakery: Bridging the Gap Between Productivity and Ergonomics</td>
<td>6:15 p.m. Networking Event – Networking Event - A Night at the Opry - An evening of country music at the Grand Ole Opry! additional fee required</td>
<td>Depart from the hotel main entrance</td>
</tr>
</tbody>
</table>
**Wednesday, March 18**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration Desk Open</td>
</tr>
<tr>
<td>7 – 7:30 a.m.</td>
<td>Speaker – Moderator Check-in and Briefing for 8 a.m. sessions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – 9:30 a.m. (Extended Sessions)</td>
<td><strong>Session Coordinator:</strong> Ranjana Mehta</td>
</tr>
<tr>
<td></td>
<td><strong>MH Material Handling in the Industrial Workplace Track</strong></td>
</tr>
<tr>
<td></td>
<td><strong>E Ergonomics Programs Track</strong></td>
</tr>
<tr>
<td></td>
<td><strong>P Potpourri Track</strong></td>
</tr>
<tr>
<td></td>
<td><strong>D Design, Product Design and Evaluation and Modeling Track</strong></td>
</tr>
<tr>
<td></td>
<td><strong>RT Round Table</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 206</strong></td>
</tr>
<tr>
<td></td>
<td>Moderator – Karen Harrington</td>
</tr>
<tr>
<td></td>
<td>Work Access Lifts – Best Practices</td>
</tr>
<tr>
<td></td>
<td>James Galante, Southworth Products Group</td>
</tr>
<tr>
<td></td>
<td>Ergonomics for Assembly Markets Without Compromising a LEAN Environment</td>
</tr>
<tr>
<td></td>
<td>Jason Parko, Ingersoll Rand</td>
</tr>
<tr>
<td></td>
<td><strong>Room 205</strong></td>
</tr>
<tr>
<td></td>
<td>Moderators – Tom DeRoos and Patricia Holdaway</td>
</tr>
<tr>
<td></td>
<td>Successful Ergonomics Teams</td>
</tr>
<tr>
<td></td>
<td>Stephen Jenkins, Cintas</td>
</tr>
<tr>
<td></td>
<td><strong>Room 204</strong></td>
</tr>
<tr>
<td></td>
<td>Moderator – Rich Halstead-Nussloch</td>
</tr>
<tr>
<td></td>
<td>Challenging the Myth That It Takes Too Long to Use Safe Patient Handling Technology Patricia Mechna, Guldmann Inc.</td>
</tr>
<tr>
<td></td>
<td><strong>Room 209-210</strong></td>
</tr>
<tr>
<td></td>
<td>Moderator – Naomi Abrams</td>
</tr>
<tr>
<td></td>
<td>How to Conduct Vehicle Ergonomic Assessments</td>
</tr>
<tr>
<td></td>
<td>Arnie Neustaetter, Pacific Gas and Electric Co.</td>
</tr>
<tr>
<td></td>
<td><strong>Room 108-109</strong></td>
</tr>
<tr>
<td></td>
<td>Moderator – Craig Halpert</td>
</tr>
<tr>
<td></td>
<td>Case Studies in Ergonomics Facilitators:</td>
</tr>
<tr>
<td></td>
<td>Nancy Larson, 3M</td>
</tr>
<tr>
<td></td>
<td>Rich Sesek, Auburn University</td>
</tr>
<tr>
<td></td>
<td><strong>Room 206</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 205</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 204</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 209-210</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 108-109</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 206</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 205</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 204</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 209-210</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Room 108-109</strong></td>
</tr>
<tr>
<td>9:45 – 10:45 a.m.</td>
<td>Keynote Presentation – William Boyd, Senior Vice President, Risk Control, CNA Insurance</td>
</tr>
<tr>
<td>10:45 a.m. – 1:15 p.m.</td>
<td>Exhibits, Ergo Cup and Poster Session</td>
</tr>
<tr>
<td>11 – 11:30 a.m.</td>
<td>Speaker – Moderator Check-in and Briefing for 1:30 p.m. Sessions</td>
</tr>
<tr>
<td>11:30 a.m. – Noon</td>
<td>Speaker – Moderator Check-in and Briefing for 3:30 p.m. Sessions</td>
</tr>
<tr>
<td>11:15 a.m. – 1:15 p.m.</td>
<td>Lunch for sale</td>
</tr>
<tr>
<td>Noon – 1:15 p.m.</td>
<td>Poster Session</td>
</tr>
</tbody>
</table>

For more detailed information on each talk, please visit the online interactive schedule at [www.xcdsystem.com/appliedergo/proceedings](http://www.xcdsystem.com/appliedergo/proceedings).
### Wednesday, March 18

<table>
<thead>
<tr>
<th>M/C</th>
<th>E</th>
<th>TT</th>
<th>AR</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manufacturing Applications and Case Studies Track</strong></td>
<td><strong>Ergonomics Programs Track</strong></td>
<td><strong>Tools and Technologies for Practitioners Track</strong></td>
<td><strong>Applied (Translational) Research Track</strong></td>
<td><strong>Master Track</strong></td>
</tr>
<tr>
<td><strong>Room 206</strong></td>
<td><strong>Room 205</strong></td>
<td><strong>Room 204</strong></td>
<td><strong>Room 209-210</strong></td>
<td><strong>Room 108-109</strong></td>
</tr>
<tr>
<td><strong>Moderators – Steve Greely and Keith Stender</strong></td>
<td><strong>Moderator – Pam Dwyer</strong></td>
<td><strong>Moderator – Lisa Brooks</strong></td>
<td><strong>Moderators – Naomi Abrams and Miriam Joffe</strong></td>
<td><strong>Moderator/ Facilitator – Gary Orr</strong></td>
</tr>
<tr>
<td>The Impact of Aging, Obesity, Cognition and Different Abilities in the Workplace</td>
<td>Avoiding Organizational Traps to Making Ergo Happen</td>
<td>Keynote Q &amp; A with Bill Boyd</td>
<td>Evaluating the Effectiveness of a Postural Support on Biomechanics and Behavioral Outcomes</td>
<td>Preparing for OSHA Ergo Inspection</td>
</tr>
<tr>
<td><strong>Featured Speaker</strong></td>
<td><strong>Featured Speaker</strong></td>
<td><strong>Featured Speaker</strong></td>
<td><strong>Featured Speaker</strong></td>
<td>Amee Bhatt, OSHA Regional Coordinator Boston; Cathie Mannion, OSHA Regional Coordinator New York; Adam Hamrick, OSHA Regional Coordinator Philadelphia; Glenn Ketcham, OSHA Regional Coordinator Atlanta; Robin Bonville, OSHA Regional Coordinator Dallas; JoBeth Cholmondelay, OSHA Regional Coordinator Kansas City; Pam Baptiste, OSHA Regional Coordinator Denver; Nancy McCormick, OSHA Regional Coordinator San Francisco; Ed Delach, OSHA Regional Coordinator Seattle; and Brett Besser, U.S. Department of Labor - SLTC</td>
</tr>
<tr>
<td>Ben Zavitz, General Dynamics Bath Iron Works Shipyard</td>
<td>Paula Lewis, EORM</td>
<td>Langdon Dement, UL Workplace Health &amp; Safety</td>
<td>W. Gary Allread, Institute for Ergonomics, The Ohio State University</td>
<td>Nancy Laurie, Wegmans Food Markets; Greg Cresswell, Humantech Inc.</td>
</tr>
<tr>
<td>Jennifer Lenhart, Whirlpool Corporation; Greg Cresswell, Humantech Inc.</td>
<td></td>
<td>Nancy Laurie, Wegmans Food Markets</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Wednesday, March 18

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 – 3:30 p.m.</td>
<td>**Ergo Quiz Bowl Round 2</td>
</tr>
</tbody>
</table>
| 3:30 – 5 p.m. | **Session Coordinator:** Jessica Hardy  
**Moderators – Paula Lewis and Jose Banaag**  
**Moderator – Ahmed Radwan**  
**Moderators – Pam Dwyer and Dale Castleman**  
**Moderator – Greg Griffith**  
**Facilitator – Scott Smith**  
**Featured Speaker:**  
**Creativity and Innovation in Ergonomics**  
Allison Stephens, Ford Motor Company  
**Mistakes to Avoid When Managing your Ergonomics Program**  
Deepesh Desai, Humantech Inc.  
**Selecting Wheels for Plant Equipment that Operators Will Appreciate**  
Dave Lippert, Hamilton Caster & Mfg. Co.  
**For Workspace Ergonomics, BYOD also Means Bring Your Own Design**  
Dave Lippert, Hamilton Caster & Mfg. Co.  
**Ergonomic Program Success is Best Predicted by the Enthusiasm of its Participants**  
Brock Anderson and Brian Turner, Gulfstream Aerospace  
**Lift Assist Device Options in the Manufacturing Plant and Warehouse**  
Volker Schmitz, Schmalz Inc.  
**Kaizen-Type ‘Find It/Fix It’ Model for Rapid Success at the Boeing Company**  
Miriam Joffe, The Boeing Company  
Zachery Collins, Bureau Veritas  
**Taking the Next Step:** Applying Human Motion Capture from Accident Reconstruction to Ergonomics  
Patrick Fay and Richard Fay, Fay Engineering Corp.  
**Using Six Sigma to Define the Ergonomic Risk Management Process**  
Michael Perry, Cummins Inc.  
**Teaching Human Factors & Ergonomics via the Tiger Motors Experiential Learning Lab**  
Richard Sesek and Tom Devall, Auburn University  
**Open for Business:** Starting Your Own Consulting Business  
Susan Murphey, Essential WorkWellness  
**Lean Sigma and Ergonomics**  
Scott Smith, AON Insurance Brokers |
### Thursday, March 19

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m. – 1:30 p.m.</td>
<td>Registration Desk Open</td>
</tr>
<tr>
<td>7 – 7:20 a.m.</td>
<td>Speaker – Moderator Check-in and Briefing for 8 a.m. sessions</td>
</tr>
<tr>
<td>7:30 – 7:50 a.m.</td>
<td>Speaker – Moderator Check-in and Briefing for 10 a.m. sessions</td>
</tr>
<tr>
<td>8 – 9:30 a.m.</td>
<td>(Extended Sessions) Session Coordinator: Abraham Robledo</td>
</tr>
</tbody>
</table>

#### Matrix

<table>
<thead>
<tr>
<th>Room 206</th>
<th>Room 205</th>
<th>Room 204</th>
<th>Room 209-210</th>
<th>Room 108-109</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/C</td>
<td>TT</td>
<td>P</td>
<td>D</td>
<td>RT</td>
</tr>
<tr>
<td>Manufacturing Applications and Case Studies Track</td>
<td>Tools and Technologies for Practitioners Track</td>
<td>Potpourri Track</td>
<td>Design, Product Design and Evaluation and Modeling Track</td>
<td>Round Table</td>
</tr>
<tr>
<td>Moderator – Eldon Fink</td>
<td>Moderators – Jose Banaag and Don Olsen</td>
<td>Moderators – Paula Lewis and Jenny Legge</td>
<td>Moderator – Holly Wick</td>
<td></td>
</tr>
<tr>
<td>3-D Printing Ergonomics</td>
<td>Featured Speaker</td>
<td>Don’t Hire Your Next Injury - Benefits of Pre-Employment Screening</td>
<td>TBA</td>
<td>Keys to Creating an Ergonomics Culture</td>
</tr>
<tr>
<td>Megan Mullininx and Jason Bateham, Gulfstream Aerospace</td>
<td>How to Engage Employees</td>
<td>Hal Williams, Bridgestone Americas Tire Operations LLC - Warren Plant</td>
<td>Tony Silva, Atlas Ergonomics</td>
<td>Facilitators: Stephen Jenkins, Cintas and Davana Pilczuk, Gulfstream Aerospace</td>
</tr>
<tr>
<td>Back School: A Preventive View to Reduce Back Pain and Improve Postural Habits</td>
<td>The University of California, Berkeley’s Ergonomics Design Guidelines for Customer Service Counters</td>
<td>Mallory Lynch, University of California, Berkeley</td>
<td>Ergonomic Assessment of a Portable Assisted Mobility Device for High-Density Metropolis</td>
<td></td>
</tr>
<tr>
<td>Hector Canales, Gildan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ergonomics Case Studies in the Shipbuilding Industry</td>
<td>Kneeling Work: Using Data Analytics and Objective-Based Measure to Address Short to Long-Term Issues with Kneeling Type Work Activities</td>
<td>The Power of Making a Corporate Initiative a Culture</td>
<td>Ergonomic Pocket Card: Putting Ergonomics in the Hands of the Engineers</td>
<td></td>
</tr>
<tr>
<td>Jeffrey Hoyle, The Ergonomics Center of North Carolina; Kesbie Woods, Newport News Shipbuilding</td>
<td></td>
<td>Scott Schimmel, Gulfstream Aerospace</td>
<td>Patricia Racco and Julie Bazer, Ford Motor Company</td>
<td></td>
</tr>
</tbody>
</table>

9:30 – 10 a.m. Break/ Ergo Quiz Bowl Finals | Room 110-111
For more detailed information on each talk, please visit the online interactive schedule at [www.xcdsystem.com/appliedergo/proceedings](http://www.xcdsystem.com/appliedergo/proceedings).

**Thursday, March 19**

<table>
<thead>
<tr>
<th>M/C</th>
<th>Manufacturing Applications and Case Studies Track</th>
<th>E</th>
<th>Potpourri Track</th>
<th>AR</th>
<th>Round Table</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Room 206</td>
<td>Room 205</td>
<td>Room 204</td>
<td>Room 209-210</td>
<td>Room 108-109</td>
</tr>
<tr>
<td></td>
<td>Mike Halperin, Kaiser Aluminum – Trentwood Works; Kent Hatcher, Humantech Inc.</td>
<td>Don Robinson, Norfolk Southern Corporation</td>
<td>Jessica Ramsey, NIOSH</td>
<td>Ahmed Radwan and Thomas Crist, Utica College</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jose Amaya, Gildan</td>
<td>Jonathan Muggridge, Gulfstream Aerospace Corporation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measuring Effectiveness of Ergonomics Countermeasures</td>
<td>Implementing a Telecommuting Policy</td>
<td>University of California’s Injury Reduction Strategies for Animal Care Employees</td>
<td>Dynamic and Static Force Measurement System: Force Puck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jose Banaag, Honda North America Inc.</td>
<td>Tina Minter, Chubb Insurance</td>
<td>Mallory Lynch and Kristie Elton, University of California-Berkeley</td>
<td>Joel Cort, University of Windsor</td>
<td></td>
</tr>
</tbody>
</table>

10 – 11:30 a.m.  
**Session Coordinator:** Sandra Sellers

11:45 a.m. – 1:30 p.m.  
**Lunch & Awards Ceremony — Ergo Cup® Competition and Practitioner and Student Awards — additional fee required | West/Center Ballroom**
The transport, transfer, adjustment and general handling of hospital patients account for one of the most significant injury risks for healthcare workers. This is true for the general population of patients and even more so for bariatric patients. Safe patient handling programs are mandated in many states to protect both the healthcare workers and their patients from injury due to manual lifting. The experience with such programs for many healthcare facilities presents a tale of great promise of benefit but very difficult delivery of the same. This is a major culture change for patient care employees. They’re initially delighted and seem eager to move forward. Equipment is purchased and staff is trained to some extent on how to use it. Soon it becomes clear that several things were not considered: laundry, repairs, equipment location. At Stanford Healthcare we moved to the “lift coach” model to provide operational expertise that supports culture change. This presentation describes our model and offers data on our experience over the past two years. We believe this to be the best and most workable solution for culture change and successful safe patient handling program implementation. The presentation includes a unique return on investment calculation that will be of interest to many.

A New Model for Successful Safe Patient Handling Programs
John Vaughan and Edward Hall, Stanford Hospital & Clinics

Have You Hugged Your Engineer Today?
Marisol Barrero and Kristi Kappes, Toyota Motor Engineering & Manufacturing North America

Can ergonomists and engineers get along? Yes! And they can also work together effectively to ensure the application of ergonomics design principles early in design. Ergonomists commonly joke about engineers and often blame them for poor unergonomic designs, which must later be controlled by the ergonomist. An ergonomist and a mechanical engineer working together at Toyota will share their perspectives on working with “the other side” and how to best communicate across the different groups. Real examples will be shared to illustrate how harnessing each discipline’s strengths and weaknesses gets the job done better and faster than a single group working alone.

Instituting POWERLIFT® at a Distribution Center
Nancy Laurie, Wegmans Food Markets; Mike Schoefer, Risk Management Consultants Ltd.

The primary injuries in manual material handling industries such as distribution centers are musculoskeletal disorders of the back. Ergonomics programs for employees engaged in this type of activity typically include lifting training. However, the traditional squat lift has three primary flaws that prevent employees from consistently performing the technique. These flaws commonly result in the employee reverting to “back lifting” because it seems faster.
and easier. POWERLIFT® Training is based on a Sumo style technique that addresses those flaws. The method is easy to train and easy to learn because it is common in many of the athletic stances that employees are already familiar with such as baseball, football and basketball. In addition, it is easy to feel the difference between a POWERLIFT® and other lifting techniques. In this session you will learn the basic POWERLIFT® techniques, get hands-on practice, learn how to sustain this type of behavior modification program and realize the benefits.

The amount of time we spend in sedentary positions on any given day has dramatically increased over the last 25 years. Most people spend the majority of their daytime hours at work in a seated position, which has resulted in a wide variety of serious health risks and barriers to human performance. Ergonomist Josh Kerst will reflect on the historical impact of the chair on our bodies and share the results of a comprehensive literature review on how it has shaped our perception, health and performance. The latest scientific evidence supporting the need for movement within the work environment is highlighted along with the steps your organization should take to address this concern and positively impact performance and safety. Development of a financially responsible approach is a critical element to address sedentary work. Effective and efficient strategies and tactics will be presented that support a wide range of business environments ranging from traditional offices, labs, healthcare and even industrial settings.

Do you have your back facing the door in your office? Did you know that many cultures perceive the back of the monitor to be an insult? Have you ever wondered why after you set up someone’s office perfectly they move everything back? Global ergonomics programs require a better understanding of how different people and cultures perceive their working world, the effects our “ergonomic” arrangement have on the perception of status in the office hierarchy and how our pre-conceived notions about what is good and bad do or do not translate around the world. This presentation will focus on the cultural ergonomics lessons learned from developing and working within a global structure. We will cover some of the interesting behavioral and social undercurrents that often go unnoticed when we focus on the basic ergonomic office setup. The best way of setting up an office may be the exact opposite of what that culture will tolerate. Knowing how to identify these idiosyncrasies in your own social background and in others is vitally important to a program’s success.

Parker Hannifin is the world’s leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. The company employs approximately 57,000 people in 50 countries around the world. The goal of this session is to share lessons learned from Parker’s deployment of a global ergonomics improvement initiative. A clear vision for ergonomic performance was endorsed by the organization’s management, and a plan for implementation at the business unit or facility level was drafted. Guidance materials and tools were developed to support implementation. Parker is currently in the third year of the initiative and can share challenges encountered during deployment and as the initiative has matured. The session will focus on what a corporate team can do to influence a diverse and decentralized manufacturing organization.

The Q & A session is held with the keynote speaker following the general session. It is an opportunity for attendees to attend a smaller session with the keynote speaker in which they can ask specific follow-up questions regarding the keynote address and receive answers directly from the speaker. This Q & A session will feature Joe Jordan, director, Initial Phase Operations, Gulfstream Aerospace.
Many office workers are spending up to 90 percent of their workday seated and may not offset the cost. This study compares objective measures of productivity over time between a group of sit-stand desk users and a seated comparison group. The results of the analysis show that users of sit-stand desks consistently outperformed their seated counterparts in terms of tasks and daily cumulative exposures.

**E** TRACK: ERGONOMICS PROGRAMS | ROOM: 205

**Using Metrics to Obtain Positive Outcomes for Your Ergonomics Program**

Jeannie Iverson, VSI Risk Management & Ergonomics Inc.

What are metrics and why do you want to use them? If you are an ergonomics program manager, consultant or ergonomics advocate, collecting the right type of metrics will reveal the positive outcomes of your program, the areas that may need more attention and the overall worth of your ergonomic processes. As ergonomists, it also shows the overall worth of your services. Collecting metrics on the status of your ergonomics program is and should be an essential component of your ergonomics program management.

**D** TRACK: DESIGN, PRODUCT DESIGN AND EVALUATION AND MODELING | ROOM: 204

**A Case Study of New Tools and Technologies for Ergonomic Assessment and Analysis**

Neely Ketzler, Auburn University

Ergonomists have a number of tools to choose from when evaluating the ergonomic risks associated with tasks in the workplace. The tools have widely varying purposes and differing usability ratings based on the type of task. A case study was performed using ergonomists with varying levels of experience in ergonomic assessment to evaluate several different tests performed in the workplace with varying levels of ergonomic risk. The study used several existing and widely available tools as well as new and emerging international tools, online platforms and mobile applications to evaluate the risk associated with the tasks. Inter-rater reliability and tool usability were evaluated.

**AR** TRACK: APPLIED (TRANSLATIONAL) RESEARCH | ROOM: 209-210

**Active Workstations and Their Effect on Performance and Biomechanics**

Woodrow Gustafson and Lora Cavuoto, State University of New York at Buffalo

In the past 30 years, the prevalence of overweight and obese people in the U.S. workforce has doubled, with over two-thirds of the population being overweight or obese. During that same period, work has become more sedentary due to increased computer desk work, leading to pain, injury and major health consequences. One promising intervention for decreasing sedentariness is the incorporation of active workstations that promote movement; however the implications of these interventions have not been explored thoroughly. This presentation will highlight the results of a study on the impact of active workstations (sit/stand and treadmill desks) on biomechanics, posture and performance measures during standard office work. The results provide insight into risks of discomfort and injury from active workstation implementation. Understanding the effects of these workstations can lead to the development of implementation recommendations in terms of tasks and duration of use for the promotion of health and prevention of negative effects.

**1:30 – 3:30 p.m.**

**R/M** TRACK: ROUND TABLE/MASTER TRACK COMBINATION | ROOM: 108-109

**Risk Assessment Tools and Methods**

Allison Stephens, Ford Motor Company; Ranjana Mehta, Texas A&M Ergonomics Center; Jim Potvin, McMaster University

Most ergonomic risk assessment tools use a simple checklist and/or are designed to assess tasks in isolation (i.e., a lift or push). A lot of real-world job tasks are not this simple and require more sophisticated tools, methods and/or technology. This combined roundtable and master track session will provide attendees with an opportunity to discuss and share their experiences — lessons learned, failures and successes — and identify future research needs in this area. The master track portion will cover wearable objective technology and smart apps, virtual manufacturing tools, and methods to evaluate acceptable muscle fatigue levels from combined tasks and daily cumulative exposures.

**2 – 2:25 p.m.**

**OE** TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206

**Sit-Stand Workstations: Thinking on Your Feet Can Be Productive**

Gregory Garrett and Mark Benden, Texas A&M Ergonomics Center, EOH Department, School of Public Health

Many office workers are spending up to 90 percent of their workday seated and may not offset the cost. This study compares objective measures of productivity over time between a group of sit-stand desk users and a seated comparison group. The results of the analysis show that users of sit-stand desks were significantly more productive than their seated counterparts. Further results show that sit-stand desk users consistently outperformed their seated counterparts over the six-month time period. Additional studies to determine sustainability of productivity in conjunction with sit-stand desk usage is ongoing.

**24** www.appliedergoconference.org
2:30 – 2:55 p.m.

OE TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206
Applied Solutions for Sit/Stand Workstations: Finding Practical, Effective and Affordable Options
Patricia Holdaway, SAS Institute

The benefits of standing while working continue to be well-discussed in a vast number of resources. Studies conducted make it almost impossible not to argue that alternating postures during the workday is the way to go promoting circulation, maintaining healthy muscles and tissues and reducing fatigue and discomfort. Employers are confronted today with continual requests for sit to stand workstations. The pros and cons of sitting and standing have been emphasized in the research, and evidence that obesity and other health risks have skyrocketed in the general population due to chronic sitting continues to mount. Rather than review the effects of prolonged sitting and standing, ergonomists and those in related fields are ready to discuss solutions. When an adjustable workstation is requested or required, there are many options to explore. The variety of sit to stand solutions continues to grow. Case studies of several options used and the associated pros and cons of these solutions will be presented. As with any organization, the budget, needs of employees and specific ergonomics program goals will drive the process in finding the most optimal sit to stand workstations. As an ergonomist, you can have a major impact on reducing the costs associated with occupational injuries and illnesses related to prolonged postures. Let’s talk practical and handle this sit/stand dilemma with results.

3 – 3:30 p.m.

OE TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206
Six Sigma Approach to Improving Your Office Ergonomics Process
Tony Silva, Atlas Ergonomics

Many organizations have been running an office ergonomics process for several years and have plateaued in performance. They do not know, with any level of confidence, what part of the process should be improved and to what level. This presentation will look at two case studies and how each company utilized Six Sigma methodologies to improve their office ergonomics process. Case study #1: one of the nations’ largest financial institutions. Their process encompasses coverage of greater than 180,000 employees deployed over 5,500 individual locations across the country. Case study #2: one of the world’s largest, multinational professional services networks with a large percentage of the work population using hoteling stations and working remotely from client and home office locations. The results include data-driven approach to better measure program performance; more standardized approach to evaluating and controlling ergonomic hazards; significant reductions in errors in the office ergonomics process; and better integration of furniture standards to control future ergonomic injuries from developing. The lessons learned include: learning when and how to use different Six Sigma methods to collect voice of the customer and determine critical to quality characteristics; using process flow diagrams to document the flow of information in your office ergonomics process; analyzing root cause with fish-bone diagrams, brainstorming to develop process improvements and use FMEAs to prioritize improvements; and trial and test improvements before rolling out corporate wide.

2:30 – 2:55 p.m.

OE TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206
Handling Device for Controlling Low Back Disorders

Physical demand profiles (PDP) are used for initial job placement as well as return to work placement following injury or musculoskeletal disorders (MSDs) illnesses. Using a functional design approach and clearly identified work-task requirements, this team developed a radically improved PDP process. These improvements better match the physical requirements of work tasks with specific injuries, thereby enhancing the usability of the output, and provide greatly increased efficiency and accuracy of the input data. This same technology is used to determine the work-relatedness of worker injuries and illnesses, thus allowing employers to avoid unwarranted costs, false claims and needless corrective actions for incidents that “didn’t occur here.”

3 – 3:30 p.m.

OE TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206
Physical Demands Profiles: New Turf for the Ergonomist
David Alexander, Auburn Engineers Inc.

Physical demand profiles (PDP) are used for initial job placement as well as return to work placement following injury or musculoskeletal disorders (MSDs) illnesses. Using a functional design approach and clearly identified work-task requirements, this team developed a radically improved PDP process. These improvements better match the physical requirements of work tasks with specific injuries, thereby enhancing the usability of the output, and provide greatly increased efficiency and accuracy of the input data. This same technology is used to determine the work-relatedness of worker injuries and illnesses, thus allowing employers to avoid unwarranted costs, false claims and needless corrective actions for incidents that “didn’t occur here.”

2:00 – 2:30 p.m.

OE TRACK: DESIGN, PRODUCT DESIGN AND EVALUATION AND MODELING | ROOM: 204
Warehouse Ergonomics: Developing and Implementing an Effective Material Handling Device for Controlling Low Back Disorders
Jeffrey Smagacz, Risk Management Group Inc.

Globally, manual lifting is one of the leading causes of occupational health and safety injuries. According to the National Institute for Occupational Safety and Health (NIOSH), low back disorders are a cause of major disability and affect more than one million employees each year, with an annual cost of approximately $50 billion. Additionally, the Bureau of Labor Statistics identifies that back injuries account for one of every five workplace injuries. These figures do not begin to reflect the pain and suffering employees experience as a result of their injuries. One of the most common places for low back disorders is warehouses. Over the past few decades, little innovation has occurred to address manual lifting in warehouses, until now. This presentation will focus on a major Fortune 1000 company: their focus, effort, setbacks and success in the development and deployment of a lifting device to sig-

nificantly reduce back bending and improve case picking efficiency. The entire process, from risk assessments to prototypes to financial measures, will be shared.

3 – 3:30 p.m.

OE TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206
Physical Demands Profiles: New Turf for the Ergonomist
David Alexander, Auburn Engineers Inc.

Physical demand profiles (PDP) are used for initial job placement as well as return to work placement following injury or musculoskeletal disorders (MSDs) illnesses. Using a functional design approach and clearly identified work-task requirements, this team developed a radically improved PDP process. These improvements better match the physical requirements of work tasks with specific injuries, thereby enhancing the usability of the output, and provide greatly increased efficiency and accuracy of the input data. This same technology is used to determine the work-relatedness of worker injuries and illnesses, thus allowing employers to avoid unwarranted costs, false claims and needless corrective actions for incidents that “didn’t occur here.”

3 – 3:30 p.m.

OE TRACK: OFFICE ERGONOMICS PROGRAMS AND APPLICATIONS | ROOM: 206
Six Sigma Approach to Improving Your Office Ergonomics Process
Tony Silva, Atlas Ergonomics

Many organizations have been running an office ergonomics process for several years and have plateaued in performance. They do not know, with any level of confidence, what part of the process should be improved and to what level. This presentation will look at two case studies and how each company utilized Six Sigma methodologies to improve their office ergonomics process. Case study #1: one of the nations’ largest financial institutions. Their process encompasses coverage of greater than 180,000 employees deployed over 5,500 individual locations across the country. Case study #2: one of the world’s largest, multinational professional services networks with a large percentage of the work population using hoteling stations and working remotely from client and home office locations. The results include data-driven approach to better measure program performance; more standardized approach to evaluating and controlling ergonomic hazards; significant reductions in errors in the office ergonomics process; and better integration of furniture standards to control future ergonomic injuries from developing. The lessons learned include: learning when and how to use different Six Sigma methods to collect voice of the customer and determine critical to quality characteristics; using process flow diagrams to document the flow of information in your office ergonomics process; analyzing root cause with fish-bone diagrams, brainstorming to develop process improvements and use FMEAs to prioritize improvements; and trial and test improvements before rolling out corporate wide.
Demonstrating payback on workplace improvement programs is an ongoing challenge for many health and safety professionals. Showing the value of an ergonomics program is a part of that challenge when only the traditional lagging measures are used. This presentation will highlight the key inputs required for calculating return on investment and demonstrating value to an organization.

This presentation is a case study of the design of a bakery within a retail grocery store. The consultant was tasked with determining the process design, equipment needs, and personnel needs necessary for evaluating company-proposed production quotas. Methods for conducting this case study, which will be discussed during the presentation, include identifying/requesting company-provided information, on-site data collection quantitative analysis of all information provided by the company, as well as the information collected by the consultant, and determining the best course of action to meet the company's goals. The discussion will consist of discussing the steps taken during this process and discussing the problems determined during this process, as well as the solutions to the problems identified during this process. This presentation includes helping consultants to understand the necessary steps and methodologies to provide a comprehensive solution for the company's problems. Problems encountered during this process and solutions to mitigate them will be discussed. The process of how to determine equipment and personnel needs based upon company-proposed production quotas, with regards to physical demands and ergonomics, will also be discussed. The audience should learn valuable information in regards to how to improve productivity with ergonomics in mind, while also learning simple, quantitative methodologies that will improve the accuracy and objectivity of the project scope.

Multiple attempts to create one-hand lifting guidelines have been made. However, there have been relatively few biomechanically based models proposed. Currently, there are no well-established one-hand lifting guidelines. In the absence of clear ergonomics guidance, practitioners often treat one-hand lifting tasks as two-handed, symmetric lifts. This research models the muscles of the low back through use of a traverse magnetic resonance image of the L3 region of the back. Drawing software is then employed to trace the border of the muscles, and architectural software is used to calculate cross-sectional area, location of center of mass and effective lever arm measurements. This more accurate biomechanical data is then input into a model that yields the contribution of each muscle group and the overall compressive forces acting on the back. Results of this study indicate that one-hand lifting in the lateral plane places considerable back compressive forces on the back and the oblique muscle group has the highest relative contribution of back compressive force for lateral lifts. The information gathered from this pilot study will be used to provide a biomechanical basis for a one-hand lifting guideline.

Innovative use of powered industrial scissors lifts for positioning workers has become more prevalent across a broad spectrum of industries. The safety, ergonomic and productivity advantages are obvious. What is less obvious is what is driving this increased need to better position the worker(s) to the work. This presentation explores these various types, sizes and configurations of lifts and their use as well as the drivers that influence industry to make these investments. This dynamic, fast moving, highly illustrated session will show many workstation examples and photographs of actual equipment being used in industrial applications.

This presentation will discuss and present results of an investigation into different experience levels of learners’ time to complete routine safe patient handling and mobility (SPHM) tasks with an overhead lift and slings. Review of literature for time to complete patient mobility assistance tasks without and with technology will be presented. Timed trials of beginner, intermediate and experienced users were completed. The perception of “it takes too long” to use safe patient handling technology is a frequent barrier to adopting safer work practices. Discussion will further cover the impact of the users’ level of experience on care task completion time. Awareness of objective times to complete tasks could help dispel myths of time inefficiency with equipment use and serve as discussion points for SPHM programs and leaders to improve safer handling practices. Improvements in safer patient handling practices positively impact volume and severity of musculoskeletal disorders.

This talk will describe and provide a format to conduct ergonomic assessments of all types of vehicles. The emphasis is on the assessment of seating variables and in vehicle computer use. PG&E has been conducting vehicle assessments for 12-plus years with numerous case
studies to demonstrate the assessment process and show outcomes. Attendees are trained to use a checklist with key measured variables explained. Interventions include use of accessories (e.g., seat wedges, lumbar supports) and modifications to existing seats. Examples from outside the utility industry are included. A variety of options are described for in-vehicle tablet and laptop use, both with and without computer mounts. The checklist for in-vehicle computer use is new for our industry. Back pain from prolonged driving and in-vehicle computer use are leading causes of discomfort in vehicles. This talk describes an assessment process and practical solutions for both.

8—9:30 a.m.

RT TRACK: ROUNDTABLE | ROOM 108-109
Case Studies in Ergonomics
Facilitators: Nancy Larson, 3M; Rich Sesek, Auburn University

Do you have an ergo problem that you can’t solve? Then why not bring your ergo problem to the top ergonomists in the world and solve it together. This session will help you identify the three types of controls used when determining how to solve a problem. Participants will also learn how to use key information to get funding and support for projects and how to sell those great ideas to management.

8:50—9:30 a.m.

MH TRACK: MATERIAL HANDLING IN THE INDUSTRIAL WORKPLACE | ROOM: 206
Ergonomics for Assembly Markets without Compromising a Lean Environment
Jason Parko, Ingersoll Rand

Manufacturers, whether in motor vehicle, white goods or other industries, have invested in assembly lines that can accommodate several diverse product models. That means that today’s assembly line must be even more nimble and flexible than ever without compromising the quality of life for workers. In an assembly environment, ergonomics is a critical consideration – particularly removing “over-exertion” for line workers. Jason Parko, product leader for systems and handling devices in the Ingersoll Rand Material Handling business, will offer noncommercial strategies for applying modular overhead lifting equipment, such as hoists, balancers and rail systems, in order to create a flexible, adaptable, ergonomically correct assembly line. He will also offer tips for safely achieving the benefits of operator control and adaptable work patterns; dispel myths about ergonomics impeding the assembly process; share examples and case studies from live lines around the world; and address questions about how these strategies can be applied in different industries and types of lines.

E TRACK: ERGONOMICS PROGRAMS | ROOM: 206
Overcoming Common Barriers to Successful Safe Patient Handling Programs
Eliza Cande, EORM

Many acute- and long-term care facilities in California have implemented safe patient handling programs. The overall effectiveness of these programs varies, depending on the facility’s ability to overcome barriers to implementation. These barriers can include difficulty gaining management commitment, training effectiveness, improper selection and use of equipment, staff and patient attitudes and beliefs and poorly focused or communicated monitoring and review processes. This presentation explores these barriers, as well as strategies and tactics that can be used to overcome them and improve program effectiveness, using examples from actual healthcare facilities. A number of approaches are explored, from the organizational level down to strategies to manage individual staff and patients.

P TRACK: POTPOURRI | ROOM: 206
Errors: An Introduction to the Nonphysical Ergonomics Behind Accidents
Paul Adams, Applied Safety and Ergonomics Inc.

Cumulative trauma disorders are the primary concern of many ergonomists, but a more severe problem is posed by human errors that cause acute injuries. This interactive presentation deals with the nonphysical side of ergonomics and aims to help practitioners interested in accident causation to understand why we make the mistakes we do. A brief overview of errors and how they may be classified will be presented to help attendees understand the different types of errors that occur. Concepts for preventing each type of error will be discussed, including the appropriate and inappropriate application of prevention through design and behavior-based safety strategies. Examples from accident analyses will be used to help participants develop skills in recognizing different types of errors involved in accidents and to ask better questions when investigating accidents. Finally, audience members will have the opportunity to experience their own human limitations by engaging in error provocative demonstrations. This presentation will benefit attendees with an interest in safety, those seeking to expand their understanding of ergonomics/human factors, as well as those looking for something different and fun.

D TRACK: DESIGN, PRODUCT DESIGN AND EVALUATION AND MODELING | ROOM: 209
Global Ergonomics Design Guide Deployment
Madina Joshi, Raytheon

Raytheon Company is a technology and innovation leader specializing in defense, security and civil markets throughout the world. Raytheon EHSS (environmental health and safety) utilizes common resources, methodologies, tools and support systems, enabling extensive integration across the enterprise. This presentation outlines the process the enterprise ergonomics leadership utilized to deploy new/improved ergonomics design guidelines worldwide, the challenges the team experienced and the continuous improvement ideas the team plans to implement in the future.

1:30—1:55 p.m.

M/C TRACK: MANUFACTURING APPLICATIONS AND CASE STUDIES | ROOM: 206
The Impact of Aging, Obesity, Cognition and Different Abilities in the Workplace
Jeffrey Snagacz, Risk Management Group Inc.

A simple fact: Organizations need people to perform physical work in their facilities. In addition to an aging workforce, employers face other emerging concerns including obesity, cognitive issues and different physical abilities. First, most populations are increasing in their average age and more than seven million are still working. Projections are that this number will double in the next decade. Age reduces our abilities and increases the frequency and severity of injury by as much as four times. Second, we are an emerging obese population. Obese workers file two times as many WC claims and have 13 times more lost work days with medical claims. Third, technology is creating cognitive issues. With a growing and diverse immigrant population, generational spans and the aging workforce, work instruction, decision-making and skilled performance is affected. These employees make more mistakes and are injured more frequently. Last, our workforce has different ability employees with missing limbs and prosthetics. They often struggle to contribute and
Performing ergonomics evaluations is not enough. This session discusses the value of ergonomics programs in terms of efficiency, sustainability and accountability for key stakeholders. Whether you are an external ergonomics consultant or are internal to an organization, you should be aware of the traps that interfere with your ability to successfully integrate ergonomics into your organization. This session is based on years of project and internal consulting experience and presents proven strategies for success.

**E TRACK: ERGONOMICS PROGRAMS | ROOM: 205**  
_Avoiding Organizational Traps to Making Ergo Happen_  
Melissa Afterman, VSI Risk Management & Ergonomics Inc.

The Q & A session is held with the keynote speaker following the general session. It is an opportunity for attendees to attend a smaller session with the keynote speaker in which they can ask the specific follow-up questions regarding the keynote address and receive answers directly from the speaker. This Q & A session will feature Bill Boyd, Senior Vice President, Risk Control, CNA Insurance.

**TT TRACK: TOOLS AND TECHNOLOGIES FOR PRACTITIONERS | ROOM: 204**  
_Keynote Q & A with Bill Boyd_  
Bill Boyd, CNA Insurance

The purpose of this study is to determine the impact of the continued use of a posture support on biomechanical and behavioral outcomes. A randomized controlled trial study (n=20) is planned, wherein the immediate and continued impact of a postural support on lung capacity, thoracic spine posture, neuromuscular outcomes (such as ROM and strength) as well as cognitive task performance for simulated office work will be investigated. Along with these biomechanical measures, behavioral outcomes, such as perceived comfort, usability and self-reported compliance, will be obtained over the course of six weeks to better understand user behavior and improve the continued use of the product. While ergonomic assessments of postural supports are commonly performed, this study is unique as it aims to understand both biomechanical and behavioral outcomes to improve the product’s effectiveness as well as sustain its usage over six weeks.

**AR TRACK: APPLIED (TRANSLATIONAL) RESEARCH | ROOM: 209-210**  
_Evaluating the Effectiveness of a Postural Support on Biomechanics and Behavioral Outcomes_  
Ranjana Mehta, Texas A&M Ergonomics Center

The Q & A session is held with the keynote speaker following the general session. It is an opportunity for attendees to attend a smaller session with the keynote speaker in which they can ask the specific follow-up questions regarding the keynote address and receive answers directly from the speaker. This Q & A session will feature Bill Boyd, Senior Vice President, Risk Control, CNA Insurance.

**TT TRACK: TOOLS AND TECHNOLOGIES FOR PRACTITIONERS | ROOM: 204**  
_Integrating JHAs_  
Langdon Dement, UL Workplace Health & Safety

Back injuries and other musculoskeletal disorders (MSDs) cost the U.S. approximately $45 million to $55 billion per year. Moreover, 47.5 percent of healthcare injuries and illnesses and 35.7 percent of manufacturing injuries and illnesses are from overexertion. Physical tasks such as pushing, pulling, lifting, lowering and carrying can all lead to overexertion injuries. A detailed job hazard analysis (JHA) will assist you in preventing injuries related to ergonomics as well as other physical and environmental hazards. The Occupational Safety and Health Administration (OSHA) define a JHA as “a technique that focuses on job tasks as a way to identify hazards before they occur. The JHA focuses on the relationship between the worker, the task, the tools and the work environment.” A proper JHA requires much more than just observing a job to “see if it looks hard.” In this session, you will learn the basics of proper task analysis, documentation and benchmarking to appropriate standards. The focus will be on healthcare and manufacturing environments.

All employers in the United States are required to provide a workplace that is free from recognized hazards. The Occupational Safety and Health Administration (OSHA) is responsible for establishing employee safety and health regulations, educating employers on the regulations and enforcing the regulations. OSHA typically initiates an investigation that involves ergonomics based on an employee compliant or an emphasis program. Learn from the OSHA ergonomics coordinators what to expect from an OSHA investigation that includes ergonomics. You’ll have a chance to meet the OSHA coordinator for your state and ask questions regarding how you can prepare for an OSHA ergonomics investigation.

2 – 2:25 p.m.

**E TRACK: ERGONOMICS PROGRAMS | ROOM: 205**  
_Picture This: A Visual Tool for Ergonomic Program Assessment & Planning_  
Paula Lewis, EORM

What if you could provide senior management and colleagues with a concise, visual snapshot of the current state of your ergonomics program? And what if this intelligent graphical representation also provided a visual roadmap to achieving your ergonomics goals? Achieving measurable ergonomics success requires more than just conducting evaluations and buying equipment. It involves many different elements — return to work programs, furniture designs, equipment standards and more. For organizations intent on developing world-class programs that are truly effective at reducing risk, minimizing injuries and reducing costs, the graphical assessment tool presented in this session makes it easier to both “see” current shortcomings in your program and the steps needed to improve its effectiveness. Attendees will not only learn the theory and use of the graphical assessment tool but can receive a copy of the spreadsheet file to test and use this approach in their own organization.

Researchers continue to publish important advances in ergonomics, but these are usually in scientific journals that are difficult or costly to access for those not in academia. This can be frustrating to ergonomics practitioners, who are either unaware of this new knowledge or unable to read about the specifics. This presentation will provide guidance for bridging...
Sometimes the biggest obstacle faced by safety or ergonomics teams is getting support from management to invest in physical changes to a workplace. Often ergonomic priorities are set by passion versus objectivity following the “squeaky wheel gets the grease” principle. This presentation describes the journey taken by a safety team at a distribution center from ergonomic risk assessment through purchase of ergonomic racking. Attention will be given to a simple assessment tool based on measureable data that team members collected, a “sandbox tool” that enables teams to test the effects of proposed changes to sharpen final recommendations, an experiment that was conducted to test different racking solutions and a pallet accessibility model developed to visually represent the results to enable management to make informed decisions.

Low back pain (LBP) can be characterized by loss of the ability to perform the activities of daily life. This research used radiographic image data to investigate height and concavity level of both lumbar discs and vertebral bodies with respect to age and gender. MRI scans were obtained from subjects whose age ranged from 20–80 years. MRI scans were used to evaluate the ability of these variables (age, gender, etc.) to predict disc degeneration. Most previous studies have focused on physical workload but did not consider risk factors associated with spinal morphology, particularly as related to aging. The hypothesis of this research was that individual differences in the musculoskeletal structures of the lumbar spine can be predicted by considering a subject’s personal characteristics. Significant differences were found between the genders and across ages. The association between these variables and disc degeneration was investigated. Previous research at Auburn University has shown that incorporation of personal characteristics into LBP risk models can improve their predictive ability. Normalizing for the size of a subject intervertebral disc (IVD) shows great promise for improving biomechanical models. For example, converting back compressive force to back compressive stress improved odds ratios for predicting LBP from 2.76 (1.2-6.6) to 5.78 (1.8-18.4).

The long-term success of a company’s ergonomics program is dependent upon a strong foundation established by leadership. Too often, ergonomics programs fail due to lack of a systems approach or appropriate strategy when the business climate and direction change or when key leaders change. Failure to demonstrate effective results and ROI from the ergonomics program can lead to loss of credibility and trust by employees and management and wasted resources. Through a series of benchmarking studies, we’ve identified both the barriers to and the opportunities for successfully managing an ergonomics program and demonstrating its value. This presentation examines the five most common mistakes that can derail your ergonomics program management efforts and shares some key elements of successful programs.

The most important ergonomic factor in wheeled equipment is the wheel. The options are innumerable and include wheel size, bearing type and tread material. Wheels with softer tread, including polyurethanes, see flat-spotting when left stationary under load. This increases the force required to begin moving the equipment. Pneumatic (air filled) wheels are also common on workplace equipment. Underinflated tires make movement much harder. Pneumatic wheels with underinflated pneumatic wheels. Armed with better knowledge of wheels, anyone can make better purchasing decisions on wheeled equipment and potentially save significant money by avoiding workplace injuries.

Selecting Wheels for Plant Equipment that Operators Will Appreciate

Dave Lippert, Hamilton Caster & Manufacturing Co.
For Workspace Ergonomics, BYOD also Means Bring Your Own Design
Rich Halstead-Nussloch, Southern Polytechnic State University

Today's IT managers are simultaneously struggling with and delighted by the bring your own device (BYOD) movement. In businesses, nonprofits, and universities and colleges, the computer lab is being replaced by Wi-Fi hotspots throughout the organization's campus, meaning that the IT function is relieved of a significant portion of its responsibilities for equipment procurement, maintenance and replacement. But the duties for providing network access, data, applications and the like in a safe and secure environment focuses on providing a high level of service, while maintaining user health and well-being. This session will provide an environmental scan for the BYOD movement and also provide a case study of how users are designing their own workspace ergonomics while they BYOD.

3:30 – 4:25 p.m. | Featured Speaker

Creativity and Innovation in Ergonomics
Allison Stephens, Ford Motor Company

Ergonomics is the study of the interface between man and machine as we all know, so every aspect of the workplace that involves a human could have ergonomic implications. For years, the study and application of physical ergonomics fell under occupational health and safety departments. Creating innovative solutions for the prevention of injuries is both rewarding and exciting. We will explore how the simplest ideas have the greatest impact, leading to advances and enhancements of the ergonomics culture. The model can easily be applied to a variety of risks beyond lifting. Participants
Brock Anderson and Brian Turner, Gulfstream Aerospace

Carefully selected core teams of engaged employees is a cornerstone of Gulfstream’s ergonomics program. We methodically choose employees that embrace a caring spirit, collaborate with others, use creativity and can receive constructive criticism to deliver and help spread relevant information throughout our business units. Partnering with these employees, we find their enthusiasm burgeons as they begin to realize they are a part of something greater than themselves. Our employees are empowered and trusted to drive meaningful change that will help not only themselves, but others around them. As ergonomists, our employees are our most valuable asset. They can change the culture of workplaces for the better and exponentially increase the bottom line while producing measurable results. Gulfstream’s success is linked to “setting the example” to our carefully selected, dedicated employees that help drive that change and share with others what they have learned in the process.

4 – 4:25 p.m.

Lift Assist Device Options in the Manufacturing Plant and Warehouse
Volker Schmitz, Schmalz Inc.

There are a lot of options when it comes to ergonomic lift assist devices in the market for manufacturing and warehouse applications. Where does a mechanical vs. a vacuum vs. a magnet or other specialty gripper make the most sense? Do I need a full blown manipulator that can do all kinds of things, or do I just need up and down lifting? What does it cost to get all of the extra capabilities and features? When do I go to full automation/robotics? What things do I have to consider as critical in my project’s success?

Kaizen-Type ‘Find It/Fix It’ Model for Rapid Success at The Boeing Company
Miriam Joffe, The Boeing Company; Zachery Collins, Bureau Veritas

Ergonomics interventions that commonly require long-term planning, capital expense and multiple meetings may frustrate internal customers. This presentation shares a proven model that reduces frustration and provides an effective, focused and rapid ergonomics intervention strategy to mitigate lifting-related issues. A program to “find and fix” manual lifts greater than 35 lbs. using a concise, structured and facilitated process was piloted, revised and deployed. While some solutions did require long-term planning, over 75 percent were implemented within 30 days and for under $1,000. Overwhelming success led to a sitewide implementation supported by top management. Results showed improvements in efficiency, “easy wins” and experience in practical problem-solving know-how for shop floor ergonomics teams; relationship building between shop workers and management; and enhancement of the ergonomics culture. The model can easily be applied to a variety of risks beyond lifting.
The authors will present a handful of case summaries in which motion capture was used. Motion capture is not just for Hollywood movies anymore. The technology is expanding to all areas of human motion analysis and even being admitted as evidence in courts of law. The authors will present a handful of case summaries in which motion capture was used to understand an accident, used to provide the “what-if” point of view, or used to evaluate “pretended” disabilities versus activities recorded under video surveillance. Since many organizations have a workforce that moves at least in part by foot transport, possible ergonomics applications abound for the lessons learned in accident reconstruction. By integrating a person’s movements with his or her environment through simulation, scenarios can be explored without risk of injury to the subject. This opens up the possibility of examining sight lines, joint loading and task design to name a few. Moving beyond the past applications, the presenters will provide guidance for the use of human motion capture in the evaluation of workplace ergonomics and safety.

Cummins Jamestown Engine Plant (JEP) produces heavy duty engines and components for Class 8 trucks, vocational vehicles, agriculture, generator sets and the marine industry. The plant is a one-million-square-foot facility employing 1,500+ people and sales of $2.2 billion. In 2011, JEP focused on identifying and improving ergonomics in the plant. Using a third-party ergonomics service, the ISM engine assembly line (100+ operators and 70 stations) was assessed to determine ergonomic issues that needed solutions to reduce risk to the operators. JEP hired a contract engineer to lead a process to eliminate or reduce the risks associated with these ergonomic issues. The team started with the ISM engine assembly line as additional assessments were being performed on the ISX assembly line (170 operators and 90 stations). The team focused on “alpha” level risks and made over 140 improvements on both the ISM and ISX line. Although several projects had been closed and the overall risk had been reduced, there were still 81 identified projects that were above an acceptable risk level. These 81 projects were reviewed and categorized in a 9 box using likelihood of injury and level of fix to create a visual image of the overall project. Using Six Sigma as the primary problem-solving process, the team was able to fix 62 of the 81 risks and develop a database system to assign, track and close ergonomic assessments and projects. As a result, ergonomic injuries as a percent of total injuries dropped from 59 percent in 2011 to 20 percent in 2013 with estimated avoidance savings of $4M and a database of ergonomic assessments.

There is currently much discussion about the potential of additive manufacturing, the process of adding material layer upon layer to form a part, in industrial environments. Gulfstream is currently leveraging this technology by printing unique shop aids and tools that improve ergonomics on the shop floor. Additive manufacturing has many strengths that make it a perfect fit for producing ergonomic shop aids and tools. Some of these strengths are the design freedom to make complex and organic shapes, the ability to print many versions of a tool in a cost effective manner and a wide range of material to choose from. This allows shop aids and tools that fit the human body to be designed for highly specific tasks and unique applications. Further, any employee-modified or handmade tools can easily be recreated with this technology. Designing for and utilization of additive manufacturing cannot only improve the ergonomics of these hand-made tools but can also help share ideas by making the tools easily-printable for other departments and business units.

Increasing numbers of organizations 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 PWS process. In addition, we will discuss 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. The session will go through each step of a PWS process, including employee input/interview process, essential function measurement, employee validation process, PWS testing construct, single site vs. multiple site considerations and the implication of employee transfer. We will share the return on
investment of a PWS process for one of the nation’s largest transportation and warehousing organizations. This session will provide participants with a working knowledge of the screening process and how they might consider the implementation of such programming within their organizations.

8 – 8:55 a.m.  

**TT TRACK: TOOLS AND TECHNOLOGIES FOR PRACTITIONERS | ROOM 205** 
*How to Engage Employees*

**Featured Speaker:** Hal Williams, Bridgestone Americas Tire Operations LLC – Warren Plant

As a safety professional, how do you engage employees? Do you know how to engage employees? Do your employees understand that they can make positive change in their safety and health system? Do you know the four elements of an effective safety and health management system? Do you research literature to find best practices? Do you know basic problem-solving steps? Do you want to know how a Tennessee VPP company engages employees to make positive change?

8 – 9:30 a.m.  

**RT TRACK: ROUNDTABLE | ROOM 108-109** 
*Keys to Creating an Ergonomics Culture*

**Facilitators:** Stephen Jenkins, Cintas; Davana Pilczuk, Gulfstream Aerospace

Creating a culture of ergonomics should be the main goal for all ergonomics programs, yet it is one of the hardest milestones to achieve. This session will help you identify where your program is on the ergonomics maturity ladder, what steps other companies and individuals took to push their programs to the next level, and how you can be a key part of creating that culture change. Active participation from all attendees is required. Participant level: beginner or moderate.

8:30 – 8:55 a.m.

**M/C TRACK: MANUFACTURING APPLICATIONS AND CASE STUDIES | ROOM: 206** 
*Back School: A Preventive View to Reduce Back Pain and Improve Postural Habits*

**Hector Canales, Gildan**

Estimates published by the National Institute of Health say that 80 percent of the world population will present back pain at some point in their lives; for this reason it is important to adopt correct postural habits to prevent them. A local study made by resident physical therapists from the social security rehabilitation center showed that Back School reduces movement disability by 48 percent compared to 27 percent with just physical therapy. Through this presentation we will demonstrate the positive impact that Back School implementation has had inside our facilities. The Back School program consists of a daily 45-minute training session during a 10-day period and includes education in bone structure and functionality of the back, postural hygiene, back care at home and physical exercises. The program is aimed at employees who receive a medical evaluation for back pain. In Gildan, the Back School program was implemented in May 2012. So far 216 employees in one facility have participated in the program. Overall results show that 100 percent of the participants reported that they have learned good postures, 96.6 percent said that it has helped them perform better at their work, 43 percent of the employees reported a reduction of 50 percent in their level of pain and 26.6 percent reported pain diminished by 25 percent. Results show that the application of preventive programs and health promotion at work are necessary to improve workers’ quality of life and prevent or diminish pain episodes, disabilities and severe injuries.

9 – 9:30 a.m.

**M/C TRACK: MANUFACTURING APPLICATIONS AND CASE STUDIES | ROOM: 206** 
*Ergonomics Case Studies in the Shipbuilding Industry*

**Jeff Hoyle, The Ergonomics Center of North Carolina; Kelsie Woods, Newport News Shipbuilding**

The shipbuilding industry is a nontraditional work environment in which the concept of ergonomics is relatively new. It involves very physical work and customized solutions specific to the applications and tasks involved in shipyard work. Ergonomic task teams (made up of hourly employees, supervisors, engineers and safety representatives) were formed to help recognize, evaluate and control ergonomic risks in a shipyard environment. Under the guidance of a CPE, such teams used various analysis tools and their knowledge of the workplace to brainstorm, trial and implement practical application-based solutions to several ergonomic risks. Several application-specific case studies showing before and after results of how team-driven solutions mitigated ergonomic risks in a shipbuilding environment will be presented.
The effects of prolonged kneeling have been well-studied and documented in the past. Two missing variables that have been left out of these studies are: 1) the costs associated with prolonged kneeling and the effects of age on these costs, and 2) solutions that can be implemented to address these costs that have a positive impact on the workplace. This presentation will focus on the Ageonomic data analytics approach used to identify short- and long-term costs associated with prolonged kneeling-type work, the tools and methods used to qualitatively and quantitatively measure ergonomic risk and test (i.e., pressure mapping technology), study outcomes and ROI of the implementation.

The goal of the powertrain manufacturing engineering (PTME) ergonomics process is to develop standards and processes to support the design and manufacturing of new model programs with minimal ergonomic risk to the operator. Within PTME, industrial engineers assess ergonomic risk on all new model programs globally. To support the engineering function and the required processes imbedded in the design for ergonomics procedure, an ergonomic pocket card was developed. The pocket card provides an easy look-up mechanism that provides general guidelines to the engineers with reference to additional information as required. While the pocket card was originally developed to support the design for ergonomics procedure, it is applied from early design, build and launch phases of the new model program as well as the post-launch phase on the plant floor. The pocket card has been distributed globally and has been a valuable method to drive consistency and standardization into the global powertrain manufacturing engineering ergonomics process.

Kaiser Aluminum and Humantech have partnered to present the strategies and efforts required to implement and sustain a world-class ergonomics program. Using best practices and lessons learned while implementing effective solutions and principles, session attendees will learn the strategic and tactical aspects of what it takes to roll out and maintain a world-class ergonomics program. This will be a high-level discussion based on the results and data accumulated from Humantech’s recent benchmarking study, which was completed on companies determined to have successful ergonomics programs. Kaiser Aluminum will speak directly to the activities completed within their organization. The discussion will highlight the following: the driver for implementation; technical and organizational challenges; the approach/visions; implementation, results, lessons learned and the ability to identify and manage risk factors attributed to musculoskeletal disorders; and the ability to identify design considerations for risk management. In closing, this session will outline the necessary steps to reduce workplace injuries and illnesses in an electronics and/or high-tech organization.

So you have an internal Ergo Cup competition or you are thinking about starting one. How do you fully leverage your Ergo Cup competition to the level that it drives ergonomic improvements through the entire organization? How can an internal competition succeed in raising the recognition and value of ergonomics within the company? How can an internal competition increase support and understanding of ergonomics among upper management? How do you get the most benefit from the time you put into an internal competition? This presentation will show how Norfolk Southern’s internal Ergo Cup competition improved the effectiveness of ergonomics within the company. It will discuss how the company completed a post-analysis of all entries after the competition and made many of the innovative entries standard for all tooling and equipment. It will also show how the internal competition significantly increased publicity about ergonomics within the company, increased employee awareness and understanding of ergonomics and spurred further employee ergonomic solutions and more entries in their internal competition. It will also discuss how to hold an internal Ergo Cup competition, including selection of judges, judging criteria, publicizing the competition, entry forms, awards and competition timing. Norfolk Southern is one of the largest freight railroads in North America. Building a strong safety culture, they have one of the lowest accident rates in the industry. This has powered many employee-lead ergonomic improvements that are captured in its internal Ergo Cup competition.

The Health Hazard Evaluation Program evaluated ergonomic concerns among employees working in the finishing department of a label manufacturing company. We were asked to evaluate a piece of equipment called an upender that transferred label rolls from a horizontal conveyor onto a pallet for shipping. Employees had to handle multiple pallets...
per shift and build wedge forms on the pallets to hold the label roll in place. The objective of this evaluation was to determine the potential for musculoskeletal disorders among employees working the underpinning in the finishing department. We observed workplace conditions and work processes and practices. We also measured heights and distances between equipment components. Our observations indicated that workstations at this facility were not designed so that most people could safely perform the job tasks. Employees were working in awkward postures that put them at risk for developing work-related musculoskeletal disorders. Specifically, hand working heights were too low or too high, reach distances were too long, and employees had to continually bend at the waist to perform their work functions. We recommended redesigning workstations, rotating employees and adjusting staffing or assigned work hours to allow employees time to rest and recover.

**AR TRACK: APPLIED (TRANSLATIONAL) RESEARCH | ROOM: 209-210**

The Correlation between Hamstring Tightness and Low Back Pain in Seated Workers
*Ahmed Radwan and Thomas Crist, Utica College*

Sitting is now the most common posture in the American workplace. Seated workers are at especially high risk for low back pain (LBP). Potential correlations between muscle impairments and LBP have not been well-documented and may lead to more effective prevention strategies to reduce LBP in seated workers. In this presentation, the anatomical relationships between the hamstring muscles, pelvis and spine will be reviewed and the association between hamstring tightness and sacroiliac/lumbar spine pathology will be described. The results of a published study that confirms this clinical association will be shared during this presentation. Upon examining hamstring flexibility among 72 office workers with a history of mechanical LBP, we found that all participants had abnormal hamstring tightness and that the extents of their disability scores as measured by the Oswestry Disability Index were significantly and positively correlated with the degree of their hamstring tightness. These results confirm the importance of maintaining hamstring flexibility in seated workers to decrease the incidence of LBP and its pathomechanical consequences. Effective strategies to maintain hamstring flexibility in seated workers utilizing the creep phenomenon of the body’s soft tissues will be presented.

**10 – 11:30 a.m.**

**RT TRACK: ROUNDTABLE | ROOM 108-109**

Healthcare Ergonomics
*Carrie Scheel, Concordia University Wisconsin and Synergistic Solutions LLC*

Are you a healthcare professional who works in ergonomics or do you consider yourself an ergonomist who is also a healthcare professional? If you answered either of those questions yes, we are looking for people willing to share their experiences with other healthcare professionals/ergonomists. Participants will separate into small roundtable groups to discuss various issues that impact ergonomics health professionals. Topics to be discussed include qualifications needed, benefits, barriers, resources, and marketing strategies for health professions. The small groups will then share their findings with the entire group. The outcome of this session will be documented and emailed to participants.

10:30 – 10:55 a.m.

**M/C TRACK: MANUFACTURING APPLICATIONS AND CASE STUDIES | ROOM: 206**

‘Five Healthy Minutes’ Program: Promotion of Physical Compensatory Exercises
*Jose Amaya, Gildan*

The physical demands associated with labor activities lead to ergonomic risk factors that can affect musculoskeletal systems. Focusing on the prevention of musculoskeletal injuries, we have designed a “five healthy minutes” exercise program to favor relaxation and diminish stress and monotony of employees exposed to repetitive movements, forced postures, heavy lifting or static work. Different studies have shown the positive impact of exercises in preventing musculoskeletal injury development, promoting positive attitude and productivity improvements in employees. There are two types of workouts: preparatory exercises for joints and muscles before physical work and compensatory exercises to unload muscle-joint stress and avoid tendon overload. A five-minute audio is played to help employees follow the exercise routine. During the daily work shift, four exercise routines are completed as follows: one pause at the beginning of the morning; preparation exercises; two pauses during production hours: compensatory exercises; one pause at the end of the day; cool down exercises. The program is aimed at every employee working in the plant. Surveys are made among workers to assess the benefits obtained through the program. Results show that 93.1 percent of employees know the program’s exercises, 80.8 percent perform exercise routines completely and 78 percent report feeling better physically after performing the compensatory exercises. The results show that pauses during the workday allow employees to relax, maintain a positive attitude and physically feel better.

**10:55 – 11:05 a.m.**

**E TRACK: ERGONOMICS PROGRAMS | ROOM: 205**

Incorporating Successful Employee-led Implementation Councils into the Ergonomics Process
*Jonathan Muggridge, Gulfstream Aerospace*

It can be rather difficult sometimes to get a new program initiative to “stick” and become part of the corporate culture. The challenge lays in shifting the workforce’s perspective of seeing ergonomics as just another program but instead a part of every employee’s process. This presentation highlights the challenges to overcome and the ways to establish successful employee-driven ergonomics councils. By leveraging experience from past successes, there are proven strategies for getting the right level of employee involvement for the establishment, promotion and sustainment of employee-led ergonomics councils. Our approach for motivating the council members as well as the rest of the workforce will be discussed, in addition to sharing best practices for creating employee-led ergonomics councils. Through the successful creation and sustainment of employee-led ergonomics councils, the ergonomics improvement process can become part of your company’s culture.

**11:15 – 11:30 a.m.**

**AR TRACK: APPLIED (TRANSLATIONAL) RESEARCH | ROOM: 209-210**

Introducing Ergonomics to the Product Design Process
*Chris Sheldrith, Cummins Inc.*

To be truly proactive in ergonomics, considerations should be made at the early conceptual stages of designing future products. In this presentation, we will be highlighting how we used Six Sigma to implement ergonomic considerations in the design process of our products. Participants will learn about the hurdles we faced as a global Fortune 500 company with multiple business units producing a wide range of products. We will also highlight how we plan to “grow” this process through improved technology.
Typically, the success of ergonomics countermeasure activities is determined through traditional measures such as the elimination or reduction of ergonomic risk factors. This then leads to injury cost avoidance. This presentation seeks to provide attendees with other measures to show the merits of ergonomics-related improvements. A couple of examples from Honda’s manufacturing plants in North America will be presented.

More than 20 million people do some work at home as part of their primary job, according to the Bureau of Labor Statistics. Incorporating telecommuting programs into the workplace has helped companies attract and retain employees, increase productivity and reduce overhead costs. Employers who have successfully implemented these programs stress the importance of having a policy that effectively manages the telecommuting relationship. Employees’ safety and health is one of many management considerations that shouldn’t be overlooked when forming or evaluating a telecommuting policy. The goal of this presentation is to share helpful tips on how to implement a well-drafted, all-embracing corporate telecommuting policy. Considerations and program content were supplied by a number of large companies that have been through the process of developing their own telecommuting programs. They shared strategies on how to organize a telecommuting policy, what elements a policy should include and what typical logistical questions the policy should address. Strategies on how to maximize the effectiveness of telecommuting policies and potential pitfalls to avoid will be discussed. Telecommuting policies can be successfully implemented and maintained through the application of discussed strategies.

From 2013 to 2014, ergonomists from the University of California, Berkeley, with 10 campuses and one national laboratory, evaluated the work performed by animal care technicians, which has been identified as one of their top five at-risk occupations. The goal of this study was to evaluate injury reduction strategies. A systematic approach was used to: identify the top five at-risk tasks for the animal care positions; develop best practices bulletins that provide work practice recommendations to reduce ergonomics risk factors; create product recommendation sheets that offer proven equipment recommendations; and develop ergonomics design guidelines for new construction and existing buildings that offer valuable ergonomics considerations to implement in the design phase of construction projects. This project resulted in processes that can help guide future ergonomics teams working in large, complex organizations.
**POSTER SESSIONS**

Posters will be on display in numerical order by abstract number in the Exhibit Hall during exhibit hours.
Poster authors will be at their posters from noon – 1:15 p.m. on Tuesday and Wednesday, March 17 and 18, to answer your questions.

Abstract #1011: Development of Artificial Neural Network Model to Predict Anthropometric Dimensions Based on Real Anthropometric Database
Waleed Basuliman, Khalid Al-Saleh and Mohamed Ramadan, King Saud University

Abstract #1028: Impact of Loading and Rest Intervals on Muscle Inflammation – A New Perspective on Musculoskeletal Disorder (MSD) Prevention and Assessment in Manufacturing Settings
Tenchi Gao and Sean Gallagher, Auburn University

Abstract #1033: The Impact of Posture on Evacuation Speed
Li Gao, Auburn University

Abstract #1044: Application of Muscle Stimulation for Quantifying Potential Muscle Fatigue during Prolonged Sitting
Bochen Jia, University of Michigan Dearborn

Abstract #1053: Brazilian Model for an Ergonomic Analysis: Method Marcal & Winter of Ergonomic Analysis
Rodrigo Pereira and Ximena Valis, Ergo Center (Brazil); and Rodney do Silva, IEDUV

Abstract #1055: Management Program in Health Workers for Offshore
Rodrigo Pereira, Sandra Cavalheiro and Ximena Valis, Ergo Center (Brazil); and Luiz do Carma, BW OFFSHORE

Abstract #1066: Methodology for Risk Analysis to Health and Safety Using the Principles of Lean Six Sigma
Eduardo Santos, USP (Brazil); and Karine Oliveira, UNISAL

Abstract #1067: How Do You Implement an Ergonomics Program When Your Ergonomics Department is Miles Away?
Ulises Farias Quintana, Gulfstream Aerospace; and Steve Greely, Gulfstream Aerospace

Abstract #1078: Characterization of Musculoskeletal Injury in Manufacturing at Northwest Mexico
Enrique De La Vega, Instituto Tecnologico de Hermosillo

Abstract #1079: Evaluation of a Corpus-based Translation Tool: An Ergonomic and Usability Perspective
Rossana da Cunha Silva, Lincoln Fernandes, Lizzandra Vergara and Lais Machado, Universidade Federal de Santa Catarina

Abstract #1093: An Augmented Reality Display that Would Give the Worker a Gauge for Predicting Potential Risk to the Back
Richard Osgood, Newport News Ship Building

Abstract #1101: Bringing Ergonomics in Class Rooms: A Multidisciplinary Approach
Aniruddha Mitra and Santanu Majumdar, Georgia Southern University

Abstract #1102: ERIN: A Practical Tool for Assessing Work-related Musculoskeletal Disorders
Yordán Rodríguez, University of Antioquia; and Ricardo Montero, Autónoma de Occidente University

Abstract #1118: Effects of Keypad Layout on Number Entry in Infusion Pumps
Kathryn Peditto, St Mary’s College of Maryland

Abstract #1119: Designing a Wheelchair-accessible Bedroom from the User’s and His Caregiver’s Point of View
Hannele Lahti, University of Eastern Finland

Abstract #1120: Use of Patient Handling Devices in Radiology Department in Kuopio University Hospital (KUH)
Pia Kauhanen, University of Eastern Finland

Abstract #1121: Veronesi Index of Ergonomic Risk for Activities Repetitive of Members Upper
Jose Veronesi Junior, IDUV; and Rodrigo Pereira, Ergo Center

Abstract #1125: Ergonomics Management Model Focusing on Resilience
Priscila Rodrigues Fernandes, Eduardo Concepción Batiz; and Ana Lucia Berretta Hurtado, Unisociesc

Abstract #1126: Building a Better Hand Truck: The Bronx DC’s Journey
Bobbie Watts and Roy Callender, Coca-Cola Refreshments

Abstract #1128: Ergonomic Risks Related to Furniture of Cloth Designing Class in a College in the South of Brazil
Ivaniria Tcella Guimarães Souza, Educational Center of Technology - SENAI; Celio Roberto Buss Biaski, Tupy Fundição S.A.; Eduardo Concepción Batiz; and Ana Lucia Berretta Hurtado, Unisociesc

Abstract #1134: Multiple Tasks Input Tool for 3-DSSPP (3-D Static Strength Prediction Program)
Rong Huangfu, Auburn University

Abstract #1137: Effect of Different Mattress Designs on Promoting Sleep Quality, Pain Reduction and Spinal Alignment in Adults with or without Back Pain: A Proposal for Systematic Review of Controlled Trials
Ahmed Radwan, Utica College
Ergonomics Program Improvement Initiatives

Booth #420: IMOD East Peoria Ergonomics Process
Caterpillar Inc., East Peoria, Ill.
This project details the IMOD East Peoria Caterpillar Division’s overhaul of their ergonomics process. The facility had previously used an off-the-shelf company process. The facility was determined to develop something that better fit the needs of their organization. The cross functional team included medical, safety, engineering and operations. The team investigated new methods to evaluate ergonomic risk, both reactively and proactively. Once tools were created, a process was agreed upon and training created. The facility ran a pilot to determine if process improvements were needed. Once the pilot was deemed successful, the process was implemented facility wide.

Booth #421: Hand Dominance Program: Breaking Old Habits
Historically, Paint Shop team members (TMs) at Toyota’s Kentucky assembly plant were trained to spray topcoat with their dominant hand. Dominant hand use was seen as resulting in the very best paint quality. However, depending on what they were spraying, using the dominant hand resulted in very awkward upper extremity postures. This led to a string of upper extremity WMSDs. To reduce injuries, TMs challenged tradition and embarked on a program to train themselves to spray with the nondominant hand. Their comprehensive program included detailed analysis of appropriate hand by vehicle zone, updating standardized work, nondominant hand training on off-line and lineside production, as well as regular work audits. Months after implementation, injuries were significantly reduced and, most surprisingly, paint quality was improved. Nondominant hand training was implemented into the Virtual Spray Trainer to ensure new TMs are trained correctly from the beginning.

Booth #422: Ergonomics Training Center and Sandbox
The Goodyear Tire & Rubber Company, Fayetteville, N.C.
Our innovative solution was developed and implemented to address our leading cause of injury to our associates – over 60 percent of our injuries were related to ergonomics. It began as an ergonomics training center dedicated to training associates in the fundamentals of force, posture and position. Space was dedicated within the plant for this training area and creative ideas by our team improved training and skill transfer by adding visual, hands-on demonstrations of each risk factor and how to control them. The concept grew and today the area has been expanded to include the Ergonomics Sandbox. Actual pieces of production equipment have been installed in the area, and just like a sandbox, the associates visit the area to try out new ideas on the equipment in order to create improvements and reduce risk. Our presentation will include video, demonstration and description to communicate how The Ergonomics Center and Sandbox has created the way for us to directly engage the problem-solving power of all of our associates to solve our most challenging production tasks and dramatically improve safety.

Booth #423: New Program for GE LODZ Facility: ERGO RESPONSIBLE
GE Power Controls S.A, Lodz, Poland
“Are we ERGO responsible?” The question arose at the beginning of our journey. Being responsible means continuous care for risk reduction, engaging others to think about probable disorders and teaching them how to counteract. It is also connecting all functions to support ergonomic solutions, so that everyone keeps ergonomics in mind every day — continuously. What we have gained is the chain reaction — specialists, situated among the employees, who advise and set a good example to them and facilitate ergonomic improvements. In 2014, we have implemented 250 kaizen ergonomics ideas (0.6 ideas/employee), which demonstrates real success!

Booth #424: Ergo Coach
Honda of America Mfg., Inc., East Liberty, Ohio
The assembly department identified a trend of increased injuries due to poor technique. Poor technique included poor body positioning and inefficient motions. These injuries occurred to associates who were newly hired, recently transferred, or new to the process. The team decided that this could be improved with “ergo coaches” who would teach associates proper ergonomic technique as they trained them on their new process. The team developed training and identified the responsibilities of these “ergo coaches.” The areas with the greatest potential for impact were selected for implementation. Injuries were reduced by 65 percent and quality was improved by 52 percent.

Booth #425: Ergonomic Analysis and Stretching Program
Cummins Filtration Turkey, Izmir, Turkey
The Cummins Filtration Izmir site has developed a comprehensive risk analysis and stretching program that involved collaborative efforts with the shop floor employees and a local university. The result was an organized program that has led to effective results. The presentation involves a very well-done video as well as a comprehensive and professional stretching guide booklet that was developed and issued to the employees.

Workplace Solutions I
(Tool Driven Workplace Solutions with Internal Competitions)

Booth #101: Grab a Gear without Fear
Toyota Motor Engineering & Manufacturing North America Inc. (TEMA), Toyota Motor Manufacturing West Virginia (TMMWV), Buffalo, W.V.
At Toyota’s West Virginia engine plant, for every engine assembled, a team member (TM) picks up two sets of one intake and one exhaust variable valve timing (VVT) gear and joins each set together in the correct orientation prior to chain install. The old packaging required TMs to pick up four VVT gears per 54-second cycle, with awkward upper extremity postures, then rotate the wrist to flip each nearly 3-pound gear into the correct orientation. This significant wrist strain led to two injuries and seven reports of early WMSD symptoms. A production team designed a new tote and insert tray that keep the arms in neutral posture and prevent TMs from having to flip the VVT gears over. This packaging redesign eliminated injuries and reduced cycle time and logistics costs. Two other Toyota engine plants adopted this innovative packaging.

Booth #103: Pretreatment Mini Line Tanks
PPG Industries, Automotive OEM, Cleveland, Ohio
PPG’s Cleveland laboratory develops and supports pretreatment products for the automotive industry. Previously, the team used a series of seven 100-gallon pretreatment tanks to execute this work. The large tanks are cumbersome and time-consuming to use, with a host of ergonomically unfriendly tasks that pose a variety of risks including potential shoulder, back and trip injuries. Our team was tasked to double lab output. We seized this opportunity to create a series of ergonomically friendly tanks/processes while simultaneously leaning out the process to improve overall effectiveness with a smaller footprint and higher quality capability.

Booth #105: Mock-up to Achieve Ergonomic and Productive Machine Design
Delphi, Sudbury, Suffolk, England
During the launch of a new product, it was determined
that additional assembly capacity was needed to meet the projected customer demand. A machine supplier was selected and machine design commenced. During a review of the original supplier proposal, it was determined that there was a high level of ergonomic risk, as 50 percent of the components the operator touched were outside the optimal work window. There were also concerns that the design cycle time could not be met due to operator/light curtain interference. This project shows how the development of a mock-up allowed the ergonomic risks to be greatly reduced and the desired design cycle time to be met.

Booth #107: Bearing Assembly Functional Inspection Tool
Timken Bearing Plant, Yantai, China
At our Yantai Plant, a new assembly line was installed. Customer requirement for the new line requires 100 percent functional rotation check for the cone assemblies. Operators had to hold the 9.5-kilogram (21-pound) assemblies in one hand and spin the assembly in two directions with the other. The Yantai plant developed a unique inspection tool that eliminated ergonomic risk, cut the inspection time in half and identifies quality issues with a 100 percent detection rate.

Booth #109: Stop Twisting and Turning
Bridgestone, Morrison, Tenn.
Our project focuses on eliminating the handling of natural rubber bales that weigh between 70 pounds and 240 pounds that become stuck on a conveyor system in our mixing department. Any time these bales become stuck on the conveyor, it requires the team to manually dislodge the bales, which put the teammates at risk for injury. Several modifications were made to the conveyor system to eliminate this from happening.

Booth #111: User-Friendly Threadless Coupling Vessel Hanger
Manchester Tank and Equipment, Quincy, Ill.
The Manchester Tank and Equipment, Quincy, Ill., facility manufactures steel pressure cylinders up to 1,200 pounds. The tanks are powder paint coated for a durable finish. The powder coat process requires the tanks to be hung on a monorail conveyor. Couplings were manually threaded into the top of each tank in order to hang the tanks. The Ergo Cup team, through trial and error, developed a unique tank hanger device. This device allows for quick and easy installation and removal and eliminated four jobs with significant ergonomic risk as well as improved productivity and quality.

Booth #113: Drum Spreading Tool
Coca-Cola Refreshments, Dunedin, Fla.
At the Dunedin Juice Plant, operators handling 55-gallon drums (filled with raw material) have to manually reposition each drum on the pallet in order to spread them to be ready for the next process step (dumping via use of a drum tool). The previous manual process resulted in significant risk of wrist, shoulders and back MSDs as well as pinching and laceration injuries. Associates at the plant evaluated the activity and designed and fabricated a tool to minimize the effort and time to move the drums about on the pallet.

Booth #115: Parts Delivery Rack Optimization
Volkswagen Group of America, Chattanooga, Tenn.
The idea for optimized delivery racks began during a lunch-time discussion among Volkswagen employees, blossomed into an innovative improvement in parts delivery and resulted in a positive impact to ergonomic production and quality processes! Delivery racks intended for door sub-assembly parts were designed and built by employees to reduce the ergonomic strain of loading and unloading parts. By reorienting the parts from a vertical to horizontal loading position, the rack effectively eliminated the strain of elbow-above-shoulder movement and reduced hand burden. The redesigned rack further improved productivity by increasing the quantity of parts for storage and shortened the process time.

Booth #117: Slinger Teardown Tool
Nexteer Automotive Plant 4, Saginaw, Mich.
Plant 4 manufactures half shaft assemblies for the automotive industry. During production, the slinger ring of the half shaft CV joint may become damaged, making it necessary for an operator to tear down the assembly for salvage. This process required the operator to use a heavy hammer and a screwdriver to knock the slinger ring off of the CV joint, striking the screwdriver forcefully up to 13 times to remove the slinger. This resulted in three strain sprain injuries and five verbal complaints. To resolve this issue, a maintenance team member fabricated a handheld fixture that fits over the slinger ring, keeps the hand away from the hammer strike area, distributes the force evenly and requires only two hammer strikes to remove the slinger. The solution resulted in a 66 percent reduction in Strain Index score, 38 percent reduction in cycle time and an estimated annual cost savings of $23,582.

Booth #119: Mold Board Forming Improvement
Caterpillar Inc., Jacksonville, Fla.
The RCWT Facility in Jacksonville, Fla., had a four-fold increase in work at their press. The two operators on press presented to management that they were afraid someone might injure their shoulder or back on the press. The operators asked permission to investigate an alternative solution to using pry bars and force to move plates through the form steps. The operators found spare equipment within the facility and created a device that will mechanically push the plates. Regional safety support evaluated the ergonomic risk pre- and post-improvements.

Booth #120: Torque Eliminators
Honda of America Mfg., Inc., Anna, Ohio
With the planning of a new engine assembly line, the team took a proactive approach. An investigation of manual torque processes on the existing assembly lines was conducted to identify current problems. Based on this investigation, they identified a problem with highly repetitive and high force manual tappet nut torques. The team determined that they could greatly reduce the number of nut torques by installing a torque arm with the new assembly line. This reduced the number of manual torques by an average of 87 percent.

Booth #121: OpGear Jig
General Dynamics Bath Iron Works Shipyard, Bath, Maine
Installing operating gear foundations in the overhead is an ergonomic risk to the shoulders and neck. To identify and locate the critical dimensions for the foundations, a 30-pound assembly gear box has to be held in an overhead position. Employees developed a 5-pound jig, using scrap material, which would hold all critical dimensions rigid for the gear box. The new jig is 83 percent lighter and reduces the ergonomic risk to the shoulders by 50 percent. The jig improved quality of alignment assembly, eliminated rework and reduced the cost to the final product by 8 percent.

Booth #122: The Pick Upsters
Honda Transmission Mfg., Russells Point, Ohio
A new model gear was introduced that was smaller in size. Picking up the new gear created an awkward pinch grip, changing from a four-finger to a two-finger grip with 16 pounds of pinch force. Through investigation, the team designed a tool allowing associates to pick up the gear with a full power grip using the thumb to press a spring-loaded mechanism with 6.5 pounds of thumb press force. With an in-house cost of $2,000 and a cost avoidance and savings of $8,000 from injury prevention, reduced scrap and labor savings, ROI was achieved in three months.

Booth #123: Reel 2 Keel
General Dynamics Bath Iron Works Shipyard, Bath, Maine
Pulling high voltage cables on Navy destroyers is a difficult and challenging job with many ergonomic risk factors. The cables are three inches in diameter and weigh seven pounds per foot, with many cables being hundreds of feet long. The current process is labor intensive, time consuming and a high ergonomic risk to the back, shoulders, arms, hands and legs. Based on employee feedback
a process change was implemented that resulted in a 50 percent reduction in ergonomic risk and a 30 percent improvement in efficiency.

**Booth #124: Ergo Buggy: Balanced Tilting Cart for Part Presentation**

Honda of Canada Mfg., Alliston, Ontario, Canada

Ergo Buggy is a cart that rotates parts within its own footprint. The mechanism is balanced to ensure smooth and controlled tilting. It is interlocked with the cart tower attachment and a foot pedal to prevent accidental rotation. This solution was implemented to improve horizontal and vertical reach and associated awkward postures of the upper limb and back while lifting glove box from packaging for assembly. The results included a savings of greater than three injuries a year, reduction of 32 scrap parts per year and a reduction of process time by 4.3 seconds per vehicle. ROI = 1.6; payback in 2.6 months.

**Booth #125: Coupler Compressor**

Honda of South Carolina Mfg., Inc., Timmonsville, S.C.

Our ergo cup theme is focused on eliminating ergonomic risk related to hand intensive tasks. We identified our theme through associate feedback and ergonomic risk assessments on the assembly line. Plant medical records revealed 16 percent of hand pain injuries were related to plugging electrical components to the vehicle wiring harness. Connection force was measured greater than 25 pounds to complete coupler connections. Ergonomic risk assessments identified awkward wrist postures, static pinch and grip forces. We eliminated the ergonomic risk by designing a leverage tool to connect the electrical components. This allows the associates to use a power grip exerting less than five pounds of force.

**Workplace Solutions I**

(Team-Driven Workplace Solutions)

**Booth #320: 360° Clean**

Gulfstream Aerospace Corporation, Savannah, Ga.

We designed a shop vacuum cleaner attachment with an articulating head for cleaning an overhead grid. The vacuum attachment was created in-house on a sub-$500 3-D printer in less than two days turnaround time. It removes almost all ergo risks (no steps, no reaching, etc.) and makes cleaning easier, with no chance of dust falling on production parts.

**Booth #322: ABS - Acoustic Blanket Stick**

Gulfstream Aerospace Corporation, Savannah, Ga.

The booth will demonstrate the interior height of a Gulfstream and show what’s required to install the acoustic blankets to the fuselage. Nylon pins attached to the frame will go through the blankets and an anchor is pushed onto the pin to secure the blanket. The booth will show the challenging position that the installer assumes as well as his solution to reduce his ergonomic risk factors.

**Booth #321: Bed Time**


There are many challenges during a manufacturing launch, especially for the largest product built to date. The size and weight of the cargo bed for the Yamaha Viking exacerbated old and introduced new ergonomic and safety hazards. The welding department team developed an innovative method to meet production and reduce the risk of injuries by flipping the bed and using a roller conveyor. This eliminated associates lifting and carrying the awkward fully loaded fixture up steps to then lower it into the XY table, also allowing the team to minimize time needed to set up the robot and increase production capability.

**Booth #323: Bed Time**


There are many challenges during a manufacturing launch, especially for the largest product built to date. The size and weight of the cargo bed for the Yamaha Viking exacerbated old and introduced new ergonomic and safety hazards. The welding department team developed an innovative method to meet production and reduce the risk of injuries by flipping the bed and using a roller conveyor. This eliminated associates lifting and carrying the awkward fully loaded fixture up steps to then lower it into the XY table, also allowing the team to minimize time needed to set up the robot and increase production capability.

**Booth #324: Magnet Dispenser**

Gulfstream Aerospace Corporation, Appleton, Wisc.

When stock room attendants receive requisitions for magnets, used to hold curtain tracks together inside the airplane, they fill the order by separating the required number from a cake of magnets kept in stock. They are tasked with trying to separate these very powerful magnets by twisting and pulling them apart, potentially causing hand and wrist fatigue. The magnets are very powerful and occasionally snap back together causing personal injury to the attendant.

**Workplace Solutions II**

(Engineering/Ergonomist-Driven Workplace Solutions with Internal Competitions)

**Booth #426: Honeycomb Braze Application Process Improvements**

Pratt & Whitney - Dallas Airfoil Repair Operation (DARO), Dallas, Texas

Elimination of excessive braze from parts, drastically reducing blend take time requirements. Elimination and removal of razor blade scraping tool.

**Booth #503: Boeing 737 Next Generation Crown Raceway Wire Bundle Installation Improvement**

Boeing Commercial Airplane Company, Renton, Wash.

This project was created to address ergonomic issues including forceful exertion, awkward posture, and repetitive motion injuries to back, shoulders, neck, hands and fingers. The intent of this design was to reduce or eliminate repetitive motion injuries and streamline the 737 final assembly process while improving quality, flow and assembly of airplanes. The design created installation-ready wire bundles delivered from supplier first time perfect. This design breakthrough greatly reduced overhead work plus improved the capacity and separation of the family group wire bundles. This modular installation and a single post clamp exceeded all expectations of the 737 program.

**Booth #505: Wire Bender**

GE, Nogales, Mexico

The GE Nogales facility manufactures low-voltage dry type transformers. The first step on this manufacturing process is the winding of coils. Winding machines are used to pull individual wires and wind them around an arbor. Pulling and bending the wires to start a new coil is done manually. The bending of wires was especially challenging for operators, both for ergonomics and quality reasons. Process was reviewed and an engineered solution was proposed, moonshined and implemented.

**Booth #509: Three-Piece Ring Gear Lifter**

Norfolk Southern Corporation - Shaffers Crossing Locomotive, Norfolk, Va.

Norfolk Southern has over 7,000 mechanical employees maintaining 4,200 locomotives at over 150 facilities. Shaffers Crossing Locomotive is a major locomotive shop with over 200 craft employees. Machinists were concerned with body positioning, object weight, force and potential pinch points when installing sections of an 80-pound, three-piece ring gear on a locomotive. A specialized hoist lift device was built by the machinists to mechanically handle the three-piece ring gear installation.

**Booth #511: Automatic Lube System for the Car Pulling System**

Norfolk Southern Corporation - Sevier Terminal, Knoxville, Tenn.

This project was addressed because of the nature of the work involved in greasing bearings, sheave wheels and jacks that are part of the rail car pulling cable system on the repair track. It involved heavy lifting of cover plates, repetitive use of a grease gun and frequent and potentially hazardous climbing of towers. A machinist in the car repair facility took it on himself to build an automatic lube system for the car pulling cable system used to pull cars along the track for repairs.

**Booth #515: Adaptable Sleeve for Tensor Tools**

Toyota Motor Engineering & Manufacturing North America Inc. (TEAM), Toyota Motor Manufacturing Texas (TMMTX), San Antonio, Texas

Toyota’s Texas Truck Plant engineers were asked to investigate multiple early WMSD reports in the Assembly
Shop. Production team members (TMs) were reporting hand-related concerns in the exhaust manifold tightening process, where there was significant use of vibrating tensor tools. A time study showed that TMs frequently pulled the tensor tool trigger prior to full engagement with nuts, which led to excessive wobble at the end of the socket and resulted in fallen nuts. This meant that TMs had to replace and refasten nuts, thus exposing them to even greater hand exertion. In addition, cross threads from pulling the trigger early arose as a quality concern. Despite TM training on when to pull trigger, this proved difficult to control. Engineers sought to address the problem through engineering controls. Anti-vibration sleeves available on the market did not fit the tool's custom socket/extension.

Booth #519: “Bullet Train” Zero Lift Pneumatic Backup Tool
Lockheed Martin Missiles and Fire Control, Camden, Ark., and Grand Prairie, Texas
Pneumatically operated roll-in backing tool for drilling composite launch tubes to prevent delamination of the composite as the drill exits the material.

Booth #521: The Knight Knuckle
Cummins Inc. - Jamestown Engine Plant, Jamestown, N.Y.
The Knight Knuckle is a very innovative solution to a problem that is faced in torqueing operations. This device was fully designed, invented and assembled at the Jamestown Engine Plant. The solution is currently under a patent review, as it represents what we believe to be new technology not only for the site, but for the field of industrial ergonomics. At AEC 2015, we will be able to present this solution in person and allow demonstrations. This was the winning entry from our internal Ergo Cup competition (90 entries were submitted this year).

Booth #523: Debburr Dynasty
Honda Transmission Mfg. Inc., Russells Point, Ohio
Associates manually rotated a gear against a sanding belt to remove burrs, resulting in forearm twisting, wrist deviation, elbow abduction and neck flexion to complete the work. There were additional safety risks for the fingers being near the moving sanding belt and for potential flying debris. The team built a holding fixture to allow the associates to de-burr the gears using a power grip at the correct height, thus eliminating all ergonomic and safety concerns. The use of this fixture enhances the de-burring consistency, decreasing potential for scrap and also significantly decreasing the cycle time to complete this process.

Booth #525: Eliminators
Honda of America Mfg., Inc., Marysville, Ohio
The hinges on the newly designed Acura TLX bumper require associates in the Bumper Paint department to set clips prior to painting the bumpers so that they can attach another part to the bumpers. Associates discovered these clips required high set forces during a new model evaluation prior to mass production. The Forming department helped investigate solutions to this problem. The initial idea of changing the process sequence only slightly improved the install force. However, they were able to completely eliminate this problem by adding a function to the “end of arm” tool that removes the bumper from the mold.

Booth #527: Universal Spin Pits Fan Transfer Stand
Pratt & Whitney Canada, Mississauga, Ontario, Canada
Aerospace process requires fans to be tested in spin pits to validate part quality. Existing process placed large ergonomic stresses and potential for part damage. Ergonomics team and engineers designed a new spin pit transfer stand that is universal to all parts.

Booth #528: Crushing High Ergonomic Risk in Lockout Press
Ethicon Endo-Surgery, Inc., Cd. Juarez, Chihuahua, Mexico
The ergonomic risk factors associated with manual press are shoulder flexion, reach across the body and shoulder repetition. In MCA lines, the associate needs to activate a manual press around 150 times per hour, and the operator needs to place around eight different components to increase repetition to 600 arm movements per hour, causing some pain in his arm and/or shoulder. We have documented around three recordable cases in the past years. Last year, we had an increase in complaints of associates with pain in their shoulder and arm. This can lead to a long-term injury.

Booth #524: Tape Cutting Machine
Cardinal Health-Cuauhtemoc, Chihuahua, Mexico
Cardinal Health-Cuauhtemoc is part of Cardinal Health’s Medical Product Division, operating in Cuauhtemoc, Chihuahua, Mexico. The facility has a labor force of around 1,000 employees, manufacturing medical face masks, surgical gowns and drapes. Having an intensive labor operation, our challenge is not just to keep up with a fast-paced environment, but also to align efforts with different functional teams to improve ergonomics, productivity and safety in our operations. Knowing that the workplace ergonomics and continuous improvement activities address similar concerns, we piggyback those programs on each other for success not just to improve ergonomic conditions but to mature our ergonomics program to a more proactive state.

Booth #325: The “Talla-Twister” for Heavy Gauge Wire Braiding
General Dynamics Land Systems, Tallahassee, Fla.
Braiding heavy gauge cables presents a significant ergonomic risk. Twisting these cables by hand is a tiring, repetitive and inconsistent process. To mitigate this risk, an automated twisting device was developed. Powered by a winch, the device runs along a length of gear rack and rotates a bar a specified number of times per unit length travelled. The operator simply loads the cables onto the twisting bar and presses a button to operate the winch. The solution not only eliminates the ergonomic risk, but also improved productivity by 85 percent and allows for continuous processing.
EXHIBITOR BOOTH LISTING

<table>
<thead>
<tr>
<th>Exhibitor Name</th>
<th>Booth #</th>
</tr>
</thead>
<tbody>
<tr>
<td>BodyBilt by ErgoGenesis</td>
<td>100</td>
</tr>
<tr>
<td>Working Concepts</td>
<td>106</td>
</tr>
<tr>
<td>University of Michigan Center for Ergonomics</td>
<td>108</td>
</tr>
<tr>
<td>Align Ergonomics</td>
<td>110</td>
</tr>
<tr>
<td>Kinesis Corporation</td>
<td>114</td>
</tr>
<tr>
<td>MEGACOMfort</td>
<td>116</td>
</tr>
<tr>
<td>Auburn Engineers</td>
<td>118</td>
</tr>
<tr>
<td>Ergonomic Assist Systems &amp; Equipment (EASE) Council</td>
<td>200/202</td>
</tr>
<tr>
<td>Atlas Injury Prevention Solutions</td>
<td>204</td>
</tr>
<tr>
<td>Spenco Medical Corporation</td>
<td>207</td>
</tr>
<tr>
<td>Goldtouch</td>
<td>208</td>
</tr>
<tr>
<td>item America LLC</td>
<td>209</td>
</tr>
<tr>
<td>Contour Design Inc.</td>
<td>210</td>
</tr>
<tr>
<td>HealthPostures</td>
<td>211</td>
</tr>
<tr>
<td>Albion Industries</td>
<td>215/217</td>
</tr>
<tr>
<td>Posture Depot</td>
<td>216</td>
</tr>
<tr>
<td>Ergo Squad</td>
<td>218</td>
</tr>
<tr>
<td>Victor Technology</td>
<td>219</td>
</tr>
<tr>
<td>GOErgo</td>
<td>221</td>
</tr>
<tr>
<td>Industrial Hygiene News/Rimbach Publishing Inc.</td>
<td>223</td>
</tr>
<tr>
<td>Grand Stands Inc.</td>
<td>300</td>
</tr>
<tr>
<td>Lockheed Martin</td>
<td>301</td>
</tr>
<tr>
<td>Johnson Technologies</td>
<td>302</td>
</tr>
<tr>
<td>Caster Connection</td>
<td>303/305</td>
</tr>
<tr>
<td>Humantech Inc.</td>
<td>306/308/310</td>
</tr>
<tr>
<td>AmericartUSA</td>
<td>309</td>
</tr>
<tr>
<td>Barefoot Ergonomic Flooring by Beagle I, Inc.</td>
<td>311</td>
</tr>
<tr>
<td>Wellnomics Ltd.</td>
<td>314/316</td>
</tr>
<tr>
<td>Darcor Limited</td>
<td>317</td>
</tr>
<tr>
<td>Sunnex Inc.</td>
<td>318</td>
</tr>
<tr>
<td>VARIDESK</td>
<td>319</td>
</tr>
<tr>
<td>Remedy Interactive</td>
<td>401</td>
</tr>
<tr>
<td>LTW Inc.</td>
<td>402</td>
</tr>
<tr>
<td>Diverse Manufacturing Solutions</td>
<td>403</td>
</tr>
<tr>
<td>The Andersen Company</td>
<td>404</td>
</tr>
<tr>
<td>Guildmann Inc.</td>
<td>407</td>
</tr>
<tr>
<td>StrongArm Technologies</td>
<td>408</td>
</tr>
<tr>
<td>The Ergonomics Center of North Carolina</td>
<td>409</td>
</tr>
<tr>
<td>ErgoShield by Powerstep</td>
<td>410</td>
</tr>
<tr>
<td>Hamilton Caster &amp; Carts</td>
<td>411</td>
</tr>
<tr>
<td>Smart Step Flooring</td>
<td>414</td>
</tr>
<tr>
<td>IMPACTO Protective Products Inc.</td>
<td>415</td>
</tr>
<tr>
<td>American Society of Safety Engineers (ASSE)</td>
<td>416</td>
</tr>
<tr>
<td>Board of Certification in Professional Ergonomics (BCPE)</td>
<td>417</td>
</tr>
<tr>
<td>OccFit Solutions</td>
<td>418</td>
</tr>
<tr>
<td>Ergonomics Innovation on the Shop Floor</td>
<td>419</td>
</tr>
</tbody>
</table>
Above, Albion Industries | Booth #215/217
Albion Industries designs casters and wheels to meet every load requirement and application environment from furniture wheels to industrial casters; including light duty, medium duty or extra heavy duty. Need a specific caster we don’t already offer? Our engineers can custom-design casters and wheels to meet your exact specifications.

Albion Industries
800 North Clark Street
Albion, MI 49224
P: (800) 835-8911
F: (517) 629-9501
www.albioncasters.com
bdenisty@colsongroupusa.com

Align Ergonomics | Booth #110
Ergonomists will save time and money with automated customizable reporting. Impress your customer with reports that can be produced within minutes. Align Ergonomics is an on-line workstation evaluation and reporting software. Organize, prioritize, and follow-up with the add-on Account Management feature.

Align Ergonomics
27068 La Paz Rd., Unit 145
Aliso Viejo, CA 92656
P: (714) 683-2720
F: (949) 448-8037
www.alignergo.com
adee@alignergo.com

American Society of Safety Engineers | Booth #416
Since 1911, the American Society of Safety Engineers (ASSE) has helped OSH professionals expand their network, access best practices and real-world solutions, and advance their careers. The 36,000 OSH professionals who are ASSE members take advantage of targeted content, networking, and education across industries and common interests, including ergonomics, health & wellness, manufacturing, management and more.

American Society of Safety Engineers
1800 East Oakton Street
Des Plaines, IL  60018
P: (847) 699-2929
www.asse.org

AmericartUSA | Booth #309
AmericartUSA manufactures power drive platform carts. Eliminate push/pull injury potential where employees are manually transporting any heavy loads over long distances, up or down ramps, or rough/carpeted surfaces. AmericartUSA, LLC’s motorized platform carts are made in the USA and, with their built in modularity, can be constructed to fit your exact application while staying under budget. Low Cost Motorized Carts | Made in USA – Americart USA

AmericartUSA
11283 River Rd., NE
Hanover, MN 55341
P: (877) 763-0076
F: (763) 498-7384
jpugh@americartusa.com
www.americartusa.com

Atlas Injury Prevention Solutions | Booth #204
Atlas IPS serves over 10,000 U.S. cities. We provide physical demands analysis, pre-employment screens, ergonomics software and services, and on-site injury triage/physical therapy for manufacturing, commercial/public transportation, warehouses, offices, and healthcare. We provide a simple total solution especially for large multi-site clients; systems, software, client training, or on-site support.

Atlas Injury Prevention Solutions
13601 Forest Park Drive
Grand Haven, MI 49417
P: (616) 844-6322
F: (616) 844-6326
www.atlas-ips.com

Barefoot Ergonomic Flooring by Beagle I Inc. | Booth #311
Barefoot Ergonomic Flooring by Beagle I, Inc. is a manufacturer of ergonomic, anti-fatigue floor mats that use high quality rubber. Barefoot mats are highly effective safety mats that provide exceptional comfort for people who stand for long periods of time. Barefoot is a recipient of the most number of patents and awards than any other anti-fatigue ergonomic mats.

Barefoot Ergonomic Flooring by Beagle I Inc.
202 S. Lake Ave, Ste 230
Pasadena, CA 91101
P: (213) 229-0830
F: (213) 229-0832
www.barefoot-flooring.com
info@barefoot-flooring.com
Board of Certification in Professional Ergonomics | Booth #417
BCPE is the premier credentialing organization in ergonomics/human factors/user experience, recognizing more than 1,200 professionals as Certified or Associate Professionals in Ergonomics, Human Factors or User Experience (CPE, CHFP, CUXP, AEP, AHFP, AUXP, CEAP). Benefits of BCPE certification include job advancement, increased pay and enhanced marketability. Let BCPE help you distinguish yourself as an ergonomics/human factors/user experience professional.

Board of Certification in Professional Ergonomics
PO Box 2911
Bellingham, WA 98227
P: (888) 856-4685
F: (866) 266-8003
www.bcpe.org
bcpehq@bcpe.org

BodyBilt by ErgoGenesis | Booth #100
BodyBilt ergonomic office seating and accessories by ErgoGenesis, is dedicated to producing ergonomically correct solutions that provide comfort resulting in increased productivity. The company’s national sales force markets BodyBilt products to companies of all sizes, government entities, educational institutions, healthcare facilities, emergency call centers and individuals throughout the U.S.

BodyBilt by ErgoGenesis
One BodyBilt Place
Navasota, TX 77868
P: (936) 825-1700
F: (936) 825-1725
www.ergogenesis.com

Caster Connection | Booth #303/305
Caster Connection is a manufacturer of ergonomic casters and wheels and a distributor for several national brands. Established in 1987, Caster Connection has found solutions for Fortune 500 organizations across the nation. Among our solutions is the CC Apex line of casters and wheels, which we’ll feature in our exhibit.

Caster Connection
2380 International Street
Columbus, OH 43228
P: (800) 544-8978
F: (868) 852-7202
www.casterconnection.com
jeremy.king@casterconnection.com

Contour Design Inc. | Booth #210
Contour Design’s mission is to provide evolutionary products that allow people to work safely at their computers. Our RollerMouse products help eliminate the need to reach for or grip the mouse. RollerMouse is based on our ergonomic expertise and inspired by users to create ergonomic design with ultra-high precision and quality.

Contour Design Inc.
10 Industrial Drive
Windham, NH 03087
P: (603) 893-4556
www.contourdesign.com

Darcor Limited | Booth #317
Darcor provides ergonomic solutions that mitigate risk to injury, increase efficiency and promotes a healthier workplace. We accomplish this through the use of proprietary wheel technology that exceeds ergonomic mobility standards.

Darcor Limited
7 Staffordshire Place
Toronto, ON, Canada M8W 1T1
P: (416) 255-8563
F: (416) 251-6117
www.darcor.com
kestevez@darcor.com

Diverse Manufacturing Solutions LLC | Booth #403
Diverse Manufacturing Solutions LLC provides Safety and Ergonomic equipment for all Industries. Our Levelizer™ lifting solutions are innovative, affordable and most of all effective, at minimizing workplace injuries. Our patented Automatic Self-Leveling Technology is a key to component in what we have termed “Forced Ergonomics™”. We utilize no air, no hydraulics, or no electricity to maintain the work in the ergonomic green zone. Contact us today www.dms-site.com

Diverse Manufacturing Solutions LLC
970 Pittsburgh Drive, Suite 22
Delaware, OH 43015
P: (740) 363-3600
F: (740) 363-6300
www.dms-site.com
info@dms-site.com

Ergo Squad | Booth #218
We are human factors consultants and solution providers. If it impacts the wellbeing and performance of your employees, we can help! Comfort Zone ergonomic assessment software is our cornerstone.

Ergo Squad
17650 E. 32nd Place, Suite 10-B
Aurora, CO 80011
P: (720) 952-1100
www.ergosquad.com
barry@ergosquad.com

Ergonomic Assist Systems and Equipment (EASE Council) | Booth #200/202
The Ergonomic Assist Systems and Equipment (EASE Council), is a council of MHI and it is made up of material handling equipment and solution providers. We are focused on providing effective ergonomic solutions for the manufacturing, warehousing, distribution, logistics and the supply chain industries. Our goal is to help people and companies find quality (sound) ergonomic solutions.

Ergonomic Assist Systems and Equipment
EASE Council
8720 Red Oak Blvd., Suite 201
Charlotte, NC 28217
P: (704) 676-1000
F: (704) 676-1199
Tom Carbott: tcarbott@mhi.org
www.mhi.org/EASE

Applied Ergonomics Conference 2015 45
EXHIBITORS

The Ergonomics Center of North Carolina | Booth #409
The Ergonomics Center of North Carolina is a membership-based organization housed in the College of Engineering at North Carolina State University. The Center provides ergonomics consulting, training programs and research for companies throughout the United States and Latin America.

The Ergonomics Center of North Carolina
5701 Neil Street
Raleigh, NC 27607
P: (919) 515-2052
F: (919) 515-8156
www.TheErgonomicsCenter.com
mcnierney@TheErgonomicsCenter.com

ErgoShield™ by Powerstep® | Booth #410
ErgoShield™ Occupational Insoles were designed to improve foot comfort and support on the job. Ergonomically constructed to provide users targeted and controlled cushioning with a supportive feel. A full range of products are available to help reduce foot pain and fatigue. Proud to be designed and manufactured in the USA.

ErgoShield™ by Powerstep®
8930 Global Way
West Chester, OH 45069
P: (888) 237-3668
www.powersteps.com/occupational
info@powersteps.com

GOErgo | Booth #221
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.

GOErgo
5577 Parkway Lane
Suite 200
Norcross, GA 30092
P: (770) 449-0461
www.go-ergo.org
Go-Ergo@iienet.org

Goldtouch | Booth #208
Goldtouch is a leading manufacturer of comfortable ergonomic keyboards, mice, keypads, mouse pads and wrist rest accessories and solutions for the home, office, and mobile lifestyle. Our commitment to providing cost-effective and high-return solutions drives us to produce computer products that have been engineered to the highest standards of quality.

Goldtouch
1101 Arrow Point Drive
Bldg. 4, Suite 401
Cedar Park, TX 78613
P: (512) 259-5688
F: (512) 259-6599
www.goldtouch.com
sales@goldtouch.com

Grand Stands Inc. | Booth # 300
Grand Stands is a certified small, woman owned company and has been in business for over 20 years providing ergonomic workstation and hardware management solutions. Products include articulating keyboard arms, proprietary keyboard platforms, flat screen monitor supports, CPU holders, electric height adjustable table bases as well as wall mount solutions.

Grand Stands Inc.
2617 S. Peck Road
Monrovia, CA 91016
P: (800) 831-2150
F: (626) 294-1770
www.grandstands.com

Guldmann Inc. | Booth #407
Safe Patient Lifting has been the focus of Guldmann for over 25 yrs. Our precision engineered Ceiling Lift provides a comfortable and safe lift for the physically challenged and protects the caregiver from injury. Caregivers can lift an estimated 1.8 tons per day, causing crippling back injuries. A Ceiling Lift solution can be customized for any setting or environment.

Guldmann Inc.
14401 McCormich Dr., Suite A
Tampa, FL 33626
P: (813) 880-0619
F: (813) 880-9558
www.Guldmann.net
AND@Guldmann.net

Hamilton Caster & Carts | Booth #411
Founded in 1907, Hamilton Caster is an industry leader in designing and manufacturing ergonomic & safety-minded casters, wheels, and carts. At AEC, Hamilton will be featuring their new Spinfinity™ line of maintenance-free casters as well as demonstrating their new central braking system for ergonomic carts. Family owned since its inception, the fourth generation remains as committed to quality as the company’s founder, John Weigel.

Hamilton Caster, Cart & In-Plant Trailer
1637 Dixie Highway
Hamilton, OH 45011
P: (888) 966-1490
F: (800) 232-3733
www.HamiltonCaster.com
www.CartsandTrailers.com

HealthPostures | Booth #211
Our bodies are made to move! HealthPostures is the leader in sit to stand ergonomic products that encourage a dynamic work place. Computer users feel energized and productive when they have the freedom to move while using HealthPostures sit to stand products. HealthPostures’ products are proudly made in the USA.

HealthPostures
14310 Ewing Ave S, Suite 100
Burnsville, MN 55336
P: (952) 873-3266
F: (952) 873-3741
www.healthpostures.com
jarede@healthpostures.com
Humantech Inc. | Booth #306/308/310
For over 30 years, global companies have relied on Humantech for workplace improvements. By combining the science of ergonomics and our unique 30-Inch View®—where people, work, and environment intersect—we deliver practical solutions that impact safety, quality, and productivity. At Humantech, we know people make productivity happen.

Humantech Inc.
1161 Oak Valley Drive
Ann Arbor, MI 48108
P: (734) 663-6707
F: (734) 663-7747
www.humantech.com
dknoedler@humantech.com

Impacto Protective Products Inc. | Booth #415
Impacto Protective Products Inc. is a manufacturer and distributor of specialized ergonomic products aimed to provide worker protection from impact, vibration, cumulative trauma and repetitive strain injuries. Our line of Anti-Vibration Air Gloves® feature certified protection from Hand/Arm vibration. Additional body protections include products such as Knee pads, Body pads, Anti-Fatigue insoles, Anti-Vibration cushions and many more ergonomic PPE solutions.

Impacto Protective Products Inc.
P.O. Box 524
Belleville, ON K8N 5B2
P: (888) 222-9031
www.impacto.ca
impacto@impacto.ca

Industrial Hygiene News | Booth #223
Industrial Hygiene News features products and services that help keep employees safe and the company OSHA compliant. IHN informs and educates occupational safety and health professionals dealing with workplace safety, emergency response, indoor air quality, as well as ergonomic issues.

Industrial Hygiene News
8650 Babcock Boulevard
Pittsburgh, PA 15237
P: (412) 364-5366 or (800) 245-3182
www.rimbach.com
karen@rimbach.com

item America LLC | Booth #209
item is the developer and producer of the original modular aluminum system. For over 35 years, we’ve focused on creating innovative products of the highest quality. Our ergonomic Work Bench System is the perfect workstation solution. ESD compatibility options, optimized handling areas, and customized lighting solutions create optimum working environments.

item America LLC
12105 Insurance Way
Hagerstown, MD 21740
P: (301) 665-9772
F: (301) 665-9775
www.item24us.com
info@item24.us

Johnson Technologies | Booth #302
Ergobuddy Therapy Platform Anti-fatigue Matting featuring patented no-trip technologies. Anti-Fatigue footwear insoles featuring patented Ergosert technology which contains the same ergonomic properties as our premium anti-fatigue mats with a two year warranty. Debuting Ergowood a new industrial modular flooring system.

Johnson Technologies
2034 Pittway Drive
Nashville, TN 37207
P: (615) 228-1346 or (800) 229-1930
F: (615) 228-1519
www.ergobuddy.com

Kinesis Corporation | Booth #114
Kinesis is a leading force in bringing the science of ergonomics into the design of computer keyboards and input devices. We manufacture and distribute an extensive range of quality ergonomic computer products, including the New Kinesis Freestyle2 Blue, MultichannelTM Bluetooth keyboard. Our continued goal is to design innovative and effective products to improve the comfort and productivity of computer users.

Kinesis Corporation
22000 20th Ave SE, Suite 102
Bothell, WA 98021
P: (425) 402-8181
F: (425) 402-8181
sales@kinesis.com
www.kinesis.com

Lockheed Martin | Booth #301
The Lockheed Martin FORTIS™ is a passive exoskeleton designed to augment human strength and endurance. The FORTIS transfers the load of heavy tools to the ground relieving the strain on the human body. The FORTIS increases productivity on average between 2x and 20x and reduces fatigue by 300% enabling craft workers to accomplish more work with less fatigue.

Lockheed Martin
3600 Sand Lake Road
Orlando, FL 32819
P: (407) 674-8877
F: (407) 674-7788
www.lmco.com
keith.maxwell@lmco.com

LTW Inc. | Booth #402
LTW is the source for Ergonomic Adjustable Height Industrial Workstations, Assembly Machine Bases, & Operator Platforms. Our Patented fully adjustable electric models have a lift capacity of up to 10,000 lbs and can be customized to your application. LTW is committed to being the foundation upon which your success is built!

LTW Inc.
311 S. Paw Paw St.
Lawrence, MI 49064
P: (269) 674-8877
F: (269) 674-7788
www.LTW1.com
Lanphear@LTW1.com
MEGAComfort | Booth #116
MEGAComfort's Anti-Fatigue Insoles are ergonomically shaped and Podiatrist designed using DUAL-LAYER 100% memory foam. Unlike our competitors, MEGAComfort’s Anti-Fatigue Insoles with over 10 years of R&D have been clinically proven and tested to reduce muscle fatigue and pain. MEGAComfort’s new Protection Line includes a PR Insole, Steel-Toe Overshoe and Industrial Sock. Samples are available at Booth #116.

MEGAComfort
14351 Myford Road, Suite F
Tustin, CA 92780
P: (877) 634-2266
F: (877) 634-2002
www.megacomfort.com
sales@megacomfort.com

OccFit Solutions | Booth #418
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 and cost associated with these injuries. Products include compression socks, orthotics and custom molded arch supports.

OccFit Solutions
125 Commerce Park Rd.
Suite 105
Mooresville, NC 28117
P: (704) 799-2873
F: (704) 663-4369
www.occfitsolutions.com

Posture Depot | Booth #216
Posture Depot offers unique ergonomic solutions that help people avoid pain and injury in any work setting. Our Penguin Ambidextrous Vertical Mouse offers computer users protection against Carpal Tunnel Syndrome, Repetitive Strain Injury, and harmful germs. With over 50 years of ergonomic and rehabilitation experience, we are laser focused on providing the best posture enhancement solutions on the market.

Posture Depot
125 Prestwood Lane
Mooresville, NC 28117
P: (704) 999-0809
www.PostureDepot.com
Scott@PostureDepot.com

Remedy Interactive | Booth #401
Remedy Interactive delivers innovative safety software solutions that empower organizations to drive beyond compliance towards healthy and injury-free productive workplaces. Our solutions provide intelligent data analysis to create the insights necessary for achieving highly efficient and impactful safety efforts.

Remedy Interactive
One Harbor Drive
Suite #200
Sausalito, CA 94975
P: (415) 332-6433
F: (415) 331-3864
www.remedyinteractive.com
rachel.sadacca@remedyinteractive.com

Smart Step Flooring | Booth #414
Smart Step anti-fatigue mats are ergonomically designed to provide maximum safety, comfort and durability. They are made with SmartTech™ Polyurethane, have trip resistant beveled edges, non-slip travel prevention, easy to clean properties, a five year warranty and are made in the U.S.A. The mats are also available in Puzzle Piece runners.

Smart Step Flooring
3290 W. Big Beaver Rd., Suite 504
Troy, MI 48084
P: (248) 740-0713
F: (248) 740-0875
www.smartstepflooring.com
anna@smartstepflooring.com

Spenco Medical Corporation | Booth #207
For 47 years, Spenco has manufactured orthopedic insoles designed to support the body during long hours of standing/walking on hard surfaces. Adding Spenco insoles to any work boot or shoe can help to minimize workplace hazards like sprains, strains and lower back pain; allowing employees to focus on their tasks.

Spenco Medical Corporation
6301 Imperial Drive
Waco, TX 76712
P: (254) 772-6000
F: (254) 751-3310
www.spenco.com
maryannh@spenco.com

Sunnex Inc. | Booth #318
Sunnex, for over 30 years, has supplied industrial task lighting to provide a safer workplace. Along with our ergonomic lifting equipment we look to provide solutions for a safer and more productive work environment.

Sunnex Inc.
9139 Forsyth Drive
Charlotte, NC 28273
P: (800) 445-7869
F: (888) 668-1920
www.sunnex.com

StrongArm Technologies | Booth #408
StrongArm Technologies is the maker of the first viable exoskeleton and the new category of Industrial Athletics. Workers are not afforded the benefit of athletic equipment to prevent injuries and maximize their performance. As a result, StrongArm is inventing new devices and methods to bridge the gap between performance and safety.

StrongArm Technologies
160 Convent Ave.
Steinman Hall B-20
New York, NY 10011
P: (585) 490-9230
www.StrongArmTech.com
Justin@strongarmtech.com

Spenco®
Love Your Feet®
University of Michigan Center for Ergonomics | Booth #108
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.

University of Michigan
Center for Ergonomics
1205 Beal Avenue
Ann Arbor, MI 48109-2117
P: (734) 936-0148
F: (734) 764-3451
www.centerforergonomics.org
centerforergonomics@umich.edu

VARIDESK | Booth #319
VARIDESK is an effective and affordable height-adjustable standing desk that gives users the freedom to switch easily between sitting and standing throughout the day. VARIDESK works with your existing furniture and comes fully assembled and ready-to-use right out of the box — no assembly required. To learn more, visit VARIDESK.com.

VARIDESK
P.O. Box 3588
Coppell, TX 75019
P: (800) 207-2587
www.VARIDESK.com
sebastian.berry@varidesk.com

Victor Technology | Booth #219
The High Rise Collection offers affordable options for quickly converting a sit down desk to a stand up desk. With three different price points, a solution is available for every budget. Each product can be used on any desk with no attachments or modifications necessary. With the High Rise Collection, everyone can stand up for themselves.

Victor Technology
175 E. Crossroads Parkway, Suite D
Bolingbrook, IL 60440
P: (630) 754-4400
F: (630) 972-3902
www.victortech.com
Arianne@victortech.com

Wellnomics Ltd. | Booth #304/316
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.

Wellnomics Ltd.
www.wellnomics.com

Working Concepts | Booth #106
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.

Working Concepts
PO Box 1345
Gresham, OR 97030
P: (503) 663-3374
F: (503) 663-1437
www.softknees.com
jesse@softknees.com
SAVE THE DATE!

March 21-24, 2016
Disney's Coronado Springs Resort
Orlando, Fla.
The Ergonomics Center

Providing companies with the expertise they need to decrease injuries and save time and money

To learn more, visit us at the Applied Ergonomics Conference
Booth #409

- Consulting
- Training
- Research

www.TheErgonomicsCenter.com
BodyBilt’s Intensive Use seating takes sharing to a new level. Designed for round-the-clock conditions and the more than 22 million U.S. shift workers affected by them, BodyBilt’s front-activated seat depth controller makes the changing shifts between workers of different shapes and sizes quick, easy and comfortable. The product’s quality build, heavy duty components, extended warranty and modularity translate into a longer lifespan.


800.364.5299 / 936.825.1700 • info@ergogenesis.com • www.BodyBilt.com