



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

Each year, organizations are asked to submit their solutions or ergonomics initiatives to one of three categories. Any organization that has created an effective solution or initiative within the previous 24-months is eligible to compete. After submitting their entry, teams arrive at AEC and present their entry to a panel of expert judges who will select five winners. Then, once winners have been selected by the judges, attendees vote on five Excellence Awards that cover the five major judging criteria.

The five Ergo Cup® categories are:

- Team-driven workplace solutions
- Team-driven workplace solutions for companies with internal competitions
- Engineering/Ergonomist-driven workplace solutions
- Engineering/Ergonomist-driven workplace solutions with internal competitions
- Ergonomic Program Improvement Initiatives

The five Ergo Excellence awards are:

- Innovation
- Simplicity
- Cost savings
- Ergonomic risk
- Presentation quality

The Ergo Cup® teams are:

Energizing Ergonomics: The Comprehensive Ergonomics Solution

Cummins Power Systems, Fridley, Minnesota

Category: Ergonomics Program Improvement Initiatives

Ergo Cup Booth: 224

Description: The presentation will show the comprehensive process that the Cummins Power Systems site in Fridley, Minnesota revamped and implemented in a 12-month period. The presentation will highlight the preventive and reactive processes, the engineering approaches, and the innovative measurement process that has shifted focus from lagging measures to leading indicators that led to more than a 40% reduction in recordable-level incidents.

Postural Education on Filling and Folding process

Ethicon, Neuchâtel, Switzerland

Category: Ergonomics Program Improvement Initiatives

Ergo Cup Booth: 225

Description: Postural education program for sitting workstations composed of visual indicators with graduation on all adjustable part of each station, training and annual refresh, individual memory card with personal parameters, good save behavior program.

“TALK the TALK - ERGO Moments”

Johnson & Johnson Vision Care, Jacksonville, Florida

Category: Ergonomics Program Improvement Initiatives

Ergo Cup Booth: 226

Description: Ergonomic injuries and OSHA recordables continued to occur, although Ergonomic Job Analyzers were performed to keep operators at a low risk. Due to some operators being unfamiliar with ergonomics and not following their safe job procedures ergonomic injuries were occurring to operator’s shoulders, lower back, elbows, forearms, wrists and hands, due to overreaching, twisting and overexertion. Implementing ERGO Moments helped operators understand the importance of following their safe job procedures. Operators are now identifying ergonomic risks within their job task and are engaged in the processes. ERGO Moments has helped lowered our overall ergonomic injuries and OSHA recordable.

ERGO LOGIC - New Model Packaging Process

Honda of Canada Mfg., Alliston, Ontario, Canada

Category: Ergonomics Program Improvement Initiatives

Ergo Cup Booth: 227

Description: Honda of Canada Mfg.(HCM) works with suppliers to design packaging for parts shipping. Previously focus was on maximizing efficiency of packaging in trailers. The New Model logistics team adjusted the process to focus on ergonomic impact and benefits directly related to proper part presentation. HCM logistics group implemented 812 packages for CRV and 642 packs for Civic over a two-year period with this approach. The HCM & supplier production processes are repetitive. Part loading and part removal will directly affect the users’ posture, repetitive motion, force exertion, morale and quality of work. ROI = 5.6; Payback 7.9wks.

Propulsion Ergo Program Improvement Initiative

GE Transportation, Erie, Pennsylvania

Category: Ergonomics Program Improvement Initiatives

Ergo Cup Booth: 228

Description: The Propulsion division of GE Transportation, Erie, PA, launched its Ergonomics Program in late 2013. This project describes the program improvement journey from 2013 to 2017.

Fountain Gun Clamp

Coca-Cola, Philadelphia, Pennsylvania

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 200

Description: The Fountain Gun Clamp, is a simple solution that allows an employee to bleed syrup flavor soda lines without having to hold down each button on a Fountain Gun (What you would see a bartender hold down to serve drinks). It's made from a c-clamp and has a flat piece of sheet metal welded to the tip of the clamp.

Conveyor Cleaner

Coca-Cola, Tempe, Arizona

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 201

Description: Using recycled parts, a tool was fabricated (\$220, in-house) that sprays water, brushes the conveyor and squeegees excess debris from the surface of a conveyor. To use, the operator clamps the unit to a water hose, which also acts as the main power source to engage both the scrub and squeegee operations. The conveyor cleaner can be attached to any conveyor line and eliminates any manual cleaning.

CryoVac Juice Extractor

Dunedin Juice Plant, Dunedin, Florida

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 202

Description: For specific customers (such as McDonalds) Coke is required to perform large quantity quality checks on the syrup being delivered to external customers. To complete the task, random syrup samples must be taken, and barrels must be filled to ship to the quality check lab. Each test requires a 50-gallon drum to be filled. Product filling the barrels comes out of plastic bags (about 15 gallons each). Syrup is very expensive and was difficult to completely get out of each bag and into a testing barrel.

Sandblasting Our Way to Better Ergonomics

Cummins Fuel Systems, Columbus, Indiana

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 203

Description: The presentation will describe the innovative modifications to a sandblast cabinet by a cross functional team of employees at Cummins Fuel Systems. The innovative yet simple modifications greatly reduced the ergonomic risks associated with the re-work of parts used in High Horsepower injectors for diesel engines producing up to 4200 hp. Visitors to our booth will have the opportunity to experience a simulation of the awkward posture and other ergonomic risks this project reduced by 95% while spending less than \$300.

The Clampetts

Honda of America MFG., Inc., Anna, Ohio

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 204

Description: Production associates manually set over 26,000 hose clamps per day using needle nose pliers and similar tools, resulting in high grip forces, awkward wrist positions and high frequencies of motions and exertions. After analyzing all aspects of the job process and reviewing studies that showed differences in hand sizes, grip strengths and grip spans, the team designed and fabricated a clamp setting mechanism that eliminated all ergonomics and safety risks. This mechanism also improved quality by eliminating scratches to the clamp coating (prevents premature rust) and enhanced productivity by reducing adjustments due to inconsistent depth of the hose clamp setting.

Battery Seal Press

Honda of America MFG., Inc., Marysville, Ohio

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 205

Description: During the assembly of the Integrated Power Unit on hybrid-electric powered vehicles, production associates repetitively turn a wheel on a press to lower 160 pounds of weight on top of the first battery to set the seal, repeat this process to set the seal between the first and second batteries, and install other components on the IPU. The frequent turning of this press wheel at a raised height creates ergonomics risks in terms of posture and repetition. The team developed a new system to lower and raise the weights on the press using a system of pull pins and levers.

Mission Accomplished

Honda Transmission Mfg., Russells Point, Ohio

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 206

Description: During the production repair process, production associates remove taper bearings from the torque converter or mission cases, averaging 85 taper bearings per month over the last two years. Production associates used a slide hammer type of device with a heat gun. The pounding motions caused physical stress on the hands, arms, shoulders and back. This very time-consuming method could also damage the cases. The team developed a new device to pull out the taper bearings using a two-handed ratchet motion. This new device eliminated the ergonomic stress, and greatly reduced the quality risk for damage and the time to complete repair.

Foam Removal Tool

Honda Manufacturing of Alabama, Lincoln, Alabama

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 207

Description: Production associates need to install the sunroof drain tube through the structural steel between the front windshield and the driver-side window prior to the application of acoustic

foam inside this A-Pillar. If newly hired production associates inadvertently skip this step, they go through an 8-hour repair process, exposing them to ergonomics risks such as overhead work, heavy manual lifting and awkward postures to be able to install the drain tube. The team fabricated an auger-type tool to remove just enough of the foam, allowing them to insert this drain tube, eliminating the ergonomics risks and making the repair significantly simpler.

Thermally Initiated Venting System Station Tooling Enhancement

Lockheed Martin Missiles and Fire Control, Camden, Arkansas

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 208

Description: Integrated set of tooling was designed, prototyped, built and introduced into the Thermally Initiated Venting System (TIVS) manufacturing process to eliminate significant awkward manual manipulation (pushing/pulling) and sustained and repetitive application of high force in awkward postures throughout the TIVS installation process. Incorporation of the fixture also significantly reduced awkward postures which were previously necessary to access hard-to-reach components and fasteners, and engineering and process changes were implemented which reduced the need for some strenuous activities, while reducing the touch time and personnel required to perform the task.

U2 Canopy Lift Tool Project

Lockheed Martin Aeronautics, Palmdale, California

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 209

Description: A Canopy Lift Tool was designed, fabricated and incorporated into the MMRO operations of the U2 “Dragon Lady” aircraft. Incorporation of this tooling eliminated the frequently encountered bending, twisting and extended and overhead reaching required to manually lift, lower and carry the aircraft canopy throughout the process. Implementation of the tooling also increased productivity, reducing the number of mechanics required to perform the task from 6 to 3, freeing up the remaining mechanics to focus on value-added tasks.

Safe and Ergonomic Handling of Roller Platforms and Trolleys

Delphi Powertrain, Chihuahua, Mexico

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 210

Description: Many pallets and containers with different types of bases need to be loaded and unloaded from various locations every shift. In order for this work to be performed safely, a risk reduction project was undertaken. Health and safety, ergonomic, and productivity issues are all addressed with the solution to standardize the stop devices used to prevent pallets or containers from rolling off platforms.

Smart & Safe Sampler

PPG coatings (Tianjin) Co. Ltd., Tianjin, P.R. China

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 211

Description: Operators are required to obtain samples for QC testing from 50-gallon drums. The sampling process required a lot of manual work using a drum cart with much lifting, pulling and pushing forces on arms, wrists, and trunk. The new liquid sampler, optimized by the team eliminates moving the drum; and allows the operator to obtain a sample through a small opening which only takes about 30 seconds.

Hands Down

Toyota Motor Manufacturing Indiana, Princeton, Indiana

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 214

Description: The Toyota Indiana West Assembly Plant builds the Highlanders and Sequoias. Team members on Engine line were having to over reach to pick up the manifold on the production side and on the conveyance side (every 58 seconds). This process resulted in several early WMSD discomfort report, as well as injuries. This process also contributed to quality issues and additional costs because team members had to pick up manifold with one hand while setting it on the hook and it resulted in several dropped manifolds. Production team members designed and fabricated internally a solution to reduce vertical reach, while improving quality, cost and productivity.

MFU Battery Install

Raytheon, Louisville, Kentucky

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 215

Description: During new production start-up of MFU, one task required employees to lift, turn and install 7 batteries weighing 119 pounds each. This required 2 employees and took approximately 2 hours to complete.

This task was not ergonomically correct and could lead to significant risk and potential injury to their backs, shoulders, hands, and feet. Employees also must kneel and use awkward postures during the install.

There was also risk of damaging the battery and injury, if one of the batteries were dropped.

Hourly employees recognized and discussed the risks involved and brain-stormed ideas for a solution – a modified lift cart and extension.

The Amazing Demolding Station

Bibby-Ste-Croix, Quebec, Canada

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 216

Description: Bibby-Ste-Croix is a foundry producing cast iron pipe and fittings. Our molten iron is transported with ladles lined with refractory material which frequently needs removed and replaced. An 18-pound jack hammer was used for this task. The Ergo Project Team, with a progression on different ideas and evolving designs, developed and built a simple and efficient demolding station. The necessary ladle modifications were then incorporated into the project. The result was our new Amazing Demolding Station which eliminated significant ergonomic risks, reduced silica and noise exposures, and greatly improved the efficiency of removing the refractory lining from the ladles.

Drill Powered FOD Cap Socket

GE Aviation, Cincinnati, Ohio

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 217

Description: Ergonomic solution to improve the process of removing assembly FOD caps.

Over Easy

The Timken Company – Rail Bearing, Mascot, Tennessee

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 218

Description: Timken's Mascot, TN facility serves the rail industry by providing new and reconditioned rail bearing assemblies for passenger, freight and locomotive applications. The labor-intensive process of assembling rail bearings requires the bearings to be manually flipped in order to install all the necessary components. The average weight for each bearing at the point it is flipped is 80 pounds, with production volume reaching up to 450 bearings per 8-hour shift. The combination of these factors yields repetitive, awkward postures and high forces. After qualitative and quantitative ergonomic review along with associate input, the Mascot team designed, built, and installed a mechanical bearing flipper that eliminated the need to manually flip over 7.5 million pounds of bearings each year.

EGO (Ergonomics-on-the Go)

Cintas, Greensboro, North Carolina

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 220

Description: At Cintas we deliver uniforms, mats, bundled aprons and towels and boxed products. We improved our cart for transporting these items from our delivery van to our customer locations. The cart has better casters for easier handling and pushing across all types surfaces. We can hang uniforms on the new cart which maintains their quality and finish. We included a handle, work surface, hanger rack holder and spring-loaded bottom to reduce manual handling risks. It reduces lifting and carrying of product. We also developed a pulley system to safely take the 44-lb. cart off and on the van.

Clem Cage

Coca-Cola, Maspeth, New York

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)
Ergo Cup Booth: 221

Description: Using the concept of a PEZ candy dispenser, the Clem Cage was designed (in-house) so that, Order Builders can retrieve pallets without having to manually handle from the top of a pallet stack.

Wunderstand 2.0

Gulfstream- Appleton, Appleton, Wisconsin

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)
Ergo Cup Booth: 222

Description: To make airplane furniture, we use large aluminum honeycomb panels (weighing up to 35 pounds)., Cabinetmakers use one hand to hold the panels while simultaneously using the other hand for highly intricate work such as adding wood trims, edge filling, and performing a multitude of processes needed to complete each piece. This puts the worker in awkward postures and creates undue neck, shoulder and back stress. The furniture employees designed a new holding fixture that reduces the ergonomic impact of muscle fatigue when holding the panel and performing multiple tasks at the same time. The new device is so revolutionary to the furniture world that it recently received a patent for its unique design and process improvement.

Bead Blasting Aircraft Wheel Assemblies

Gulfstream- Appleton - Appleton, Wisconsin

Category: Workplace Solutions I (Team-Driven Workplace Solutions with internal competitions)
Ergo Cup Booth: 223

Description: When bead blasting aircraft wheel assemblies, the operator is required to hold the bead blaster spray nozzle in one hand and physically lift and rotate the 50# assembly with the other hand to remove paint and corrosion prior to the painting process. This high-risk task causes hand, wrist, arm and back fatigue and requires the mechanic to take multiple breaks during the operation.

Jurassic Press

Yamaha Motor Mfg. Corp., Newnan, Georgia

Category: Workplace Solutions I (Team-Driven Workplace Solutions)
Ergo Cup Booth: 234

Description: The ROV Drive Shaft sub-assembly process used an arbor press to press in the bearings. The equipment limited who could operate the station to only 29% of the workforce. The press had high ergonomic risk for the shoulders & elbows, requiring extended reach and high force to operate, repeating the operation 3-5 times per piece. It also had the potential to strike operators working or walking behind the press.

The team retrofitted an old hydraulic press to replace the arbor press. By designing and building it in house, they were able to save money, reduce the process time by 22%, and change the

operation to a LOW ergonomic risk. Now 100% of the workforce can operate this equipment. The changes saved an estimated \$67,690 through avoided injuries & reduced process time.

Bushing Rodding Tool

Owens Corning Newark, Ohio

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 235

Description: The new and old tool will be compared to demonstrate the improvement in ergonomics. We will also include a video of the task being performed with the use of both tools to provide a clear picture of the tools use in the plant. A training simulator will be set up at the booth for hands on experience for conference attendees and judges.

The Need to Rotate

Mueller Company, Albertville, Alabama

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 236

Description: The completed hydrant was loaded, to a pallet, on a conveyor and manually rotated. The hydrant was rotated to allow clearance for hydrant washer, before painting. On the new assembly line, the hydrant is loaded to a pallet that is automatically rotated to the correct orientation, that would allow it to move through the rest of the line.

J.E.D. Clamp-It (Justifying Ergonomic Design)

DePuy Synthes, Horseheads, New York

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 237

Description: As part of our machining process in the Solids cell, fixtures are utilized in the machining process. These fixtures are used to hold our raw materials during manufacturing.

The fixtures were repeatedly moved in and out of the equipment to load and unload parts at varying intervals based on equipment cycle times.

In order to secure the fixtures to the equipment a ratcheting torque wrench and a hex key socket was used.

It is important that machine operators ensure that the fixtures are properly secured to ensure the product is within specifications.

“Mix” It Safer

The Estée Lauder Companies, Melville, New York

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 231

Description: The Estée Lauder Companies’ manufacturing facility in Melville, New York, makes cosmetic products in large production vessels ranging from 25 to 1,000 gallons. To create a finished product, the raw materials are mixed together using a five-foot long solid stainless-steel

mixing shaft with an attached propeller. These mixing shafts can weigh up to 65 pounds and were known to cause musculoskeletal injuries when employees manually attached them to the motor. Technical Services employees working with the Engineering and EHS departments developed an in-house solution to modify the existing equipment to reduce the ergonomic risks.

The “Quint-Essential” Lifting Tool

The Estée Lauder Companies, Oevel, Belgium

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 232

Description: The Estée Lauder Companies’ manufacturing facility in Oevel, Belgium, produces cosmetics products for many brands within the Company. Employees identified a need for a tool to avoid the ergonomic risks of improper lifting of heavy rolls of paper used as packing material. After reviewing possible vendor solutions and not finding a suitable option, the employees proposed modifying an adjustable lifting tool for multiple heavy and awkward lifting tasks throughout the facility.

Robot Bell Cup Push Tool

Volkswagen Group of America, Chattanooga, Tennessee

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 238

Description: The idea to improve the manual assembly and disassembly of robot bell cups came from the team who completed the process daily and understood the ergonomic, safety and quality issues with the process. A tool was designed, and 3D printed to replace the robot manufacturer tool and improve the process. The tool created a process that was more ergonomically friendly by reducing pressure points on the palm and improved quality by reducing the potential to damage the bell cups. The tool improved the process time by controlling the location of the bell and eliminating the fatigue on the hands from compressing the bell cup during assembly and disassembly.

Baffle Installation Lever

Volkswagen Group of America, Chattanooga, Tennessee

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 239

Description: The installation of a lever to install baffles onto parts was the idea of team member who had sore thumbs and hands. The baffles have two clips that must be pressed into holes on a metal part. The baffle clips required high push force to install while the team member held the metal part. The process was changed by adding a stand to hold the part and a lever arm was added to press the baffle clips into the metal part. This resulted in a 40% reduction in force to install the clips and improved quality by reducing the number of unseated baffles. In addition, productivity was improved 50% by creating a repeatable process.

Drive Shaft Delivery Method

Volkswagen Group of America, Chattanooga, Tennessee

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 240

Description: The development of a new delivery method for drive shafts was born from team member ergonomic complaints and quality issues. The team re-designed the delivery racks by reorienting the parts from a horizontal to vertical position. This new position improved ergonomics by eliminating a raised arm lift and presented the parts in a power grip position for easy lifting. Quality was improved by reducing the potential of the drive shaft making contact with the rack and creating defects. Productivity was also improved by reducing the reach time required to lift the parts from the rack.

G650 Shock Strut & Side Brace Tool

Gulfstream – Appleton, Appleton, Wisconsin

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 241

Description: Removing and replacing a 100+ pound main landing gear shock strut, and/or a side brace, for periodic maintenance requires two mechanics to manually lift and carry the component(s) from cart level to above shoulder height. Two mechanics are required to handle the component while another mechanic removes/replaces the holding pins that secure the unit to the aircraft. The process consumes three mechanics and poses significant risk for upper body and back injury. By adapting an existing lift device with an attachment that will latch on to the strut or side brace, the manual lifting and carrying requirement is eliminated and the labor and durations times are significantly reduced.

Coil Swage Process Change and Equipment Design

ATI Specialty Alloys and Components, Huntsville, Alabama

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 242

Description: An employee-led ergonomics team was presented with a challenging problem with a swaging process for metal alloy coils. The facility was experiencing indicators for musculoskeletal disorders due to high vibration as well as lost sales revenue due to manufacturing inconsistencies. This employee-led team turned to process and equipment design changes to yield extreme results.

The project resulted in an 89% reduction in ergonomics risk factor score. Annual lost sales revenue of \$28,620 was recovered with an annual injury cost avoidance of \$60,000. The total annual ROI for the project was 4564% and the payback period was less than 8 days.

Knuckle Buster

Honda of South Carolina, Timmonsville, South Carolina

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 243

Description: At Honda of South Carolina, we have a process that poses a challenge to associates. The process requires the associate to torque a hub castle nut on a free spinning hub assembly.

A locking device was implemented to retain the wheel studs to prevent the hub from spinning while torque is being applied. The locking tool is used 960 times per day in a normal 1:07 process time.

The Knuckle Sandwich

Honda Manufacturing of Indiana, LLC, Greensburg, Indiana

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 244

Description: Do you want a knuckle sandwich? How about a knuckle to the chest?

Honda Manufacturing of Indiana takes its first swing in the Ergo Cup with the Knuckle Sandwich team.

During the design review of the 2016 Civic model, production associates would have struggled in holding the 37 to 48-pound rear knuckle. With both hands temping bolts, the chest would keep the knuckle assembly upright. This condition resulted in high risk for injury, increased downtime and poor associate morale. Knuckle Sandwich is proactive approach providing a fixture that supports the rear knuckle during installation, thereby eliminating all these potential inefficiencies.

Mig Masters

Honda of South Carolina, Timmonsville South Carolina

Category: Workplace Solutions I (Team-Driven Workplace Solutions)

Ergo Cup Booth: 245

Description: In the Weld Department at Honda of South Carolina the process known as the stageout process requires an associate to lift a frame off of the primary fixture and carry the frame by hand to a staging table 6' away. The second associate would lift the part from the staging table, exposing associates to parts with hot welds and sharp edges and then carry an additional 6' to the secondary fixture. Frames often fell during loading and unloading. Higher fatigue levels were attributed to excessive walking and material handling.

Lever for Door Adjustment

Ford Motor Company, Hermosillo, Mexico

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 62

Category: Since 1987, our door adjustment process consisted in moving the door hinges by hitting them with a hammer and chisel, this process is critical to set the door correctly aligned to the vehicle. The idea to change that process came from our Ford Production System with a process called Workstation Stability and Continuous Improvement Mapping where we had four stations evaluated as RED in Safety, Quality and Delivery targets. These results were related with accidents, medical treatments, defects caused in these stations and down time. A supplier manufactured the prototype lever with the initial design made by our engineering team. After the tryouts, our team made several iterations to improve design. This design eliminated the ergonomic issues, decreasing the risk of accidents caused by handling the hammer and chisel, improved our vehicles quality by eliminating the marks produced by the impact of the chisel; and provided a cost reduction by decreasing hammer and chisel usage.

Final Assembly Door Panel Installation Fixture

Ford Motor Company, Hermosillo, Mexico

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 63

Description: In Ford Motor Company's Hermosillo Stamping and Assembly Plant launching a new model is always a challenge given new specifications, options, upgrades, etc. We actually build in our production lines Ford Fusion and Lincoln MKZ models. For Model Year 2017 there was some improvements overall to the vehicle and one of those was the additional speakers in models such as Lincoln MKZ. In simple terms additional speakers= additional weight to the door panel.

Die Setter Laser Light Marker

Toyota Motor Manufacturing, TX, Inc., San Antonio, Texas

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 80

Description: Toyota Motor Manufacturing, TX, Inc. (TMMTX) Press/Stamping shop established a highly visible laser into the process to help with the current ergonomic standards within the production process. The implementation of the laser has created a highly functional visual solution that will prevent repetitive neck flexion, extension, and rotation needed to safely lift and fly a 4-ton press Die with crane.

Raytheon Section Compression Fixture

Raytheon Missile Systems, Tucson, Arizona

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 81

Description: The Raytheon Section Compression Fixture is a simple but powerful tool to eliminate ergonomic risk in our factory. Our presentation would allow conference attendees to attempt the task with and without the fixture. In addition, we will have a video and brochure with additional information to truly understand the burdensome process.

New CRV Tailgate Install Methodology

Honda of Canada Mfg., Alliston, Ontario, Canada

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 82

Description: Honda of Canada Mfg.(HCM) engineers developed a new method to install CRV tailgates. With the new vehicle design and the old method of install, only associates greater than 6'0" would be able to perform the process. With the use of the tools developed to allow perfect fit and alignment of the tailgate, the hinges can now be installed prior to the placement of the tailgate, reducing the extreme reaches and awkward postures. This allows accessibility of all associates to the process. HCM associates have provided positive feedback, significantly improving zone morale. Injury avoidance = 4/year. ROI= 2.76, payback, 15 weeks.

Bumper Pull Tester

Honda of America MFG., Inc., Marysville, Ohio

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 83

Description: Production associates perform quality checks on over 100 brackets on bumpers at the start of each shift and during each model change. This ensures that the brackets do not break off under certain pull force specifications (37 pounds on one bracket and 67 pounds on another bracket) They exert high pull forces using awkward postures, and perform inconsistent pulls between tests, resulting in low morale. The team created a worktable with a built-in pull test fixture to eliminate these ergonomics concerns, to ensure quality pull tests each time and to reduce the time to complete the manual pull tests.

Large-Scale 3D-Printed Fixture with Switchable Magnet

Honda Manufacturing of Alabama, Lincoln, Alabama

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 100

Description: The previous fixtures used at the Honda Manufacturing of Alabama's Assembly department to secure the three-piece propeller driveshaft for All Wheel Drive vehicle models were difficult to use and unreliable. Production associates lifted over 55 pounds (part weight plus fixture weight) and exerted 42 pounds of pull force to remove the fixture from the part after

installation to the vehicle. Collaborating with production associates, the team designed a 3D-printed jig with a switchable magnet, reducing the lifting weight to 13.5 pounds and pull force to 28 pounds. The new fixture also allows for better part fit and tool clearance.

Snubber Die Cut Solution

GE Power, Charlottesville, Virginia

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 101

Description: Addressing ergonomic issues using Design for Manufacturing principles to improve worker safety and operational impact.

Self Turning Tool

Toyota Motor Manufacturing, TX, Inc., San Antonio, Texas

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 102

Description: Toyota Motor Manufacturing, TX, Inc. (TMMTX) is home to the Toyota Tundra and Toyota Tacoma. Over 110,000 Toyota Tacoma trucks are built each year and 80% of them 4X4 powered drivetrain. In order to complete a 4X4 Tacoma the team members must rotate the Prop Shaft by hand (6) times to install the bolts to the Transmission Transfer unit. The constant rotation of the prop shaft has caused wrist and hand discomfort due to the awkward hand positioning. Team Members worked alongside engineers to look for ways to improve the process. Their collaborated solution is a tool that helps self rotate the prop shaft. The resulting solution not only improved ergonomic condition for the production team members but also has improved production time savings to the production line.

Right off the Bat

Bridgestone Warren County, Morrison, Tennessee

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 103

Description: We use a conveyor on each side of the creel stand to convey 80 lb. spools of wire to the pins on the creel stand. Each reel is supported between two plastic bats that are attached across two chains that convey the spools about 40 ft. along the creel stand. We modified the conveyor bats by splitting them into two parts. This modification allows us to change just the top half of the bat that gets worn from the spools. Three screws that are easily accessible allows us to replace the top of the bat rather than having to remove the entire bat from the conveyor.

331 & 332 Routing Process on Same Table

Gulfstream Aerospace, Mexicali, Mexico

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 120

Description: Looking for space reduction to support ramp up production of new models was needed optimize lay out.

New ergonomic workstation was designed to replace 2 workstations by saving space and keeping ability of processing two different harnesses using a rotating mechanism.

We can alternate the setup to make two different products without sacrificing space and keeping ergonomic key points always active.

(Winner of the Gulfstream Ergonomics Fair 2017)

D614 Engine Strap Dolly

Gulfstream Aerospace, Savannah, Georgia

Category: Workplace Solutions II (Engineering/Ergonomist-Driven Workplace Solutions with internal competitions)

Ergo Cup Booth: 121

Description: The presentation describes how a dolly used for the construction of an aircraft engine strap frame underwent numerous modifications to compensate for issues arising from a move from one building to another. What started as a simple change, turned into a project which resulted in cycling over different parts of the dolly numerous times which resulted in continuous ergonomic improvements. Special emphasis is given to the integration of hinges that were manufactured as a single component using a new additive manufacturing process.

This project won first place at the Gulfstream internal Ergo competition.