

22nd Annual Engineering Design EXPO

EXPO Award Winners

Awards for Excellence in Booth Presentation

<p>Alternative Drain Pan Defrost</p>	<p>Design, evaluate, and test electrical heating systems for evaporator drainpans, providing the necessary temperature requirements while accounting for manufacturing, operation, and maintenance costs.</p> <p>Sponsor: Trever Pope Sponsor Organization: Colmac Coil Manufacturing Inc.</p> <p>Team Members: Jonathan Paul - Mechanical Engineering Andrew Lake - Mechanical Engineering Anthony Gatlin - Mechanical Engineering Jamie Walker - Mechanical Engineering</p> <p>Faculty Advisor(s): Tao Xing, Steve Beyerlein Mentor(s): Theo White</p>
<p>BandBeesten: The Legacy Continues</p>	<p>The BandBeesten lives on as the Department of Mechanical Engineering and the Vandal Marching Band collaborate to create the ultimate drum machine. This year's BandBeesten is fully powered and with a redesigned frame, control system, and wheels it can traverse astroturf and hardwood with a 400 pound load.</p> <p>Sponsor: Spencer Martin Sponsor Organization: Vandal Marching Band</p> <p>Team Members: Amanda White - Mechanical Engineering Christian O'Bryan - Mechanical Engineering Maddie Brennan - Electrical & Computer Engineering Tyler Comstock - Mechanical Engineering Robyn Vowell - Mechanical Engineering</p> <p>Faculty Advisor(s): Edwin Odom, Steve Beyerlein, Robert Rinker Mentor(s): Matt Kologi, Theo White</p>
<p>Development of Prototype Miniaturized Spectrometer of Decagon Devices</p>	<p>A miniature spectrometer characterizing Polydextrose was designed, using an Arduino Due micro-controller, with an integrated camera for viewing physical changes such as glass transition temperature and other physical changes. Testing of the manufactured design was done for proof of concept and suggesting improvements.</p> <p>Sponsor: Martin Buehler Sponsor Organization: Decagon Devices Inc</p> <p>Team Members: Brandon Cisco - Chemical & Materials Engineering Cody Dawes - Chemical & Materials Engineering Robert Blair - Chemical & Materials Engineering Daniel Roach - Chemical & Materials Engineering</p> <p>Faculty Advisor(s): David Drown</p>
<p>DeVlieg Innovation Design Project – Engineering Scholars Heat Exchange</p>	<p>The goal of this project is to develop a physical heat exchanger with sensor systems to monitor and record the conditions of students will be able to use this heat exchanger to test computer models of the heat exchanger.</p> <p>Sponsor Organization: DeVlieg Foundation</p>

	<p>Team Members: Dustin Mallet - Electrical & Computer Engineering Lorraine Mottishaw - Chemical & Materials Engineering Patrick Paulus - Mechanical Engineering Kathryn Simpson - Chemical & Materials Engineering</p> <p>Faculty Advisor(s): Bob Stephens Mentor(s): Andrew Engel</p>
<p>Dynamic Fish Manure Extractor</p>	<p>Cleanliness in fish hatchery raceways is of the utmost importance when it comes to healthy fish. As an engineering team, our purpose is to design a system that can effectively reduce the build-up of fish manure on the bottom of the raceways without causing re-suspension of the manure in the water.</p> <p>Sponsor: Scott Williams Sponsor Organization: UI Aquaculture Center</p> <p>Team Members: Steven Sainsbury - Mechanical Engineering Craig Woodruff - Biological & Agricultural Engineering Braden Comstock - Biological & Agricultural Engineering Cole Schierman - Mechanical Engineering Clint Hartz - Biological & Agricultural Engineering</p> <p>Faculty Advisor(s): Tao Xing Mentor(s): Kevin Kruger</p>
<p>Engineers Without Borders Water for Carani Bolivia</p>	<p>The UI student chapter of Engineers Without Borders has partnered with the community of Carani, Bolivia to help them gain access to clean, dependable water, among other goals.</p> <p>Sponsor Organization: Engineers Without Borders</p> <p>Team Members: Michael Jones - Mechanical Engineering Will Parker - Electrical & Computer Engineering</p> <p>Faculty Advisor(s): Fritz Fiedler</p>
<p>Excitation Control for a Synchronous Machine</p>	<p>The goal of the project is to specify, purchase, install, and commission a static exciter for the synchronous generator in the UI Model Power System Lab, including user documentation and a verified RTDS system model.</p> <p>Sponsor: Normann Fischer Sponsor Organization: Schweitzer Engineering Laboratories</p> <p>Team Members: Jacob Nelson - Electrical & Computer Engineering Carlos Valdez - Electrical & Computer Engineering Kerri McGinty - Electrical & Computer Engineering Chien-Kai Wang - Electrical & Computer Engineering</p> <p>Faculty Advisor(s): Feng Li Mentor(s): Brian Johnson</p>
<p>Pedestrian Location and Guidance</p>	<p>The Pedestrian Location and Guidance project aims to monitor an intersection and locate pedestrians while in the crosswalk. Assist visually impaired pedestrians who may have trouble safely crossing the street. If the pedestrian strays or remains in the crosswalk the system should be able to recognize this and give feedback.</p> <p>Sponsor: Jim Frenzel Sponsor Organization: UI Department of Electrical & Computer Engineering</p> <p>Team Members: Alec Briggs - Electrical & Computer Engineering Tom Haney - Electrical & Computer Engineering</p>

	<p>Faculty Advisor(s): Feng Li Mentor(s): James Frenzel</p>
Radiative Cooling of the Night Sky	<p>Electronic manufacturing facilities require a large amount of power, up to 47 million kWh per month. Significant energy can be saved on cooling by utilizing the phenomenon, radiative cooling. Team VOYAGER has developed a model demonstrating the feasibility of dissipating heat from an electronics manufacturing facility to the night sky.</p> <p>Sponsor Organization: IEE/WERC International Environmental Design Contest</p> <p>Team Members: Breanna Wong - Chemical & Materials Engineering Kai Coldsnow - Chemical & Materials Engineering Rachel Peterson - Chemical & Materials Engineering Josh Roper - Chemical & Materials Engineering Cody Satterthwait - Chemical & Materials Engineering</p> <p>Faculty Advisor(s): David Drown Mentor(s): David MacPherson, Charles Cornwall</p>
Robotic Arm Rehabilitation Device for Reach and Grasp	<p>Design and development of hand rehabilitation modules, adding new functionality and improving upon two first-generation designs. The purpose of the modules is to extend the functionality of an existing arm rehabilitation device (previously for arm reach training) in order to also include the rehabilitation of hand grasp. The existing arm rehabilitation device, called ArmAssist, was developed by Tecnia.</p> <p>Sponsor: Aitor Belloso Linacisoro Sponsor Organization: Tecnia Research & Innovation</p> <p>Team Members: Adrian Alcocer - Biological & Agricultural Engineering Ryan Clark - Mechanical Engineering Calvin Connor - Mechanical Engineering Ronnie Ross - Mechanical Engineering Tony Totorica - Electrical & Computer Engineering Brandon Wade - Biological & Agricultural Engineering</p> <p>Faculty Advisor(s): Joel Perry Mentor(s): Joel Perry, Samuel Qualls</p>
The Soft-Story Issue	<p>Looking at the issues that arise when a structure has a soft/weak-story and what is generally done about fixing these issues.</p> <p>Sponsor: Richard Nielsen Sponsor Organization: UI Department of Civil Engineering</p> <p>Team Members: Robert Herrera - Civil Engineering</p> <p>Faculty Advisor(s): Richard Nielsen</p>
TITAN: Tensegrity Internal Actuation	<p>The goal is to design a moving internal payload to provide a method of locomotion for the NASA concept space exploration robot, SuperBall.</p> <p>Sponsor: Vytas SunSpiral Sponsor Organization: NASA AMES</p> <p>Team Members: James Tighe - Mechanical Engineering Amy Wohlschlegel - Electrical & Computer Engineering Kelsey Rayborn - Mechanical Engineering Mark Garber - Mechanical Engineering Dylan Waterman - Electrical & Computer Engineering</p>

Faculty Advisor(s): Matthew Riley
Mentor(s): Kyle Morse, Stephen Goodwin

Awards for Excellence in Technical Presentation

<p>DeVlieg Innovation Design Project – Rehabilitation Robot End-Effector</p>	<p>As a sophomore design project with the goal of developing a robot end-effector to support robotic rehabilitation research.</p> <p>Sponsor Organization: DeVlieg Foundation</p> <p>Team Members: Aaron Eliason - Mechanical Engineering Autumn Pratt - Mechanical Engineering Brendan Souvenir - Electrical & Computer Engineering David Mortin - Electrical & Computer Engineering</p> <p>Faculty Advisor(s): Eric Wolbrecht Mentor(s): James Tigue</p>
<p>Guided Parafoil Subsystems “GPS” Technology</p>	<p>Develop and improve the guided parafoil subsystems of the small payload quick return (SPQR) system for small sample returns from the International Space Station. Upgrades include shrinking current electrical subsystems, integrating wireless sensor technology, developing user interface for system communication and developing parafoil deployment systems and inflation</p> <p>Sponsor: Marc Murbach Sponsor Organization: NASA AMES</p> <p>Team Members: Stephen Wayne - Electrical & Computer Engineering Brandon Arakawa - Electrical & Computer Engineering Jason Bjur - Electrical & Computer Engineering Effat Takaleh - Mechanical Engineering Brian Kislring - Mechanical Engineering Forrest Austin Tanner - Mechanical Engineering Richard Park - Computer Science Ben Cumber - Computer Science</p> <p>Faculty Advisor(s): Feng Li, David Atkinson Mentor(s): Matt Kologi</p>
<p>Just a Portion of Absorption</p>	<p>An absorption column using sand was designed to be a cost effective, efficient and robust preliminary separation process that removes emulsified oil from brackish water. The bench-scale apparatus was built to demonstrate the effectiveness; total energy requirement, amount of waste, and water quality analysis; and address potential health and safety issues.</p> <p>Sponsor Organization: IEE/WERC International Environmental Design Contest</p> <p>Team Members: Hannah Law - Chemical & Materials Engineering Jassim Alshammari - Chemical & Materials Engineering Jocie Cracroft - Chemical & Materials Engineering Meshari Ali - Chemical & Materials Engineering</p> <p>Faculty Advisor(s): David Drown Mentor(s): David MacPherson, Charles Cornwall</p>
<p>LED Display</p>	<p>LED Display is an attempt to create a clear, bright, and cost-effective medium for displaying video to be viewed during any time of day and from a distance.</p> <p>Sponsor: Robert Rinker Sponsor Organization: UI Department of Computer Science</p> <p>Team Members: Colin Clifford - Computer Science</p>

	<p>Peter Brown - Electrical & Computer Engineering</p> <p>Faculty Advisor(s): Bruce Bolden</p>
Radiative Cooling of the Night Sky	<p>Electronic manufacturing facilities require a large amount of power, up to 47 million kWh per month. Significant energy can be saved on cooling by utilizing the phenomenon, radiative cooling. Team VOYAGER has developed a model demonstrating the feasibility of dissipating heat from an electronics manufacturing facility to the night sky.</p> <p>Sponsor Organization: IEE/WERC International Environmental Design Contest</p> <p>Team Members: Breanna Wong - Chemical & Materials Engineering Kai Coldsnow - Chemical & Materials Engineering Rachel Peterson - Chemical & Materials Engineering Josh Roper - Chemical & Materials Engineering Cody Satterthwait - Chemical & Materials Engineering</p> <p>Faculty Advisor(s): David Drown Mentor(s): David MacPherson, Charles Cornwall</p>
Rain Guage Retrofit	<p>Design a cost effective digital conversion for current USDA forest service rain gauges that will increase productivity, longevity, and performance.</p> <p>Sponsor: Pete Robichaud Sponsor Organization: USDA Forestry Service</p> <p>Team Members: Alec Harrison - Biological & Agricultural Engineering Nick Kirby - Mechanical Engineering Michael Kaminski - Electrical & Computer Engineering Peter Frankenfield - Mechanical Engineering</p> <p>Faculty Advisor(s): Matthew Riley Mentor(s): Kevin Krueger</p>
Robotic Arm Rehabilitation Device for Reach and Grasp	<p>Design and development of hand rehabilitation modules, adding new functionality and improving upon two first-generation designs. The purpose of the modules is to extend the functionality of an existing arm rehabilitation device (previously for arm reach training) in order to also include the rehabilitation of hand grasp. The existing arm rehabilitation device, called ArmAssist, was developed by Tecnalía.</p> <p>Sponsor: Aitor Belloso Linacisoro Sponsor Organization: Tecnalía Research & Innovation</p> <p>Team Members: Adrian Alcocer - Biological & Agricultural Engineering Ryan Clark - Mechanical Engineering Calvin Connor - Mechanical Engineering Ronnie Ross - Mechanical Engineering Tony Totorica - Electrical & Computer Engineering Brandon Wade - Biological & Agricultural Engineering</p> <p>Faculty Advisor(s): Joel Perry Mentor(s): Joel Perry, Samuel Qualls</p>
Team Rocket: Integrated Rocket Ramjet	<p>Design and model an Integrated Rocket Ramjet (IRR) engine design that will transition from the solid rocket phase to the liquid ramjet phase after reaching the designed speed while utilizing minimal breakaway parts or by means of control surfaces. The control surfaces will also serve as an inlet optimization tool to minimize exergetic losses into the combustion chamber and simultaneously maximize exit conditions for optimal thrust.</p> <p>Sponsor: John Crepeau Sponsor Organization: UI Department of Mechanical Engineering</p>

	<p>Team Members: Chance Sundquist - Mechanical Engineering Nate Randall - Mechanical Engineering Robert Willis - Mechanical Engineering Steven Elsbury - Mechanical Engineering</p> <p>Faculty Advisor(s): Tao Xing, John Crepeau Mentor(s): John Teske</p>
<p>UI Clean Snowmobile Challenge Team</p>	<p>The University of Idaho Clean Snowmobile Team is comprised of both undergraduate and graduate students. We design, build, and test a snowmobile then compete with it at the SAE Clean Snowmobile Challenge. The object of the challenge is to reduce emissions and quiet the snowmobile while maintaining reliability and performance.</p> <p>Sponsor Organization: UI Clean Snowmobile Challenge Team</p> <p>Team Members: Dillon Savage - Mechanical Engineering Crystal Green - Mechanical Engineering Chase Smith - Mechanical Engineering Alex Wright - Mechanical Engineering Justin Ruehl - Mechanical Engineering Mechann Hester - Mechanical Engineering Mark Woodland - Mechanical Engineering Aaron Eliason - Mechanical Engineering Conor Swanstrom - Mechanical Engineering Jason Maas - Mechanical Engineering Austin Anderson - Mechanical Engineering Zach Lipple - Mechanical Engineering Zach Puett - Mechanical Engineering Cade Smith - Mechanical Engineering Tessa Aus - Electrical & Computer Engineering Shea Morrison - Electrical & Computer Engineering Alexa Aguilar - Electrical & Computer Engineering</p> <p>Faculty Advisor(s): Dan Cordon, Michael Santora</p>
<p>University of Idaho Biodiesel Reactor Upgrade</p>	<p>State of the art pilot scale bio-diesel reactor, designed to address challenges in bio-diesel production. The system design will safely handle reagents such as methanol and liquid sodium methlyate. Implementation focus is on enclosure of the system.</p> <p>Sponsor: Brian He Sponsor Organization: UI Department of Biological & Agricultural Engineering</p> <p>Team Members: Gene Staggs - Biological & Agricultural Engineering Brian Hanson - Biological & Agricultural Engineering Andrew Engel - Mechanical Engineering Conner Saxe - Mechanical Engineering</p> <p>Faculty Advisor(s): Dev Shrestha, Steve Beyerlein Mentor(s): Kevin Kruger</p>

2015 EXPO People's Choice Award

<p>TITAN: Tensegrity Internal Actuation</p>	<p>The goal is to design a moving internal payload to provide a method of locomotion for the NASA concept space exploration robot, SuperBall.</p> <p>Sponsor: Vytas SunSpiral Sponsor Organization: NASA AMES</p> <p>Team Members: James Tigue - Mechanical Engineering Amy Wohlschlegel - Electrical & Computer Engineering Kelsey Rayborn - Mechanical Engineering Mark Garber - Mechanical Engineering Dylan Waterman - Electrical & Computer Engineering</p>
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