

AETC Program Overview

(Subject to Change)

MONDAY, FEBRUARY 9

7:00AM

Registration

LOCATION: Medallion C/D

8:00AM

CONTINUING EDUCATION

CPD #1 – 3D Printing

Speaker- Herb Wedig, Technical Training Aids

Co-presenter: Terry Cambron, Stratasys

LOCATION: Medallion A

Additive Manufacturing 101

This presentation will explore the rapidly developing area of additive manufacturing and the use of 3D printers. The primary focus will be in the areas of material extrusion utilizing fused deposition modeling (FDM) technology and material jetting with polyjet technology. These technologies can save time and money compared to traditional methods of making prototypes, cores, patterns, molds and even some production-quality parts. The first part of the presentation will show how these technologies work and describe the advantages and limitations of each. The second portion of the presentation will use case studies to investigate a variety of 3D printing prototyping and production applications currently used in industry today. Finally, the materials, machines and the parts they make will be examined to understand the tolerances and strength characteristics of 3D printed thermoplastics and digital materials.

This session will conclude with the presentation of research and teaching applications by speakers.

CPD #2 – Designing Agricultural Applications for Handheld

Mobile Devices

Speaker- Joe Dvorak, University of Kentucky

LOCATION: Medallion B

This class is a basic introduction to App development. It will cover the basics of App development and tools that are required for various types of development. Example applications will be developed in App Inventor which is a graphical method of creating programs for Android. App Inventor enables the quick creation of basic apps without extension programming knowledge. This class will focus on easy ways to get started with App programming and publishing. No previous programming experience is necessary for this course. Participants will need to bring a laptop on which they may install and run an application (App Inventor) to enable development.

11:00AM

Suppliers and Consultants Display; Student Design Presentations

LOCATION: Medallion C/D

Participants to come.

12:00PM

LUNCHEON

LOCATION: 10th Floor – Grand Ballroom

Keynote Speaker: Jim Wessing, Kondex

“Manufacturing: Dispelling Workforce Myths, Developing its Future”

1:30PM- CONCURRENT TECHNICAL SESSIONS

1:30PM-3:15PM TECH SESSION 1 – Planting Technologies

LOCATION: Medallion A

Planter Technology” : The global push to increase crop production and keep pace with population projections underlines the importance for growers to make every seed count. Maximizing growing potential of corn and soybeans will be key, and the technology needed to achieve this has been developing rapidly. In this session, learn how manufacturers are delivering modern planters and planter equipment to assist the industry in optimizing every acre.

1:30PM

Introductions

1:35PM

Micro-Managing Planters: Smart Iron Solutions to Agronomic Problems

Dale Koch, Precision Planting

2:05PM

ExactEmerge™ Row Unit

TBA, John Deere

2:35PM

Multi-hybrid, Future of Planting

Gregg Witt, Raven Industries, & Derek Prostime, Kinze

1:30PM-3:15PM TECH SESSION 2 – Center for Off-Road Equipment

LOCATION: Medallion B

Kansas State University’s STORM 2050 CORE

1:30PM

Introduction to CORE Vision

Dr. Joe Harner, KSU BAE Department Head

1:35PM

Pulse Width Modulation Control System Response and Accuracy During Nozzle On/Off and Its Impact on Agricultural Sprayer Coverage on the Ground

Dr. Ajay Sharda, KSU BAE Assistant Professor/KSU Extension Specialist

1:55PM

"Potential Educational Models Meshing Academia and Industry Through the STORM 2050 CORE Center"

Dr. Dan Flippo, KSU BAE Assistant Professor

2:15PM

Functional Degradation Comparisons of Market Available Seed Meters via Lab Evaluations

Derek Mullins, Vice President of Operation – Mechanized Design, LLC

2:35PM

Benefits to Industrial Partners in Collaborating with the KSU STORM 2050 CORE Center

Ed Brokesh, KSU BAE Instructor

2:55PM

Open Discussion and Feedback

Jim Schmidt, Vice President of Engineering – Mechanized Design, LLC

Give your feedback and openly discuss the vision and operations of KSU’s STORM 2050 CORE

3:15PM-3:30PM – BREAK

3:30PM CONCURRENT TECHNICAL SESSIONS

3:30PM-5:15PM- TECH SESSION 3 – Specialty Crop Harvesting

LOCATION: Medallion A

3:30PM

Introductions

3:35PM

Instrumentation for Monitoring and Reducing Damage During Mechanized Harvest Operations

Nicholas Tipper, Techmark Inc.

4:05PM

Harvesting Grapes – from Field to

Mike Vande Voort, Oxbo

4:35PM

Developments in Precision Peanut Harvest

Kendall Kirk, Clemson University

3:30PM-5:15PM-

TECH SESSION 4 – Autonomous Vehicles

LOCATION: Medallion B

A recent trend in agricultural machinery has been the move toward partial or fully autonomous operation. Reduction of labor costs, operator fatigue, and operator error coupled with gains in efficiencies can be realized with autonomous vehicle operation. This session will highlight some new advancements in autonomous operation of agricultural machinery. These include autonomous operation of traditional machinery and some new pieces of equipment recently introduced to agricultural applications.

3:30PM

Introductions

3:35PM

UAV Data Collection and UAV Modification for Agriculture

Mitchell and Zach Fiene, DMZ Aerial

4:05PM

FAA Unmanned Aircraft Systems Update

Stephen George, Federal Aviation Administration

4:35PM

Developing Trust in Autonomous Vehicles

Michael Wagner, Edge Case Research

5:30PM-6:30PM

DISTINGUISHED LECTURE

LOCATION: Medallion B

“Central Tire Inflation Systems” – Speaker: Martin Tigges



Martin Tigges is a German Agricultural Engineer and managing partner of “PTG Tire Inflation Systems”

Preview of 2015 Distinguished Lecture Session:

Today’s agricultural tractor is a multifunctional farm machine that has improved rapidly over the last few years to deliver exceptional performance. Agricultural tractors are excellent dual-mode

vehicles that need to be quick and safe to drive on roads, work the fields with maximum tractive efficiency and soil protection, and also perform all work with minimum diesel consumption and tire wear. In addition, they do this with attached equipment that may bring the entire weight to 55 tons or more.

The connecting link between machine and road is the tire, which must support the weight of the vehicles on the road, ensure safe driving and comfort, and also protect the soil and allow proper working in the field. Tires must be hard to provide low wear on the road but also soft for good grip in the field. These are essentially conflicting requirements that cannot be met with the same tire pressure. Inflating the tires to a "happy medium" results in pressures that are too low on the road and too high in the field.

This lecture provides an overview of the various benefits of driving with an adjusted tire pressure in the field and on the road. The features of PTG's central tire inflation systems, CTIS, are nearly zero pressurized seals in the air transmission unit (dual-line system), a main control unit based on a proportional valve system, and various operating panels. Examples of air transmission units for different axle geometries are given. Furthermore, the concept of a new sealing concept for air transmission units is introduced. A list of PTG's hydraulic-driven compressors for the CTIS air supply is given along with the description of the procedure for calculating the air requirement of each customer. PTG's outlook on upcoming new developments and future market requirements concludes the lecture.

5:30PM

Panel Discussion- Getting on Track for Your Career

LOCATION: Medallion A

In today's job market, it's never too early to start planning your first steps into what will hopefully be a long and successful career. Panelist will share thoughts on strategies for students to secure the internships they want and how to make the most of those internships. Additional remarks will focus on how to acquire additional skills beyond the classroom to improve your chances of getting the job you want and how to utilize skills from human resource personnel to get your application noticed.

Panelists: Maynard Herron, AGCO
Larry Hoover, CNH
Neal Stoffel, Kondex

7:00PM

STUDENT/INDUSTRY DINNER AND BOWLING

LOCATION: S&SC (The Sports and Social Club), 427 S 4th Street, Louisville
Preregistration is required.

TUESDAY, FEBRUARY 10

7:00AM

Registration

LOCATION: Medallion C/D

7:30AM

CONCURRENT TECHNICAL SESSIONS

7:30AM-9:45AM

TECH SESSION 5 – Standards

LOCATION: Medallion A

This session will overview key standards development activities and regulations pertaining to agricultural equipment. A selection of timely topics will be included which cover priority North American and international activities.

7:30AM Introduction and overview of ASABE alignments with other organizations

Scott Cedarquist, ASABE Standards

7:40AM Ag Equipment Braking Update

Ron Stoltenberg, AGCO

7:50AM AgGateway Update

Andres Ferreyra, Ag Connections

8:05AM Equipment Height

Todd Howatt, AGCO

8:20AM Status of ISO 18497, Safety of Highly Automated Machinery

Doug Durant, John Deere

8:35AM South American Trends and Updates

Alessandro Silva, CNH

8:50AM Status of ISO 16230-1, Safety of Higher Voltage Equipment

Bruce Hawkins, John Deere

9:05AM A Global Perspective on Sustainability

Marty Matlock, University of Arkansas

8:00AM-9:45AM TECH SESSION 6 – Supplier Technology

LOCATION: Medallion B

Each year, AETC provides a technical session with a focus on supplier provided products. In 2015, this focus area will be hydraulics. In this session, you will learn about expanding technologies and new applications for the agricultural market. The session will also explore industry trends relating to hydraulic components. If you are already using, or considering using hydraulics in your equipment designs, plan to attend.

8:00AM Introduction

8:05AM Hydraulic Fitting and Component Planting Technology

Scott Frost, Air-Way

9:45AM-10:00AM BREAK

10:00AM CONCURRENT TECHNICAL SESSIONS

10:00AM-11:45AM TECH SESSION 7 – Bioenergy

LOCATION: Medallion A

Chair: Mr. Sam Tagore, The U.S. Department of Energy

10:00AM Introductions

10:05AM Comparison of Alternative Biomass Harvest and Logistics Systems

Dr. Kevin Shinnors, University of Wisconsin

Biorefiners are adopting conventional dry biomass bale feedstock supply systems predominately because they are low-risk. As the industry matures, alternative, potentially lower-cost systems will likely supplement or displace current systems. These alternatives might include single-pass baling of residues; new bale packages (size, shape, density); chopped, bulk systems; and whole-plant harvest (i.e. grain plus residue). Comparisons of these systems, and of moist versus dry storage, will be provided.

About the Author: Kevin Shinnars is a Professor of Agricultural Engineering at the University of Wisconsin in the Department of Biological Systems Engineering. His research focuses on harvest, handling, processing, and storage of biomass feedstocks and hay and forage crops. His teaching responsibilities include agricultural machine design; and off-road vehicle engineering.

10:30AM

Bulk Harvesting, Storage, and Logistics of Herbaceous Biomass Crops: A snapshot of 'now' and the opportunities that lie ahead

Mr. Lucas Graham, Genera Energy

While much research has focused on feedstock specific conversion technologies, Genera Energy noticed a gap in identifying and management of resources, precision harvest and biomass supply logistics. Genera Energy has filled the knowledge gap with proprietary commercial programs Energy Grange™ management system, Bin-Spec™ precision harvest and Supply-Assure™ biomass logistics. The speaker discusses these unique feedstock supply programs.

About the author: Lucas Graham is the Feedstock Production and Supply Manager for Genera Energy, his responsibilities include coordinating all feedstock supply projects, leading applied R&D genetic selections, and developing agronomic management and harvesting practices for biomass production. Lucas was an Agronomist and Precision Ag Manager with Helena Chemical Company prior to joining Genera. He has a B.S. in Plant Sciences from the University of Tennessee.

10:55AM

Felling a Few LOGS to Find Energy

Mr. Tim Hughes, Kentucky Energy and Environment Cabinet

Whether the term "Log" instills the image of an energy dense timber hewn from a tree or the record of activity kept by a trucker, addressing LOGISTICS, current OPPORTUNITIES, future GROWTH, and SUSTAINABILITY of biomass is critical for the success of the bioenergy sector. Our office was awarded a \$250,000 USDA Forest Service grant in 2014 to develop a Statewide Wood Energy Team and address these issues. It is imperative that the resources of the private sector, governmental agencies, academic institutions, and other interested parties work together effectively to clear many of the hurdles that have created stumbling blocks for success. The presentation will highlight activities going on in our state while raising a number of topics that must be addressed regionally, nationally, and internationally as we strive for increased energy access, affordability, and reliability.

About the Author: Tim Hughes is the Director for the Division of Biofuels within the Kentucky Energy and Environment Cabinet. Previously he served as the Senior Policy Analyst of the Governor's Office of Agricultural Policy where he also held various other roles since 2004. Tim and his wife Lori own TLC Farms in Simpson County. Mr. Hughes has been an active agricultural leader in both Logan and Simpson Counties. He is a graduate of Western Kentucky University where he also served as their farm manager in 2002 and 2003. Tim has served as the state chairman of two young farmer groups and has played leadership roles in various national farm organizations.

11:20AM

Supply systems to handle and deliver high tonnage feedstocks for cellulosic biofuels production

Mr. Sam Tagore, U.S. Department of Energy (DOE)

In 2010, The U.S. Department of Energy selected five projects to develop commercial-scale supply systems to handle and deliver high tonnage biomass feedstocks for cellulosic biofuels production. The awards were part of the department's ongoing efforts to reduce U.S. dependence on foreign oil, spur the creation of the domestic bio-industry and provide new jobs in many rural areas of the country. The awards were selected as the projects having high potential to stimulate the design and demonstration of comprehensive systems to sustainably handle harvesting, collection, preprocessing, transport, and storage of multiple feedstocks in high volumes. Feedstocks or combinations of feedstocks that were considered included: agricultural residues, energy crops (e.g., switchgrass, miscanthus, energy cane, sorghum, poplar, willow), forest resources (e.g., forest thinnings, wood chips, wood wastes, small diameter trees), and urban wood wastes. These pioneer projects have now been completed with high degrees of success. The speaker will provide an overview of main lessons learned from these projects.

About the Author: Sam Tagore is a Technology Manager in the U.S. Department of Energy's BioEnergy Technologies Office. His primary focus during last 15 years in DOE has been the development of cellulosic feedstock supply and logistics for biofuels production. Mr. Tagore has degrees in Mechanical Engineering and Industrial Administration from Purdue University. Sam is a professional engineer and a member of the ASABE.

10:00AM-11:45AM TECH SESSION 8 – Supplier Showcase

LOCATION: Medallion B

AETC 2015 will again feature some of the world's finest agricultural equipment component/systems manufacturers and distributors. These companies will be presenting the newest innovations and most up-to-date information on a variety of agricultural machinery systems of interest to attendees. The supplier companies presenting will also have tabletop displays of their products, literature, and contact information. Don't miss out on this opportunity to learn about the latest developments, from the world's best agriculture OEM suppliers.

10:00AM

Introductions

10:05AM

Pattern Master

Kurt Kamin, K-B Agritech LLC

10:30AM

iCon Wireless Seeder Control System and Modular Electric Drive Meter

Edward Lambert, Seed Hawk Inc.

10:55AM

Laser Cladding and Laser Heat Treating: Advanced Technologies for Enhanced Wear Properties on Agricultural Equipment.

Keith Johnson, Kondex Corp.

12:00PM

AE50 RECOGNITION LUNCHEON

LOCATION: 10th Floor - Ballroom

1:30PM

AE50 SHOWCASE I

LOCATION: Medallion A/B

Moderator: Brian Huenink, John Deere

Each year the AE50 recognition awards honor companies offering the best engineered products for agricultural, food, biological and related systems. These companies continue to push the envelope of new equipment design through innovation. The AE50 products featured in this session were new to the marketplace in 2014, and all have the potential for a broad impact in their area of industry. This is an excellent opportunity to learn of new features incorporated into these products and share a portion of their journey to the marketplace. The session is open to all and will feature presentations on a sampling of those products receiving 2015 AE50 awards.

1:30PM

Introductions

1:35PM

CS690 Cotton Stripper

Kevin Goering, Deere & Company

2:00PM

Easy Collect 603 Row-independent corn head

Adam Verner and Brent Raines, Krone North America

2:25PM

Hagie Tracks, CCI, Hs TB (High-Speed Toolbar)

Bryan Hrnicek, Hagie Manufacturing Company

2:50PM

Crumbles® Precision Feedstocks

Dave Lanning, Forest Concept, LLC

3:15PM

1910 Commodity Cart

Derryn Pikesh, Deere & Company

- 3:30PM** **Break / YPC “All in Good Fun”**
 LOCATION: Medallion C/D
Description to come.
- 3:45PM** **AE50 SHOWCASE II**
 LOCATION: Medallion A/B
 Moderator: Brian Huenink, John Deere
 Each year the AE50 recognition awards honor companies offering the best engineered products for agricultural, food, biological and related systems. These companies continue to push the envelope of new equipment design through innovation. The AE50 products featured in this session were new to the marketplace in 2014, and all have the potential for a broad impact in their area of industry. This is an excellent opportunity to learn of new features incorporated into these products and share a portion of their journey to the marketplace. The session is open to all and will feature presentations on a sampling of those products receiving 2015 AE50 awards.
- 3:45PM** **Introduction**
- 3:50PM** **Magnum™ ROWTRAC™ Tractor**
 Bryan Nannet, Case IH Agriculture
- 4:15PM** **645FD HydraFlex™ Draper Platform**
 Ben Schlessler, Deere & Company
- 4:40PM** **MaxEmerge5™ Row Unit**
 Lee Zumdomme, Deere & Company
- 5:05PM** **ExactEmerge™ Row Unit**
 Lee Zumdomme, Deere & Company
- 6:30PM** **AETC Planning Committee**
 LOCATION: Medallion C/D
- 6:30PM-8:30PM** **The Open Ag Data Alliance Post-AETC Session**
 LOCATION: Medallion A/B
 Join us for a special post-AETC, pre-Farm Machinery Show session on the development and importance of compatible data in agricultural information systems. Led by **Dennis Buckmaster, James Krogmeier, and Aaron Ault**, this session will include commentary from industry professionals, an outlined structure to combat data discordancy, and possible real use cases for such a structure. The Open Ag Data Alliance (www.openag.io) is an open project designed to bring interoperability, security, and privacy to agricultural data.