June 2009

RESOURCE

Engineering & Technology for a Sustainable World

AE50

OUTSTANDING INNOVATIONS

PUBLISHED BY ASABE – AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS

FROM THE *President*

Every day, our work world changes. We try to solve problems that are morphing right before our eyes as they are influenced by an ever-changing economic, political, and technological landscape. Newly published research data, patent applications, and insights from associates feed new information into our projects, affecting our notions of risk, market potential, and technical viability. There are always new insights and information that delay getting a product to market, but we can solve the latest problem only if we keep things moving. I don't know how often I've walked into the break room at about 10:00 in the morning and asked, in an exasperated voice, "When are we going to quit developing and commit to iron?" Such is the life of product engineers.

This issue of *Resource* celebrates those who actually move innovative products out of the lab and into the world of commercial application. The AE50 Awards honor the tangible products of our fellow scientists, engineers, and technologists. Those who applied to the AE50 competition received their own satisfaction some time ago, when their prototypes worked for the first time, and again when the first units rolled off the assembly line. Whether or not any new product will be a success often remains to be seen, but for each of these winners the prospects appear to be very promising. The AE50 applications were judged by a panel of ASABE member-professionals who have been down the product development road before and who know good work when they see it.

Peruse this year's AE50 Award winners. Find a couple of ideas that you think are special, and then take a moment to send the people involved a note of appreciation for their efforts in advancing the professions of biological and agricultural engineering through product development. We can't miss opportunities to thank each other for doing good work. As for me, I'll have an opportunity to personally thank every winner at the ASABE Annual Meeting in Reno this summer. They will be a very special set of people.

Jim Dooley, Forest Concepts, LLC
jdooley@forestconcepts.com

SALUTING AE50 WINNERS

Resource magazine is pleased to sponsor the AE50—the only awards program of its kind—celebrating innovations in the specific areas of agricultural, food, and biological systems. This special issue is dedicated to the ag and bio engineers who designed and developed these exciting new products.

From many entries, an expert panel judged the best products introduced to the marketplace during 2008. These innovations save time, costs, and labor, often while improving user safety as well. In addition, the products featured represent the diversity of agricultural and biological engineering, as well as the variety of manufacturers—of all sizes and specializations.

This year's AE50 recipients join the ranks of many, over more than two decades, who have been honored for their creativity. In June 1984, *Agricultural Engineering* (now *Resource*) included "A Forum for New Developments" in a special issue on technology. Twenty-five new techniques, inventions, and innovations were showcased. The featured items were drawn from product information solicited by the Society and screened by a panel of experts.

From this focus on identifying innovative technology, two years later the AE50 was born. Its intent was described as follows: "Acceptance in the marketplace is the highest accolade any new agricultural product can receive. But for innovative developments in the last 12 months, a singular honor is to be named one of the year's Agricultural Engineering 50 outstanding innovations in product or systems technology."

Product nominations poured in. A panel of engineers was enlisted to review the entries, and in 1986 the first AE50 awards were bestowed.

The interest in new technology and innovative applications of existing technology remains constant. As was the case in the beginning, many of the products featured are patented and their names trademarked. In the years ahead, some may become household words. Others may be further improved as technology advances, and will in turn inspire further innovations. We are pleased to showcase the results of the honorees' ingenuity, tenacity, and labor.

Congratulations to the winners!

2009 AE50 AWARDS

4 **ADI-1236PT Peanut Digger/Inverter,** Amadas Industries
AutoConnect™ Mower Deck, Deere & Company
5 **Auto-Pilot for LEXION Corn Heads,** CLAAS of America, Inc.
AutoTrac™ RowSense™ Automatic Guidance, Deere & Company
6 **Bale Direct System,** Glenvar Bale Direct Pty. Ltd.
CAM Pilot Guidance System, CLAAS of America, Inc.
7 **Central Insecticide System™,** Deere & Company
CR9090 Elevation Combine, New Holland
8 **Diesel Saver™ Automatic Productivity Management (APM) System,** CNH America, LLC
Eight-Range Hydrostatic Transmission with Integrated Hydraulic Control System, New Holland North America, Inc.
9 **FarmPRO™ GPS Steering and Application Control System,** AutoFarm and Raven Industries
FlatNet™ Irrigation, Netafim, Ltd.
10 **FMC-750F-HYD High Performance Oasis™ Wet Seal Centrifugal Pump,** Ace Pump Corporation
FrontPower PTO System, Laforge Systems Inc.
11 **Groundsmaster® 5900/5910 Mowers,** The Toro Company
H1 Bent-Axis Variable Motor, Sauer-Danfoss, Inc.
12 **H9800 Series Automatic Self-Propelled Balewagon and Mil-Stak® Large Bale Loader,** New Holland Agriculture
Infinity Deck, Kubota Tractor Corporation
13 **iTEC Pro Intelligent Total Equipment Control,** John Deere
LINER 1750 Dual-Rotor Rake, CLAAS of America, Inc.
14 **Magnum™ 180, 190, 210 Tractors,** Case IH
Model 1305BC Brush Cutter, Turf Teq, LLC
15 **Model 750HD Specialty Crop Header,** New Holland Agriculture
Pivot™ by Big Ass Fans®, Big Ass Fans
16 **ProCore Processor,** The Toro Company
PTO-Driven Gear Pump for New Holland H7150 Haybine® Mower Conditioner, New Holland Agriculture
17 **QuadraTouch™ Touch Screen Dryer Control System,** Sukup Manufacturing Co.
QUANTIMETER Optical Sensing System, CLAAS of America Inc.
18 **Round-Up Module Unwrapper,** Cherokee Fabrication Company, Inc.
RowCommand™ Individual Row-Control System, John Deere Seeding Group
19 **Saddle Suspension for Class V Suspended Axle on Case IH Magnum™ 335 Tractors,** CNH America LLC
Sectional Control Technology, Seed Hawk, Inc.
20 **Self-Leveling Cleaning Shoe,** John Deere Harvester Works
Smart Nozzle System, Harrison Ag Technologies
21 **TM1200 Trailed Mower,** Vermeer Corporation
TorQmaster Flange Clutch, Weasler Engineering, Inc.
22 **Universal Flange Gasket,** HYPRO, LLC - Pentair Water
Valley AutoPilot GPS Ready Control Panel, Valmont Irrigation, Inc.
23 **Valley Tracker Mobile,** Valmont Irrigation, Inc.
X1114 Professional Ag-Bagger, Ag-Bag, a Miller-St. Nazianz, Inc., Company
24 **3E Series Compact Utility Tractors,** Deere & Company
88 Series Axial-Flow® Combine, Case IH
25 **600D Series Draper,** John Deere Harvester Works
1720 CCS Stack-Fold Planter, John Deere Seeding Group
26 **2510H High-Speed Nutrient Applicator,** John Deere Des Moines Works
3000 TWENTY AutoHST Control System, Deere & Company
27 **4720 Compact Utility Tractor,** Deere & Company
5430i Chemical Application Vehicle, John Deere Fabriek Horst, B.V.
28 **7260 Cotton Picker,** John Deere Des Moines Works
7760 Cotton Harvester, John Deere Des Moines Works

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DEPARTMENTS

2 From the President
Saluting AE50 Winners
29 Index of Winners by Compan
30 Professional Opportunities
Events Calendar

ADI-1236PT Peanut Digger/Inverter

Amadas Industries
Suffolk, Virginia, USA
757-539-0231
www.amadas.com

The Amadas ADI-1236PT is a 12-row tractor-towed, hydraulically powered, folding-frame peanut digger/inverter. Previous peanut digger/inverters have been limited in size by tractor carrying capacity, but the ADI-1236PT is towed, not carried. When combined with the unique folding-frame design, this digger/inverter is capable of maintaining at least 33 percent greater field-operation efficiency than previously available digger/inverters in 2-, 4-, 6-, or 8-row configurations. The machine digs, cleans, and inverts 12 rows of peanuts into six 2-row windrows where the peanuts will dry until suitable for harvest. The trail-type technology used on this digger allows for more efficient use of tractor horsepower. A 220 hp tractor used to carry a conventional 8-row digger is more than sufficient to tow this 12-row model. Not only is the digging efficiency increased, but tractor and operator expense may also be reduced when comparing operation of the ADI-1236PT against a conventional 8-row or two 6-row digger/inverters.

AutoConnect™ Mower Deck

Deere & Company
Moline, Illinois, USA
309-765-8000
www.deere.com

The 60D and 72D AutoConnect™ mid-mount mower decks are the next generation in ease-of-use and attachment technology for use with the 3000 Twenty series CUT tractors. The decks are designed for installation without leaving the tractor seat. Operators will be able to drive over the top of the mower as the mower deck automatically connects to the tractor and the PTO shaft automatically hooks up. The operator will only need to leave the tractor seat to set the gauge wheels in place and set the desired height of cut. Disconnecting the mower deck is just as easy: flip two latches and then back off the mower deck. The AutoConnect™ mid-mount mower is also compatible with loaders, backhoes, and rear attachments. Front and rear attachments can stay on when mowing, and vice versa.

Autopilot for LEXION Corn Heads

CLAAS of America, Inc.
Omaha, Nebraska, USA
402-861-1000
www.lexioncombines.com

The corn head autopilot is a row-sensing guidance system that uses existing corn stalks to accurately guide the combine through the field. Left- and right-hand steering sensors on the center row of the corn head enable the corn head (and combine) to feel its way through the field, keeping it on track in both standing and lodged crop. The steering sensors act alone and do not require the combine to be equipped with a GPS receiver, which keeps the overall cost of the system and its complexity low. System operation is simple via a single zero steering angle calibration and a single engagement switch on the joystick. A steering correction dial on the console allows the operator to fine-tune adjustments on the fly. The system is disengaged as soon as the steering wheel is manually operated. This optional equipment can be added to any LEXION combine corn head as a factory- or field-installed feature.

AutoTrac™ RowSense™ Automatic Guidance

Deere & Company
Moline, Illinois, USA
888-476-7827
www.deere.com

AutoTrac™ RowSense™ strives for pinpoint accuracy. Growers may now utilize AutoTrac™ SF1 or SF2 while harvesting corn. The AutoTrac™ RowSense™ system works by fusing GPS data from the StarFire™ receiver with data from a pair of mechanical row sensors located on the corn head. By fusing data sources, the result is an industry-exclusive automatic guidance system for combine harvesters with solid performance. AutoTrac™ RowSense™ offers many benefits to operators, including the ability to utilize AutoTrac™ in cornfields that were planted with or without AutoTrac™. AutoTrac™ RowSense™ improves efficiency in down corn conditions and on curved rows, reduces operator fatigue, and reduces crop loss with increased accuracy and efficiency on every pass across the field. It allows the corn grower to get more done, in less time and at less cost during the corn harvesting operation.

Bale Direct System

Glenvar Bale Direct Pty. Ltd.
Cottesloe, Western Australia
+61-427-550-546
www.glenvarbaledirect.com.au

The Glenvar Bale Direct System (BDS) is a kit for connecting a conventional baler to a conventional combine, enabling grain growers to harvest and bale in a single operation with substantial efficiency and financial benefits. The BDS enables direct baling of the entire residue from a combine without any contamination, and collection of a high percentage of the weed seeds in the bale, thus minimizing the onset and seed-bank of herbicide-resistant weeds. The operation is cost, time, and labor efficient and results in a by-product that is easily transported and stored. Comparisons have shown that an extra 30 percent of residue is collected compared to baling as a separate operation. The residue can be marketed for numerous uses including cellulosic ethanol production, stock feed manufacture, fire logs, straw board, and stock bedding. As well, the baled product is not contaminated by stones, sticks, or soil, leading to less machinery maintenance by the end-user.

CAM Pilot Guidance System

CLAAS of America, Inc.
Omaha, Nebraska, USA
402-861-1000
www.claasofamerica.com

The CLAAS CAM Pilot automatically steers the self-propelled forage harvester along a windrow. It uses two cameras instead of lasers or GPS to guide itself. The CAM Pilot gives a continuous reading as it follows the path of uneven swaths on the straightaway, around corners, and up and down hilly terrain. Compared to well-known GPS systems, the innovation and advantage of the CAM Pilot is that "it knows" where the windrow actually is; a GPS system knows where the windrow "should be." The CLAAS CAM Pilot is a cost-effective alternative solution for GPS, and it works in small and curvy fields. No matter where the rake/merger operator leaves the windrow, the CAM Pilot will follow it. The operator can maximize efficiency and concentrate on keeping the machine running at top performance.

Central Insecticide System™

Deere & Company
Moline, Illinois USA
309-765-8000
www.deere.com

The Central Insecticide System™ (CIS) is a planter option that allows the grower to apply pesticide in a T-band to the open furrow during planting. The CIS incorporates many features, such as closed handling, central fill, direct injection, and row-to-row accuracy. CIS is designed to work with Force® CS, a concentrated liquid insecticide. The CIS consists of six major components: insecticide cabinet, water tank(s), pump and valve assembly, flow monitors, nozzles, and controller/monitor. Minimum coverage is 104 ha (256 acres) between fills for full rate applied to all rows, more if product is applied to refuge rows only. The system does not require an additional tractor SCV. The CIS system features a closed calibration procedure at one central location to protect the operator from insecticide exposure. Comparable granular-type insecticide systems require the operator to collect chemical from each row unit on the planter.

CR9090 Elevation Combine

New Holland
Turin, Italy
717-355-3553
www.newholland.com

The New Holland CR9090 Elevation Combine harvester matches cutting-edge technology with high capacity to offer a most productive combine. New Holland innovations such as IntelliSteer™, Grain Cam™, and the IntelliView™ III touch-screen monitor, coupled with the new Varifeed™ grain header (the widest header in Europe), helped the CR9090 set two world harvesting records in 2008. A 435 kW (591 hp) maximum engine powers the CR9090. The grain tank holds 12,500 L (356 bushels), and the fuel tank holds 1,160 L (306 gal) of fuel. The rotor cover vanes are adjustable to match the crop and crop conditions, with material passing 25 percent faster through the threshing/separation area at the fastest setting. The Opti-Spread™ straw chopper, controlled remotely for adjustment on-the-go, evenly spreads straw as wide as 12 m (40 ft), and the optional Grain Cam™ system monitors grain quality in real time, allowing the operator to fine-tune combine settings for optimal grain purity.

Diesel Saver™ Automatic Productivity Management (APM) System

for Case IH Steiger® 4WD and QUADTRAC® Tractors

CNH America, LLC
Burr Ridge, Illinois, USA
262-636-6011
www.cnh.com

The new Case IH Diesel Saver™ Automatic Productivity Management (APM) System for Steiger® 4WD and QUADTRAC® tractors is a fully integrated drive-train management system that provides continuous maximum efficiency with minimum fuel consumption while reducing noise and operator fatigue. This new control system automatically adjusts both the gear setting and engine rpm to the most fuel-efficient mode for a given load. The operator chooses either field or transport mode, and the APM system reduces engine speed whenever the implement load allows, automatically reducing fuel consumption and leaving the operator to concentrate on the work in progress instead of having to manually shift gears at just the right time and adjust the engine rpm with the throttle. In APM mode, the operator uses the engine throttle handle as a ground speed selector. Once the desired ground speed is attained, the APM system automatically adjusts the engine speed and transmission ratio to provide maximum fuel economy.

Eight-Range Hydrostatic Transmission with Integrated Hydraulic Control System

for the New Holland TV6070 Bidirectional™ Tractor

New Holland North America, Inc.
New Holland, Pennsylvania, USA
717-355-3052
www.newholland.com/na

The eight-range hydrostatic transmission with integrated hydraulic control system on the New Holland TV6070 Bidirectional™ tractor allows an operator to improve tractor performance with better tractive effort and speed control, without the need to manually monitor and shift both the range control switch and the hydrostatic motor displacement control lever. The resulting improvement reduces operator fatigue, especially during loader operations, by allowing the operator to focus completely on the task, yet simultaneously improving tractor efficiency. Range shifting can be done on-the-go by pressing the "bump" switch on the right-hand control lever. The control system maintains both the transmission and engine at peak operating efficiency and power during fully loaded conditions. An integrated pressure-compensating valve continuously monitors the system operating pressure and automatically adjusts the hydrostatic motor displacement until full displacement is reached—and continues the adjustment to keep the engine at constant rated power, eliminating engine droop during tractor stall conditions.

FarmPRO™ GPS Steering and Application Control System

AutoFarm and Raven Industries
Fremont, California, USA
877-947-7327
www.gpsfarm.com

The FarmPRO™ GPS Steering and Application Control System is the result of a collaborative product development effort between AutoFarm and Raven Industries. FarmPRO combines AutoFarm's sub-inch accurate RTK AutoSteer with Raven's Viper Pro state-of-the-art display and control system, thereby providing a feature-rich steering and application control system via a single large screen display. FarmPRO™ offers: WAAS to RTK steering accuracy options, including the ability to run on OmniSTAR HP/XP; as-applied maps on the go; variable rate control up to five products; automatic boom height and section control; 26.4 cm (10.4 in.) color touch-screen display; Windows XP operating system; Shape File Format for export to back office software; data transfer via USB Key; auto calibration of steering and application functions; AutoFarm's Reflex technology; plus an extensive list of vehicle install kits for tractors, sprayers, and combines, including articulated tractors.

FlatNet™ Irrigation Pipe

Netafim, Ltd.
Tel Aviv, Israel
+972-4-6287222
www.netafim.com

FlatNet™ is an irrigation pipe with a variety of connector elements adapted for attachment of lateral branches. These connector elements are fitted to the pipe's wall during manufacture. The pipe is made of flexible, polyethylene-composite fabric and includes fittings integrally welded at predetermined locations on the pipe's wall. The fittings are also made of polyethylene, making the total product recyclable. The irrigation pipe is formed from an engineered composite fabric, comprising a watertight layer and a fabric layer. The fabric layer is designed in a special technique that gives the pipe advantages that no other replacement product is able to provide: low axial extension, low circumference creep, low weight, low volume, and more.

FMC-750F-HYD High-Performance Oasis™ Wet Seal Centrifugal Pump

Ace Pump Corporation
Memphis, Tennessee, USA
800-843-2293
www.acepumps.com

The Ace Model FMC-750F-HYD Pump was developed for the self-propelled sprayer market to provide the performance and reliability demanded by today's applicators. Oasis™ WetSeal technology prevents shaft seal failures resulting from running a pump dry. Dual mechanical seals are submerged in buffer fluid, providing seal faces with continuous cooling and lubrication. Air pressure is also applied to the seal cavity, preventing abrasive or corrosive materials from contacting and degrading the seal faces. The Oasis™ technology also provides a buffer preventing crop damage and potential environmental contamination from a leaking seal. Other features contribute to overall pump reliability: a thrust-balanced impeller and heavy-duty bearings for long drive train life; E-coated castings protecting from chemical attack; high-efficiency hydraulic motor with splined coupling driving the pump; and maximum pressures up to 150 psi and maximum flows up to 290 gpm, ample for the range of applications on today's sprayers.

FrontPower PTO System

Laforge Systems, Inc.
Concord, California, USA
925-827-2010
www.fronthitch.com

FrontPower is a self-contained, gear-driven, stand-alone front PTO system, designed according to ISO standards for agricultural tractors. The easy-to-install unit features a transmission with multi-disc wet clutch and zero-seal design with controlled leak rate for lubrication and improved heat dissipation for durability at continuous power output of up to 180 hp at 1,000 rpm (FrontPower 1000 version) or 80 hp at 540 rpm (FrontPower 540 version). Safety features include a positive brake that holds the output shaft still when the engine is running and requires engine shut-off for indexing; a metal master shield, a two-step switch in the cab to prevent accidental engagement, and an LED-based rpm monitor in the switch. Both the electronically controlled, smooth engagement of the clutch and the in-cab speed monitoring work independently from any tractor system, making it possible to install a FrontPower system on hundreds of tractor models.

Groundsmaster® 5900/5910 Mowers

The Toro Company
Bloomington, Minnesota, USA
800-803-8676
www.toro.com/5900

The Toro® Groundsmaster® 5900 series mowers are engineered to maximize productivity and lower daily operating costs for parks, schools, commercial properties, and golf courses. The cutting decks provide a full 5 m (16 ft cut) capable of mowing more than 40.5 ha (100 acres) per day. The 99 hp Cummins® turbo-diesel engine features a high-pressure common-rail fuel delivery system for increased power and fuel efficiency with cleaner emissions. The InfoCenter™ displays advisories, onboard diagnostics, trouble faults, and maintenance reminders onboard, allowing for a high level of troubleshooting and reduced maintenance expense. To combat downtime from overheating, the SmartCool™ System automatically clears chaff from radiator intake screens. Rising coolant temperature, hydraulic oil temperature, or air intake temperature will automatically reverse the cooling fan to blow off debris. The climate controlled Groundsmaster® 5910 provides protection and comfort in extreme temperatures. The fully enclosed, factory-installed cab has air conditioning and heat for increased operator efficiency and safety.

H1 Bent-Axis Variable Motor

Sauer-Danfoss, Inc.
Ames, Iowa, USA
515-239-6000
www.sauer-danfoss.com

Sauer-Danfoss's H1, 80 cm^3 (5 $in.^3$) and 110 cm^3 (7 $in.^3$), Bent-Axis Variable Motors are the first sizes in a new series of motors designed to complement the growing family of H1 Axial Piston Pumps. With the introduction of the H1 Bent-Axis Motors, Sauer-Danfoss provides a complete H1 transmission system, optimized around electrical control. The H1B motors not only provide OEMs with improvements in reliability and flexibility but also higher overall efficiency, resulting in lower fuel consumption and reduced life-cycle costs. With 32-degree bent-axis technology, zero-degree capability, and higher overall efficiency, the H1 Bent-Axis Motors offer OEMs significant advantages. The H1B motors are fully PLUS+1TM compliant, enabling seamless integration with Sauer-Danfoss's electronic machine control architecture—Plug and Perform®. With an IP 69 rating, the electrical controls are able to withstand the harshest working environments.

H9800 Series Automatic Self-Propelled Balewagon and Mil-Stak® Large Bale Loader

New Holland Agriculture
New Holland, Pennsylvania, USA
888-290-7377
www.newholland.com/na

The New Holland Automatic Self-Propelled Balewagon Models H9870 and H9880 have been modified to accept the Mil-Stak® Large Bale Loader as an approved plug-and-play attachment for easier, faster, automated handling of 0.9 × 0.9 m (3 × 3 ft) and 0.9 × 1.2 m (3 × 4 ft) large, square bales. New software enables automatic control of the loader and bale manipulation and full use of the automated stacking capabilities of the balewagon. This integrated system also allows the user to convert the balewagon from handling small square bales to large square bales, or vice-versa, in less than 30 minutes, making the New Holland Self-Propelled Balewagon the only product to date capable of handling both small square and large square bales. While the current use for this product is primarily for handling hay products for feeding livestock, future use for handling biomass bales is a major benefit.

Infinity Deck

Kubota Tractor Corporation
Torrance, California, USA
310-370-3370
www.kubota.com

Named for its distinctive counter-rotating figure-eight grass flow, the Infinity Deck's most notable benefit is its ability to quickly change from mowing to mulching to catching mode. Unlike conventional decks, the Infinity Deck's blades rotate in opposite directions. Each blade's center is located just inside of the front wheels' path of travel. Together, these two designs help to pick up flattened grass caused by the front tire. To change from side discharge to mulching mode, the operator slides the steel gate, located on the outside of the deck, to the front of the discharge area. This feature, along with the deck's rounded shoulders, keeps grass under the deck, ensuring good mulch. No special blades or tools or optional attachments are needed, and using the optional grass catcher is easy. Due to the power of flow, a blower is no longer needed. The deck does all the work. With this design, attaching the grass catcher's boot is simple.

iTEC Pro Intelligent Total Equipment Control

John Deere
Moline, Illinois, USA
309-765-8000
www.deere.com

iTEC Pro is the next step toward complete tractor automation: intelligent Total Equipment Control. This innovative module for the GreenStar™ 2 system coordinates vehicle and implement functions with end turns by utilizing the GreenStar™ 2600 display and StarFire™ iTC receiver. Automating these functions allows vehicle and implement functions to be performed consistently on headlands or internal boundaries. When paired with AutoTrac™, this system accurately guides the tractor around an optimal end of row turn that is configured based on implement and machine dimensions input to the GreenStar™ 2600 display. By automating these tasks, this system also positions the machine and implement correctly for the next field pass to increase accuracy and efficiency. iTEC Pro performs consistently and accurately, increasing in-field efficiency by saving growers money and, more importantly, time.

LINER 1750 Dual-Rotor Rake

CLAAS of America, Inc.
Omaha, Nebraska, USA
402-861-1000
www.claasofamerica.com

The LINER 1750 twin-rotor design allows for one single windrow working width up to 8 m (26 ft). With telescopic rotor baskets controlled from the cab, shrinking the rake down for transport is easy. With 14-tine arms with four double tines per arm, per rotor, the LINER 1750 increases working output with more tine arms and raking speed. The 3-D contour rotor articulation offers the ability to swath quickly, while at the same time maintaining high forage quality. The two-point inverted U-frame gives maximum clearance of the single, wide-angle universal drive shaft.

Magnum™ 180, 190, 210 Tractors

Case IH
Burr Ridge, Illinois, USA
262-636-6011
www.cnh.com

Case IH introduces three new Magnum™ Tractors—the Magnum 180 at 150 hp, the Magnum 190 at 165 hp, and the Magnum 210 at 180 hp—combining features of higher-horsepower Magnum tractors such as the largest-in-class Surveyor™ cab, with innovative new technology like the totally redesigned Multi-Control™ armrest. The new Magnum tractors have a lighter overall footprint that reflects the ideal weight-to-power ratio needed for typical mid-sized row-crop implements and operations. Six key tractor functions are at the operator's fingertips with the new, customer-designed, ergonomic, multi-functional control handle that integrates gear and throttle control. An optional integrated joystick provides simultaneous control of optional mid-mount functions such as a loader grapple. The Surveyor™ cab provides ample leg and elbow room and greater visibility, now with a new A-post instrumentation cluster that puts key operational data in plain view. All three models feature a quiet-running, fuel-efficient, biodiesel-compatible six-cylinder 6.75 L (1.8 gal) engine rated at 2,200 rpm.

Model 1305BC Brush Cutter

Turf Teq, LLC
Honey Brook, Pennsylvania, USA
866-503-8873
www.turfteq.com

The walk-behind Turf Teq Model 1305BC Brush Cutter is used for clearing brush and cutting tall grasses and any overgrown areas too difficult for a finish mower. This unit features an innovative variable-angle cutting head, allowing the operator to cut under fences, trees, and other difficult-to-mow areas. On hillsides, the pivoting feature adds stability to the machine by increasing the overall ground contact pattern. The deck pivots incrementally to the left up to 30.5 cm (12 in.) beyond the handlebars. The machine also features a 13 hp Honda engine and a fully hydrostatic forward/reverse transmission with differential lock for maximum productivity while operating in a variety of conditions. There is no need to stop and change gears to increase/decrease speed or change direction. The model 1305BC also features a multi-use tractor with quick attach capability to operate Power Edger, Power Broom, or Power Rake.

Model 750HD Specialty Crop Header

New Holland Agriculture
New Holland, Pennsylvania, USA
888-290-7377
www.cnh.com

The New Holland 750HD Specialty Crops Header was developed for harvesting fragile grass seed and other specialty crops with the New Holland H8060 and H8080 Speedrower® Self-Propelled Windrowers. The header is specifically designed to cut cleanly; make consistent, evenly formed windrows; and minimize seed loss while delivering significantly more throughput capacity than sickle heads. A flexible fabric crop-leaning device gently pushes even tall crops over for feeding into the adjustable disc speed MowMax™ cutterbar to minimize seed loss and reduce cutting time. The cutterbar feeds the crop into an auger containing tapered flighting that gently conveys and releases crop into the windrow through the rear center opening of the header. Three choices of windrow width are provided by a choice of closure kits. A perforated rear deck area provides a clear view of windrow formation from the tractor cab.

Pivot™ by Big Ass Fans®

Big Ass Fans
Lexington, Kentucky, USA
877-244-3267
www.bigassfans.com

Pivot™ by Big Ass Fans® delivers maximum airflow, gentle breezes, and quiet operation in over 73 unique positions. Pivot™ is suited for agricultural settings and food processing/storage facilities. While its main function is cooling, this fan also reduces moisture, increases productivity, and maintains food freshness longer. Pivot™ includes an optional cage for increased safety and a precision-molded hub for smooth operation and long life. The proprietary airfoil and winglet design work together for optimal air movement. Exclusive trim pieces reduce noise at connection points for quiet operation and fan stability. The flexible mounting system permits hanging the fan in a variety of spaces and positions to satisfy a variety of applications. And because Pivot™ uses a simple 1 hp motor, it costs just pennies per hour to operate.

ProCore Processor

The Toro Company
Bloomington, Minnesota, USA
888-384-9939
www.toro.com

The ProCore Processor sweeps, processes, and evenly disperses aeration cores back to the turf in a one-pass operation. The agronomic benefits of the ProCore Processor allow adherence to a cultivation plan, which allows aeration to occur more frequently, and uses native soil as topdressing. The operational benefits of the ProCore Processor include reducing the time it takes to get the turf back to play, reducing labor required for the aeration process, and less disruption to golf course members, guests, and maintenance staff. The ProCore Processor is sold in two configurations: the OnePass configuration can run in conjunction with an aerator, which will aerate and process the soil all at the same time; the second configuration is a tow-hitch version, which can aerate with one tow vehicle and process with another.

PTO-Driven Gear Pump

for New Holland H7150 Haybine® Mower Conditioner

New Holland Agriculture
New Holland, Pennsylvania, USA
888-290-7377
www.cnh.com

The patented PTO-driven gear pump on the New Holland H7150 Haybine® Mower Conditioner is a high-output pump mounted on the tongue of the unit and driven by a typical telescoping PTO shaft with standard universal joints. The pivot-tongue hitch design provides exceptional maneuverability and easy hook-up. The pump rotates independently from the tongue, so that the input shaft of the pump always points towards the tractor PTO output shaft to minimize PTO angles as the tractor and mower conditioner make turns in the field. This unique arrangement eliminates the need for expensive constant-velocity universal joints and replaces the previous design that included a pump/coupler arrangement with the pump mounted directly on the tractor output shaft. The operator has the ability to operate the machine on either side of the tractor, decreasing the turnaround time on headlands due to the center-pivot design.

QuadraTouch™ Touch Screen Dryer Control System

Sukup Manufacturing Co.
Sheffield, Iowa, USA
641-892-4222
www.sukup.com

The Sukup QuadraTouch™ Touch Screen Dryer Control System is an easy-to-use touch-screen system with advanced programming that increases dryer efficiency and minimizes large swings in drying temperature and grain moisture at discharge. The system uses advanced algorithms and calculus to virtually eliminate under- and overshooting of set target moisture content. It also eliminates large temperature swings, improving efficiency.

Although the programming of the QuadraTouch™ is highly advanced, the system was designed to be easy to use, with menus guiding the operator through dryer functions. Graphs generated by the QuadraTouch™ allow the operator to track performance. Graph data, along with information stored in the system log, can be transferred via USB drive or Compact Flash card to a computer, where it can be viewed and manipulated in Microsoft™ Excel™. The QuadraTouch™ is a PLC-based system. PLCs are rugged and are built to withstand harsh environments. They offer superior noise protection, eliminating nuisance trips.

QUANTIMETER Optical Sensing System

CLAAS of America, Inc.
Omaha, Nebraska. USA
402-861-1000
www.lexioncombines.com

QUANTIMETER uses light-emitting measuring (LEM) technology to accurately measure the real-time yield performance (or total volume of harvested grain) of a specific crop at harvest. Harvested grain is conveyed through a beam of NIR light created between two photosensors, where its volume is measured and displayed in real-time, in pre-selected units (bushels per acre, tons per hectare, etc.) via LEXION's CEBIS monitor. The data can be stored by field total and combine bulk total and off loaded via PCMCIA card for analysis. Performance is unaffected by fluctuations in the elevator's operating speed. Additionally, sensors are wiped free of material build-up by the grain flow. Primary yield monitor calibration efficiency is improved as QUANTIMETER utilizes a single volume, or single batch, calibration method vs. multiple loads at different rates of travel used to simulate different flow rates. It is optional equipment that can be added to any LEXION combine as a factory- or field-installed feature and can be fitted with GPS for yield mapping.

Round-Up Module Unwrapper

Cherokee Fabrication Company, Inc.
Salem, Alabama, USA
334-298-4547
www.cherokeefab.com

The Cherokee Fabrication Round-Up Module Unwrapper introduces round seed-cotton modules into the ginning process. The unique unwrapping process eliminates the chance of contamination associated with cutting module wrap material and offers a cycle time short enough to easily accommodate full-sized round modules and ginning rates exceeding 100 bales per hour.

This machine is available as an optional part of a Cherokee Roller Bed Module Feeder, or it can be configured to attach to most existing traditional module feeders.

The Round-Up Module Unwrapper is powered by a small hydraulic power unit and is operated with simple joystick controls. The uncomplicated operational sequence is short and can be mastered by a new operator in a matter of minutes. The patent-pending process leaves virtually no cotton inside the empty wrap, which can be easily and safely removed by a single operator.

RowCommand™ Individual Row-Control System

John Deere Seeding Group
Moline, Illinois, USA
866-993-3373
www.deere.com

RowCommand™ individual row-control system uses electrically actuated wrap-spring clutches integrated into the seed meter drive gearboxes located on each planter row unit, along with Swath Control Pro™ software to provide operators the ability to start and stop seeding of individual rows or groups of rows based on GPS mapping. This prevents double planting in end rows, especially in odd-shaped fields, as well as planting through waterways and other obstacles where seeding is unnecessary or undesirable. RowCommand™ offers the unique ability to configure the 16 control sections as the operator desires. For example, rows can be paired together into groups of 2 or 3 across the entire planter, or the outermost rows can be paired together, with the remaining inner rows controlled individually. RowCommand™ is the only system in the industry today with section configuration through software. This provides a fully integrated, Deere-supported solution for individual row control that is available as a factory-installed option or as an attachment for field conversion.

Saddle Suspension for the Class V Suspended Axle on Case IH Magnum™ 335 Tractors

CNH America, LLC
Burr Ridge, Illinois, USA
262-636-6011
www.cnh.com

The Saddle Suspension used in the new Class V Suspended Axle on the Case IH Magnum™ 335 Tractor is a completely new suspension concept that greatly improves the traction control, steering control, ride comfort, and axle weight-carrying capacity of the tractor. All of this is achieved by installing the axle into a saddle and then mounting the saddle to the frame. Electronically controlled hydraulic cylinders connect the axle to the tractor's main frame. A suspension control valve controls the hydraulic pressure and flow to both sides of the cylinders. The main purpose of the control valve is to maintain the axle in the neutral position (mid-stroke). When the tractor is operating, the saddle forces all axle osculation to take place in the saddle, and all up-and-down motion to be managed by the saddle moving vertically relative to the frame. Simplifying the axle suspension motion has led to the superior performance of this suspension system.

Sectional Control Technology

Seed Hawk, Inc.
Langbank, Saskatchewan, Canada
306-538-2221
www.seedhawk.com

Sectional Control Technology (SCT) works in conjunction with GPS to automatically shut off sections of an air cart's meters as well as lift openers of the corresponding sections of the air drill when previously seeded ground is encountered. Because fertilizer is not doubled, there is less chance of excess nutrients being introduced into waterways, making SCT technology good for the environment.

SCT is used in conjunction with a Seed Hawk air cart and air drill, currently manufactured in sizes up to 800-bushel capacity and 25.6 m (84 ft) operating width.

SCT is an innovative way to eliminate overlaps, reduce ground disturbance, and save on input costs of seed, fertilizer, inoculants, and fuel. Depending on the width of the toolbar and the variability of the field shapes and sizes, input costs can be reduced by 10 percent.

Self-Leveling Cleaning Shoe

John Deere Harvester Works
East Moline, Illinois, USA
309-765-8000
www.deere.com

The John Deere Self-Leveling Cleaning Shoe is designed to provide customers with outstanding shoe capacity and increased productivity when harvesting on slopes. Utilizing John Deere's patented overcompensation logic and the largest tilt range in the industry, the self-leveling shoe provides cleaning shoe capacity on an 8-degree slope that is at or near a level-land shoe's capacity when operating on level ground. Multiple tilting elements (for both the chaffer and sieve) make up the self-leveling shoe and allow for easy one-person removal of the shoe elements. The self-leveling shoe system is fully automatic and is monitored in the cab on a display. In-cab adjustment of the chaffer's louver opening and the sieve elements is also included on the self-leveling shoe system. Upgrades to the shoe frame structure, as well as the cleaning shoe drives, provide system reliability. The features of the self-leveling shoe provide excellent shoe capacity and increased productivity for customers harvesting on slopes.

Smart Nozzle System

Harrison Ag Technologies
Mobridge, South Dakota, USA
605-845-2433
www.H-AgTec.com

The Smart Nozzle is a CAN-based system that controls individual nozzles of self-propelled and pull-type sprayers. It eliminates overlap and double application during the spraying operation, reducing both the application cost and the risk of yield potential penalties due to overapplication. The Smart Nozzle system reduces application costs by as much as 10 to 15 percent. The increased yield potential can prove to be as dramatic in overapplied areas. The controller generates an applied map from GPS telemetry. This map is used by the system to control the nozzles and to provide a graphical display of the field. The instantaneous action of the Smart Nozzle system eliminates the need for "look ahead" and overlap required with boom control systems. The system also incorporates a wireless interface to control individual nozzles, useful in locating nozzles that are not working properly.

TM1200 Trailed Mower

Vermeer Corporation
Pella, Iowa, USA
800-370-3659
www.vermeerag.com

The Vermeer TM1200 is a 4.7 m (15 ft, 6 in.) wide-swath, heavy-duty, center-pivot disc-type trailed mower. It features two independent, staggered cutter bars that provide exceptional flotation on uneven ground, and the entire machine folds to a narrow transport width of 2.6 m (8 ft, 5 in.). The narrow transport width allows easy maneuvering through gates and travel from field to field. Staggered cutterbar design ensures accurate and complete cutting action in the center of the swath. Maximum swath width is 87 percent of the cutting width for quick, uniform dry down. A nitrogen-charged accumulator flotation system easily adjusts for varying field and crops conditions. This mower allows hay producers who operate multiple tractors and mowers to streamline their operation. One operator with this larger mower can cut at the same rate while reducing the amount of labor, machine operation, and fuel consumption by up to 50 percent.

TorQmaster Flange Clutch

Weasler Engineering, Inc.
West Bend, Wisconsin, USA
262-338-2161
www.weasler.com

The TorQmaster Flange Clutch from Weasler is a modular friction-overrunning clutch initially designed for square balers. It mounts the overrunning portion to the flywheel instead of the shaft yoke, which sets the design apart. This allows for a larger diameter, narrower clutch, which improves heat flow from the friction surfaces to the atmosphere. Convective cooling is increased, allowing this clutch to cool four times faster than its predecessor. Because the friction discs are larger in diameter, the friction faces can be reduced from six to two while improving durability. Reducing the friction faces also improves the sensitivity to wear and adjustment three times. Assembly and service are also more ergonomic; being modular, the maximum lifted weight is 13 kg (28.7 lb). It also incorporates a load-bearing spindle for lighter and more intuitive assembly and service. The TorQmaster Flange Clutch is available with capacity from 600 to 2,700 Nm.

Universal Flange Gasket

HYPRO, LLC – Pentair Water
New Brighton, Minnesota, USA
651-766-6300
www.hypropumps.com

The Universal Flange Gasket is used primarily in mobile sprayer wet-end systems and, with its unique design and wrap-around feature, provides positive alignment of the adjoining fittings during assembly. The gasket is held in place with an elastomer that envelops the joint's mating surfaces, eliminating all issues of misalignment during assembly and providing greater sealing capacity. Alignment ribs are also provided on the outside as indicators for 45 and 90 degree radial alignment of rotated fittings.

Valley AutoPilot GPS Ready Control Panel

Valmont Irrigation, Inc.
Valley, Nebraska, USA
800-825-6668
www.valleyirrigation.com

The Valley AutoPilot GPS Ready Control Panel provides a high degree of accuracy for the operator controlling linear irrigation equipment. The Valley AutoPilot Control Panel provides the basic operator capability to program irrigation functions, such as start/stop, change of percent timer speed, chemigation on/off, and change direction based on the linear's position in the field. Prior to the introduction of GPS for providing position, the position along the run was estimated based on a drive unit run time. While this provided reasonable position information, it prepared the way for the adoption of GPS. The AutoPilot control panel uses GPS signals to accurately calculate the position of the linear equipment along its run. With Valmont's introduction of GPS this year, the degree of accuracy necessary for precision irrigation management with Valley linears is possible.

Valley Tracker Mobile

Valmont Irrigation, Inc.
Valley, Nebraska, USA
800-825-6668
www.valleyirrigation.com

The Valley Tracker Mobile is a combination of Smartphone technologies that uses web access and a custom-designed mobile website to monitor and control center pivots and linears through a Valley Tracker hardware device. Tracker Mobile provides irrigators with a unique visual status of the grower's irrigation machines via the most convenient form of mobile access through their Smartphone. Color codes and symbols inform the user about the status of irrigation equipment: running, stopped, direction, water on/off, water amount applied, and speed. Mobile control commands can also be sent: start, stop, water on/off, direction change, and water amount. Tracker Mobile allows users to be on the go and still track and control irrigation machines, which saves hours of time, fuel, and vehicle wear, resulting in more efficiency and lower operating costs. Tracker Mobile also makes it easy to schedule and manage irrigation events.

X1114 Professional Ag-Bagger

Ag-Bag, a Miller-St. Nazianz, Inc., Company
St. Nazianz, Wisconsin, USA
920-773-1203
www.ag-bag.com

The Ag-Bag X1114 Professional Ag-Bagger for high-capacity silage bagging has a 4.3 m (14 ft) tunnel and a 3.4 m (11 ft) low-position rotor, which allows packing up to 30 percent more silage in a day than a traditional 3.7 m (12 ft) silage bagger. The X1114 fills 4.3 m (14 ft) diameter bags, 152.4 m (500 ft) in length. This provides rations savings over silage stored in bunkers, where 20 percent annual spoilage and shrinkage is common. Fully electronic CAN bus controls provide true fly-by-wire operation as well as full on-board diagnostics of all primary and secondary machine functions. The X1114 features dual-mode steering, two-speed propulsion, throttle and rotor engagement, as well as a load-governing feed table, easily controlled by one operator from the deluxe 90 Series cab. In addition, the latest advancements in fuel efficiency and emissions reductions through the use of 580 hp CAT C15 diesel engines meeting Tier III emissions standards are included.

3E Series Compact Utility Tractors

Deere & Company
Moline, Illinois, USA
309-765-8000
www.deere.com

The John Deere 3E series consists of the 31.4 hp 3032E and the 37.1 hp 3038E models. These tractors provide premium features, such as hydrostatic transmissions, electro-hydraulically operated independent PTO, and automotive-style parking brake. The simple, ergonomically designed operator platform and controls make this tractor easy to operate. The 3E series tractors are available with the optional factory-installed model 305 front-end loader, which features a high 530 kg (1,168 lb) lift capacity. The loader uses John Deere's Quick Change attachment carrier for fast removal of the loader bucket and increased maneuverability or for change to other loader attachment options such as pallet forks or front blades. These tractors were designed to give the customer higher engine power and loader lift capacity at a lower cost.

88 Series Axial-Flow® Combine

Case IH
Racine, Wisconsin, USA
262-636-6011
www.CaseIH.com

The Case IH 88 Series Axial-Flow® Combines have been redesigned from the ground up, adding the new 325 hp Class VII Model 7088 to the 265 hp Model 5088 (which replaces the 2577) and the 305 hp Model 6088 (which replaces the 2588). Major new industry innovations have been added to these longer-wheel-base harvesters, including: a new, simplified feeder reverser design that is low-weight and requires no maintenance; a unique stationary engine air screen with vacuum system for improved cooling and increased time between cleaning; and new automated quick-fold grain tank covers controlled from the cab. Clean grain elevator capacity has been increased 15 percent, a two-speed header drive is an option, and the 88 Series now shares a common feeder/header interface with the Case IH 20 Series Axial-Flow® models. The all-new styling utilizes body panels made from soy-based sheet molding compound (SMC) material and includes low rear trim panels to keep dust and crop residue from accumulating on the engine deck.

600D Series Draper

John Deere Harvester Works
East Moline, Illinois, USA
309-765-8000
www.deere.com

The 600D Series Draper platform allows growers to cover more acres in less time, even in higher-yielding crops. The 600D Series Draper utilizes critical geometries to improve flotation, cutting performance, material handling, grain savings, visibility, and serviceability. New features include a longer stroke cutting system, wider draper belts, faster draper belts, taller belt cleats, rubberized draper belt drive rollers, an advanced flotation system, a gauge wheel system integrated into the draper height sensing system, a large-diameter feed drum that's positioned farther forward, robust gear cases, a shaft-driven timed dual-knife system, stainless steel feed floor, hydraulic cutter bar tilt, ContourMaster™ integration, center drum/center draper belt/reel reverse with feeder house, in-cab belt speed display, reel resume capability, and no-tool/one-person conversion to four-tire transport configuration. The platform is available in three sizes: 7.6, 9.1, and 10.7 m (25, 30, and 35 ft).

1720 CCS Stack-Fold Planter

John Deere Seeding Group
Moline, Illinois, USA
866-993-3373
www.deere.com

The 1720 CCS Stack-Fold Planter combines the productivity of the Central Commodity System and the performance of Pro-Series XP™ with the maneuverability of an integral planter. The 1720 CCS is an integral planter, mounting to the tractor's three-point hitch, utilizing a flexible, folding frame with 10 degrees up flex and 7 degrees down. It is available in a 16-row configuration with 0.8 m (30 in.) row spacing, two 50 bushel CCS™ tanks, and Pro-Series XP row units. Heavy-duty lift assist wheels are integrated into the 1720 CCS frame design; these wheels reduce the amount of weight placed on the rear of the tractor and support the CCS cradle. This design provides a balanced planter for maneuverability in the field and during transport. 1720 CCS Planters work well in conventional or reduced-tillage field conditions and are ideal for planting into strip-till conditions.

2510H High-Speed Nutrient Applicator

John Deere Des Moines Works
Ankeny, Iowa, USA
515-289-3389
www.deere.com

The 2510H is a nutrient application tool designed specifically for high-speed application of anhydrous ammonia and liquid fertilizer while providing minimal soil disturbance. The 2510H offers up to 67 percent increased productivity, as it was designed and tested for field speeds up to 16 kph (10 mph). The design of the disk opener and frame allows the tool to apply nutrient in three seasons: application after fall harvest, in the spring before planting, or side dress while row crops are growing. The unique disk opener design allows increased field speeds over conventional shank machines, and soil disturbance is dramatically reduced.

3000 Twenty AutoHST Control System

Deere & Company
Moline, Illinois, USA
309-765-8000
www.deere.com

AutoHST is a new transmission option for the John Deere 3520 and 3720 Compact Utility Tractors. It is designed to resemble an automotive-type control system. The operator will feel right at home because the controls resemble those of a car. Automotive-like features include: a lever on the left for drive-neutral-reverse to engage the transmission, a single "go pedal" on the right to go forward or backward, and a single brake on the right, like the brake in a car. When the operator presses the "go pedal," the engine rpm increases and the tractor starts to move, just like a car. This option is especially useful when doing loader work. Instead of a steady high rpm, the rpm is adjusted by the "go pedal" to meet the requirements of the job. This results in fuel savings and a quieter operating environment.

4720 Compact Utility Tractor

Deere & Company
Moline, Illinois, USA
309-765-8000
www.deere.com

The John Deere 4720 Compact Utility Tractor introduces the first electronically controlled and most powerful engine in its class. The interim tier 4 John Deere 250 series engine delivers 66 hp, 12 percent more power than its tier 2 predecessor. CAN electronics enable fuel temperature compensation for more consistent power throughout the day, Service Advisor™ diagnostics for faster troubleshooting and software updates, eThrottle™ mode that links engine and transmission speed for an automotive drive feel, and an optional economy PTO mode for greater fuel efficiency. The economy PTO mode can deliver the power required by many applications at 72 percent of rated engine speed, thus saving fuel. User-selectable eThrottle™ reduces noise and also helps to save fuel by automatically bringing the engine to idle when the tractor is brought to a stop. Fuel temperature compensation and up to 30 percent torque rise ensure consistent engine performance in all conditions.

5430i Chemical Application Vehicle

John Deere Fabriek Horst, B.V.
Horst, Netherlands
www.JohnDeere.com

The John Deere 5430i Chemical Application Vehicle is a versatile and highly productive machine for application of crop protection products and fertilizers. The vehicle has a 4000 L (1,057 gal) solution tank, a 36 m (118 ft) suspended boom, and four-wheel independent air-spring suspension with four-wheel drive. The vehicle is 3 m (10 ft) wide—the tractor is less than 2.55 m (8.36 ft) wide, narrow enough for European roads and capable of covering a large area in a single day. Integrated steering guidance, boom height control, boom section control, headland management, and application documentation systems give the operator a remarkable level of precise application control and record keeping using a single interface. The 5430i has automatic control of the solution application system. This allows loading and mixing of carrier and chemicals using one switch panel as well as automatic multi-step rinsing with one switch. Other features increase productivity and ease of use, making this machine a top choice for European producers and contractors.

7260 Cotton Picker

John Deere Des Moines Works
Ankeny, Iowa, USA
515-289-3145
www.deere.com

The 7260 Cotton Picker opens new market opportunities by providing international customers a cost-effective solution to transition away from hand picking and custom harvesting. The pull-type design allows utilization of existing 80+ hp tractors, which operate this two-row picker at 5.5 kph (3.4 mph). A single joystick control handle, along with an onboard hydraulic system, control the operation of the automatic unit-height control, while the tractor's SCV controls the swing hitch and basket dump features. The 13 m^3 basket holds over 907 kg (2,000 lb) of cotton before dumping. A 225 L (60 gal) onboard solution tank eliminates the need for service stops, allowing up 5 ha (12 acres) to be harvested in an average workday. The machine can accommodate 70, 76, and 80 cm (28, 30, and 32 in.) row spacings.

7760 Cotton Harvester

John Deere Des Moines Works
Ankeny, Iowa, USA
866-993-3373
www.deere.com

New from the ground up, the 7760 six-row cotton picker changes the harvesting system and provides benefits to both the grower and ginner. With on-board module-building technology, it offers the ability to pick virtually non-stop, with no stopping to unload, no crossing the field to get to a module builder, no waiting for boll buggies, and no time wasted getting back on the row.

The 7760 gives a consistently formed and wrapped module that can be dropped in place or carried to an end-row, all while continuing to harvest. In addition, the 7760 gives a clean, high-efficiency pick from the PRO-16™ and PRO-12 VRS™ Row Units, smooth, reliable power from the John Deere Power Tech Engine, and an operator-friendly cab with easy access to major controls.

Index of Winners by Company

Ace Pump Corporation
10 FMC-750F-HYD High-Performance Oasis™ Wet Seal Centrifugal Pump

Ag-Bag, a Miller-St. Nazianz, Inc., Company
23 X1114 Professional Ag-Bagger

Amadas Industries
4 ADI-1236PT Peanut Digger/Inverter

AutoFarm and Raven Industries
9 FarmPRO™ GPS Steering and Application Control System

Big Ass Fans
15 Pivot™ by Big Ass Fans®

Case IH
14 Magnum™ 180, 190, 210 Tractors
24 88 Series Axial-Flow® Combine

Cherokee Fabrication Company, Inc.
18 Round-Up Module Unwrapper

CLAAS of America, Inc.
5 Auto-Pilot for LEXION Corn Heads
6 CAM Pilot Guidance System
13 LINER 1750 Dual-Rotor Rake
17 QUANTIMETER Optical Sensing System

CNH America, LLC
8 Diesel Saver™ Automatic Productivity Management (APM) System
19 Saddle Suspension for Class V Suspended Axle on Case IH Magnum™ 335 Tractors

Deere & Company
4 AutoConnect™ Mower Deck
5 AutoTrac™ RowSense™ Automatic Guidance
7 Central Insecticide System™
24 3E Series Compact Utility Tractors
26 3000 Twenty AutoHST Control System
27 4720 Compact Utility Tractor

Glenvar Bale Direct Pty. Ltd.
6 Bale Direct System

Harrison Ag Technologies
20 Smart Nozzle System

HYPRO, LLC – Pentair Water
22 Universal Flange Gasket

John Deere
13 iTEC Pro Intelligent Total Equipment Control

John Deere Des Moines Works
26 2510H High-Speed Nutrient Applicator
28 7260 Cotton Picker
28 7760 Cotton Harvester

John Deere Fabriek Horst, B.V.
27 5430i Chemical Application Vehicle

John Deere Harvester Works
20 Self-Leveling Cleaning Shoe
25 600D Series Draper

John Deere Seeding Group
18 RowCommand™ Individual Row-Control System
25 1720 CCS Stack-Fold Planter

Kubota Tractor Corporation
12 Infinity Deck

Laforge Systems, Inc.
10 FrontPower PTO System

Netafim, Ltd.
9 FlatNet™ Irrigation Pipe

New Holland
7 CR9090 Elevation Combine

New Holland Agriculture
12 H9800 Series Automatic Self-Propelled Balewagon and Mil-Stak® Large Bale Loader
15 Model 750HD Specialty Crop Header
16 PTO-Driven Gear Pump for New Holland H7150 Haybine® Mower Conditioner

New Holland North America, Inc.
8 Eight-Range Hydrostatic Transmission with Integrated Hydraulic Control System

Sauer-Danfoss, Inc.
11 H1 Bent-Axis Variable Motor

Seed Hawk, Inc.
19 Sectional Control Technology

Sukup Manufacturing Co.
17 QuadraTouch™ Touch Screen Dryer Control System

The Toro Company
11 Groundsmaster® 5900/5910 Mowers
16 ProCore Processor

Turf Teq, LLC
14 Model 1305BC Brush Cutter

Valmont Irrigation, Inc.
22 Valley AutoPilot GPS Ready Control Panel
23 Valley Tracker Mobile

Vermeer Corporation
21 TM1200 Trailed Mower

Weasler Engineering, Inc.
21 TorQmaster Flange Clutch

FYI: Every year, companies from around the world submit entries to the AE50 competition, and a panel of international engineering experts annually chooses up to 50 award-winning innovative products that will best advance engineering for the food and agriculture industries. Sponsored by *Resource*, the AE50 program emphasizes the role of new products and systems in bringing advanced technology to the marketplace—engineering developments to help farmers, food processors, and equipment manufacturers cut costs, enhance quality, and increase profits—and change our everyday world. For more information and an entry form, go to www.asabe.org/resource/ae5002entry.html.

PROFESSIONAL OPPORTUNITIES

Resource is published eight times per year: January/February, March, April/May, June, July/August, September, October/ November, and December. The deadline for ad copy to be received at ASABE is four weeks before the issue's publishing date.

Advertisements are $125 per column-inch length (column width is 3.5 inches) and include free placement on the ASABE Career Center at www.asabe.org/membership/careercenter.htm. The minimum ad size is 2 inches—approximately 100 words—to qualify for the free online listing. Ads are posted on the Web site within three business days of final approval and remain there for 30 days. If the insertion order is for two months, the cost is $110 per column inch per insertion and includes a 60 day free web listing. For more details on this service, contact Melissa Miller, ASABE Professional Opportunities, 2950 Niles Road, St. Joseph, MI 49085-9659, USA; 269-429-0300 ext. 317, fax 269-429-3852, miller@asabe.org, or visit www.asabe.org/resource/ persads.html.

Events *Calendar*

ASABE CONFERENCES AND INTERNATIONAL MEETINGS

To receive more information about ASABE conferences and meetings, call ASABE at (800) 371-2723 or e-mail mtgs@asabe.org.

2009

June 21-24	**ASABE Annual International Meeting.** Reno, Nevada, USA.
June 22-24	**World Congress of Computers in Agriculture and Natural Resources**. Reno, Nevada, USA.
Oct. 11-14	**Bioenergy Engineering and Operations Conference.** Bellevue, Washington, USA.

ASSISTANT/ASSOCIATE PROFESSOR OF MECHANICAL ENGINEERING

The School of Mechanical and Materials Engineering at Washington State University invites applications to fill two full time, nine-month, tenure track faculty positions at the Assistant or Associate Professor level for the Tri-Cities campus. This position has a 50% research appointment in the WSU Agricultural Research Center (ARC) in affiliation with the WSU Center for Precision Agricultural Systems (CPAS). The successful candidate will be expected to develop a rigorous, collaborative, transdisciplinary, and extramurally funded research program; engage with external stakeholders to develop and promote innovative, effective technologies for agriculture; teach lower and upper division courses; and mentor graduate students. Candidates must possess a Ph.D. in Mechanical Engineering or related engineering field at the time of hire; the ability to teach a broad range of courses in mechanical engineering; and technical expertise in machine design, automation, or control systems of relevance to specialty crop production systems. Ideal candidates will demonstrate: strong oral and written communication skills; record of research productivity and potential for obtaining extramural support; ability to develop new processes, systems and opportunities relevant for agricultural production/processing systems; knowledge of agricultural production/processing systems; strong computer skills; skills in project management; and experience working with multi-disciplinary and team research. Applicants are encouraged to send a letter of application, complete curriculum vitae and contact information for three references to jbaker@tricity.wsu.edu or: Mechanical Engineering Search, c/o Joanne Baker, Washington State University Tri-Cities, 2710 University Dr., Richland, WA 99354-1671. Review of applications will begin May 8, 2009. Refer to search #5204 at www.wsujobs.com for more complete information.

WSU is an EEO educator and employer.

GLOBAL INDUSTRIES, INC.

Immediate opening for Engineering Manager at the Hutchinson/Mayrath division of Global Industries, Inc. in Clay Center, Kansas. Hutchinson/Mayrath is a leader in the design, manufacture and sales of grain handling equipment. Responsible to lead team of engineers, drafters and support staff in design of material handling equipment for domestic and international applications. Provide leadership to engineering department in areas of design, continuous product improvement, coordination between departments, assistance in sales and customer service. Minimum BS degree in Mechanical, Agricultural or related engineering field with 5 years of related work experience. Prior management experience and demonstrated leadership skills required. Material handling engineering experience and proficiency with AutoCAD and other engineering programs preferred. We offer an excellent compensation and comprehensive benefits package which includes salary and annual bonus potential based on qualifications; paid vacation; medical, dental, vision and life insurance; 401K with employer match and more. Relocation assistance available. Qualified candidates may send resumes to hr@globalindinc.com. Visit our web site www.globalindinc.com.

Annual International Meeting

Grand Sierra Resort
Reno, Nevada
June 21-24, 2009

ASABE 2009

ASABE 2009 provides a forum to expand awareness of current industry trends, promotes and acknowledges innovations in design and technology, offers opportunities in furthering education through professional development courses and technical sessions and provides a focus on the economic, political and societal impacts facing the industry. Join us for 4 days in exciting Reno, Nevada this June!

ASABE 2009 Highlights

- Networking Opportunities
- Panel Discussion on Economic Outlook
- More than 1000 Technical and Poster Presentations
- 10 Specialty Sessions which include invited speakers, panel discussions and rap sessions
- Industry Trade Show
- Interactive Bioenergy "Point/Counterpoint" Opening Session
- Career Fair
- World Congress of Computers in Agriculture & Natural Resources Conference Crossover Privileges

Don't Miss Your Opportunity to Attend – Registration Closes June 12th!

REGISTER TODAY AT WWW.ASABEMEETINGS.ORG

General Registration
May 1 – June 12

Visit **www.asabemeetings.org** for meeting updates, registration details and sponsorship and exhibitor opportunities.

October 11-14, 2009
Hyatt Regency
Bellevue, WA

BIOENERGY ENGINEERING 2009

The American Society of Agricultural and Biological Engineers (ASABE) and 25x'25, in partnership with peer engineering and professional organizations, announces the first comprehensive multi-disciplinary international bioenergy engineering conference providing professional education for all aspects of engineering in the biofuels and bioenergy systems from genetics through production, distribution and use. The unique agenda will offer a multifaceted forum for the exchange of ideas, dissemination of knowledge, and the pursuit of initiatives to address the ever-changing societal, economic and political constraints that influence design.

CONFERENCE HIGHLIGHTS

- **Focused Institutes with High Level Invited Speakers and Defined Technical Sessions:**
  - Executive & Program Manager Conference
  - Science & Technology
  - Engineers in Design & Plant Operations
- **Forums & Panel Discussions**
  - Emerging Technologies: The Future of Biofuel Production
  - Future of Bioenergy: Policy Issues
- **Supplier Showcase & Expo**
- **Career Fair**
- **Planned Workshops:**
  - Control Systems Design
  - Regulatory Compliance & Design for the Environment
  - Pre-Processing & Process Engineering for Starch & Oil Based Systems
  - Bioenergy Engineering Extension and Workforce Development
  - Design for Cellulosic Materials Processing & Handling
  - Engineering a New Bioenergy Industry
  - Optimal Drying for DDG & Other Solid Wastes
  - Feedstock Supply Logistics
  - Solid Fuels Standards
- **Mobile Workshops/Tours:**
  - Grays Harbor Area
    - Area Facilities Involved in Biofuels and Alternative Energy Projects
  - Seattle Area Bioenergy Process & Industrial Applications
    - Seattle Area Industries With Newest Bioenergy Engineering Techniques And Processes.
  - Bioenergy Research & Industries in Greater Vancouver Area of British Columbia Canada
    - Clean Energy Research Center and Facilities with Patented Technology and State-of-the-Art Greenhouse Operations
  - Tri-cities Central Washington & North Central Oregon
    - Agricultural Biomass Production And Conversion Technology in Central Washington & North Central Oregon.
- **Awards Luncheon**

For additional conference details, registration information and sponsorship opportunities, please visit
www.bioenergyengineering2009.com