AGRI TECHNICA®

THE WORLD'S NO. 1

INNOVATION MAGAZINE 2019

Innovation Award AGRITECHNICA

- 1 Gold Medal
- 39 Silver Medals
- 291 Company Innovations

Global Farming – Local Responsibility

- DLG-Special "Protecting Yield and Nature"
- DLG-Special "Acre of Knowledge"

DLG APPROVED

- Testing of agricultural machinery
- Current test results

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MADE BY DLG

CONTENT

GLOBAL FARMING – LOCAL RESPONSIBILITY

Agriculture has experienced an unprecedented development over the last 100 years. Food security and sustainable, resource-saving production methods have resulted mainly due to the technological advances made in agriculture. However today, modern agriculture also plays a central role when it comes to finding solutions for current challenges such as environmental protection, biodiversity or climate change. Agricultural enterprises offer custom-tailored systems and services adapted to the respective location in order to use resources efficiently.

This year's guiding theme of AGRITECHNICA, „Global Farming – Local Responsibility“, focuses on the close network of a world-wide agricultural sector with simultaneous regional adaptation of the methods. The world's leading agricultural trade fair shows that innovations have the potential to globally harmonise productivity with resource and climate protection. The innovations presented with the Innovation Award are representative of the current developments in the entire industry. These include not only efficiency and safety, digitalisation and connectivity, but especially new solutions for sustainable, environmentally friendly cultivation.

Modern agriculture needs innovations, creative solutions and ideas.
The AGRITECHNICA Innovation Award represents the world's most demanding competition for these goals.

I want to congratulate all prize winners on their success.

Hubertus Paetow
President of DLG e.V.

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INFO

AGRITECHNICA 2019

10 to 16 November 2019
10 and 11 November Preview Days
Hanover Fairgrounds
Opening times:
daily from 9.00 am to 6.00 pm

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AGRITECHNICA 2019

WHERE INNOVATION MATTERS

Innovations, information, networking, business – this is what the world's leading trade fair for agricultural machinery and equipment stands. Fully booked right down to the last stand space. This year too, AGRITECHNICA is the global platform for successful sharing of experience and information with colleagues and customers.

From 10 to 16 November 2019 (Preview Days on 10 and 11 November), more than 2,750 exhibitors from 51 countries will be presenting their new and further developments at the fully booked Fairgrounds in Hanover. AGRITECHNICA is thus the leading international showcase of the global agricultural machinery and equipment industry and the forum for questions relating to the future of crop production. The trade visitors from home and abroad can expect to see a series of topical issues and premiers. These include the new exhibition sector DLG-AgrifutureLab for start-ups and the International Farmers' Day, which will be focussing on the agricultural nations France and the United Kingdom. This year, the comprehensive Technical Programme of Conferences, Congresses and Forums will be addressing the guiding theme "Global Faming – Local Responsibility".

Excellent international technical programme

Thanks to its Technical Programme with a large number of international congresses, workshops and forums, AGRITECHNICA is considered to be the most important platform for the future of the agricultural sector. This is where the technology trends are displayed and the important questions concerning the future of agriculture and agricultural technology are discussed. A further technical highlight, alongside the forums and the DLG Specials Programme (see page 6) is the international event-rich conference series "Ag Machinery International" (13/14 November), being organised together with the German Engineering Association VDMA, with the two key themes "Chances and challenges of large-scale agriculture worldwide" and "the European Union in the post-Brexit era – challenges for farmers in Europe". The international conference "LAND.TECHNIK AgEng 2019" of the leading further education specialist VDI Wissensforum will provide an overview of current developments in agricultural machinery before the opening of the trade fair already on 8 and 9 November and provide information about the latest research results obtained.

International Farmers' Day celebrates its premiere

The International Farmers' Day will be held for the first time at AGRITECHNICA. For the opening event the focus will be on France and the United Kingdom. On 14 November the specialist technical information offered by the world's leading trade fair will be centred on the interests of French and British farmers. A comprehensive programme of forums with lectures by experts in Hall 15 will illustrate the challenges and solutions that the agricultural machinery industry has developed for these two farming nations.

DLG-AgrifutureLab – Start-ups in the field of agricultural machinery and equipment present their innovations

As the forum for decision-makers and the leading business marketplace, AGRITECHNICA is the hotbed of innovations. With the DLG-AgrifutureLab (Pavilion P11, Stand D41, north of Hall 11), Agritechnica offers in particular young companies and start-ups aiming to provide answers to questions relating to the future of agriculture attractive opportunities to present their visions and products to the international agricultural sector.

SYSTEMS & COMPONENTS with its own guiding theme and new competition

This year the SYSTEMS & COMPONENTS show will be held for the fourth time within the context of AGRITECHNICA. As a technical spotlight, a meeting forum for the industry and a B2B platform for the supply industry, it rounds off the world's leading trade fair for agricultural machinery and equipment perfectly. "Systems & Components" provides information about the latest developments and innovations in the field of components for agricultural machinery and equipment and related sectors. The range offered by the some 700 exhibitors in Halls 15, 16, 17 and 18 provides a comprehensive overview

of the current trends and casts a look into the future of agricultural machinery and equipment. Industry leaders, medium-sized companies and start-ups from over 40 countries will be presenting their spheres of expertise and innovative force in the fields of engines, electronics, drive technology, hydraulics, cabs and power lifts, as well as spare parts and wear parts. This year, with its own guiding theme "Assisted Farming – Engineering agriculture through smart solutions", Systems & Components will be focussing on assistance systems for agricultural machinery and the interplay with upstream and downstream areas. For the first time DLG will be presenting the "SYSTEMS & COMPONENTS Trophy – Engineers' Choice" for components and systems at Agritechnica. In doing so it is paying tribute to the high status and innovative force of the supply industry for agricultural machinery and equipment.

Attractive offers for younger visitors to the trade fair

With a series of different events and functions, AGRITECHNICA offers younger age groups "reasons to visit". On Thursday, 14 November, the "Young Farmers' Day" together with the "Young Farmers' Party" in the evening set an important benchmark for the range of professional offerings to young entrepreneurs and young talent in the industry, – coupled with a high fun-factor. In the "Campus & Career" exhibition sector (Hall 21), DLG together with partners will be providing an extensive information and advisory programme covering issues connected with professional career paths. In the "Career" sector, visitors can establish contacts with companies, gather information from recruitment consulting services and learn more about training and further training opportunities. In the "Campus" sector, technical colleges and universities as well as research institutes will be presenting current projects. The Special "Workshop Live" (Hall 2, Stand E40), being held in cooperation with the German Federal Dealer Association LandBauTechnik-Bundesverband, will be spreading the smell of service workshops in the trade fair halls. Apprentices, craftsmen and master craftsmen will be showing every hour live on the latest machinery and equipment how maintenance and repair work are carried out today on these items and what requirements are made of the various qualification levels in the job.

Farming Simulator League

This year the fascination inspired by agricultural machinery will be felt not only throughout the entire exhibition grounds, but also in the virtual world of a computer game. For the first time fans will be able to experience live in Pavilion P32 how players of the "Farming Simulator" take part in the "Farming Simulator League" (FSL) and collect points for the final game in this competition in 2020.

NETWORK AGRITECHNICA – MADE BY DLG

At the world's No. 1 trade fair for the sector, DLG brings exhibitors and visitors together and matches them perfectly. As an international showcase for topics, trends and strategies, AGRITECHNICA provides orientation and impetus, serving as the Innovations Show for technologies and products and as a successful business marketplace.

With its network of trade fairs and events, AGRITECHNICA is the leading partner of global agricultural machinery and equipment. And with the superscript DLG trademark, the exhibitions display a brand name guaranteeing quality – Made by DLG.

www.DLG-Messen.de

Guiding theme

GLOBAL FARMING – LOCAL RESPONSIBILITY

AGRITECHNICA 2019 is presenting solutions for the strategic questions facing the sector and society. This year's guiding theme "Global Farming – Local Responsibility" is focussing attention on the networking of the global cultivation systems and their regional challenges, and shows how innovations in agricultural machinery and equipment can help to make goals such as climate protection, biodiversity, sustainability and food security achievable.

Agriculture now resembles a worldwide network – feeds and foods, technologies and farm inputs are traded internationally. The production and further processing of raw materials take place independently of one another in different regions of the world. This global exchange forms the basis for the success of the farms, including their upstream and downstream sectors. Individual regions specialise in particular lines and aim to produce products for which there is an international demand. Technology companies follow this trend and offer customised systems in services for the respective locations so that resources can be used efficiently. But not only the exchange of goods is reflected in this network. The global trade indirectly redistributes enormous quantities of water and nutrients that are needed for the production of the basic products.
"Local Responsibility" is the key to the future viability of farms. Farmers need to protect natural resources, organise work procedures in a socially effective fashion, and structure them efficiently and sustainably using appropriate methods. Providers of farm inputs, machinery and equipment, digital systems and technologies help to optimise local production methods and promote cropping systems that meet the local requirements. They have a great influence on the farmers' options for designing their production system sustainably.

DLG EXPERT KNOWLEDGE CROP PRODUCTION

At AGRITECHNICA, the DLG Competence Center Agriculture will be presenting new titles from the DLG Expert Knowledge pamphlet series in addition to current publications on the topic of crop production. This includes the latest findings on the ‚Use of mineral fertiliser spreaders'.

DLG Expert Knowledge pamphlet:
Use of mineral fertiliser spreaders
The task of fertilisation is to apply the nutrients in the correct quantity at the correct point in time in the correct location. Assuming homogeneous soils, this means that the fertiliser must be distributed evenly over the surface. Sophisticated technology helps to achieve this. By itself however, modern technology does not guarantee even fertiliser distribution. A variety of additional factors extensively influences the quality of fertiliser spreading.

Current Expert Knowledge pamphlets:
www.dlg.org/neue_merkblaetter.html

DLG-Special

"PROTECTING YIELD & NATURE"

Crop production is currently facing major challenges. Alongside legal framework conditions regarding plant protection or nutrient management, society too is making new demands on agricultural production. Cropping systems must be adapted to these new conditions in order to continue producing cost-efficiently. Manufacturers, development engineers and the scientific sector are working on new technologies, concepts and ideas in order to support farmers in designing sufficient, sustainable and more efficient production of foodstuffs and agricultural raw materials. The DLG-Special "Protecting Yield & Nature" aims to present possible technical solutions that can earn an economically acceptable livelihood via appropriate yields in addition to protecting the soil, water and air. They include in particular the latest developments in the fields of technology for low-loss fertilising, innovative systems supporting decisions taken, resource-conserving crop protection methods and innovative irrigation systems.

DLG-Special „PROTECTING YIELD & NATURE" (Hall 15, Stand G30)

Consultation	
EXA Computing	Conserving resources is smart – same as your data
Farmdok	Precise & sustainable with FARMDOK- Monitoring & Precision!
ISIP	Interactive platform operated by the various State chambers of agriculture and agricultural research Centres in Germany
Matrix	Innovation Consultancy and transfer of knowledge
Next Instruments	CropScan 3300H On Combine Analyser The CropScan 3300H
Tillage	
SoilReader	Precision Soil Analysis for Precision Agriculture
Fertilization	
BioCover	SyreN – The System for acidification of slurry
Piesteritz	SKW Piesteritz - we increase efficiency - the future of fertilisation
TVESKAEG	With TVESKAEG we introduce advanced MR technology – as known from hospitals – into farming as a easy to operate, fast and accurate sensor to measure important production parameters to improve yield and protect the environment.
Plant protection	
APV	Working without chemicals due to Tined Weeder Pro, Tined Weeder and Rotary Hoe
Einböck	Einböck – your specialist for tined weeders and row-crop-cultivators
FH Aachen Zacho Group	ETAROB – mobile platform for field robots
K.U.L.T.	Camera steered hoeing for the relief of man and nature
Milar	Eco Sniper, Argentina system for the selective application of herbicides
Naïo Technologies	Electrical robots for mechanical weeding and plant protection
Trapview	Trapviev Pest Predictive Service – a decision support System for the application of crop protection
Treffler Maschinenbau	Automatic working depth regulation - support for the perfect harrow result
Irrigation	
SmartAgriHubs	Speeding up the development and uptake of digital innovations

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DLG-Special

"ACRE OF KNOWLEDGE"

Soil losses, low-quality seed, inadequate crop protection, water shortage and high yield losses in many regions of the world – these are just a few of the challenges that agriculture must face worldwide. Agriculture in regions with small and very small farms and special climatic and geological conditions is affected particularly strongly. Mutual information and experience sharing and knowledge transfer at international agricultural markets is an essential step towards developing answers and helping to solve these and other challenges.

DLG-Special „ACRE OF KNOWLEDGE" (Hall 21, Stand C13)

Partner	
Arable Inc.	Weather forecast, crop modeling
BASF New Business	Harvest & Post-Harvest, Integrated Value Chain, Agri-Hub (Eastern Africa)
Boreal Light	Solar desalination, irrigation
Cleanshield Denmark	Plant protection, nutrient management, seeding
Enable West Africa (enpact e.V. & Smart Hectar)	AgTech start-up accelerator programme in Western Africa
EVUM Motors	Electric commercial transport vehicle for the agricultural sector
FAO und Cornell-University	3D-Printer
FAO und Partner	Hydroponics, Greenhouse, Rain Simulator
Fraunhofer ENAS	Soil sensor
General Laser OG	GPS-System
International Rice Research Institute (IRRI)	Innovations and techniques for sustainable rice production
Riela	Cleaning and drying thechnology
Senior Expert Service	Consultancy for agricultural development projects
UNIDO	Agri Experts from developing countries
Vandersat	Remotesensing
Vertical Works GmbH	Environmentally friendly agricultural machinery / drones
VISTA GmbH	Food Security Platform

That is why DLG, together with the Food and Agriculture Organization of the United Nations (FAO) as expert partner, and in cooperation with the United Nations Industrial Development Organization (UNIDO), is creating this platform at AGRITECHNICA. This is where working methods and approaches to improve cultivation systems and the livelihoods of the local population as well as efficient resource management will be presented and discussed. The spectrum of themes on the "Acre of Knowledge" ranges from erosion protection, alternative income and cultivation concepts, integrated crop protection methods, through to reduction of post-harvest losses and training. These challenges play a special role in regions with poor infrastructure, training deficits and small-scale structures. Accordingly, appropriate possible responses include commercial business models, cooperative approaches as well as development cooperation projects. These will be discussed in an associated Expert Forum (Monday to Friday, in English) with experts and participants from 13 countries located on different continents.

Agricultural machinery trends at AGRITECHNICA 2019

TECHNOLOGY AND INNOVATIONS FOR AGRICULTURE

Agricultural machinery manufacturers will once again be presenting a wide variety of innovations at AGRITECHNICA 2019. The innovations that have been submitted and the medals that have been awarded clearly show the current development trends in agricultural machinery and demonstrate the great ingenuity and the high technical level of agricultural engineering. The developments are usually aimed at increasing the efficiency and quality of working methods and production procedures.

Exhaust emission legislature remains a technology driver in tractors. In part, re-engineered or new tractor models are being presented along with the shift to exhaust emission level V. An electromechanical power-split gearbox that can also supply 100 kW of external electrical power will be presented for the first time in addition to further developed full powershift und hydrostatic/mechanical power-split stepless gearboxes. Large tractors are increasingly being equipped with track running gear for high traction and low soil pressures. In addition to the full or semi-caterpillar drives that are available as standard, four fully-integrated triangular semi-caterpillar drives for standard tractors are now also available for the first time.

Exploiting options for preventing soil degradation, humus loss and diseases

The challenges facing soil cultivation technology are high – particularly in light of the decline in the active ingredients used in crop protection agents. In the future, all options for preventing soil degradation, humus loss, diseases and pests will have to be exploited. Post-harvest management and soil cultivation play a central role in this.

The requirements on sowing and cultivation technology have also increased: changeable row widths, grain singling for cereal, simultaneous fertiliser integration. Improved sensor systems, electric drives and the related electronics have significantly increased the complexity of the machines, which also necessitates new digital operating concepts to make the potential of the machines usable.

Solutions to certain problems which have so far been completely disregarded are being shown in the area of mineral fertiliser spreading. A new app can be used to estimate the anticipated spreading quality of fertiliser blends in advance, and the farmer is provided with setting recommendations for the first time.

Today, progress in control and regulation technology in combination with modelling and high-performance data networks is enabling the influence of slopes to be taken into consideration during spreading with broadcasters. From sensor systems for contents to small-scale variation of the output quantity, precision farming technologies are being further developed for both mineral fertiliser and farm fertiliser spreading.

Trend to continuous minimisation of water consumption

The economically justified use of irrigation is increasing along with the number of dry spells. The fundamental trend towards continuously minimising water consumption is taking this development into account. Increasing digitalisation and the possibility of networking sensors are resulting in new options. Individual sensors (e.g. rain sensors) can be incorporated in the Internet of Things (IoT), thus enabling optimised water balancing.

In terms of crop protection technology, the industry is offering a number of new and improved approaches for further increasing application accuracy. Increasing power remains highly important. Electronic aids are a crucial factor in achieving this. The work rate and quality of mechanical weed regulation are being increased thanks to electronic aids, particularly through the use of automatic row guidance.

The manufacturers of threshing crop harvesting machinery will be presenting a particularly high number of innovations at AGRITECHNICA 2019. Not only larger threshing drum diameters but also, and in particular, the appropriate threshing drum, infeed and separating drum constellations with the most linear possible, and therefore gentle, material flow are contributing to performance increases. In the case of axial rotor combine harvesters, performance stability with high straw yields and moisture contents is being increased thanks to new rotor/housing configurations and modified discharge drum/separating basket combinations.

The top models offer engine outputs of around 800 hp. This clearly confirms the trend towards an increasing power density amongst combine harvesters.

Due to the wide diversity of farm sizes in Europe, the range of single-row potato harvesters offers several output classes and various equipment variants. This extensive differentiation can also be observed amongst the two-row bunker harvesters. The trend towards increased machine outputs is also continuing in feed harvesting technology, particularly for forage harvesters. The installed machine output has to be implemented as efficiently as possible. Adapted output management therefore appears to be appropriate, particularly during grass harvesting, when the maximum engine output is only required in part. This can not only relieve the driver but can also save fuel and therefore protect the environment at the same time.

The mowing market is dominated by disc mowers. While this segment is undergoing constant further development, at least in terms of details, the trend in some areas of mowing has recently started to shift towards double-blade mowers again. New designs combine advantages such as very low power requirements, precise cutting and low weight with working widths of up to 10 m as well as improved blade service lives and increased operating safety.

Trend towards performance- and cost-oriented, fully automated mechanisation

The beet harvesting segment is continuing to move forwards in the general trend towards performance- and cost-oriented, fully automated mechanisation in agriculture. Large self-propelled machines, usually with six rows, increasingly frequently with nine rows and even twelve rows, and with (intermediate) bunkering, have become established worldwide. Digital networking of sowing, cultivation, harvesting, clamp care and transport data is ensuring the optimisation of the entire process chain. The trends towards the use of digital systems and IT remain clearly recognisable both in agriculture and in the upstream and downstream sectors. Interesting new and further developments can be found in the area of FMIS (Farm Management Information System). Newly designed data platforms can be used to link sensors and information across manufacturers and therefore to produce handling instructions and documentation automatically.

Interesting further developments can also be seen from smart, non-invasive soil sensors and automated weather stations with a multi-sensor approach and crop protection recommendations up to and including remote detection using satellite systems.

Author:
Dr. Markus Demmel
Bavarian State Research Center for Agriculture, Freising-Weihenstephan, Chairman of the AGRITECHNICA Innovations Committee

DLG ON SHOW IN HALL 21

In Hall 21, Stand B 26, DLG will be providing insights into its extensive testing and skilled specialist work. For instance, the DLG Test Center Technology and Farm Inputs will be presenting its range of tests for agricultural machinery and equipment, as well as results from the DLG-PowerMix, the efficiency test for tractors. New digital services and attractive products characterise the DLG Certification Programme "Sustainable Agriculture". Experts from the International DLG Crop Production Center will be supplying research results for crop production. On the DLG platform, insiders will be discussing current challenges in the agricultural machinery and equipment sector in "DLG-Talk Technology". The trade fair presentation will be rounded off by the extensive training programme offered by the DLG Academy, new publications and titles from DLG's publishing label, and networking offers for DLG members, Young DLG and professionals from home and abroad.

Programme on the DLG-Stage

Sunday, 10 November	
2:00 - 4:30 p.m.	**Presentation of the AGRITECHNICA Innovation Award in Silver** DLG-Innovations Commission and DLG e.V.
Monday, 11 November	
2:00 - 3:00 p.m.	**DLG-Talk "Technology": Fertilizer management – Taking action instead of desponding!** DLG e.V., Competence Center Agriculture
Tuesday, 12 November	
2:00 - 3:00 p.m.	**DLG-Talk "Technology": Rapeseed – Now it's time for the professionals!** DLG e.V., Competence Center Agriculture
Wednesday, 13 November	
2:00 - 3:00 p.m.	**DLG-Talk "Technology": Sustainable farming** DLG e.V., Competence Center Agriculture
Thursday, 14 November	
10:00 a.m. - 6:00 p.m.	**Young Farmers' Day** Junge DLG
4:00 - 6:00 p.m.	**Young Farmers' Congress** Junge DLG
Friday, 15 November	
10:00 - 11:00 a.m.	**Digitizing: Chance for greater sustainability?** Bitcom and DLG e.V.
2:00 - 3:00 p.m.	**DLG-Talk "Technology": Irrigation – from a niche issue to standard** DLG e.V., Competence Center Agriculture
Daily	
Lectures and discussion panels by and with Campus & Career	
Expert lectures focusing on arable farming from the DLG-Competence Center Agriculture	

Agricultural Impulses

INNOVATION AWARD AGRITECHNICA

The DLG Innovation Award that will be presented at AGRITECHNICA is one of the leading innovation awards in the International agricultural sector. The award new name emphasizes the importance of modern agricultural machinery for the future of agriculture.

"Innovation Award AGRITECHNICA 2019" – the name portrays the prize as a quality award for entrepreneurial innovative force. A neutral Commission of Experts appointed by DLG selected the winners of the Gold and Silver Medals from among all the innovations submitted and admitted to the competition on the basis of strict criteria.

1 Gold and 39 Silver Medals

291 innovations from altogether 148 companies from 24 countries were admitted to the competition. This underlines AGRITECHNICA's leading position as the world's largest showcase for agricultural machinery and equipment innovations. One innovation was awarded a Gold Medal and a further 39 innovations were awarded Silver Medals. The award-winning innovative products have not yet been presented or won awards at any other major exhibition or international show. They must be functional at the time of the Exhibition and available on the market at the latest in the year 2021.

PROFILE OF THE INNOVATION AWARD

Participation and presentation
All companies exhibiting at AGRITECHNICA are entitled to participate in the "Innovation Award AGRITECHNICA" competition with their innovations. Following intensive information and discussion, a neutral Commission takes a majority decision on which products are to receive the "Innovation Award AGRITECHNICA" in Gold or Silver.

„Innovation Award AGRITECHNICA" in Gold
A product with a new concept, of which the function has been substantially modified, and the use of which makes a new process possible or substantially improves a known process, can win an "Innovation Award AGRITECHNICA" in Gold. The following aspects are crucial for the award of a Gold Medal:

- Practical significance
- Benefits for commercial and labour aspects
- Improvement of the environmental and energy situation
- Effects on facilitating labour and improving workplace safety

„Innovation Award AGRITECHNICA" in Silver
An innovation that develops a known product further in such a way that an essential improvement of the function and the method can be expected, but which does not fully satisfy the criteria for a Gold Medal, can win an "Innovation Award AGRITECHNICA" in Silver. The following aspects are crucial for the award of a Silver Medal:

- Practical significance
- Benefits for the work performance and work quality
- Improvement of operational safety

The Jury of Experts
The Innovations Commission is made up of independent experts from the fields of Science and Academia, Research, Consultancy and Practical Operations. The members of the Commission guarantee that the award decisions are taken objectively and expertly. On the basis of strict criteria, they have selected the products to be presented with a medal from among all the company innovations submitted in time before the closing date for submissions.

- **Till Belau,** Association for Technology and Structures in Agriculture e.V. KTBL, Darmstadt
- **Prof. Dr. Hamdi Bilgen,** Faculty of Agriculture, Bornova-Izmir, Turkey
- **Prof. Dr.-Ing. Stefan Böttinger,** University of Hohenheim, Institute of Agricultural Engineering (440), Stuttgart
- **Christoph von Breitenbuch,** Agricultural Business Community Leine-Solling GbR, Parensen
- **PD Dr. agr. Joachim Brunotte,** Institute of Agricultural Technology, Braunschweig
- **Dr. Markus Demmel,** Bavarian State Research Center for Agriculture, Institute for agricultural engineering and animal husbandry, process engineering crop production, Freising-Weihenstephan
- **Dr. Lars Fliege,** Agrargesellschaft Pfiffelbach mbH, Pfiffelbach
- **Prof. Dr. Ludger Frerichs,** Technical University Braunschweig, Institute of Mobile Machines and Commercial Vehicles, Braunschweig
- **Ekkehard Fricke,** Lower Saxony Chamber of Agriculture, Department of Irrigation, Hanover
- **Peter-Eric Froböse,** Froböse-Landbau, Lage
- **Heinz-Günther Gerighausen,** Kürten
- **Prof. Dr. sc. agr. Hans-Werner Griepentrog,** University of Hohenheim 440 c Institute of Agricultural Engineering, Measuring and Testing Technology, Stuttgart
- **Bahne Hansen,** MVB GmbH, Fahrenwalde
- **Dr. Daniel Hege,** Hege Walter Gemüsebau in Limburgerhof, Limburgerhof
- **Prof. Dr.-Ing. habil. Thomas Herlitzius,** Technical University Dresden, Faculty of Engineering, Chair of Agricultural Systems and Technology, Dresden
- **Wilhelm Jäger,** Westfarm GbR, Geilenkirchen
- **Prof. Dr. agr. Wolfgang Kath-Petersen,** Technical University Cologne, Institute of Construction Machinery and Agricultural Engineering, Cologne
- **Dr. Rainer Keicher,** Geisenheim University Center for Economics, Geisenheim
- **Prof. Dr. Hermann J. Knechtges,** Reiskirchen
- **Harald Kramer,** Chamber of Agriculture North Rhine-Westphalia, Crop Protection Service, Münster
- **Thomas Korte,** Surwold
- **Dr. Fabian Lichti,** Bavarian State Research Center for Agriculture, Institute for agricultural engineering and animal husbandry, Freising-Weihenstephan
- **Ferdinand Mersch,** Chamber of Agriculture North Rhine-Westphalia, Department of Ecological Agriculture and Horticulture, Cologne-Auweiler
- **Jörg Peter Merz,** Hesse Department of Agriculture (LLH), Alsfeld
- **Dr. Martin R. Müller,** Association of Agricultural Engineering and Agricultural Construction in Bavaria e.V. (ALB Bayern e.V.), Freising-Weihenstephan
- **Prof. Dr. Patrick Ole Noack,** University of Weihenstephan-Triesdorf, Agricultural Systems Engineering, Weidenbach
- **Dr. Hans-Jörg Nussbaum,** Agricultural Center Baden-Wuerttemberg, Aulendorf
- **Dipl.-Ing. Heinrich Prankl,** BLT Wieselburg Institute of Education and Research Francisco Josephinum, Wieselburg, Austria
- **Dr. Rolf Peters,** PotatoConsult UG (limited liability), Visselhövede
- **Joachim Pfannstiel-Wolf,** Grevenbroich
- **Prof. Dr. Jacek Jan Przybył,** Poznan University of Life Sciences, Poland
- **Prof. Dr.-agr. Thomas Rademacher,** Bingen University of Applied Sciences, Bingen a. Rh.
- **Dr. Ovidiu Ranta,** University of Agricultural Sciences and Veterinary Medicine (USAMV), Cluj-Napoca / Catedra III Mecanizare, Cluj-Napoca, Romania
- **Dipl.-Ing. Dirk Rautmann,** Julius Kühn-Institute (JKI), Federal Research Institute for Cultivated Plants, Institute for Application Techniques in Plant Protection, Braunschweig
- **Prof. Dr. Yves Reckleben,** University of Applied Sciences, Kiel – Department of Agriculture, Chair of Agricultural Machinery and Field Operations, Osterrönfeld
- **Prof. Dr. Arno Ruckelshausen,** University of Applied Sciences Osnabrück, Faculty of Engineering Sciences and Computer Science, Osnabrück
- **Mortimer von Rümker,** Seed Breeding Gotha-Friedrichswerth, Friedrichswerth
- **Prof. Dr. habil. Matthias Schick,** Strickhof Facility Management Animal Husbandry & Dairy Farming, Lindau, Switzerland
- **Dipl.-Ing. arg Henning Schoof,** Dörentrup
- **Dr. Klaus Spohrer,** University of Hohenheim, Institute of Agricultural Engineering (440), Stuttgart
- **Prof. Roger Stirnimann,** Bern University of Applied Sciences / School of Agricultural, Forest and Food Sciences (HAFL), Zollikofen, Switzerland
- **Prof. Dr. Bernhard Streit,** Bern University of Applied Sciences (BFH), Zollikofen, Switzerland
- **Dr. Norbert Uppenkamp,** North Rhine-Westphalia Chamber of Agriculture, Münster
- **Prof. Dr. Karl Wild,** HTW Dresden (University of Applied Sciences) AG Agricultural Engineering, Dresden
- **Prof. Dr. Dirk Wolff,** University of Applied Forest Sciences Rottenburg, Rottenburg a. N.
- **Dr. Dipl-Ing. Klaus Ziegler,** Association of Franconian Sugar Beet Growers e.V., Eibelstadt

Where you can find Gold and Silver medals at the AGRITECHNICA

PRODUCT	EXHIBITOR	STAND
GOLD		
eAutoPowr gearbox e8WD for 8R large tractors	John Deere Walldorf GmbH & Co. KG	Hall 13, Stand C40
SILVER		
Automated Vehicle and Implement Guidance in Wine-Growing	AGCO Deutschland GmbH – Fendt	Hall 20, Stand B14b
Fendt IDEALDrive	AGCO International GmbH	Hall 20, Stand B14
Automatic All-Round Strapping Trolley	Agrarsysteme Hornung GmbH & Co. KG	Hall 4, Stand A54
398 MPT - High Speed Flotation Truck Tire	Alliance Tire Europe BV	Hall 4, Stand C28
AmaSelect Row	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG	Hall 9, Stand H19
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Horizon Star III Razor Maize Picker	Carl Geringhoff Vertriebsgesellschaft mbH & Co. KG	Hall 13, Stand A39
APS Synflow Walker	CLAAS – Vertriebsgesellschaft mbH Deutschland	Hall 13, Stand C02 and Pavilion 35, Stand A01
CEMOS Auto Chopping	CLAAS – Vertriebsgesellschaft mbH Deutschland	Hall 13, Stand C02 and Pavilion 35, Stand A01
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Innovative driveline for HD big balers	CNH Industrial Deutschland GmbH NEW HOLLAND	Hall 3, Stand A49c
Baler Control System for the T7 Tractor	CNH Industrial Deutschland GmbH NEW HOLLAND	Hall 3, Stand A49c
CX Threshing	CNH Industrial Deutschland GmbH NEW HOLLAND	Hall 3, Stand A49c
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Intelligent vibration damping for large square balers	John Deere Walldorf GmbH & Co. KG	Hall 13, Stand C40
Proactive throughput controller	John Deere Walldorf GmbH & Co. KG	Hall 13, Stand C40
Efficiency Package for Large Combine Harvesters	John Deere Walldorf GmbH & Co. KG	Hall 13, Stand C40
iQblue connect	Lemken GmbH & Co. KG	Hall 11, Stand A42
Automatic twine remover on stationary Premos pellet presses	Maschinenfabrik Bernard Krone GmbH & Co. KG	Hall 27, Stand F24
EasyCut F 400 CV Fold	Maschinenfabrik Bernard Krone GmbH & Co. KG	Hall 27, Stand F24
Dino – autonomous robot and precision weed controller	Naïo Technologies	Pavilion 11, Stand B04
Protective screen for tracked forestry tractors	Pfanzelt Maschinenbau GmbH	Hall 26, Stand C22
SmartDepth	Precision Planting LLC	Hall 20, Stand B14j
MultiRate Dosing System	Rauch Landmaschinenfabrik GmbH	Hall 9, Stand D20
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NEVONEX	Robert Bosch GmbH	Hall 16, Stand A04a and Pavilion 11, Stand C10
R-Connect Monitor	ROPA Fahrzeug- u. Maschinenbau GmbH	Hall 25, Stand H07
Potato squeezer	ROPA Fahrzeug- u. Maschinenbau GmbH	Hall 25, Stand H07
RSM Night Vision System	Rostselmash	Hall 9, Stand A31b
VarioCHOP	samo Maschinenbau GmbH	Hall 13, Stand A52
NPK-Sensor	Samson Agro A/S	Hall 23, Stand A35
WideLining-System	Väderstad GmbH	Hall 12, Stand B25

EXHIBITION GROUNDS HANOVER/GERMANY

KEY AREAS

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- Machinery and Equipment for Combining Hall: 3, 4, 5, 7, 9, 13, 20, P35
- Machinery and Equipment for Chopping Hall: 13, 27
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- DLG Special „Acre of Knowledge" NEW!
- DLG Special „Protecting Yield and Nature"
- DLG-AgrifutureLab NEW!
- Workshop Live and International Dealer Center
- Forestry *Live* Demonstration
- FOODnext Conference NEW!
- AgMachinery International Conference
- DLG Systems & Components Future Lounge

CA Conference Area
IC Information Center
CC Convention Center
HN House of Nations

- DLG-Stand
- IVL-International Visitors' Lounge
- Campus&Career
- Farming Simulator League NEW!

INNOVATION AWARD AGRITECHNICA 2019 IN GOLD

TRACTORS, MOBILE LOADING EQUIPMENT, TRANSPORT TECHNOLOGY

eAutoPowr gearbox e8WD for 8R large tractors

John Deere Walldorf GmbH & Co. KG (Hall 13 Stand C40)

Joint development with:

JOSKIN S.A., Belgium (Hall 4 Stand C12)

Stepless transmissions with a hydrostatic-mechanical power split have been used in agricultural tractors for over 20 years. Up until now, additional generators for electric drives with a higher power requirement were installed on tractors (fan, compressed-air/air conditioner compressor, etc.) or on implements.

The eAutoPowr gearbox for the new 8R large tractors from John Deere represents the first electro-mechanical power split gearbox in agricultural technology. Technically, the hydro unit (pump/motor) is completely dispensed with; instead, two electric motors are used as a continuously variable actuator. The electric motors have been specified so that they not only supply the drive, but can also provide up to 100 kW of electric power for external consumption. The resulting possible tractor-implement electrification is demonstrated with a system solution for spreading manure developed together with Joskin, where two axles on a tridem spreader are electrically driven.

On the tractor side, this electrical integration results in improved gearbox efficiencies and reduced maintenance costs. In addition, the surplus power flows occurring at certain operating points can be "tapped" when utilising electric power for external electrical components, which further improves the overall efficiency. Used in combination with an axle drive on a manure spreader, the results in practical use include, among other things, higher traction, reduced slip and improved track guidance on side slopes.

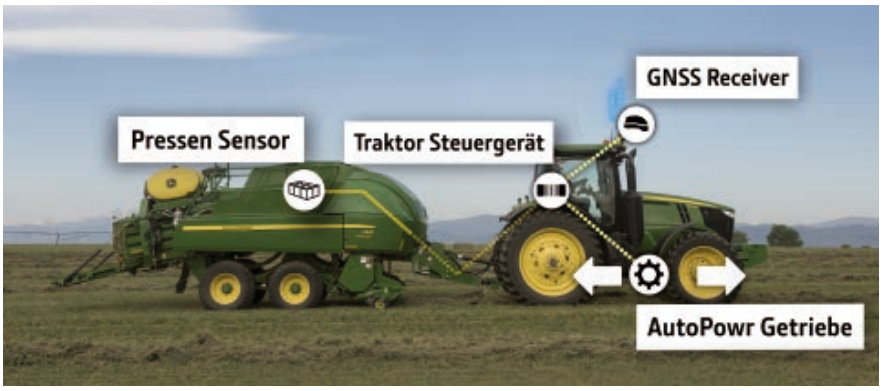
INNOVATION AWARD AGRITECHNICA 2019 IN SILVER

TRACTORS, MOBILE LOADING EQUIPMENT, TRANSPORT TECHNOLOGY

Intelligent vibration damping for large square balers

John Deere Walldorf GmbH & Co. KG (Halle 13 Stand C40)

Large square balers enable high transport and storage density of plant material and therefore have achieved major importance in agriculture. However, due to high inertial and pressing forces, these big balers induce vibrations that subject the tractor cab to unpleasantly strong pitching movements, which put a strain on the tractor driver.



With intelligent vibration damping, these vibrations are almost completely eliminated on models of the 7R tractor series in conjunction with balers from John Deere. Based on the signals of the acceleration sensors in the GPS receiver and other signals within the tractor, the continuously adjustable drive is adjusted with the plunger frequency of the baler so that a periodic change of the speed setting compensates for the vibrations created. No additional hardware is required for this purpose.

This technology specifically developed for active vibration reduction means a considerable relief for the health and performance of tractor drivers.

TRACTORS, MOBILE LOADING EQUIPMENT, TRANSPORT TECHNOLOGY

Baler Control System for the T7 Tractor

CNH Industrial Deutschland GmbH NEW HOLLAND (Hall 3 Stand A49c)

Large square balers enable high transport and storage density of plant material, and therefore have achieved major importance in agriculture. However, due to the high inertial and pressing forces, big balers induce vibrations that subject the tractor cab to unpleasantly strong pitching movements that put a strain on the driver.

To reduce this vibration load, a baling mode can be selected on the New Holland T7 tractor series. This modifies the coordination of the front axle suspension and increases the slope of the limiting curve on the engine map. This then avoids oscillation of the tractor-implement combination, the system decouples and a considerable reduction in the vibration load results. No additional hardware is required for this purpose. This passive system is compatible with balers from any manufacturer. This technology, specifically developed for active vibration reduction, means a considerable relief for the health and performance of the tractor driver.

TRACTORS, MOBILE LOADING EQUIPMENT, TRANSPORT TECHNOLOGY

Automatic All-Round Strapping Trolley

Agrarsysteme Hornung GmbH & Co. KG (Hall 4 Stand A54)

Careful securing of loads is crucial when transporting agricultural bales, but the manual securing of loads with belts involves a high degree of risk for the operator and takes a great deal of time that is in especially short supply during harvest.

The all-round strapping trolley from Agrarsysteme Hornung automates the proper securing of loads with straps with comparatively little effort, and requires less than 60 seconds to do so. The automatic lashing straps can be positioned as desired on the trailer. Swing arms at the front and rear wall lay the straps over the load. Then they are automatically tensioned. This securing method also functions with partial loading and imprecisely positioned bales.

Despite tight time schedules, this enables the driver to comply with the requirement to secure the load, while the danger during lashing and for other road users when driving on public roads is considerably reduced.

TRACTORS, MOBILE LOADING EQUIPMENT, TRANSPORT TECHNOLOGY

398 MPT – High Speed Flotation Truck Tire

Alliance Tire Europe BV, The Netherlands (Hall 4 Stand C28)

Agricultural trucks, with drive and chassis technology designed for off-road use, are becoming increasingly important in European agriculture and forestry. Up until now, no suitable tyres were available for the rear axles of a large number of these vehicles where the inflation pressure could be reduced to a reasonable level in the field, while also allowing driving speeds of more than 65 km/h on the road at a higher inflation pressure.

The Alliance 398 MPT now enables fast driving on motorways and expressways and, due to the tread design and reduced tyre inflation pressure, offers excellent traction and reduced loading of the ground in fields and off-road. The design, with steel belts and a steel body, enables low heat-up at high driving speeds, driving safety and flexible adjustment to terrain with a reduced tyre inflation pressure.

With tyres like the Alliance 398 MPT, the border between arable land and asphalt is more "permeable", i.e. the lorry technology, which is considerably more energy-efficient on the road compared to tractors, can in some cases also be used for agricultural transport on fields under the more difficult ground conditions there.

TRACTORS, MOBILE LOADING EQUIPMENT, TRANSPORT TECHNOLOGY

Automated Vehicle and Implement Guidance in Wine-Growing

AGCO Deutschland GmbH – Fendt (Hall 20 Stand B14b)

Joint development with:

Braun Maschinenbau GmbH (Hall 20 Stand B14f)

Operating farm machinery under vines requires a high level of concentration from the tractor driver. The tractor must be steered precisely, while at the same time monitoring and controlling the implements.

The automated vehicle and implement guidance system jointly developed by Fendt and Braun considerably increases output in wine-growing tasks – while simultaneously reducing the strain on the driver. The ground contour, vines, poles, etc. are recorded using laser technology and the information is passed on to the Fendt 200V Vario narrow-track tractor via an ISOBUS interface. Furthermore, the 3D position is determined with a gyroscope and the tractor assumes the track and implement guidance based on this information. The height and width of implements mounted on the left and right between the axles can be controlled independently of each other, however the system can also be used for the lateral guidance of rear mulchers.

The combined tractor/implement control system therefore simplifies the operation of farm machinery under vines. In addition to reducing the strain on the driver and increasing output, more exact guidance of these tools also enables the reduced use of other crop protection measures.

MACHINERY AND EQUIPMENT FOR DRILLING AND SOWING

WideLining-System

Väderstad GmbH (Hall 12 Stand B25)

Tramlines in row crops allow any sprayers and spreaders used to run on wider and soil-friendly tyres. In practice, however, this is usually not possible, because the typical row width is as narrow as 75 cm. Existing solutions for creating wider track widths either involve totally different row widths or shutting off individual tramlines – either mechanically or hydraulically.

The WideLining System from Väderstad is the first system to apply a tramline without shutting off individual rows on a precision drill. Instead, this tramlining system creates a track width of 105 cm by automatically shifting the seed rows without shutting them off. This way, the system applies track widths that are wide enough for a slurry tanker without wasting valuable crop land and yield potential. The three seed rows behind the tractor are shifted hydraulically from 75 cm to 60 cm, creating a tramline without increasing the seed rate on the neighbouring seeders, at forward speeds as fast as 12 km/h or more.

Instead of creating the typical 150 cm track widths by shutting off a seeder for 75 cm seed rows, the WideLining System from Väderstad produces 105 cm tramlines, for example, which are wide enough for the slurry tanker to enter the crop on flotation tyres. In addition, the system cuts out higher application rates in the neighbouring seeders when individual seeders are shut off. This in turn eliminates an uneven distribution of the plants in and across the direction of travel.

MACHINERY AND EQUIPMENT FOR DRILLING AND SOWING

SmartDepth

Precision Planting LLC, USA (Hall 20 Stand B14j)

In the past, operators had to guess the optimum drilling depth for a specific seed in a specific soil. Based on this guess, they would then set up the precision drill. Once the settings were made, it was not possible to have them altered automatically on the move and in real time to respond to varying conditions, such as changing moisture levels.

SmartDepth controls the drilling depth automatically and accurately relative to the current soil conditions such as moisture level. To do that, the operator defines a drilling range, i.e. a minimum and maximum depth, and enters the minimum moisture. As the machine is drilling, SmartDepth measures and reads the various moisture levels at various depths in real time. At the same time, it automatically increases the drilling depth as necessary, using an electric actuator. This way, each seed benefits from adequate soil moisture for reliable germination.

Placing the seeds automatically at depths where moisture levels are adequate, the system ensures uniform germination and crop establishment, and a more uniform crop. As the placement of the seeds is adapted to the varying conditions within a field, it reduces the risk of poor germination. The system will presumably save seeds, because operators will not have to factor in extra volumes for potentially higher seed rates that accommodate narrower target spacings and less than optimum crop establishment.

MACHINERY AND EQUIPMENT FOR DRILLING AND SOWING

ModulaJet

Forgio Roter Italia S.r.l., Italy (Hall 21 Stand C05)

The use of biodegradable plastic films has quite a long tradition in row cropping. Covering a seed row with plastic film is a practical way of controlling weeds. In addition, film reduces water evaporation rates and heats the topsoil, which in turn encourages early growth and reduces the vegetation period. Many films are punched by the punch hole seeder, or immediately after the seeding pass with mechanical elements so the new plants can shoot through the film without tearing it. Yet these holes also allow weeds to establish, which is not desirable as they are difficult to remove. The ModulaJet system from Forigo Roter Italia S.r.l. is an innovative seed placement technology for crops grown under film. The seeds are pneumatically singled, then accelerated in an air stream and shot through the film into the soil. This creates a very small hole right above the seed that are too small to allow weeds to develop. The depth of seed placement is controlled by the air flow rate. The seed rate and the application of the film at the end of the field are controlled electronically. The system works best for large seeds such as maize or soya.

Using much smaller holes in the film significantly reduces the degree of weed development after the new plants have broken through, reducing the subsequent row crop work.

MACHINERY AND EQUIPMENT FOR FERTILIZING

NPK-Sensor

Samson Agro A/S, Denmark (Hall 23 Stand A35)

Due to increasing specialised legal requirements for precise application of liquid organic fertilisers, an exact analysis of the ingredients relevant for fertilisation has an important role to play.

In addition to taking samples, which must then be subjected to wet-chemical analysis, near infrared sensors (NIRS) are currently being used to estimate the nutrient content of manures. For the first time, Samson now offers a system for determining nitrogen, phosphorus and potash in manure, which is based on an Nuclear Magnetic Resonance (NMR) sensor. It enables an analysis of manure ingredients without matrix-dependent calibration requirements.

Sensors based on NMR technology promise fewer errors in manure analysis. Initial laboratory tests also show a good alignment with laboratory values.

MACHINERY AND EQUIPMENT FOR FERTILIZING

EasyMix

AMAZONEN-WERKE H. Dreyer GmbH & Co. KG (Hall 9 Stand H19)

Significant amounts of mixed fertilisers are prepared at decentralised locations with the objective of using inexpensive individual fertilisers while at the same time applying several nutrients in the desired ratio. Apart from some mixed fertilisers produced as standard with a defined nutrient ratio and defined initial components, up until now there have been no aids, e.g. spreading charts, for the majority of these customised fertiliser mixtures that would enable fertilisers spreaders to be optimally adjusted in accordance with the properties of the mixture produced. With the "EasyMix" app from Amazone, used with the company's two-disc spreaders, it is now possible to estimate the lateral distribution of the individual components and to determine the optimum fertiliser spreader adjustment for the mixture before it is produced. This is achieved by entering the planned mixing components, the fertiliser spread properties and the desired working width. Alternating effects of the individual components on the spreading disc and their varying flight behaviour are taken into account when determining the expected spreading quality. As a result, the app reduces the danger of uneven nutrient distribution resulting from unsuitable mixture components, an excessively large working width or an incorrect fertiliser spreader adjustment.

MACHINERY AND EQUIPMENT FOR FERTILIZING

MultiRate Dosing System

Rauch Landmaschinenfabrik GmbH (Hall 9 Stand D20)

With the MultiRate Dosing System for pneumatic spreaders from RAUCH, the dosing units of each individual fertiliser outlet opening are continuously and independently electronically adjusted. The 48 Volt electric drive enables extremely short adjustment times, and therefore a fast variation of the fertiliser quantity applied during forward travel. Perpendicular to the driving direction, the fertiliser application can be varied in 1.2 m wide strips, which leads to a considerably higher spatial resolution compared to the possibilities that have existed in the past. For fertilising according to an application map, the specified values are implemented more exactly, and when spreading wedges and in curves, over- and under-dosing are considerably reduced. Boundary spreading can also be optimised by adapting the quantity to the outer fertiliser outlet opening in conjunction with a boundary spreading baffle plate.

With the MultiRate Dosing System, it is therefore possible to apply fertiliser more safely; the crop can be supplied according to need and the level of nutrients finding their way into bodies of water and the ground water can be reduced. In addition, even with large working widths of up to 36 m, small-areas of ecological significance within a field can be specifically excluded from fertilisation.

MACHINERY AND EQUIPMENT FOR FERTILIZING

Hill Control Control System

Rauch Landmaschinenfabrik GmbH (Hall 9 Stand D20)

It is possible to vary the fertiliser distribution on disc spreaders by changing the point of application, speed of the discs and dosing quantity; however, up until now no system has been able to compensate for the altered spreading distance and the distorted spreading pattern on a slope. Current solutions attempt to keep the change in the point of application when spreading fertiliser on a slope to a minimum with a low drop height between dosing and the spreading disc or with forced guidance of the fertiliser on the spreading disc. In addition, the spreading pattern at the spreading discs can be detected with radar-supported measurement systems and, if necessary, also corrected during spreading.

The HillControl Control System from Rauch is software that improves the distribution accuracy when spreading fertiliser, especially on hilly terrain. It functions in conjunction with an inclination and yaw rate sensor on disc spreaders by changing the point of application, disc speed and dosing quantity. As a result, the spreading distance and direction of the fertiliser pellets during spreading is changed with a controlled adjustment of the point of application, therefore correcting the distortion in the spreading pattern.

Especially in extremely hilly terrain, the HillControl Control System considerably improves the distribution accuracy when using two-disc spreaders. Furthermore, over- and under-dosing are also reduced when driving over hilltops or through depressions.

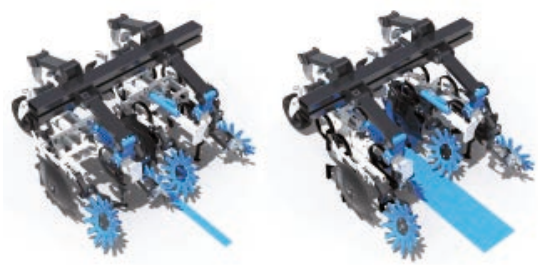
MACHINERY AND EQUIPMENT FOR PLANT PROTECTION

VarioCHOP

samo Maschinenbau GmbH, Austria (Hall 13 Stand A52)

Hoeing implements and/or hoeing units are currently usually adjusted mechanically while at a stop. The adjustment procedures are extremely complex and time-consuming, which in practice generally prevents optimised adjustment from taking place.

The VarioCHOP System is a hoeing implement or hoeing units with a variable processing width that can be conveniently adjusted from the tractor cab. With VarioCHOP, an adjustment to various field conditions, crops, weather events, erosion and stages of growth can be quickly carried out. The system operates with a reaction time of approximately five seconds and can be used on hoes with up to 99 rows. The mechanical adjustment to each individual hoeing unit is driven by one precision hydraulic cylinder that is coupled to a heavy-duty steering angle sensor. As a result, it is possible from the tractor cab to adjust the optimum hoeing range. This then makes it possible to always achieve the perfect distance to the crop plant from the first to the last hoeing pass. With this method, passes for mechanical weed control can be clearly optimised, however the great practical benefit particularly lies in the considerable savings of time when adjusting the hoeing implement. Coupling with camera systems already available on the market to provide automatic range adjustment would be another advantage in practice.



MACHINERY AND EQUIPMENT FOR PLANT PROTECTION

AmaSelect Row

AMAZONEN-WERKE H. Dreyer GmbH & Co. KG (Hall 9 Stand H19)

When hoeing row crops, the areas between the rows are processed, however the longitudinal spaces between the plants are not. Currently, this gap in weed control cannot be closed with purely mechanical methods, however this is possible with a combination of special boom sprayers. Here the operating conditions of both systems must be seen as rather contrary. The hoe operates optimally under dry conditions and the crop protection agents are more effective with corresponding soil moisture.

The AmaSelect Row System enables the user to switch over from area application to boom application, without conversion measures and at any time, with a "standard" field sprayer in field operation in various row crops (sugar beets, maize, potatoes, etc.). For this purpose, the AmaSelect 4-fold nozzle body offers a 50 cm partial width switching and nozzle positions at a 25 cm and 50 cm distance with flexible switching of each individual nozzle. This unique nozzle body design enables row referencing with both 75 cm and 50 cm row widths without conversion measures. A nozzle configuration for the individual farm is equipped and programmed depending on the row width of the crops. The system can be switched over from boom application to the usual area application as desired at the press of a button. The desired application quantity for areas and boom application is stored in the control terminal. As a result, the application quantity is automatically adjusted during a function change, preventing overdosing in the boom.

The basic condition for boom application with this method is, of course, the exact position of the cultivated crop being captured during sowing by means of RTK, as well as exact track guidance. In addition, optimum boom positioning is assumed, as a combination of spraying angle and distance from the ground determines the width of the spray band. Using the special nozzles with a 40 degree spraying angle, a spray width of 25 cm results when it is 35 cm from the ground. This, of course, can be varied depending on the boom height.

Traditionally, boom spraying is often combined with mechanical weed control. With AmaSelect Row a decoupling of the two methods is achieved; each system can be optimally run accordingly, enabling the performance of both systems to be optimally utilised. As a result, the amount of crop protection agents used in row crops is considerably reduced without a loss of performance. That lowers costs while protecting the environment.

MACHINERY AND EQUIPMENT FOR COMBINING

Horizon Star III Razor Maize Picker

Carl Geringhoff Vertriebsgesellschaft mbH & Co. KG (Hall 13 Stand A39)

The European corn borer is spreading increasingly across all of Germany and is the most important pest affecting all maize harvesting methods. Its damaging effect is apparent in the harvest and quality losses through modest cob bases and infestation with fusaria fungi, which can also affect subsequent crops. In addition to insecticides and biological agents, one of the most important control strategies is thorough chopping up of the maize stubble directly following the harvest, i.e. before driving on fields with combine harvesters and removal logistics. Therefore, destruction of the maize stubble directly on the maize picker is required.

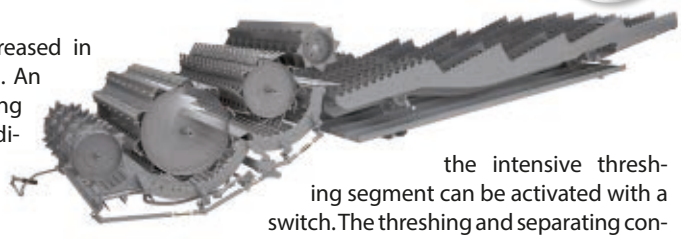
That's why the manufacturer Geringhoff has developed a maize picker with an integrated stubble chopper based on the familiar Rota Disk method, with one cutting and two picking rollers. It consists of angled blades on the rotor of the back-picker shredder below the picking units. For maximum destruction of all maize stubble, the rotors must be guided with the shortest distance to the surface of the ground. To achieve this, Geringhoff provides the frame of the Horizon Star III Razor maize picker with a rotary joint in the centre. The central area with the inclined conveyor of the combine harvester and the two side areas are depth-guided with sensors.

As a result, the Horizon Star III maize picker makes a major contribution to improving crop protection in maize production.

MACHINERY AND EQUIPMENT FOR COMBINING

APS Synflow Walker

CLAAS – Vertriebsgesellschaft mbH Deutschland (Hall 13 Stand C02, Pavilion P35 Stand A01)

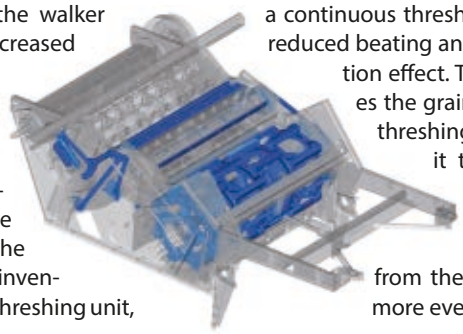


The threshing output of walker combine harvesters cannot be further increased by enlarging the threshing and separating units, as the volume of the machines, and the width in particular, are limited. Consequently, up until now the tangential threshing unit in walker combines was supplemented with a separator drum located downstream of the threshing unit or an upstream pre-accelerator drum. However, each additional drum increasingly destroys the straw and reduces the accessibility to the threshing and separating concaves. With the APS Synflow Walker, Claas combines the two threshing and separating systems. The familiar accelerator follows a threshing drum increased in diameter to 75.5 cm. An additional separating drum with a 60 cm diameter separates residual grain from the straw, and is followed by the impeller. As a result, despite the reduced threshing concave wrap angle, threshing path length has been increased compared to the previous model. The harvested crop therefore flows straighter in an energy-saving manner that is gentle to the straw. All rotating speeds and concave gaps are synchronised, eliminating the need for additional adjustments, and the intensive threshing segment can be activated with a switch. The threshing and separating concave parts can be pulled out to the side on a tangential system for the first time, which greatly reduces the conversion effort between crops. The APS Synflow Walker, therefore, increases the threshing output and is gentle on straw, while at the same time improving the quality of work achieved by the tangential threshing and separating system.

MACHINERY AND EQUIPMENT FOR COMBINING

CX Threshing

CNH Industrial Deutschland GmbH NEW HOLLAND (Hall 3 Stand A49c)



Tangential threshing units are primarily used in walker combine harvesters with high threshing-drum speeds to maximise the grain separation at the threshing concave. Otherwise, the walker losses are greatly increased due to grain separation from the force gravity. However, this reduces the grain quality and increases noise from the threshing unit. For the first time since the invention of the beater-bar threshing unit, New Holland has segmented the beater bars, which were previously continuous across the entire width, and offset them to each other. This configuration results in a continuous threshing process with a reduced beating and an increased friction effect. This in turn increases the grain separation at the threshing concave and with it the threshing output. The threshing drum accepts the threshed crops from the inclined conveyor more evenly, and the typical receiving noises are now hardly audible. The mass moment of inertia is increased by the heavier threshing drum, reducing load peaks. In addition, more dust is drawn into the combine harvester. Furthermore, the stainless-steel guide rails on the straw guidance drum are coated with polyurethane for the first time. This softer material creates a more elastic impact against the residual grain, reducing grain cracking. With these innovations to the CX threshing and separation technology, New Holland increases the threshing output and work quality, and with them the efficiency of walker combine harvesters.

MACHINERY AND EQUIPMENT FOR COMBINING

CEMOS Auto Chopping

CLAAS – Vertriebsgesellschaft mbH Deutschland (Hall 13 Stand C02, Pavilion P35 Stand A01)

Changing the adjustment of the counter-blade and friction bar to match the various properties of straw is frequently neglected, as the combine harvester must be stopped for this purpose. Even when an opportunity for adjustment arises during harvesting work, the operator often lacks the required values for optimising of the control settings according to their agronomic goals. With CEMOS Auto Chopping, Claas has, for the first time, automated the optimisation of the crop-dependent adjustments of a straw chopper. Sensors in the inclined conveyor measure the straw moisture level. The material layer thickness in the inclined conveyor also serves as an input signal for the automatic unit. As a result, the chopper settings are continually adjusted to the harvesting conditions; on areas with a higher straw moisture level, chopping is more aggressive. Using a slide switch, the operator only specifies the area between the maximum chopping quality and the maximum system efficiency in which the system is to operate. In addition, the system also offers a cleaning and safety function. When material flow is measured, the counter-blade and friction bar are moved back and forth for cleaning, and they swing out in case of a threat of short-term overloading.

With CEMOS Auto Chopping, as much power as necessary, but as little as possible, continually flows to the straw chopper. That saves fuel while at the same time offering advantages for both arable farming and crop growing.

MACHINERY AND EQUIPMENT FOR COMBINING

3D Varioflex

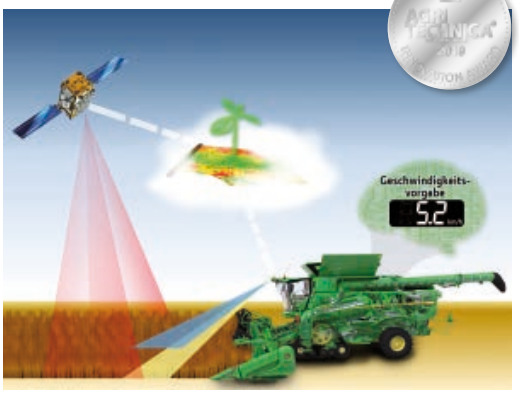
BISO GmbH, Austria (Hall 05 Stand E28)

Additional crop rotations with a higher share of legumes require cutting systems with flexible cutterbars to harvest the crops located close to the surface of the ground with the lowest possible pick-up losses. However, these cutting systems have to be suitable for both grain and rape, as is customary for the ordinary auger cutting systems with a variable cutting table length. With the 3 D Varioflex cutting system, BISO has combined the advantages of a flexible cutter bar with a variable cutting table length for the first time. The cutterbar is height-adjustable over a total of 25 cm and the contact force of the cutterbar on the ground is measured with force sensors in its parallelogram carriers. The contact pressure range can be adjusted from 0 to 50 kg, so that the carriers connected at the rear with the frame actively guide the cutterbar over bumps in the ground. The vertical movements of the variable cutting table benefit from scale-like overlapping guide plates. BISO presents provides farmers with an auger cutting system with active adjustment of the cutterbar to the ground for the first time. It can be used instead of a conventional cutting system with a variable cutting table length and a flexible cutting system, therefore reducing costs.

MACHINERY AND EQUIPMENT FOR COMBINING

Proactive throughput controller

John Deere Walldorf GmbH & Co. KG (Hall 13 Stand C40)



Throughput controllers on combine harvesters cannot react to changes in the harvested crop conditions until the material is already in the harvesting header, in the intake duct or in the threshing unit. With extreme changes in harvesting conditions, such as lying crops, partial gaps and weed areas, result in correspondingly high over- or under-loading, and combine driving speeds that change too drastically. The throughput controller is then often deactivated. John Deere solves this problem with the proactive throughput controller. 3D stereo cameras detect the crop situation in front of the combine just like a proactive driver. Crop heights, lying crop with lying direction, gaps, driving lanes and harvested areas are detected and classified by so-called "machine learning". In addition, the system also uses the data of vegetation models, which consist of biomass maps generated via satellite or other technologies. Camera and biomass signals can also be used alone in each case.

As soon as the combine harvester begins harvesting, the system calculates regression models from the real-time and the geo-referenced vegetation data. The harvesting conditions in front of the machine are therefore known, as are the strategies still specified by the driver. The combine harvester merges all sensor values and then adjusts its driving speed and its settings to the harvest situation. The proactive combine harvester operates automatically for the first time, just like a combine harvester operated by a proactive, experienced driver. With this technology, John Deere has taken a major step in the further development of the automation of threshing crop harvesting.

MACHINERY AND EQUIPMENT FOR COMBINING

Fendt IDEALDrive

AGCO International GmbH, Switzerland (Hall 20 Stand B14)

Joint development with:

AGCO Deutschland GmbH / Fendt (Hall 20 Stand B14b)

While harvesting threshing crops, the steering wheel and the steering column impair the view of the harvested crop being pulled-in directly in front of the inclined conveyor. This is particularly true under difficult harvest conditions. Problems with crop flow recognised too late result in the consequence of possible clogging and downtime, and of overall threshing output. With the Fendt IDEALDrive, AGCO provides an unobstructed view of the area directly in front of the combine harvester by dispensing with the steering column and steering wheel. The driver's seat is equipped with a left-hand armrest with a joystick. All the functions of the steering column – from the steering wheel to the turn signals – are integrated in it. The intensity of the steering commands are conversely proportional to the driving speed, increasing safety when driving on public roads at up to 40 km/h. The system meets the EU requirements for road approval.

The IDEALDrive is the first self-propelled agricultural machine completely operated with a joystick. In addition to the improved view, the manoeuvrability and operating comfort during harvesting work, and the overview when driving on public roads, and with it the safety, are increased. All in all, as in the construction machine sector, the system makes a contribution to increasing the efficiency of combine harvesting.

MACHINERY AND EQUIPMENT FOR COMBINING

SmartCut

Gebr. Schumacher GmbH (Hall 13 Stand B26b)

With the increasing working widths and harvesting speeds of combine harvesters, as well as changing cutting forces for crops that are to be threshed, the mechanical requirements for the cutting blade drive and cutting technology are also on the rise. Up until now, harvesting was carried out with the blade drive at a constant speed, and defects occurring during the harvest were detected from noises developing, a poor cutting pattern or even from clogging at the cutterbar. With the SmartCut technology for blade drives, rotating-angle and rotating-force sensors have been integrated in the gearbox for the first time. The rotating-angle sensor indirectly measures the position of the mowing blade; the rotating-force sensor the drive force at the respective position.

This enables SmartCut to differentiate between cutting, friction and peak forces. The latter occur when knife blades collide with foreign bodies or against fingers. Increased friction forces occur with bent fingers or knife blades, or other defects. The cutting force is dependent on the crop and the driving speed. For the first time, SmartCut therefore creates the basis for the load-dependent control of the drive / crusing speed. The measured cutting force can also serve as an input signal for the combine harvester's throughput controller. The SmartCut technology enables wear prediction and the early detection of defects. This reduces downtimes and repairs – and with them the variable costs of combine harvesting.

MACHINERY AND EQUIPMENT FOR COMBINING

Efficiency Package for Large Combine Harvesters

John Deere Walldorf GmbH & Co. KG (Hall 13 Stand C40)

Compared to walker combine harvesters, a further increase in performance on more powerful rotor combines is limited by the physical size of the machine. As a result, for further performance increases, the construction volume must be used more efficiently and the entire machine designed for a higher efficiency. This includes not only drive assemblies, but also all other assemblies – from the intake duct to the chopper.

When developing its new dual-axial rotor combine harvester, John Deere has not only revised the assemblies for threshing and separating, but also all other performance-determining assemblies while taking maximum efficiency into account. The goal of the design was to obtain maximum performance stability, with unaltered machine settings wherever possible, under difficult harvesting conditions. This begins with an identical pivot point of inclined conveyors and feed drums in order to always keep the feed angle identical relative to the rotors. This also includes a completely new, slim, belt-based drive concept that enables a transport width of 3.5 m to be adhered to with a current maximum duct width dimension of 1.72 m and 710 mm front tyres. The dual-axial rotor threshing and separating concept was designed for maximum straw throughput and performance stability values. Especially during cleaning, great importance was placed on the discharge of large air volume flows, including via the straw distribution technology in order to minimise the air counter-pressure and maximise air separation. The optimisation ends at the chopper by replacing the familiar angled blades with so-called "dented" blades with a golf ball air-flow effect for maximising the air volume flow.

The overall design contains all currently known technical measures for maximising the efficiency of a combine harvester. These then result in a reduced input with with maximised threshing output and therefore efficiency.

MACHINERY AND EQUIPMENT FOR LIFTING (POTATOES, BEETS)

Potato squeezer

ROPA Fahrzeug- und Maschinenbau GmbH (Hall 25 Stand H07)

Large numbers of volunteer potatoes pose a complex problem in the subsequent crop, especially as frost periods become increasingly scarce in warming winters. The new potato squeezer is the first system to rely on two tyres that are driven hydraulically at different speeds, thereby squeezing the potatoes passing between them. One tyre is fitted with angled knives that cut large tubers into pieces before they are crushed. The combined use of knives and tyres makes the squeezer very effective, because the narrow gap is not widened and it still squeezes large tubers. For reliable performance and very quiet running, the unit has spring-loaded impact damage protection and allows users to select separate rotation speeds.

The new potato squeezer damages the tubers that are sorted out by the pickers or the machine, thereby minimising the potential that they survive and grow in the field. The potato squeezer is a retrofit unit for modular Ropa potato harvesters.

MACHINERY AND EQUIPMENT FOR LIFTING (POTATOES, BEETS)

R-Connect Monitor

ROPA Fahrzeug- und Maschinenbau GmbH (Hall 25 Stand H07)

SmartView

Grimme Landmaschinenfabrik GmbH & Co. KG (Hall 25 Stand G06)

Digital camera technologies on farm machinery open up a wide range of opportunities in the monitoring of tuber processing procedures, documentation and, in the long term, in remote support/service applications. In this context, ROPA and Grimme have developed innovative solutions for beet and potato harvesters.

"SmartView" from Grimme focuses on monitoring the cleaning and sorting processes on potato harvesters that also involves the pickers and the operator who use and interact via the system. Offering zooming features, live slow motion and customised camera views on the Multi-Touch display screen, the system improves the monitoring of the crop flow and eliminates the need for adjusting cameras by hand. The "R-Connect Monitor" from ROPA focuses on intelligent and fully automated camera feeds from the sugar beet harvester to the so-called "R-Connect" Internet portal that offers a farm management and logistics management platform. The camera feeds of the standing beet crop before harvest and the feeds from the unloading elevator are made available on the Internet platform, helping managers to monitor the processing quality on the harvester, as well as machine data and job assignments, so managers can support operators remotely.

The two products represent a first step towards fully automated harvester set-ups. In addition, offering the opportunity to optimise the processes on the harvester, the systems will also save avoidable (travel) costs for service engineers and improve the logistics and consequently the quality of the crop as it is delivered to the factory.

MACHINERY AND EQUIPMENT FOR CHOPPING, MOWING, CONDITIONING MOWED MATERIAL AND BALING

ESM system biduxX©

ESM Ennepetaler Schneid- und Mähtechnik GmbH & Co. KG (Hall 27 Stand H47)

Double knives have several in-built shortcomings that affect the efficiency of a mower: they are vulnerable to damage by foreign objects, high-maintenance and are the limiting factor for attaining high work rates. On the other hand, low in weight, requiring less input power and giving precision cuts, they do offer advantages in boggy terrain and mountainous regions.

The new bidux X double knife offers several intriguing and remarkable details. Thanks to a new geometry, the blades of the top and bottom knives are configured in such a way that wear and gap formation is reduced. In addition, the new geometry eliminates the need for regrinding all cutting edges of the blades on the top and bottom knives. The mushroom mounts of both knives and the new guides lead to substantial improvement in gap formation, which in turn results in a longer service life of the sharpened blades. One set of knives for a day's work is the new and important formula in the use of double knives in sustainable farming.

The advantages of this significantly improved cutting system are uncontaminated forage and faster wilts, reduced fuel consumption and less damage to the sward, because the system can be operated with a smaller tractor. Further advantages include faster regrowth and protection of the entire fauna in the pasture. This is the cutting system of choice for farmers with a focus on sustainability, especially in view of the fact that the costs are comparable to those of disc mowers.

MACHINERY AND EQUIPMENT FOR CHOPPING, MOWING, CONDITIONING MOWED MATERIAL AND BALING

Automatic twine remover on stationary Premos pellet presses

Maschinenfabrik Bernard Krone GmbH & Co. KG (Hall 27 Stand F24)

This automatic twine remover boosts pelleting efficiency and improves work safety.

Grain, rape seed and maize straw are sought-after raw materials in farming and in the industrial sector. The straw can be marketed as pellets, chopped straw or straw powder. The harvested straw is baled into square bales of various sizes, which have to be broken up before processing them into pellets, for example. The issue here is that the twine needs to be removed first, a tedious manual job in a dusty environment.

The automatic twine remover on the stationary Premos pelleting press cuts the twine, removes it from the bale, coils and places it into a container in an automated sequence. In its first step, a triangular knife cuts the twine at the bottom of the bale while a rake on the top gathers and feeds it to a hydraulic spool. As this rotates, it winds the strings and then places the coil into a container. The auto sequence can be interrupted remotely by the operator. The system presents a significant improvement in terms of work safety, operator comfort, ease of use and productivity.

MACHINERY AND EQUIPMENT FOR CHOPPING, MOWING, CONDITIONING MOWED MATERIAL AND BALING

EasyCut F 400 CV Fold

Maschinenfabrik Bernard Krone GmbH & Co. KG (Hall 27 Stand F24)

German traffic laws restrict transport widths of a tractor-mounted machines to 3 m. Due to this restriction, the maximum working width of front mowers cannot exceed 3.2 m depending on the cutting system. However, 3.2 m work widths are quite small for satisfying results and involve the risks of tyres running on the cut grass and of leaving stripes of uncut grass.

The new Krone EasyCut F 400 CV Fold disc mower conditioner offers a work width of 4 m, which cures the above problems by using the machine in combinations with a rear or a butterfly mower, especially when cutting bends and sloping fields. This combination offers larger overlaps that eliminate striping. On the other hand, the foldable cutterbar allows the machine to pivot to the rear for a sub 3 m transport width. Further advantages include the hydraulic folding mechanism that is operated from the cab and gives added road safety.

Another benefit of a large front mower width is the fact that it eliminates the need for fitting complex sensor-based control systems to avoid striping – a costly technology that actually does not contribute to the overall efficiency. Run-over stripes are eliminated and the quality of work is improved.

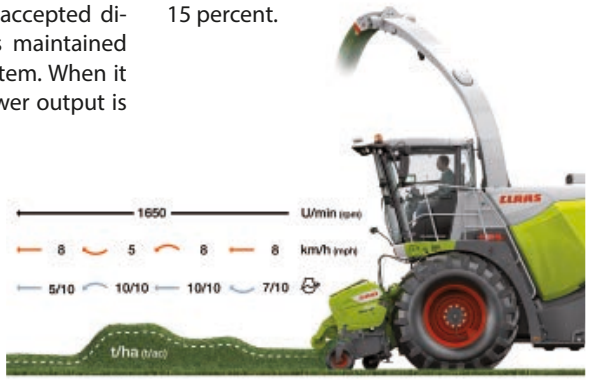
MACHINERY AND EQUIPMENT FOR CHOPPING, MOWING, CONDITIONING MOWED MATERIAL AND BALING

CEMOS AUTO Performance

CLAAS – Vertriebsgesellschaft mbH Deutschland (Hall 13 Stand C02)

This system is a combined engine output/forward speed control on forage harvesters. Capacities and engine powers of forage harvesters have increased during the past few years. Yet, the full engine power that is currently available on a high-performance harvester is only exploited to the full when there is good supply and constant flow of maize or wholecrop silage into the machine. However, only 500-600hp is needed when harvesting wilted silage. Running the engine at full power when this is not required by the work at hand needlessly increases fuel consumption.

CEMOS AUTO Performance matches engine output to the work at hand by altering the power curve. In the field, the operator starts the assistance system and selects an engine speed, a forward speed and one out of 10 engine power curves. After the autopilot is started, the forager and the tractor trailer combination start working. The preset engine speed is accepted directly by the forager and is maintained by the automatic control system. When it turns out that the preset power output is too high for the present crop, the system automatically switches to a lower and more efficient output range while maintaining the current forward speed and engine speed. Vice versa, the system switches to a higher output range when harvesting higher-yielding stands. The automatic engine output control eases the strain on both the forager and driver in a very convenient way, and leads to environment-friendly fuel savings of up to 15 percent.

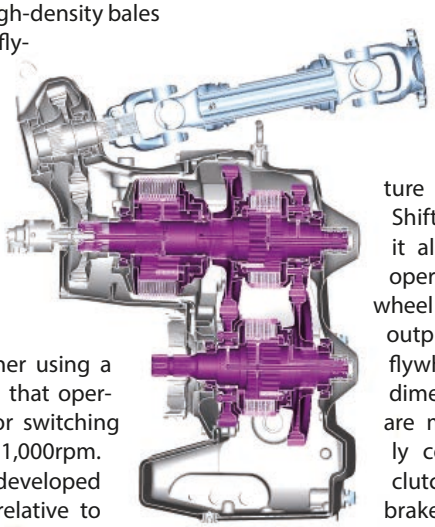


MACHINERY AND EQUIPMENT FOR CHOPPING, MOWING, CONDITIONING MOWED MATERIAL AND BALING

Innovative driveline for HD big balers

CNH Industrial Deutschland GmbH NEW HOLLAND (Hall 03 Stand A49c)

Big balers that produce high-density bales require a high-inertia flywheel and a powerful plunger to suit. Therefore, protective start-up systems are required to prevent the tractor from stalling or the PTO shaft from overstraining when the baler swings into action.



The common cure is either using a hydraulic start-up system that operates at a lower torque, or switching from the 540rpm PTO to 1,000rpm. CNH and Walterscheid developed a new driveline where, relative to the current tractor torque, the gearbox shifts up into the desired flywheel speeds. The feature is called "Power Shift Function", and it allowed the developers to increase flywheel speeds and baling output while reducing flywheel inertia and dimensions. The shifts are made by internally cooled multi-plate clutches. A multi-plate brake with internal cooling, which is also integrated in the gearbox, slows down the plunger when this is in its optimum starting position. It also serves as an emergency brake that brings the plunger to a stop within eight seconds. The system also reduces the risk of fire because it removes the flywheel brake from a dusty environment. The necessary service modes are also selected via this intelligent control system.

The new drive concept for big balers assists the tractor PTO in starting the heavy flywheel,l thereby protecting the tractor and the PTO clutch. The brake that is now integrated in the gearbox brings the flywheel to a safe and effective halt and significantly reduces the risk of fire.

MACHINERY AND EQUIPMENT FOR FRUIT, VEGETABLES AND OTHER SPECIAL CROPS

VENTUM

HORTECH S.r.l., Italy (Hall 21 Stand F04)

Shortage of labour is a growing concern, especially among vegetable growers. Although the harvesting processes of produce like rocket or baby leaf salad are largely mechanised today, processing and packaging are still carried out manually, which is time consuming.

The VENTUM self-propelled harvester is the first machine to combine the stages of harvesting, processing and packaging into one automated process. After the crop is harvested, it travels on a system of various conveyor belts operating at different speeds to the processing unit. The technology also spreads and scatters the crops. Foreign objects and unwanted particles are separated by blowing the material over a 30 cm gap onto another belt. In a final step, the cleaned, weighed and boxed produce is automatically transferred to a transport vehicle. The VENTUM self-propelled harvester automates all harvesting, processing and packaging stages, presenting a substantial improvement to efficiency and quality in vegetable harvesting, thereby increasing productivity and reducing costs.

MACHINERY AND EQUIPMENT FOR FRUIT, VEGETABLES AND OTHER SPECIAL CROPS

Dino – autonomous robot and precision weed controller

Naïo Technologies, France (Pavilion 11 Stand B04)

The biggest challenge in mechanical weed control is the removal of weeds within the crop rows. In organic farming, these weeds are removed manually in a time-consuming process.

The Dino robot, in combination with the precision weed controller, is the first autonomous machine for mechanical weed control in lettuce rows. The machine locates the lettuce and activates two electric knives that cut the weeds in the space between two lettuce heads. The controller also produces a digital map that is then used for harvesting.

This technology reduces the cost of manual weed control. The Dino robot, in combination with the precision weed controller, is a low-weight option to tractor-mounted weed controllers, reducing compaction and ensuring extended reliability.

MACHINERY AND EQUIPMENT FOR FOREST MANAGEMENT, MUNICIPAL APPLICATIONS AND LANDSCAPE MANAGEMENT

Protective screen for tracked forestry tractors

Pfanzelt Maschinenbau GmbH (Hall 26 Stand C22)

Tree fellers are at risk of injury from by falling branches and treetops, especially when felling or cutting dead timber. The new protective screen is attached to a Moritz crawler tractor and is opened when the tractor is at the tree. Embracing the tree at 2 m from the ground, the screen offers effective protection to fellers, especially in the preparatory phase. For the actual felling, only one half of the screen stays open so that the remaining hydraulic power is available for the actual felling job. Unlike existing solutions where a protective screen is suspended from a forwarder, this solution offers the advantage that fellers are not working under an unpropped crane. Another advantage is that the new screen is used in conjunction with a tracked tractor, which is less expensive to operate than a forwarder.

Especially in view of the increase of dead timber in forests as a consequence of climate change, this screen is a contribution to work safety in forest work. Although, a tractor may not be able to go into any type of terrain, the tractor-based screen presents an effective and comparably cost-effective way of improving work safety for tree fellers.

MACHINERY AND EQUIPMENT FOR FOREST MANAGEMENT, MUNICIPAL APPLICATIONS AND LANDSCAPE MANAGEMENT

Scorpion reach arm mowers

GreenTec A/S, Denmark (Hall 26 Stand F12)

Parallel control and cutting irregular vegetation has not been convenient with reach arm mowers in the past. Switching between control modes has only been only possible by swapping reach arms or reprogramming the reach arm control. It has not been possible to switch control modes on the move.

Scorpion mowers now offer both types of cutting head control. On the one hand, it offers parallel control that allows operators to maintain a consistent cutting depth on the hedge with just very little adjustment by the operator. On the other hand, its hybrid arm system comes with a standard control unit that allows operators to control the cutting head flexibly when cutting irregular vegetation. This innovative hybrid arm system makes it possible to switch between the two modes on the move. Parallel control allows operators to keep an eye on the surroundings for increased work safety, while switching to manual mode on the move allows them to carry out specific cuts for boosted productivity.

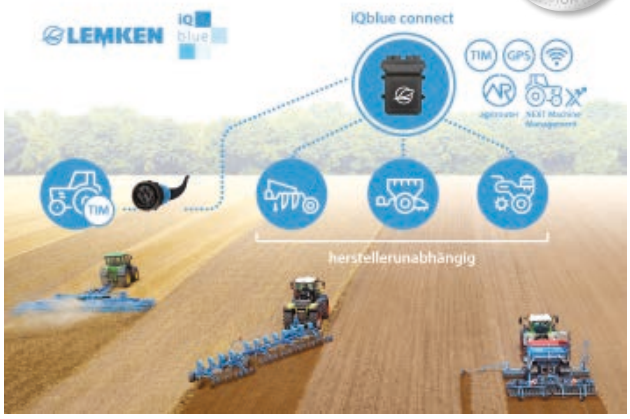
DIGITAL SYSTEMS AND IT

iQblue connect

Lemken GmbH & Co. KG (Hall 11 Stand A42)

By integrating Tractor Implement Management (TIM) into the ISOBUS standard it is possible to use sensor-based implement data to control the tractor or the implement. Although many existing ISOBUS-compatible implements and tractors are able to collect and supply the necessary data to the system, they lack the necessary hardware and software to support the control feature.

iQblue connect is a universal, retrofit and mobile module that automates implement functions via ISOBUS – presenting a simple and cost-effective way to implement TIM functions to the latest AEF (Agricultural Industry Electronics Foundation) standard. This means that the actuators on the implement can be controlled automatically from the tractor. iQ-



blue connect has a GPS receiver and uses a cell phone network and interfaces with the agrirouter. In addition, the system has built-in mobile data connectivity to integrate the implements into digital documentation. The easy-use system connects to various implements via a uniform interface and without tools, configuring itself automatically to the new implement. The module can be extended by further installation kits that were developed for specific implements that allow users to automate the functions of mechanical actuated machines. iQblue connect can also be retrofitted to existing implements where it makes use of the existing actuators. iQblue connect allows users to automate a large variety of different agricultural machine applications. The manufacturer will demonstrate various use cases, such as ploughing, cultivating or tilling.

DIGITAL SYSTEMS AND IT

ISOMAX

CNH Industrial Italia S.p.A., Italy (Hall 3 Stand A49, Pavilion 11 Stand C01)

Joint development with:

- OSB AG (Pavilion 11 Stand C02)

- Fliegl Agrartechnik GmbH (Hall 4 Stand A40)

- CCI – Competence Center ISOBUS e.V., (Hall 27 Stand G33)

The major challenges in implementing new ISOBUS applications are high hardware costs, the cost for software development and the lack of knowledgeable graduate engineers. In particular, the industry lacks an innovative start-up scene of electronics-savvy professionals, pupils and students who are keen to develop marketable solutions that will turn ISOBUS into an integrating and central element on agricultural machines.

ISOMAX from AGXTEND (trademark) represents a new solution for future ISOBUS applications. The fully AEF (Agricultural Industry Electronics Foundation)-certified system is universal, comprehensive and comprises all elements including the connector and the ECU. ISOMAX can be operated via any ISOBUS terminal. As such, it allows owners of older implements to retrofit these with the technology and connect it to the tractor's ISOBUS system. The open-source ISOBUS Dev Kit allows electronics-minded farmers, pupils, students and also electronic professionals to develop ISOBUS-compatible solutions at very little cost. As ISOMAX provides automatic implement recognition and the ISOBUS "TC-GEO" function, it does not require operators to enter the data manually. In addition, it provides the basis for implementing precision farming. For example, the machine dimensions are automatically communicated to the tractor's steering system. A built-in MEMS (micro electro-mechanical systems) sensor logs reliable field and road times, and actual working hours. It is also possible to connect to other systems, e.g. the "Fliegl Counter".

Being part of the ISOBUS evolution, ISOMAX presents a new combinations of ISOBUS platforms and sensor systems connected to it. ISOMAX is a low-cost and attractive option for small businesses to enter the ISOBUS world.

DIGITAL SYSTEMS AND IT

RSM Night Vision System

Rostselmash, Russia (Hall 9 Stand A31b)

Night work offers a number of advantages, such as lower temperatures for certain types of field work such as spraying. On the other hand, despite modern and powerful work light systems, night work involves risks including impaired visibility so that operators are strained to view the machine's immediate surroundings and notice obstacles and people in good time.

Like systems used in the automotive industry, the "RSM Night Vision System" uses not only the visible light, but also part of the near-infrared light spectrum of the silicon-based, and thus cost-effective, camera technology. Unlike costly thermal cameras, the RSM Night Vision System illuminates a larger range. As a further advantage, it is not necessarily mounted on the outside of the machine where it is exposed to dust and debris. The electronic pre-processing feature and the algorithms used by the RMS make the system very sensitive and effective in conditions with very little available light. This high level of sensitivity allows users to use this technology together with the regular tractor lights, where it provides visibility in the range of 250 m up to 1,500 m, and also allows operators to work at higher forwards speeds. At the same time it helps them to see people and obstacles sooner. The feeds from the main camera, which is installed in the cab and looks ahead of the machine, are projected onto the front screen, whereas the feeds from the side cameras are displayed on the display screen. With RSM Night Vision, drivers can "see" obstacles or people in the immediate surroundings of the machine that they would not be able to see with the naked eye.

DIGITAL SYSTEMS AND IT

NEVONEX

Robert Bosch GmbH (Hall 16 Stand A04a, Pavilion 11 Stand C10)

Joint development with:

- AMAZONEN-WERKE H. Dreyer GmbH & Co. KG (Pavilion P11 Stand C10a, Hall 9 Stand H19)
- BASF Digital Farming GmbH (Pavilion P11 Stand C10b, Hall 15 Stand G48)
- LEMKEN GmbH & Co. KG (Pavilion P11 Stand C10c, Hall 11 Stand A42)
- PESSL INSTRUMENTS GmbH (Pavilion P11 Stand C10d, Hall 15 Stand D53)
- Rauch Landmaschinenfabrik GmbH (Pavilion P11 Stand C10e, Hall 9 Stand D20)
- Syngenta Crop Protection LLC (Pavilion P11 Stand C10h)
- Topcon Agriculture S.p.A. (Pavilion P11 Stand C10f, Hall 15 Stand H27)
- ZG Raiffeisen eG (Pavilion P11 Stand C10g)

Constant innovation in agriculture has led to the appearance of a variety of intelligent machines, implements, sensors and software. This means that implements can be reliably connected and used through ISOBUS. Yet, what has been missing up to now is an open system that provides the basis for importing not only data, but also and above all logic and knowledge into the machines.

NEVONEX is such an open platform. Like an operating system, it forms the basis for software applications (FEATURES) to program new or existing farm machines. Sourced from the automotive industry, NEVONEX is based on reliable and hack-proof technology with end-to-end encryption. Similar to existing apps, it allows users to run FEATURES directly on agricultural machines, requiring only a suitable controller and registration on the NEVONEX platform. An integrated interface management allows smooth access to the platform via the ISOBUS or using proprietary signals. The innovative aspect of this product is the fact that it defines universal interfaces, provides secure and reliable reading and control rights, and accumulates the collected expertise available in the agricultural industry and in its upstream and downstream sectors.

INNOVATION AWARD REGISTRATIONS

PRODUCT	EXHIBITOR
1. Tractors, mobile loading equipment, transport technology	
Autonomous Sugar Cane Cart	Trimble Germany GmbH
TIM Telematics	KUBOTA GmbH
John Deere 8RX – Standard tractor with 4 integrated crawler drives	John Deere Walldorf GmbH & Co. KG
PICKER	Fliegl Agrartechnik GmbH
WDC 1300	AGRAVIS Raiffeisen AG
HAV 50S1	Proxecto Engineering Services LLP
Chemical mixer LCM-12	Uzdaroji Akcine Bendrove LAUMETRIS
Intelligent hydraulic devices discharge	HYDRAC Pühringer GmbH & Co KG
iTarra	Acres Machinery Ltd
SIWI Combi Hitch	SIWI Maskiner ApS
Alliance AGLIFLEX + 379	Alliance Tire Europe BV
Easy Coupler System (ECS)	Weidemann GmbH
CTIS +	TRELLEBORG Wheel Systems Germany GmbH
Conversion Track System	Camso Deutschland GmbH

PRODUCT	EXHIBITOR
Malone Express	Malone Farm Machinery Ltd.
KL55.8T	Kramer-Werke GmbH
Valtra Powershift Revolution	AGCO Deutschland GmbH – Valtra
Adaptive operating armrest	Elobau GmbH & Co. KG Joint development with: ATH, University Hohenheim; IKTD, University Stuttgart
Valtra U-Pilot	AGCO Deutschland GmbH – Valtra
Lintrac 130 with TRACLINK SMART	Traktorenwerk Lindner Gesellschaft mbH
Valtra Connect	AGCO Deutschland GmbH – Valtra
Valtra Aires+	AGCO Deutschland GmbH - Valtra
OSPREY	Fliegl Agrartechnik GmbH Joint development with: Fliegl Agro-Center GmbH
Fliegl Hawk	Fliegl Agrartechnik GmbH
Rigitrac SKE 50 Electric	RIGITRAC Traktorenbau AG
SKS	Krampe Fahrzeugbau GmbH
Variable front weight with directions protection	John Deere Walldorf GmbH & Co. KG
Adaptive Tire Pressure Control ATC	Herbert Dammann GmbH
W204, W205, W206 WAŚ	WAS Przetworstwo Tworzyw Sztucznych Józef i Leszek Was, sp.j.
JSM Auto Power	MANITOU BF S.A.

PRODUCT	EXHIBITOR
Valtra Guide	AGCO Deutschland GmbH – Valtra
SYN TRAC	SYN TRAC GmbH
HighView	MANITOU BF S.A.
Cardan Shaft Electronic Data Interchange	BONDIOLI & PAVESI GmbH DEUTSCHLAND
TerraCare AirPower	TERRA CARE GmbH
Methangas-Traktor	CNH Industrial Deutschland GmbH NEW HOLLAND
EAMS - Embedded Angle Measurement System	SCHARMÜLLER Ges.m.b.H & Co.KG
ALL IN ONE STAGE V	AGCO SAS – MASSEY FERGUSON
REMOTE VALVE LEVERS	CNH Industrial Deutschland GmbH CASE IH
Nokian Ground King	NOKIAN HEAVY TYRES Ltd.
Agricultural Robot of Continental	Continental Reifen Deutschland GmbH
KEYLESS ENTRY	CNH Industrial Deutschland GmbH CASE IH
Fendt 3L Joystick	AGCO Deutschland GmbH – Fendt
MERLO E-FARMER 25.5	Merlo Deutschland GmbH
INTELLIGENT TYRE PRESSURE CONTROL	CNH Industrial Deutschland GmbH – Steyr Joint development with: Grasdorf GmbH; TerraCare Reifendruckregelsysteme GmbH

PRODUCT	EXHIBITOR
Operating philosophy FendtONE	AGCO Deutschland GmbH – Fendt
Activ casing oil extraction	CLAAS - Vertriebsgesellschaft mbH Deutschland Joint development with: Linde Hydraulics GmbH & Co. KG
Fendt DynamicPerformance	AGCO Deutschland GmbH – Fendt
SILVER: Alliance 398 MPT	Alliance Tire Europe BV
SILVER: Automatic All-Round Strapping Trolley	Agrarsysteme Hornung GmbH & Co. KG
SILVER: Baler Control System for the T7 Tractor	CNH Industrial Deutschland GmbH NEW HOLLAND
SILVER: Intelligent vibration damping for large square balers	John Deere Walldorf GmbH & Co. KG
SILVER: Automated Vehicle and Implement Guidance in Wine-Growing	AGCO Deutschland GmbH – Fendt Joint development with: Braun Maschinenbau GmbH
GOLD: eAutoPowr gearbox for 8R large tractors	John Deere Walldorf GmbH & Co. KG Joint development with: JOSKIN S.A.
2. Machinery and equipment for tillage and seed-bed preparation	
Koralin	LEMKEN GmbH & Co. KG
Coulters for chopping with tungsten carbide assembly	BOEHLERIT GmbH & Co. KG
agrel micron inject (AMI)	agrel GmbH
CMN Intelligent Flow	CMN Maskintec A/S
WearChecker	FRANK WALZ- UND SCHMIEDETECHNIK GmbH
Cenius-TX ZoneFinder	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG Joint development with: EXA Computing GmbH
U-Cut	DICKSON GmbH
Camera -Striegel 4.0	Thomas Hatzenbichler Agro-Technik GmbH
Striegel Bio King	Thomas Hatzenbichler Agro-Technik GmbH
Carbide goosefoot share	BOEHLERIT GmbH & Co. KG
MZURI REZULT	MZURI-AGRO
Active controlled cultivator	Farmet a.s.
3. Machinery and equipment for drilling and sowing	
Blockagesensor	Müller-Elektronik GmbH & Co. KG
SMART570 Terminal	Müller-Elektronik GmbH & Co. KG
Väderstad E-Control Mobile	VÄDERSTAD GmbH
FertiSpot	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG
VISTAFLOW	KUHN Maschinen-Vertrieb GmbH
Precea SpeedShaft	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG
Fox for flower strips	Dettmer Agrar-Service GmbH
Grassland harrow with slit for seed device	Güttler GmbH
20|20 Connect	Precision Planting LLC
FurrowForce	Precision Planting LLC
Mini SmartFirmer	Precision Planting LLC
EASY SET Heavy Duty	Arbos Group S.p.A.
ARBOS SOWING APP	Arbos Group S.p.A.
GREEN DRIVE	Arbos Group S.p.A.
EASY CONNECTION SEEDING BAR	Arbos Group S.p.A.
Section control of drill machines with utilisation of valves with pneumatic-controlled rubber elastic closing segments	Farmet a.s.
Active control of drill machines with a regulated dose, depth of sowing, and drill unit down force according to application maps	Farmet a.s.

PRODUCT	EXHIBITOR
SILVER: Modula Jet	FORIGO ROTER ITALIA S.r.l.
SILVER: SmartDepth	Precision Planting LLC
SILVER: Väderstad WideLining	VÄDERSTAD GmbH
4. Machinery and equipment for fertilising	
Towing shoe distributor with 4 cutting distribution heads	BOMECH b.v.
Distributor head with flow control	Alrena B.V.
ExaCut ECQ	Vogelsang GmbH & Co. KG
VX186GL	Vogelsang GmbH & Co. KG
Evers Tribus	EVERS Agro B.V.
K105XE-SC and K135XE-SC	BREDAL A/S
Paddle mixer	Green Energy Max Zintl GmbH
SAMSON Remote Support	SAMSON AGRO A/S
SAMSON TG	SAMSON AGRO A/S
SAMSON US2	SAMSON AGRO A/S
SAMSON ISOBUS Section Control	SAMSON AGRO A/S
SAMSON ISOBUS variable rate application	SAMSON AGRO A/S
SAMSON active hydraulic carpet chain tensioning	SAMSON AGRO A/S
XLAB	CNH Industrial Italia SpA Joint development with: stenon GmbH
Weigh-ECU	Müller-Elektronik GmbH & Co. KG
PICHON new control system	SAMSON AGRO A/S
AT5105 LNMS	PLOEGER MACHINES B.V.
Vredo Automatic docking	Vredo Dodewaard bv
TWIN	Fliegl Agrartechnik GmbH
TWIST	Fliegl Agrartechnik GmbH
FlexFlow	Fliegl Agrartechnik GmbH
Conceal	Precision Planting LLC
Reduction of the grit back draft	BRIRI GmbH Riepenhausen Maschinenbau
SILVER: MultiRate Dosing System	RAUCH Landmaschinenfabrik GmbH
SILVER: EasyMix	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG
SILVER: NPK Sensor	SAMSON AGRO A/S
SILVER: HillControl Control System	RAUCH Landmaschinenfabrik GmbH
5. Machinery and equipment for plant protection	
Adjustment mechanis-ms for the optimized adaptation of the hoeing tools in hoes	LEMKEN GmbH & Co.KG Joint development with: Machinefabriek Steketee BV
Multi-Select	Herbert Dammann GmbH Joint development with: Müller-Elektronik GmbH & Co. KG
DroneLink	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG Joint development with: DroneWerkers
I-Spray	KUHN Maschinen-Vertrieb GmbH
SmartSprayer	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG Joint development with: Robert Bosch GmbH; BASF Digital Farming GmbH - xarvio
HARDI TWIN FORCE with Pulse System	HARDI GmbH
AEROSTAR SMART-CONTROL	Einböck GmbH & Co KG
ABRAH Beet	DULKS GmbH
Self-propelled sprayer-spreaders	Pegas - Agro Ltd.
ABRAH Strip Till	DULKS GmbH
HORSCH track planning	HORSCH Maschinen GmbH
Volocopter Drone	Volocopter GmbH Joint development with: John Deere Walldorf GmbH & Co. KG; Geisenheim University
Fendt Rogator 300 Einzelradfederung	AGCO Deutschland GmbH – Fendt

PRODUCT	EXHIBITOR
Fendt OptiNozzle	AGCO Deutschland GmbH – Fendt
VSN™	SBG Innovatie BV
ADCON SERIES 6 RTU	ADCON Telemetry - BU of OTT Hydromet GmbH
GT-QS Closed Transfer Dosing Systems	Aams-Salvarani BVBA Joint development with: GoatThroat Pumps
HARDI TWIN FORCE Pulse System with weed detection	HARDI GmbH
Low-inventory compact suspension system with variable ground clearance	MAZZOTTI S.r.l. Soc. Unipersonale
Specific-nozzle positioning of the rows	Herbert Dammann GmbH
Garford Robocrop Contractor	Garford Farm Machinery Ltd.
ZÜRN TopCut collect	Zürn Harvesting GmbH & Co. KG
ExactApply Dual Product	John Deere Walldorf GmbH & Co. KG
SILVER: VarioCHOP	samo Maschinenbau GmbH
SILVER: AmaSelect Row	AMAZONEN-WERKE H. Dreyer GmbH & Co. KG
6. Machinery and equipment for irrigation and drainage	
Winture Planet Cube and Winture Planet Green	Boreal Light GmbH
IRRIGAMATIC	Arbos Group S.p.A.
Draincleaner Delta	HOMBURG MACHINEHANDEL B.V.
7.1 Machinery and equipment for combining	
PALESSE GS 4218 CNG	OJSC Gomselmash
ST Grain Belt Swather	Honey Bee Manufacturing Ltd.
ExtendSpeed	Gebr. Schumacher GmbH
CropScan 3300H On Combine NIR Analyser	Next Instruments Pty. Ltd.
Redekop Seed Control Unit (SCU)	Redekop Manufacturing Company Joint development with: John Deere Walldorf GmbH & Co. KG
Variable Integrated Airsystem(V-IAS)	Carl Geringhoff Vertriebsgesellschaft mbH & Co. KG
CR Combine – Power Efficiency	CNH Industrial Deutschland GmbH NEW HOLLAND
Drago Gold Sunflower	OLIMAC s.r.l.
CEMOS PERFORMANCE ANALYSE	CLAAS - Vertriebsgesellschaft mbH Deutschland
Automatic cylinder locking on the inclined conveyor	John Deere Walldorf GmbH & Co. KG
John Deere Fast Fuel Fill System for Large Combine	John Deere Walldorf GmbH & Co. KG Joint development with: Shaw Development LLC
John Deere HDX tape cutter	John Deere Walldorf GmbH & Co. KG
Fendt IDEAL 10T	AGCO International GmbH
Grain Trap	SPREUWERK Ingenieurbüro
SILVER: Proactive throughput controller	John Deere Walldorf GmbH & Co. KG
SILVER: Fendt IDEALDrive	AGCO International GmbH Joint development with: AGCO Deutschland GmbH – Fendt
SILVER: SmartCut	Gebr. Schumacher GmbH
SILVER: 3D VARIOFLEX	BISO GmbH
SILVER: CEMOS AUTO CHOPPING	CLAAS - Vertriebsgesellschaft mbH Deutschland
SILVER: APS SYNFLOW WALKER	CLAAS - Vertriebsgesellschaft mbH Deutschland
SILVER: CX Threshing	CNH Industrial Deutschland GmbH NEW HOLLAND
SILVER: Horizon Star* III Razor	Carl Geringhoff Vertriebsgesellschaft mbH & Co. KG
SILVER: Efficiency Package for Large Combine Harvesters	John Deere Walldorf GmbH & Co. KG
7.2 Machinery and equipment for lifting (potatoes, beets)	
Speedtronic-Web	Grimme Landmaschinenfabrik GmbH & Co. KG
SILVER: Potato squeezer	ROPA Fahrzeug- u. Maschinenbau GmbH
SILVER: R-Connect Monitor	ROPA Fahrzeug- u. Maschinenbau GmbH

PRODUCT	EXHIBITOR
7.3 Machinery and equipment for chopping, mowing, conditioning	
FODDER DISTRIBUTOR DEVICE	La Parra del Soberal
Joystick steering on harvester BiG X	Maschinenfabrik Bernard Krone GmbH & Co. KG
Integrated comfort front guard on XCollect	Maschinenfabrik Bernard Krone GmbH & Co. KG
RS 6003 with ATSK	Rasspe Systemtechnik GmbH
Smart Belt	Continental Reifen Deutschland GmbH
ELHO Cobra 7720 T	EL-HO OY AB
KUHN VB 7100	KUHN Maschinen-Vertrieb GmbH
CM4240 Merger	PLOEGER MACHINES B.V.
Cotton Baler Belt	Continental Reifen Deutschland GmbH
Fully integrated transport system and automatic transport protection for the ORBIS maize header	CLAAS - Vertriebsgesellschaft mbH Deutschland
Fendt BalancedGrip	AGCO Deutschland GmbH – Fendt
Fendt Katana grinding device	AGCO Deutschland GmbH – Fendt
Kubota NIR sensor system	KUBOTA GmbH
Reversible and adjustable fan blades on harvester FR Forage Cruiser	CNH Industrial Deutschland GmbH NEW HOLLAND
FLOWTAST	PÖTTINGER Landtechnik GmbH
HD big baler with a tandem axle with hydraulic suspension	CNH Industrial Deutschland GmbH NEW HOLLAND
LOOP MASTER™ Knoter	CNH Industrial Deutschland GmbH NEW HOLLAND
SILVER: CEMOS AUTO PERFORMANCE	CLAAS - Vertriebsgesellschaft mbH Deutschland
SILVER: EasyCut F 400 CV Fold	Maschinenfabrik Bernard Krone GmbH & Co. KG
SILVER: Automatic twine remover on stationary Premos pellet presses	Maschinenfabrik Bernard Krone GmbH & Co. KG
SILVER: ESM system biduxX©	ESM Ennepetaler Schneid- und Mähtechnik GmbH & Co. KG
SILVER: Innovative driveline for HD big balers	CNH Industrial Deutschland GmbH NEW HOLLAND
8. Post-harvest technology	
Self-cleaning elevator foot	DENIS PRIVÉ GmbH
Grain cooler GRANIFRIGOR	FrigorTec GmbH
ELICA Dehulling System	ELICA - ELEVATOR Ltd.
Harvest moisture sensor	Tolsma Techniek Emmeloord b.v.
Plug & Play drying and cooling system	Tolsma Techniek Emmeloord b.v.
DOWNS CROP VISION	DOWNS
GSI GrainViz	AGCO International GmbH
9. Machinery and equipment for fruit, vegetables and other special	
WeatherXact Pro	CNH Industrial Italia SpA Joint development with: AppsforAgri B.V.
Electroherbicide	CNH Industrial Italia SpA Joint development with: Zasso GmbH
AGXTEND	CNH Industrial Italia SpA Joint development with: Geoprospectors GmbH; stenon GmbH; AppsforAgri B.V.; Fritzmeier Umwelttechnik GmbH & Co. KG; Zasso GmbH; Dinamica Generale
QuickConnect	Grimme Landmaschinenfabrik GmbH & Co.KG
Automatic system for maintaining the depth of work applied at the colibrì devices	OLIVER AGRO S.r.l.
SILVER: Dino - Autonomous robot with inter-plant precision weeder	Naïo Technologies
SILVER: VENTUM	HORTECH S.r.l.

PRODUCT	EXHIBITOR
10. Machinery and equipment for forest management, municipal	
WD-40 Flexible	WD-40 Company
F-CON (Fliegl - CONnect) - MULTI quick release coupling	Fliegl Fahrzeugbau GmbH
Winch 2x8 DH with constant pulling power	PISEK-Vitli KRPAN d.o.o.
Smart Align	INO Brezice d.o.o.
BIOMASS 400	Serrat Trituradoras Joint development with: SERRAT TRITURADORAS
Autonomous Fairway Mower by John Deere	John Deere Walldorf GmbH & Co. KG
Frequency controlled high pressure cleaner	Meier - Brakenberg GmbH & Co. KG
SILVER: Protective screen for tracked forestry tractors	Pfanzelt Maschinenbau GmbH
SILVER: Scorpion reach arm mowers	GreenTec A/S
11. Digital systems and IT	
AVR CONNECT	AVR bvba
agroparts DealerShop	LexCom Informationssysteme GmbH
FOSTER-vr	FarmTool Farmsoftware GmbH Joint development with: Secova GmbH & Co. KG; John Deere Walldorf GmbH & Co. KG Vertrieb Deutschland
Modular Diagnosis Tool 2.0 - MDT 2.0	Sontheim Industrie Elektronik GmbH
Communication Lifecycle Manager 2.0 - CLCM 2.0	Sontheim Industrie Elektronik GmbH
Valley Insights, Powered by Prospera	VALMONT Irrigation
John Deere AutoSetup	John Deere Walldorf GmbH & Co. KG Joint development with: Kotte Landtechnik GmbH & Co. KG
TIM	AEF - Agricultural Industry Electronics Foundation e.V.
quiN	geo-konzept GmbH Gesellschaft für Umweltplanungssysteme mbH
Artificial intelligence (AI) in automatic loading	Maschinenfabrik Bernard Krone GmbH & Co. KG
XtraPower	Maschinenfabrik Bernard Krone GmbH & Co. KG
NEXT FlexGPS OFFICE	FarmFacts GmbH
SoilReader	SoilReader
RSM voice access	ROSTSELMASH
RSM router	ROSTSELMASH
DepthXcontrol	CNH Industrial Italia SpA Joint development with: Competence Center ISOBUS e.V.; Geoprospectors GmbH
Cellular SensorSpear	TeleSense Europe ApS
myMANITOU	MANITOU BF S.A.
Turn Assist	Continental Reifen Deutschland GmbH
„Intelligent Security View“ (ISV)	Fritzmeier Systems GmbH Joint development with: Grammer AG; MEKRA Lang GmbH & Co. KG
3D High Flash LiDAR HFL110	Continental Reifen Deutschland GmbH
365Pocket App	365FarmNet Group KGaA mbH & Co. KG
GFX-350 Display and NAV-500 Receiver	Trimble Germany GmbH
AgForce	AgForce GmbH & Co. KG
Trimble NextSwath Enhancements	Trimble Germany GmbH
iMETOS LoRAIN	PESSL INSTRUMENTS GmbH
CropManager	SEGES
Grain Controle System	Ambros Schmelzer & Sohn GmbH & Co. KG
YPSILON	VISTA Geowissenschaftliche Fernerkundung GmbH Joint development with: BayWa AG
DataConnect	CLAAS - Vertriebsgesellschaft mbH Deutschland Joint development with: John Deere GmbH & Co. KG; 365FarmNet Group KGaA mbH & Co. KG
John Deere AutoPath™	John Deere Walldorf GmbH & Co. KG
FendtONE	AGCO Deutschland GmbH – Fendt

PRODUCT	EXHIBITOR
Fendt Guide Sync	AGCO Deutschland GmbH – Fendt
Veris iScan+ Flex	Veris Technologies, Inc.
DataConnect	John Deere Walldorf GmbH & Co. KG Joint development with: CLAAS Vertriebsgesellschaft mbH; 365FarmNet Group KGaA mbH & Co KG
John Deere security PIN code	John Deere Walldorf GmbH & Co. KG
John Deere Over-The-Air Software-Upgrade	John Deere Walldorf GmbH & Co. KG
xarvio FIELD MANAGER rice	BASF Digital Farming GmbH
Mahindra SmartTrack	Mahindra & Mahindra Ltd.
AutoTrac™ 2.0	John Deere Walldorf GmbH & Co. KG
Entry-Level AutoTrac™	John Deere Walldorf GmbH & Co. KG
xarvio FIELD MANAGER	BASF Digital Farming GmbH Joint development with: Arable, Special/Acre of Knowledge
Audili Pasture Management	Audili OG
AgroVIR Global	AGROVIR Ltd.
Scalable digital documentation system	John Deere Walldorf GmbH & Co. KG
Valley Scheduling	VALMONT Irrigation
Trapview Pest Predictive Service	EFOS d.o.o.
CropManager - Variable rate module	SEGES
risikoEinBlick	agronova GmbH
FieldClimate Assesibility Assessment (FAA)	PESSL INSTRUMENTS GmbH Joint development with: John Deere GmbH & Co. KG
Pay-per-Use	Grimme Landmaschinenfabrik GmbH & Co. KG
MultiTerminal	Grimme Landmaschinenfabrik GmbH & Co. KG
CCI.Assist	Competence Center ISOBUS e.V. Joint development with: RAUCH Landmaschinenfabrik GmbH; LEMKEN GmbH & Co. KG; Maschinenfabrik Bernard Krone GmbH & Co. KG; KUHN Maschinen-Vertrieb GmbH; GRIMME Landmaschinenfabrik GmbH & Co. KG; LACOS Computerservice GmbH
Fendt & MF Intelligent Hay	AGCO International GmbH
Washing station Opti Clean with dongle control	Meier - Brakenberg GmbH & Co. KG
API-AGRO	API-AGRO
Fendt Plus Store	AGCO International GmbH Joint development with: FENDT AGCO GmbH; Massey Ferguson AGCO; Valtra AGCO
SoilOptix geo-touch	geo-konzept GmbH Gesellschaft für Umweltplanungssysteme mbH Joint development with: SoilOptix Inc.
AG DATA INTEGRATOR (AGDI)	John Deere Walldorf GmbH & Co. KG Joint development with: CPS (Computer Program System) LLC CenterProgramSystem
SMART COMMAND	Reichhardt GmbH Steuerungstechnik
Land Net - Rural Connectivity by John Deere	John Deere Walldorf GmbH & Co. KG
risikoEinBlick	agronova GmbH
Field Area Plus	ROPA Fahrzeug- u. Maschinenbau GmbH Joint development with: BEDM GmbH
CCI A3 with personal operating logic	Competence Center ISOBUS e.V. Joint development with: RAUCH Landmaschinenfabrik GmbH; LEMKEN GmbH & Co. KG; Maschinenfabrik Bernard Krone GmbH & Co. KG; KUHN Maschinen-Vertrieb GmbH; GRIMME Landmaschinenfabrik GmbH & Co. KG
House of Crops	House of Crops GmbH
farmCounter eHarvest	HANSENHOF electronic GmbH Reifland
SILVER: iQblue connect	LEMKEN GmbH & Co. KG
SILVER: ISOMAX	CNH Industrial Italia SpA Joint development with: OSB AG; Competence Center ISOBUS e.V.; Fliegl Agrartechnik GmbH
SILVER: RSM night vision system	ROSTSELMASH
SILVER: NEVONEX	Robert Bosch GmbH Joint development with: Pessl Instruments GmbH; AMAZONEN-WERKE H. Dreyer GmbH & Co. KG; LEMKEN GmbH & Co. KG; ZG Raiffeisen eG; BASF Digital Farming GmbH; Rauch Landmaschinenfabrik GmbH; Syngenta Crop Protection LLC; Topcon Agriculture S.p.A.
SILVER: SmartView	Grimme Landmaschinenfabrik GmbH & Co. KG

SYSTEMS & COMPONENTS Trophy

ENGINEERS' CHOICE

At AGRITECHNICA, DLG awards the „SYSTEMS & COMPONENTS Trophy – Engineers' Choice" for the first time. The award recognises the high value and innovative power that the supplier industry brings to the agricultural machinery industry.

Supplied components and systems play a pivotal role in the manufacturing of agricultural machinery. During all development stages of a product manufacturers cooperate very closely with system and component suppliers to optimise the functionality of the product.

The optimal complement to the AGRITECHNICA Innovation Award

AGRITECHNICA Project Manager Marie Servais is delighted that the suppliers of the agricultural machinery industry are now given their own dedicated and high-visibility award that is presented at the world's leading trade fair. She says: „The Trophy is aimed at companies that exhibit at AGRITECHNICA 2019 SYSTEMS & COMPONENTS to give them a unique opportunity to commend themselves as inspiring innovators to developers and manufacturers. This way the award complements ideally the renowned AGRITECHNICA Innovation Awards."

Awarded by R&D engineers

By awarding the „SYSTEMS & COMPONENTS Trophy – Engineers' Choice", DLG awards components or systems that present a new or significantly improved concept and that can make a meaningful contribution to the development and production of agricultural and other off-highway machinery. The submitted system is assessed on criteria such as its practical relevance to the industry, its contribution to profitability and advancement of existing processes, its environmental impact and energy consumption as well as the improvements it brings to operator stress and safety.
The winners of the „SYSTEMS & COMPONENTS Trophy 2019 – Engineers' Choice" will be selected by a jury that is made up of R&D engineers from manufacturers who are exhibitors at AGRITECHNICA. The jury will make a shortlist of all submissions and select the winners from this. The winners will be presented at a awards ceremony at the SYSTEMS & COMPONENTS Future Lounge on 10 November. On Monday, they will present their products in the Future Lounge to the expert audience.

SYSTEMS & COMPONENTS Trophy – Engineers' Choice: Nominees 2019

PRODUCT	EXHIBITOR	STAND
Alliance Forestar 344 ELIT	Alliance Tire Europe BV	Hall 4 Stand C28
Multifunctional hydraulic tank module in hybrid design	ARGO - HYTOS GmbH	Hall 17 Stand F18
Continuously Variable Transmission Unit	BONDIOLI & PAVESI GmbH DEUTSCHLAND	Hall 15 Stand E27
New generation of professional agricultural driveshafts	BONDIOLI & PAVESI GmbH DEUTSCHLAND	Hall 15 Stand E27
Easy mount IoT pumps	BONDIOLI & PAVESI GmbH DEUTSCHLAND	Hall 15 Stand E27
SFT 2.0 driveline with SH CV joint	BONDIOLI & PAVESI GmbH DEUTSCHLAND	Hall 15 Stand E27
GFT8150 TIS (Tire Inflation System)	Bosch Rexroth AG	Hall 16 Stand A04
BPW AGRO Hub	BPW Bergische Achsen Kommanditgesellschaft	Hall 15 Stand E05
AX pump and motor	Bucher Hydraulics GmbH	Hall 17 Stand E17
Front Loader Solution	Danfoss Power Solutions ApS	Hall 16 Stand B20
Hitch Control Solution 2.0	Danfoss Power Solutions ApS	Hall 16 Stand B20
POLO Connectors Test Couplings	Ernst Wagener Hydraulikteile GmbH	Hall 16 Stand A16
SafeKnives	Frank Walz- und Schmiedetechnik GmbH	Hall 11 Stand B18
HELLA Smart Worklight System	Hella Fahrzeugteile Austria GmbH	Hall 17 Stand B40
INVENOX Battery Systems	INVENOX GmbH	Hall 17 Stand H12a
Replaceable ball for ball links with integrated locking	LH Lift Oy	Hall 17 Stand D02
TWIN TOUCH	RAFI GmbH & Co. KG	Hall 17 Stand B19
ANCOR	recalm GmbH	Hall 17 Stand D54a
Emergency-Release-System Scharmüller	SCHARMÜLLER Ges.m.b.H & CoKG	Hall 17 Stand D04
VisibleFarm API	VisibleFarm Kft.	Hall 15 Stand H16b

Detailed information on the nominees can be found at:
www.agritechnica.com/en/systems-components/systems-and-components-trophy

DLG-Test Center Technology and Farm Inputs

TESTED QUALITY

The experts at the DLG Test Center Technology and Farm Inputs test several thousand agricultural machinery and equipment products and farm inputs every year. The rewards for passing these demanding tests, which are relevant for practical use, are certifications such as DLG APPROVED or the DLG quality labels.

Decisions to invest in new agricultural machinery or farm inputs should always be taken on the basis of robust data and facts. In the market the test labels issued by the DLG Test Center Technology and Farm Inputs stand for top product quality that has been confirmed neutrally and independently. The methods and test profiles are practice-related and independent of manufacturers. They are based on the latest modern measuring techniques and test facilities and take international standards and norms into account.

The DLG Test Commissions – consisting of leading practitioners, scientists, experts from federations and associations, consultants and administration – conduct reproducible technical tests together with the DLG test engineers in response to practice-oriented questions from animal husbandry and field operations. Whether on test rigs or in defined scenarios in practical use on farms, the products and innovations are scrutinised with the help of the latest modern measuring technology and assessments by experienced practitioners, right down to the smallest detail. The test method and the test design are developed in close consultation with the independent, test commissions, whose members work on an honorary basis. These specify the evaluation standards and decide on the award of the test labels.

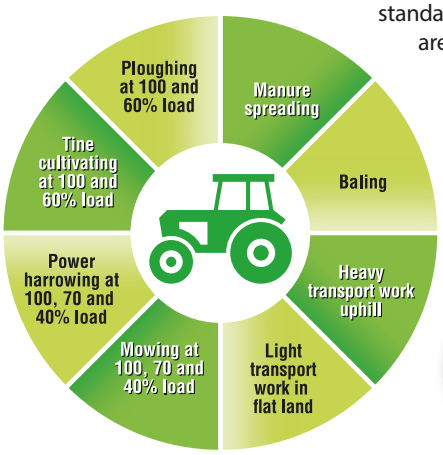
TESTING FOR PRACTICE

DLG has been testing agricultural machinery and technology and farm inputs for over 130 years. With its tests in the fields of vehicle technology, indoor and outdoor work, as well as farm inputs, machinery and equipment for forestry work, municipal applications and gardening, the DLG Test Center Technology and Farm Inputs is one of the internationally leading test organisations. The Test Center in Gross-Umstadt provides practitioners with information that represents an important decision-making aid for investments and use in practice. Its more than 4,000 test reports and test results provide farmers with clear orientation – concerning agricultural machinery and equipment as well as concerning compound feed, ensiling agents, fertiliser lime or products for cleaning, disinfecting and udder hygiene.

www.DLG-Test.de

DLG-POWERMIX

The DLG APPROVED PowerMix mark is awarded to tractors that have successfully passed a performance and consumption test to criteria that are laid down in the DLG-PowerMix standards. These call for 14 load profiles that are typical for the day-to-day work of the machine and that form the basis for measuring fuel and AdBlue consumption as well as the overall machine performance and efficiency. The individual load profiles replicate typical field and transport applications both at half load and full load.



DLG Tested Quality and Farm Inputs: Current results

Company	Product	Test Date	DLG Test Label
Andreas STIHL AG & Co. KG	STIHL MS 500i	2019	DLG APPROVED*
Andreas STIHL AG & Co. KG	STIHL FSA 130	2019	DLG APPROVED*
Andreas STIHL AG & Co. KG	STIHL MS 462 / MS 462 C	2018	DLG APPROVED*
CLAAS Selbstfahrende Erntemaschinen GmbH	CLAAS NIR-constituent sensor	2019	DLG APPROVED**
CNH Industrial Österreich GmbH	T6.180 -> transmission variants	2019	PowerMix
CNH Industrial Österreich GmbH	T6.180 -> transmission variants	2019	PowerMix
Firma Pfanzelt Maschinenbau GmbH	Forwarding trailer Pfanzelt-Standard Type "RW S-Line S-6"	2018	DLG APPROVED*
Gebrüder Zimmermann GmbH, Kalk- und Schotterwerk	Carbonic magnesium lime 90 (0-2 mm)	2019	DLG Quality Seal
Gebrüder Zimmermann GmbH, Kalk- und Schotterwerk	Carbonic lime 75 (0-0.1 mm), moistened	2019	DLG Quality Seal
Gebrüder Zimmermann GmbH, Kalk- und Schotterwerk	Carbonic magnesium lime 90 (0-<0.1 mm)	2019	DLG Quality Seal
Husqvarna AB	Husqvarna 545 Mark II, 545 G Mark II	2019	DLG APPROVED*
Husqvarna AB	Husqvarna 550XP Mark II, 550XPG Mark II	2019	DLG APPROVED*
Husqvarna AB	Husqvarna 572XP/ 572XPG	2018	DLG APPROVED*
Husqvarna AB	Husqvarna 565	2018	DLG APPROVED*
Husqvarna AB	Husqvarna 550 XP / 550 XPG	2018	DLG APPROVED*
John Deere GmbH & Co. KG	Forage harvester John Deere 9800	2018	DLG APPROVED**
John Deere GmbH & Co. KG	HarvestLab 3000 (SW 132 – LKS 05/18)	2018	DLG APPROVED**
John Deere GmbH & Co. KG	HarvestLab 3000 (SW 132 – LKS 04/18)	2018	DLG APPROVED**
KAMPS DE WILD BV	KAWECO NIR Sensor	2018	DLG APPROVED**
Karatzis S.A.	Round bale netwrap Ulith Supernet white	2019	DLG Quality Seal
Karatzis S.A.	Round bale netwrap Protector Premium white/yellow	2019	DLG Quality Seal
Karatzis S.A.	Round bale netwrap netting Premium white/green	2019	DLG Quality Seal
KUHN-HUARD S.A.	Stubble and seedbed cultivator Kuhn Prolander 6000	2018	DLG APPROVED**
Makita Corporation	MAKITA Type 130 (Dolmar PS-6100 und Makita EA6100P)	2018	DLG APPROVED*
Neumärker Landhof-Volker Pfeiffer	Corn cobs for barbecue use	2019	DLG Quality Seal
Polifilm Extrusion GmbH	Sun Reflect silage sheet silver-green/black, uv-stabilised, 120 µm	2019	DLG Quality Seal
Stelios Kazantzidis & Vosporou	Round bale netwrap Sila Eco Power Net	2019	DLG Quality Seal
Telenot Electronic GmbH	Radio remote control for double-drum cable winches B&B F 10 DT	2019	DLG APPROVED*
Telespazio VEGA Deutschland GmbH	Satellite system AutoSat IP FlyAway AV PRO	2019	DLG APPROVED*
VEENHUIS MACHINES BV	NUTRIFLOW 3.0	2019	DLG APPROVED**
WBV Westdeutscher Bindegarn-Vertrieb Eselgrimm GmbH & Co. KG	ULITH® Silage sheet 150µm white/white UV-stabilised	2019	DLG Quality Seal
WBV Westdeutscher Bindegarn-Vertrieb Eselgrimm GmbH & Co. KG	Ulith silage sheet	2019	DLG Quality Seal
Zill GmbH & Co. KG	Ultimate Powerfol silage sheet	2018	DLG Quality Seal with supplementary test „UV resistance: 15 months"
Zill GmbH & Co. KG	Agrifol silage sheet	2018	DLG Quality Seal with supplementary test „UV resistance: 15 months"

*DLG APPROVED Full Test ** DLG APPROVED in Single Criteria