



SMART, EFFICIENT, EASY



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Today's farming...



application running...

Today's farming has evolved from individual craftsmanship to precision agriculture. Driven by advances in technology, precision agriculture will have a huge impact on traditional approaches to farming land and growing crops, all across the world. This profound change is driven by three fundamental reasons:

- 1. In order to feed the growing world population, we need more and better food;**
- 2. To save the planet itself, farming has to use less inputs and be more efficient;**
- 3. Farmers, like all of us, want an easier working life and cost savings.**

New technologies improve the performance of existing mechanical farming equipment. Applying electronics, software, satellite-technology, online tools and Big Data enables farmers to use their equipment more effectively and to reach higher productivity of their crops.

Kverneland Group is a leader in these developments. Together with our partners we make farming smart, efficient and easy. Today and in the future.



Fully dedicated to electronics...

Kverneland Group Mechatronics develops and manufactures advanced control systems for agricultural equipment. Our terminals, Electronic Control Units and applications make machinery easier to connect, operate, control and monitor. This enables precision farming that contributes to lower costs, less use of raw materials, easier work and higher yields. Therefore it ensures a lower environmental impact and a higher profitability for farmers and contractors.

How it started

Even in the early 1980's, Kverneland Group Mechatronics, then named Vicon, realised that automation would become an essential part of the future of agricultural machines. In 1983 an electronics department was introduced in the company, with the job to develop the next generation of agricultural equipment. A few years later, we were the first to release a baler and fertiliser spreader using a microcontroller. A wave of innovations and thousands of machines were the result of these first steps in agricultural electronics. By the year 2001 the developments were that successful that Kverneland Group decided to establish a new company, fully dedicated to the use of electronics in Agriculture. That year, Kverneland Group Mechatronics was born.

Thirty years after the first electronically controlled machines, we offer a range of hundreds of products and grew from a small group of engineers to a business unit with over 80 employees.

Kverneland Group Mechatronics is a business unit of Kverneland Group, one of the world's largest manufacturers of agricultural equipment. The company develops equipment for arable farming (ploughs, seeding machines, sprayers and spreaders) as well as for dairy farming (spreaders, mowers and balers) under the brands Kverneland and Vicon. Kverneland Group is owned by Kubota (turnover > 10 billion euro), that is based in Osaka (Japan) and is a leader in tractors, agricultural machinery, engines and pipelines.



"In 2001 Kverneland Group Mechatronics was born"

Growing a perfect crop the easy way

“ When we bought a new GPS-controlled sprayer a few years ago, we needed a terminal to control it. Choosing the IsoMatch Tellus was an easy choice. First of all it is a Kverneland product, just like our new sprayer but more than that, it works very practically. Not only with the sprayer, but also with any other ISOBUS machine. We just plug it in and get to work. The Tellus provides an easy overview and operation. Even on a bumpy field, the touch screen is very accurate and responsive.

Recently we bought a new Kverneland spreader and decided to complete it with the IsoMatch Tellus GO, which is smaller and more simple than the Tellus. It is a very user friendly terminal. Now we are able to use two ISOBUS machines at a time. The fact that the terminals are operated in exactly the same way makes it easy to switch from one tractor to the other and to instruct employees.

If I were to replace any more machines, I would definitely choose ISOBUS machines because they are compatible with the terminals. I would probably choose Kverneland machines. I am very satisfied with both the machines and the terminals and it is an advantage that all are made by the same company. I only need one contact for questions and support and I appreciate the service Kverneland offers. At first the terminals took some getting used to, of course, but after training offered by Kverneland, we can optimally use the options the machines and the terminals have to offer.

REMCO TROUW, arable farmer in The Netherlands and owner of two IsoMatch terminals

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Development from scratch...

At Kverneland Group Mechatronics, we develop all our products from scratch: from the first research up to full production, training and service.

A new product always begins with a new idea, inspired by new technology and demands in the field as picked up by our marketing and product management department. R&D, with over thirty employees (the largest team in our business unit), then takes over with the development of software and hardware, product design and prototyping. Once the prototype is satisfactory, the innovation is passed on to production, where it is manufactured, from the production of the different parts to the cable assembly. After thorough quality control and testing, the new product is ready to be distributed to farmers and agricultural contractors.

Mechatronics technologies

GPS and sensor technology are essential aspects of the solutions Mechatronics offers. Precision farming starts with position determination, using GPS. GPS ensures that machines will perform the right task at exactly the right place and enables sensors to register detailed site-specific information. RTK (Real Time Kinematic) corrects the GPS signals for small deviations caused by the movements of satellites. This correction ensures an accuracy of centimetres. Mechatronics combines these technologies with embedded systems, based on Linux software, to create smart farming solutions.

ISOBUS

At the beginning of the 21st century, Kverneland Group Mechatronics applied for a patent on an invention that made ISOBUS possible. ISOBUS was the first step towards an innovation debate in the agribusiness. The objective was to achieve compatibility and standardisation between tractors and implements. The uniform ISOBUS language enables standardised communication between the different tractors and machinery. After releasing the patent in 2001, ISOBUS grew to become the international standard for data communication in agricultural equipment. Thanks to the ISOBUS technology, farmers can connect tractors, machines and terminals on a 'plug & play' base.

“A new product always begins with a new idea”

All machines will be online and connected

“ The future of farming is in electronic and technological developments. I am convinced that, within the next few years, all machines will be online and connected, communicating wirelessly with management- and control systems, and with each other. It makes the work easier, improves the efficiency and therefore saves money. More than that, it provides the farmer with important data that can be used for improving farm management. As sensors get smarter, they do not just collect data, but translate it for practical use in the field and save the data for later use. The machine will become a management tool and the farmer's knowledge will shift from craftsmanship to technology and management.”

“These developments enhance the role of Kverneland Group Mechatronics. We are a frontrunner in the field of innovative, electronic technologies. Technology and innovation are in our DNA. We closely follow technological developments, both in agriculture and in other industries. We invest in research and are constantly developing our strategic visions of the future. We give ourselves the opportunity to experiment with new, innovative ideas. We create the future of farming.”

PETER VAN DER VLUGT,
Chief Technology Officer Kverneland Group Mechatronics



Equipment for precision farming...



GEOSPREAD

The spreading of fertiliser is usually executed with fixed working widths, assuming rectangular fields. In reality most fields are not so evenly shaped. This causes overlap, and therefore waste of product and less than optimal crop performance. Together with the engineers of the Kverneland spreaders, Mechatronics developed a complete new technology. The GEOSPREAD option on the Kverneland and Vicon spreaders with fully automatic weighing system and unique reference sensor. It is possible to quickly and accurately adjust the individual working width, just by giving the right commands via the ISOBUS terminal in the tractor cab. In combination with IsoMatch GEOCONTROL it is even possible to adjust the application rate automatically and place specifically, using GPS.

ISOBUS Universal Terminals

The ISOBUS terminals IsoMatch Tellus GO and IsoMatch Tellus PRO are the next step in precision farming. The terminals are the centre for connecting all machines (Kverneland, Vicon or any other brand) and a platform for running precision farming applications. They provide easy control of the machine from the tractor cab and enable higher yields, lower costs and easier working.

The Tellus PRO offers everything a farmer needs to get the maximum out of his machines and his crops. It allows saving costs of fertiliser, chemicals and seeds

by using Section Control and Variable Rate. With the unique dual screen functionality it gives the farmer the opportunity to view and control two machines and processes simultaneously.

The IsoMatch Tellus GO is designed for controlling machines in a simple way. You can easily set up the machine with the soft keys via the 7-inch touch screen. And, for optimal control while driving, just use the hard keys and rotary switch.

Fleet management application

The Fleet Management application enables the farmer to monitor and manage the daily business from behind a desk. On a map the farmer can see all equipment, the status of the task of this machine and the worker that is controlling the tractor. With this data a farmer can make decisions based on real time information and work in an efficient and effective way. The farmer can send the next tasks to the tractor via the Fleet Management application. If there is need for service or spare parts on certain equipment, the farmer will be notified directly. This is also the case when the equipment reports an error. With the availability of real-time and historic diagnostic data of all equipment the farmer has access to valuable information. This all will guarantee the reduction of downtime and maximise the use and performance of the machine.

Designed for controlling machines in a simple way

There is always space to bring in creative ideas

“ Our department is responsible for developing the software and hardware for the electronic control of Kverneland and Vicon machines and Kubota tractors. We develop all software ourselves, using our own printed circuit boards (PCB's). That way we can make it entirely according to our own demands and wishes.

The work is very versatile and that's what makes it fun. Sometimes we develop software on demand, for the Kverneland Group and Kubota factories for example. Sometimes we work on our own products such as Terminals and software applications. In both cases, we start from scratch and the job includes brainstorming, optimising and testing the products. We are not stuck behind our computers, the projects involve a lot of teamwork and contact with people and there is always space to bring in creative ideas. I am especially proud of our own products. They are really innovative and created with passion. That's what I love about my job. ”

JEROEN JACOBS, engineer





iM FARMING

smart efficient easy **FARMING**

By having a wide variety of ISOBUS compatible machines and applications available, Kverneland Group can help farmers choose the right strategy for making their business more smart, efficient and easy. The iM FARMING concept offers the right combinations of ISOBUS compatible machines, electronic solutions and applications which enable farmers to futureproof their farm management.

Using ISOBUS compatible machines and applications provides farmers with important advantages:

- Easy connection and enhanced communication between tractor, machine, universal terminal and farm management information systems
- Standardisation of controller and settings
- Centralised data collection and easy data transfer

The iM FARMING concept combines and presents its competitive advantages of the ISOBUS machine offering in combination with all electronic solutions, simply explained to the farmer to help them find the right solution for their machine. This is based on real needs, to enhance cultivation and growing processes while making more efficient use of scarce and expensive raw materials. This way, farming practice becomes more cost-efficient and sustainable.

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>> The iM FARMING concept supports modern farming in four different ways:

IM READY

When all machines are ISOBUS certified, control becomes easy. All machines and applications are ready to work, using Plug&Play technology. No different systems or cables. With the right combination of machines and applications, farmers are always ready for action!

IM INCONTROL

With the IsoMatch universal terminals it is possible to control all ISOBUS machines in an easy way. Especially in combination with the available applications and accessories such as the camera and joystick. Centralising the collection of data, allows for an easy overview of all on-farm processes. Data is easy to access through an IsoMatch universal terminal in the tractor cab. By having such oversight, farmers are always in control.

IM GLOBAL

When monitoring fields or controlling implements, having continuous insight in the location of machines is of great importance for good navigation. By using GPS and GEOCONTROL software, this is no longer an obstacle. ISOBUS machines can be controlled by these GEO technologies through the IsoMatch universal terminals or tractor terminal. This allows for automatic section control, automatic variable rate control and easy options for task management and documentation. By using such combinations of software and technologies, on-field work and adjustments can be done without leaving the tractor cab and can continue long after dark without problems.

IM INTELLIGENT

Installing the most intelligent hardware and software solutions, allows farmers to aim for the highest level of precision. Combining an intelligent ISOBUS seed drill with GEOSEED software and an IsoMatch universal terminal for example, will open up unprecedented precision in avoiding wind and water erosion and optimise yield performance. Making intelligent combinations of software and technology, lifts farming practices to the next level.

An easy overview of all onfarm processes

