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The New Holland NH^{Drive} concept autonomous tractor shows a vision into the future of agriculture

Unveiled on 30th August at the Farm Progress Show in the United States, the New Holland NH^{Drive} concept autonomous tractor is a driverless machine which can perform a wide range of farming tasks day and night. It is also able to reach the field autonomously via private on-farm tracks, to work together with other autonomous or traditional operator controlled machines and courtesy of the cab it can still be driven by an operator ensuring maximum flexibility.

At first glance, the T8 Blue Power tractor on display may have looked like a normal standard tractor to the numerous visitors who packed New Holland's stand at the Farm Progress Show, the annual outdoor farming machinery show that is held in Boone, Iowa (USA). But once the first images of the video dedicated to the tractor and its incredible operational capacities appeared on the screen, everyone understood that they were witnessing a glimpse into the future of farming, one that could feature fully autonomous machinery: something which could redefine the agriculture of tomorrow.

A further evolution based on efficiency and sustainability

Developed by CNH Industrial in collaboration with its long-standing technology provider Autonomous Solutions Incorporated, ASI, a Utah-based company that is the industry leader in off-road autonomous solutions, the New Holland NH^{Drive} autonomous tractor is an unmanned vehicle that is fully autonomous and can be monitored and controlled via a desktop computer or via a portable tablet interface. This enables farmers to access tractor and implement data, wherever they are, from different locations, whilst checking fields from the comfort of their pick-up, whilst tending livestock or whilst at home, and always whenever they need. This facilitates right-time decision making to enhance operational efficiency and productivity. Furthermore, farmers will maintain full control and ownership of their data.

A path-plotting screen shows the tractor's progress, another shows its live camera feed, providing the user with up to four real time views (two front and two rear). A further screen enables monitoring and modification of key machine and implement parameters such as engine speed, fuel levels and implement settings, including seeding rate or coulters downforce. The route to the field can also be planned, should this involve private roads or tracks.

The NH^{Drive} concept tractor is equipped with a seeder, and is able to autonomously seed the next crop straight behind the combine. Using an application installed on a portable device, perfect for supervised automation, such as an operator driving a combine, or on a desktop computer, perfect for the farmer working in his farm office, the tractor and implement parameters can be continually monitored and controlled, and changes can be made if necessary.



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Able to work 24 hours a day, 7 days a week, the NH^{Drive} tractor helps to reduce the risks associated with human error as it follows predetermined and optimised plans for all activities. It is able to reach higher levels of productivity and efficiency than traditional methods. The NH^{Drive} can make full use of the periods of favourable weather for farming operations by working day and night.

In the future, the NH^{Drive} tractor will be able to completely automate grain handling during the harvest when equipped with a trailer, including unloading, transport and offloading activities.

Two tractors in one: maximum flexibility

The NH^{Drive} concept tractor is equipped with a cab that is completely identical to that of a standard T8. This means that it can also be used for those operations where complete autonomy is not yet possible, such as front loader work and high speed road transport.

As regards getting around the farm, the NH^{Drive} tractor can travel on pre-mapped private paths. Simply "tell it" where to go and what it has to do once it has reached its destination via private tracks, and the tractor will get to work, either individually or in a convoy.

The New Holland NH^{Drive} tractor makes full use of the advanced PLM (Precision Land Management) technology for precision farming. This Open - Connected - Smart – Supported technology is easy-to-use, and is always accessible to all users and is continuously supported by New Holland specialists.

The NH^{Drive} tractor follows optimised in-field paths, which are automatically generated by the software, after having taken into account the size and shape of the field, any pre-existing obstacles and the width of the implement to be used. Furthermore, it will be fully compatible with the full suite of PLM solutions. In the future this concept will be able to utilise previously collected yield data for the variable application of inputs and to carry out operations with maximum precision, year after year. The results are increased operating efficiency and the ability to make the most of short operating windows.

The NH^{Drive} tractor is able to work alongside other autonomous machines and can also work in tandem with machines driven by an operator.

Thanks to a combination of radar, LiDAR (range finding lasers) and RGB cameras, the NH^{Drive} is able to detect a wide range of in-field obstacles. If an obstacle is detected, the tractor sends a message to the interactive interface and the person responsible for the farming operations will decide if and how the tractor can avoid or bypass the obstacle.

It is conceivable, that in the future the complete tractor range as well as other agricultural equipment could be equipped with the NH^{Drive} technology. Furthermore it is possible that the cab will be completely removed in future autonomous tractors.



The ideal celebration of 10 years of sustainable efficient technologies

The preview of the New Holland NH^{Drive} autonomous concept tractor represents one of the most significant milestones surrounding the 10th anniversary celebration of New Holland's Clean Energy Leader® strategy. Since 2006 this strategy promotes the use of renewable fuels and develops technologies targeted at reducing the environmental impact of farming activities and maximising farming efficiency and productivity, with the declared objective of producing food for everyone while using fewer resources.

The further development of the NH^{Drive} autonomous tractor will be a key element of the future PLM strategy - one of the pillars of the Clean Energy Leader strategy – and represents the ultimate expression of the "doing more with less" concept: more work, more efficiency, more productivity, more flexibility in operating decisions, all based on precise data. This, all with optimised use of inputs, reduced costs and consumption and less human fatigue.

“The NH^{Drive} autonomous tractor offers us the opportunity to open up completely new horizons for future farming” stated Carlo Lambro, Brand President of New Holland Agriculture “Farming will become increasingly responsible for ensuring the availability of food produced in an efficient and sustainable way. An autonomous tractor that is able to work day and night, helps solve the problem of a lack of specialised labour during the most intense seasons, makes 100% use of the periods of favourable weather for various farming activities and maximises the rational use of resources. The NH^{Drive} concept autonomous tractor represents the first and very important step towards a new model of responsible farming management on a global level. At New Holland Agriculture we have made farming innovation our main goal for more than 120 years and are proud to be an active and driving force in this important change”.

ENDS

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