Driverless concept offers glimpse of farming's future

Autonomous tractor technology shows way forward for farming: enhancing efficiency and working conditions in agriculture

Driverless tractor concept makes European debut following worldwide unveiling in US / Tractor uses latest precision technology to minimise use of input / Enables operations to best exploit ideal soil and weather conditions / Some features already in use on current tractors

PRESS RELEASE

St. Valentin / Paris, 26.02.2017

The European debut of an autonomous concept tractor that can be operated unmanned and monitored remotely using advanced safety and control systems reveals technology which could bring significant benefits to world agriculture's productivity, environmental impact and workload demands, believes the team behind the machine, which is making its European debut this month. As a result, the concepts it contains have the potential to play a significant part in feeding the world's rapidly-expanding population – expected to reach nine billion by 2050 – and in using farmland more efficiently.

Following its global unveiling at the 2016 US Farm Progress Show, the Autonomous Concept Vehicle (ACV) is being shown for the first time in Europe at the SIMA international farm machinery show in Paris by Case IH, a brand of CNH Industrial. The Case IH ACV has been awarded a silver medal in the SIMA Innovation Awards.

Case IH was among the pioneers of 'precision farming' Advanced Farming Systems (AFS) when, in 1994-95, it introduced a GPS-based system to show the yields from different areas of fields. Still used today in a more advanced form, this allows subsequent application rates of fertiliser and seed to be adjusted the following year according to the yields those areas gave. This maximises crop potential and cuts wastage, while also minimising the environmental impact of crop inputs.

More recently, over the past decade, automated in-field self-steering systems – utilising an advanced version of the GPS navigation systems used in many cars – have, alongside, other

Case IH Public Relations Officer
Europe, Middle East & Africa
Steyrer Straße 32
4300 St. Valentin, Austria

Press Contact:
Cecilia Rathje
cecilia.rathje@cnhind.com

Ph. +43 7435 500 634
Mob. +43 676 880 86 634

automatic machine functions, become integral parts of many currently-available tractors and other agricultural machines, helping reduce overlapping and misses and thereby minimising wastage of fuel, fertiliser and other crop inputs, as well as relieving some of the operator's workload. However, long hours in the cabs of such machines are often still essential, while sourcing staff sufficiently qualified and prepared to work them is becoming difficult. Designed to relieve drivers from the monotony of such work and allow them and their employers to make better use of their skills and enjoy a better work/life balance, while making possible unmanned work around the clock to maximise use of good weather periods, the Autonomous Concept Vehicle (ACV) can be integrated into fleets of existing machines to work alongside them, and even offers the future potential to automatically adapt to weather events.

"The ACV retains much of the conventional technology of a modern tractor, and uses an 'RTK' form of ultra-accurate GPS to provide parallel steering capability with a variation of less than 2.5cm, which many farmers are already using to ensure missed or overlapped land between passes spans no more than this width," explains Dan Stuart of Case IH.

"In addition to minimising input wastage, such steering accuracy is also key to the successful adoption of techniques such as mechanical weeding between crop rows, to reduce pesticide usage and, where organic production is practised, make this more viable. It also incorporates telematic systems already in use on some current tractors, designed to allow farmers and managers to see where a tractor is, what it is doing and even how much fuel it has, all from a tablet or farm office PC."

The addition to the ACV of radar, lidar (laser-based) and sensor proximity and safety systems, plus wireless technology that allows the machine to be monitored and controlled remotely via a PC or tablet computer, means that once the tractor is in the field it can work completely independently, eliminating the need for a driver to observe operation, and so removing the need for a cab. Should the tractor come into range of anything that might pose a risk to the machine, or be at risk from it, then it stops, the owner is alerted, and the machine does not restart until camera feeds are checked and a decision on whether the tractor can continue is taken. For example, should a small pile of straw be in the way, it can be instructed to progress; should another vehicle come across its path when in the field or on a private track, the ACV will move off again once the other has moved on.

Where fields can be accessed via private tracks/roads, the ACV can even be programmed to find its own way to work. The farm owner or manager can observe the progress of the tractor via mapping displayed on a tablet/PC, and can even see the tractor's 'view' by accessing its video camera feeds.

In the future these concept tractors will be able to use 'big data' such as real time weather satellite information to automatically make best use of ideal conditions, independent of human

input, regardless of the time of day. For example the tractor would stop automatically should it become apparent changeable weather would cause a problem, then recommence work when conditions would have sufficiently improved. Alternatively, if on private roads, they can be sent to another field destination where conditions are better – soils are lighter or there has been no rain, for example.

Currently, the ACV is a concept, but a testing programme working with farmers in real-world situations is in its early stages and this will cover more than simply how the product itself performs.

“Adding an autonomous tractor to a farm’s operation could have a wider impact on how the business is managed, so we are also working with test farms to assess not just the machine’s practical uses and performance, but also how autonomous operation might affect areas such as labour use, logistics and the efficiency of input use,” says Mr Stuart.

In the meantime, certain elements of the ACV’s technologies are suited to integration into conventional tractors in the nearer future, and are as applicable to smaller tractors – those for orchard work, for example – as they are to machines the size of the high-horsepower tractor on show, which is designed for soil cultivation and crop establishment on large farms.

”Much of the technology required for autonomous vehicles, such as obstacle detection, is currently available. As these technologies are more widely adopted by the auto industry and their availability increases over time, we anticipate reduced costs. As a result, while we may not see the full introduction of cabless autonomous tractor in the short term, components of its technology are likely to become available on new tractors much sooner,” concludes Mr. Stuart

***

Press releases and photos: *http://mediacentre.caseiheurope.com*

Case IH is the professionals' choice, drawing on 175 years of heritage and experience in the agricultural industry. A powerful range of tractors, combines and balers is supported by a global network of highly professional dealers dedicated to providing our customers with the superior support and performance solutions required to be productive and effective in the 21st century. More information on Case IH products and services can be found online at www.caseih.com.

Case IH is a brand of CNH Industrial N.V., a world leader in capital goods listed on the New York Stock Exchange (NYSE: CNHI) and on the Mercato Telematico Azionario of the Borsa Italiana (MI: CNHI). More information about CNH Industrial can be found online at www.cnhindustrial.com.

Case IH Media Center

www.caseih.com

www.facebook.com

www.youtube.com

For more information please contact:

Cecilia Rathje
Ph: +43 7435 500 634
Case IH Public Relations Officer
Europe, Middle East & Africa
Email: cecilia.rathje@caseih.com