Press release

Holmer SmartTurn – the smart way to turn a sugar beet harvester
Reichhardt and Holmer present the first head land management for a self-propelled harvesting machine and win a DLG silver medallion

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It is dark. The driver of the sugar beet harvester tries to orientate himself on a large, unknown field. At the same time he monitors parameters like speed, working depth or turbine speed. Mistakes are hardly to be avoided: The lifting unit is raised too late at the end of a row, on the head land unnecessarily long turn manoeuvres are made or the rows are miscounted and the lifting unit is lowered at the wrong row. The results are unnecessary fuel consumption, higher non-productive time, harvesting losses and major stress for the driver as well as unnecessary soil compaction by multiple crossings.

Now the DLG-awarded Holmer SmartTurn solves these problems. SmartTurn is an integrated software solution for the sugar beet harvester Terra Dos T4 developed by Reichhardt and Holmer. The software combines for the first time the mechanical row steering system in the sugar beet harvester and the head land system with a GNSS-steered head land turning as it is known from tractor technology. This way an automatic turning process in the head land is possible for the first time for self-propelled harvesting machine – including the raising and lowering of the lifting unit as well as the necessary steering manoeuvres.

And thus functions Holmer SmartTurn:
The sugar beet harvester Terra Dos T4 steers during harvesting within the row automatically with the help of the leaf feeler as well as the impulses of the lifting shares. Reichhardt SMART CONTROL with GNSS steering system registers the crop borders and field boundaries as well as other parameters. The Holmer TerraControl head land system raises the lifting unit and lowers it again when necessary.

Now SmartTurn links this information.
SmartTurn indicates at the end of a row via an acoustic signal automatically the optimum time to initiate the turning process which the driver starts actively. Then the Terra Dos T4 finishes at the crop border automatically the harvesting process and raises the lifting unit in the ideal point.
Now at the same time the GNSS steering system takes over the turning process. At this the Terra Dos T4 takes an ideal turning way. The system automatically heads for the correct, nearest row.
By reaching the next row, SmartTurn lowers the lifting unit automatically in the ideal point. Afterwards the proven row steering system takes over the control of the machine in the row.

In addition, the Reichhardt SMART CONTROL records the head land and the already worked on field parts and visualises these to make possible turning areas for the system recognizable.

The calculation of the necessary waypoints is done in the ISO FLEX module. The waypoints are transferred via CAN bus to the steering computer which transmits the calculated steering movements to the machine controller. Thanks to ISO FLEX, e.g., a tablet computer can be...
used as a display and operating unit; via WLAN it can visualize the worked field parts and the rows to work on.

The collected data help to calculate the tracks of turns or starts as well as to virtually count the rows. All work sequences are thereby optimised and completely automated. If these data do not exist, the navigation information can be collected during harvesting. Furthermore sequential, automatic calculations are done for the next turning to optimise the driving performance in the head land (head land width, entry terms in the next track, ...) based on the data of the current row feeler track. At last all field specific data are saved and made available to the farmer for documentation and evaluation purposes.

By means of SmartTurn soil compaction is minimised, because unnecessary driving manoeuvres are avoided; harvesting losses are reduced, because raising and lowering of the lifting unit is done automatically. Moreover, variable costs are lowered by less non-productive time, because, e.g., a time consuming row count is no longer necessary. The Holmer SmartTurn is a huge benefit for the driver which gives him a better overview about the field, so that he can completely concentrate upon the supervision of the harvesting quality.

The joint project of Reichhardt and Holmer offers for the sugar beet harvester Terra Dos T4 a modern, automatic steering and Smart Farming function. It optimises the sugar beet harvest and the soil protection – and is completely in line with the Agritechnica motto "Green future, smart technology". This Smart Farming invention was awarded with a silver medallion for harvesting technology by the DLG commission.

**Photo 1**: 2017_Holmer SmartTurn_Silbermedaille  
**Legend**: Silver medal for the first head land management for a self-propelled harvesting machine: Holmer SmartTurn. (photo: Holmer)

**Photo 2**: 2017_Holmer SmartTurn_Silbermedaille_Zeichnung  
**Legend**: Automatic turning with the Holmer SmartTurn. (photo: Holmer)

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About HOLMER
Holmer is a modern, medium-sized mechanical engineering company that develops, produces and sells agricultural machines. Holmer is world market leader for self-propelled sugar beet harvesting technology.

The Holmer Maschinenbau GmbH has its headquarters in Eggmühl near Regensburg. Including subsidiaries in France, Poland, the Czech Republic, Ukraine, Turkey and the US as well as a representation in China, the Holmer team consists of 400 employees. Founded in 1969, Holmer Maschinenbau GmbH developed the first self-propelled six-row sugar beet harvester in 1974 – a milestone of agricultural technology. Since that time, the Holmer machines have been in successful operation at customers’ in over 40 countries world-wide.

By now, far above 3,500 sugar beet harvesters have been delivered from the factory workshops in Eggmühl. The current model Terra Dos T4 has been awarded “Machine of the Year 2014” and “Machine of the Year 2016” and holds the world record in sugar beet harvesting. With the beet cleaner loader Terra Felis 2, Holmer has positioned itself as a full-line provider in the sugar beet harvesting and loading technology sector. Moreover, the Terra Variant sets new standards as the most powerful carrier tractor in the world – especially in the field of direct slurry injection.

With innovation, passion and respect, Holmer changes the future of agricultural technology and inspires with its machines customers and partners.

About REICHHARDT
Reichhardt is a medium-sized electronics enterprise, which develops customized and demanding electronic solutions for famous manufacturers of self-propelled machines in agricultural and construction machine technology as well as in municipal services. The business spectrum encloses beside software and hardware development also cable assembly, control panel construction and the assembly of electronic components. Since last year the Reichhardt group also runs a manufacturing company for electronic components and devices. The Reichhardt GmbH Steuerungstechnik develops ideas and innovations as far as series production with its customer. In addition, the company is known for Precision and Smart Farming solutions as well as for its competence in ISOBUS. Reichhardt employs with the subsidiary in the USA in three locations about 130 employees.

The cooperation with Holmer Maschinenbau GmbH started already in 1994 with developments for the Terra Dos series as well as for the Terra Variant. The experiences that Reichhardt has in sugar beet technology, even outreaches this. About as long the Hessian electronics company deals with automatic steering systems as an integrated solution often in the form of mechanical row feeler as well as an After Sales solution with GNSS and sensor technology. Reichhardt is known for its steering options with the help of ultrasound in row cultures for tractors just as for active cultivation device steering systems. Maize harvest can hardly be imagined without the flexible row feeler of Reichhardt. The company takes also a leading role in the GNSS segment, which is shown e.g. by the supply of RTK correction data known as RTK CLUE.

With SmartTurn several core competence areas of Reichhardt were brought together in a novelty.