



AEF ISOBUS Database and ISOBUS Check Tool



With the AEF ISOBUS database and the ISOBUS Check Tool, agricultural machines and implements can be quickly and easily checked for optimal functionality and compatibility.

In order to create a uniform basis, manufacturers of agricultural machinery, together with organizations such as the International Organization for Standardization (ISO), have developed a standard for communication between agricultural components, the so-called ISO1 1783 - "Tractors and machinery for agriculture and forestry - Serial control and communication network", commonly known as the ISOBUS [1].

By complying with the ISOBUS standard, the various manufacturers want to provide equipment that is compatible with each other. However, if a new implement or component does not work in conjunction with the tractor because, for example, some functions cannot be called up or possibly the entire system is at a standstill, this can be a time-consuming problem. For this reason, the Agricultural Industry Electronics Foundation (AEF)

has developed a system that is specifically designed to help prevent compatibility problems and find quick solutions and avoid time-consuming triangular communication between the manufacturers involved and the workshop. The system consists of the AEF ISOBUS database and the ISOBUS Check Tool for compatibility testing of agricultural implements with ISO-BUS standard.



AEF and ISOBUS

The Agricultural Industry Electronics Foundation (AEF) was founded in October 2008 by seven international agricultural equipment manufacturers (Kverneland Group, Grimme, AGCO, John Deere, Pöttinger, Claas, and CNH) and two associations (VDMA, AEM) as an independent international organization. Its goal is to provide resources and expertise for electronic systems in agriculture and to assist in the introduction and implementation of the ISOBUS standard. Since its founding, AEF's membership has already grown to more than 150 companies, associations and organizations. Meanwhile, the area of interest has expanded to also include Farm Management Information Systems (FMIS), electric drives and camera systems [2].

The focus of ISOBUS aims to standardize communication between tractors and implements and to ensure full compatibility of data transmission between different systems. The goal is to achieve plug-and-play functionality

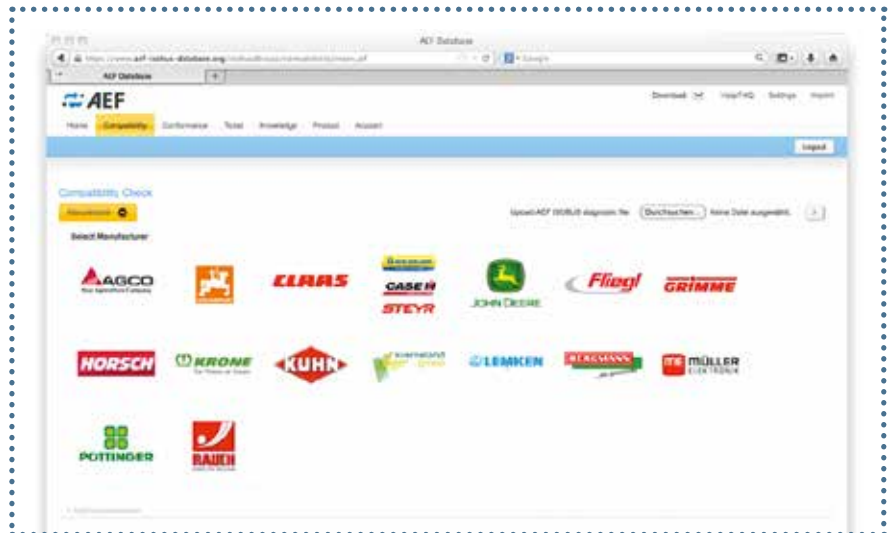


Figure 1: The AEF ISOBUS database lists a wide range of tractors, attachments and agricultural equipment from manufacturers and their dealer networks (www.aef-isobus-database.org).

of all components. The farmer should not have to think about whether a particular component can be inserted into his system and whether it guarantees full functionality [1,2].

AEF ISOBUS database

The AEF ISOBUS database is an online database of a wide variety of tractors, implements and agricultural equipment from manufacturers and their dealer networks that are members of AEF. All products »

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in the database have successfully passed the AEF Conformance Test and have been published by their respective manufacturers. The user can search for various implements and tractors listed by manufacturer, type or model, as shown in Figure 1. Once an implement is selected, for example a tractor, the database displays information about the product version, available functionalities and ISOBUS compliance certification. Now the user can search for another implement, for example an attachment, and select it. The database provides the same information for the attachment as for the tractor. In addition, all available combination functionalities between the selected implements are displayed. This allows the user to quickly and easily check functionalities and certifications of the current system and immediately determine which attachment supports the full functions and can be easily integrated [3]. With the help of this information, agricultural equipment dealers can make better statements about which tractor, attachment or implement will ensure maximum functionality of the entire system.

ISOBUS Check Tool

Another tool, the ISOBUS Check Tool, which was developed by Sontheim Industrie Elektronik, makes it possible to read out important information from combined agricultural equipment in the field (Fig. 2). This information is then transmitted to the manufacturers in order to jointly solve the problem. The ISOBUS Check Tool is a software system that, in combination with a CAN interface connected to the ISOBUS, independently runs a trace and records important diagnostic information from the various ECUs on the bus. Thus, a service technician can use this tool to connect directly to the tractor's ISOBUS and read out all data from all devices. This information is saved in XML format



Figure 2: The ISOBUS Check Tool records important diagnostic information from the various ECUs on the bus.

and packaged as a zip file. The technician can upload this file to the AEF ISOBUS database. There he will find a list of the devices that are on the bus with all the important information about the manufacturers, the model, the functions, certifications and the possible combinable functionalities. In this way, the technician can quickly find out which devices cannot be combined and generate a so-called ticket. This ticket contains all the important information of the entire system and is transmitted to the relevant manufacturers. Once a ticket has been created in the database, specialists from the manufacturers involved can collaborate on a solution to the problem.

The AEF ISOBUS database provides a platform on which the technicians can communicate and follow the ongoing progress. Thus, a basis for a fast and systematic solution approach is guaranteed. Furthermore, the database stores the information about the ticket and the approached solution. These later serve as reference material for similar compatibility problems between other manufacturers. The ISOBUS Check Tool is available free of charge to all manufacturers who have access rights to the AEF ISO-BUS database.

Conclusion

The AEF ISOBUS database and the ISOBUS Check Tool have been developed for a better support of the ISOBUS standard. It provides end users with a quick and easy way to check new devices for optimal functionality and compatibility. In addition, sudden compatibility problems between different devices can be solved faster and more efficiently by a service technician thanks to the ISOBUS Check Tool. Manufacturers also benefit from the AEF ISOBUS database and the ISOBUS Check Tool, because it allows them to verify the certification of their equipment, to solve compatibility problems more quickly and also offers a pool of reference solutions with which future compatibility problems can be solved more easily and efficiently. W (oe)

References

- [1] ISO 11783: An Electronic Communications Protocol for Agricultural Equipment
- [2] AEF website (<http://www.aef-online.org/en/>)
- [3] AEF database presentation (https://www.aef-isobus-database.org/isobusdb/docs/aef_presentation_en.pdf)

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