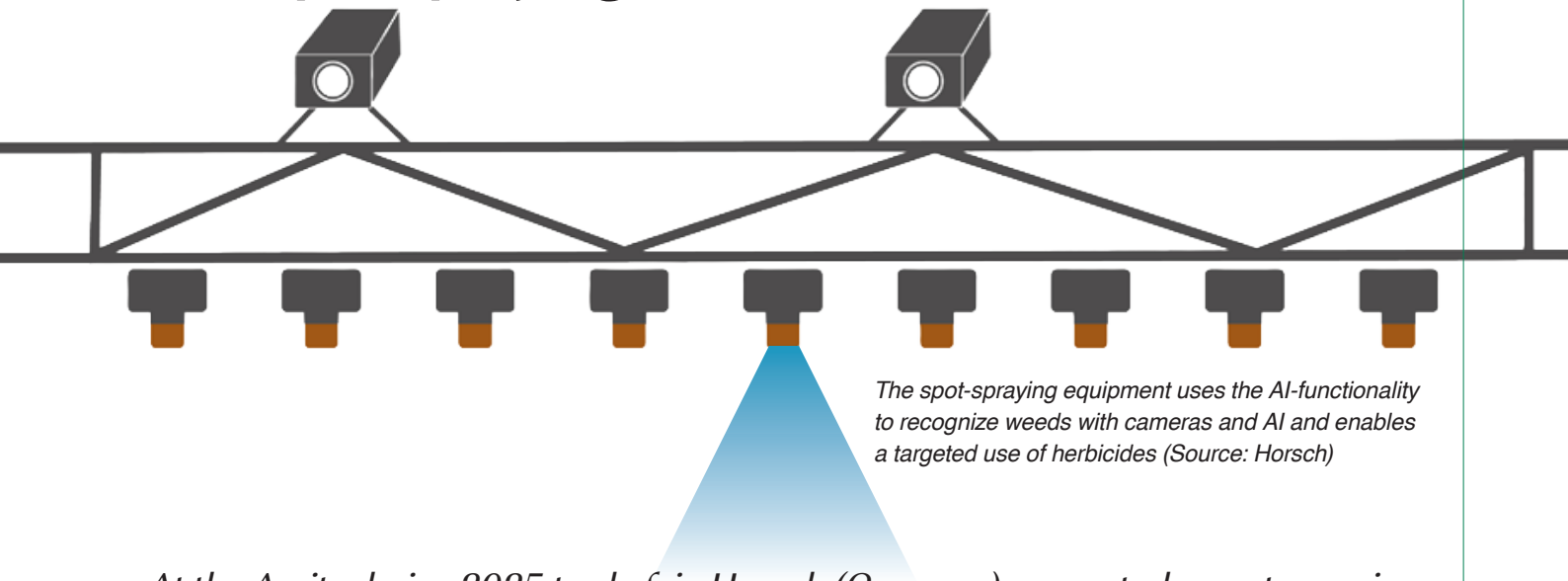
Spot spraying with AI-based controller



The spot-spraying equipment uses the AI-functionality to recognize weeds with cameras and AI and enables a targeted use of herbicides (Source: Horsch)

At the Agritechnica 2025 trade fair, Horsch (Germany) presented a spot-spraying equipment based on TTControl's (Austria/Italy) FusionAI computing platform.

Precision farming uses data collected via sensors, GPS (global positioning system), or drones as a basis for cultivating fields more (resource-)efficiently with the help of artificial intelligence (AI). The goal is to increase yields while reducing environmental impact and saving costs. AI applications are an important factor in modern agriculture, but their development is complex and requires expertise from a wide range of domains, explained CiA member TTControl, a joint venture by TTTech and Hydac.

Horsch is an agricultural machinery manufacturer that also works on solutions for precision farming. It developed a spot-spraying application that uses cameras and AI (artificial intelligence) to detect individual weeds in the field and enables the targeted use of herbicides. This “green in brown” system was presented at the Agritechnica trade show. Spot spraying is a precision-farming application that uses optical sensors and object recognition in combination with AI to detect weeds in fields, thereby reducing the use of herbicides.

"We are working with FusionAI to further develop our spot spraying solution. It has all the relevant interfaces for challenging field use – from 100/1000BaseT1, GSML2 with high bandwidths to CAN CC (classic). It also has sufficient computing power to accurately detect plants even at high-driving speed,“ explained Caspar Russ from Horsch. ”FusionAI opens up new technical possibilities for reading a wide range of sensor data and thus serves as a key technology that enables us to implement AI-supported plant detection and adaptive application strategies."

The first pilot applications of the spot-spraying solution with FusionAI in crop-protection equipment have been in use since the beginning of 2025 and provide the basis for continuous further development and improvements. The FusionAI computing platform has been specially developed for the harsh environmental conditions found in mobile machines. The modular architecture separates the computing unit and display functionality. The AI accelerator enables AI-supported image processing and environmental perception. Due to multiple CAN, Ethernet, USB, and camera interfaces as well as compliance with functional safety and cybersecurity standards, the AI-capable controller is suited for future-oriented automation, safety, and telematics solutions, stated the Austrian-Italian supplier.

"FusionAI is a powerful, highly versatile computing platform: it can, for example, be used as a central computing platform in the machine, for AI applications, as a display controller, or, in combination with the connectivity module, as a telematics unit. In addition, FusionAI supports various security functions such as secure display or touch input and already meets the requirements of the Cyber Resilience Act," explained Christiana Seethaler, Vice President of Product Development at TTControl.

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> “The collaboration with Horsch is very exciting and informative for us, as FusionAI enables us to support the realization of the new generation of smart, software-defined agricultural machinery.
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> *Christiana Seethaler (Vice President of Product Development at TTControl, source: Nicky Webb)*