

Ball Valve 543 Pro

Automating sustainable agriculture with modular ball valves

Customer reference: Kilter, Norway

The agricultural company Kilter implements ball valves by GF Piping Systems to precisely and reliably distribute herbicides.

The Ball Valve 543 Pro enables the autonomous and precise application of herbicides



Feeding 10 billion people while simultaneously becoming more sustainable requires big changes to the current agricultural industry. This means that the entire sector must protect the environment by maximizing the yield on smaller fields. To meet these challenges, Norwegian company Kilter has created a solution: Their AX-1 weeding robot is the first fully autonomous robot to use a Deep Learning Neural Network to ensure healthy plants and enable a more sustainable food production. For optimal results, the AX-1 relies on ball valves by GF Piping Systems to operate the tank system.

Project background

Thanks to its Neural Network, Kilter's AX-1 autonomous farming robot is capable of accurately navigating fields and applying a precise amount of herbicide to weeds without coming into contact with crops or the soil. This precision dramatically increases efficiency which means that farmers can reduce their herbicide usage by 95%. But in order to enable the reliable delivery of herbicide while also ensuring that only the necessary number of micro-droplets is released, Kilter requires a high-performance valve system within the AX-1. Here, the company selects the two-way Ball Valve 546 Pro and three-way Ball Valve 543 Pro by GF Piping Systems.

Technical solution selected

The lineup of the Ball Valve 546 Pro and 543 Pro is the newest generation introduced by the Swiss flow solutions provider. They feature two and three outlets respectively and have been developed for industrial use. Made from a variety of polymers depending on the application, the ball valves are corrosion-free and require very little maintenance. And, due to their modular design, the 546 Pro and 543 Pro can be adapted to fulfill specific needs. In addition to a wide range of materials and dimensions, options include LED position feedback sensors, electric, pneumatic and smart actuators, as well as a spring return unit ("dead man's lever") for added safety.

Improvements achieved

In total, one AX-1 farming robot features seven ball valves by GF Piping Systems. As part of the 50-liter tank system, their reliable and precise operation ensures that the AX-1 can fulfill its task of applying the perfect amount of herbicide. At the same time, they also help to meet safety requirements: The two valves used to empty the tank system are fitted with a spring return unit (a mandatory feature in Norway) which prevents unintentional drainage. Throughout the project, GF Piping Systems offers support and is able to modify the valves with a larger lever for Kilter that reduces the physical effort during operation. Finally, the ball valves also contribute to Kilter's sustainability efforts as they contain 20% bio-attributed PVC. As a result, the AX-1 farming robot benefits farmers, the environment, and ultimately consumers.



The Kilter AX-1 is fitted with seven Ball Valves by GF Piping Systems that are part of the tank system.



Thanks to the modular Ball Valve 543 Pro, the autonomous robot can precisely and safely mix and distribute herbicides.

Customer benefits

- The Ball Valves 546 Pro and 543 Pro offer a modular platform that can be configured to meet the demands of the customer.
- Long-lasting materials and digital interfaces make the 546 Pro and 543 Pro a futureproof option for industrial applications.
- GF Piping Systems offers customers support in all project phases and can help them find the optimal solutions for their specific needs.

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