

# THE NEXT BIG THING IN AG SPRAYING IS BEING DEVELOPED ON MAIN STREET IN HUMBOLDT

The innovation in Ladd McCluskey's lab on Humboldt's Main Street isn't limited to scale miniatures. The company's engineering and production expertise is also poised to make a big impact on environmental protection, water resource conservation, spray-time efficiency, and farmer safety.

McCluskey is part of a team introducing Merlin IC System, a device to optimize the application of crop protection chemicals using valves with built-in pulse wave modulation valves and ultrasonic flow meters.

The Merlin IC System is the brainchild of Bob Beggs and Kurt Kamin, two long-time experts in limiting off-target spraying and reducing drift on ag sprayers. Beggs and Kamin are from Wisconsin and owned DRT (Drift Reduction Technologies). They have a million acres of spraying experience under their belts. The new South Dakota-based company formed when McCluskey joined the team is called Latitude-Ag.

Unique to the market, the Merlin IC System is capable of multiport-chemical injection allowing applicators and farmers to monitor multiple flow rates and precisely control the application of each chemical in every section of the boom. The system replaces section flush valves or end caps with 180 degree sweeps and aggressively returns the solution to the section feed. By eliminating dead ends and continuously circulating the chemicals, the Merlin IC System expedites the clean-out process, reduces operator exposure, and limits environmental contamination.

Designed to be an aftermarket add-on to any sprayer, applicators and farmers can get more precise application and faster clean-outs without purchasing new equipment. With an aggressive recirculation system, clean-out takes less than 5 minutes.

Beggs and Kamin came to McCluskey with a pencil sketch of what they wanted. They even had a 3D-printed model, but it was printed on a hobby machine. McCluskey's engineering team refined the design and produced it on their advanced 3D printers out of Nylon-12, a super durable product. Successful testing of the Merlin IC System has been ongoing for three years.



*The Merlin IC System device.*

"We wanted it super quick, super easy to change. And it will allow you to spray two chemicals at once and not have to modify anything on the sprayer. It's not going to affect your warranty – you don't have to cut into any hoses, no pipes, no nothing," McCluskey said. The system is also ISOBUS compatible with existing displays in tractor cabs.

The highly-efficient and cost-effective system can start and stop injected product in any section – making it ideal for buffer zone management, variable rate mapping prescriptions and boundary management.

Latitude-Ag plans to sell Merlin IC through equipment dealerships. Additional testing is ongoing with the University of Nebraska and Latitude-Ag plans to have the product ready in spring 2023.

Development of a product such as this is typically a 10-year process. But McCluskey, an expert in rapid prototyping via his advanced 3D printing technologies, took this project from conception to market in just 10 months. The speed of iteration is also due in large part to the freedom he provides to the company's skilled engineers and talented production specialists. ■