

Industry Insight

R U Ready? GPS Tech Update



By Ken Rost of Frost Services

Tech Update: GPS Guided Sprayers

Spray applications are a critical tool for turf grass management. The emergence of targeted pesticides and growth enhancement products ensure that spray applications will continue on the golf course. The cost of turf spray products prohibit negligent usage and require us to be as efficient as possible in all aspects of the application process. These include product selection, application timing, proper nozzle selection, proper mixing, and accurate application

for proper coverage. Safety for the applicator and patrons should not be overlooked either. All aspects of the application process need to be performed at a high level to ensure success.

The latest technology to emerge addresses the accuracy in application and coverage using GPS guided spray at every nozzle position. That's right, every nozzle position. It's probably a concept that came to your mind when toggling switches for your boom section valves in order to prevent over



spraying or under spraying. You may have thought, ‘Can’t this be done automatically?’ Our cousins in the agriculture industry have gone as far as GPS guided boom section control and pulsation at each nozzle, but never to the level of individual nozzles controlled by GPS.

Two GPS guided spray systems have emerged this year. Capstan introduced a system to the market at the GIS in Las Vegas which is a product combination of Capstan Sharp Shooter/Pin Point system and Raven’s Envisio Controller. The Capstan components are responsible for the individual nozzle on/off function as well as flow control using pulse technology (no different from the fuel injectors in your car). The Raven components are responsible for GPS information, rate determination as well as the user interface. GPS information is WAAS based with RTK correction to get the best accuracy possible. The nozzle control devices are solenoids that attach to the diaphragm check valves on Wilger nozzle



bodies.

The other system that was shown at the GIS in Las Vegas was the Seletron system offered by the Italian company, Arag. This system is a complete aftermarket package that includes all of the components manufactured by Arag. The Seletron system uses a remote mounted computer (RCU) that communicates to the nozzle devices on an isobus system. The RCU then connects with a user interface screen as well as the GPS receiver. The RCU controls a

choice of two nozzles and a main flow control valve to adjust for ground speed rate changes. The nozzle control devices are stepper motors that control flow just prior to the nozzles. The Seletron system uses WAAS with DGPS correction as long as there are at least 5 satellites in the open sky.

Reviewing these systems this summer, we found that both systems did perform the functions of spray with incredible accuracy relative to previously sprayed areas and also rate control relative to ground speed. The

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maximum error in GPS positioning was reported to be 10". However, we found that accuracy was better at about 2-3". Both systems allow for adjustments to be made to overlap as well as advanced nozzle on/off control anticipating an upcoming spray area. These features allow the operator to choose the level of overlap to ensure complete coverage. Both systems use two nozzles on each nozzle position

so that at low rates, one nozzle is used and at higher rates the system can use the other nozzle or both nozzles together. Both systems were able to accept prescription maps or run on boundary exclusion areas.

But that's where the similarities end. Here are some differences that we found:

As with all introductions of

- **The Capstan/Raven system could make flow adjustments for turning radius, the Seletron system did not.**
- **The Capstan/Raven system is an OEM installed system, Seletron can be fitted to any sprayer in about 6-8 hours.**
- **The Capstan/Raven system uses pulsing at the nozzles which do not allow the use of air inducted spray tip technology for drift control. The**

Seletron system allows any spray tip to be selected.

- **The Seletron system was simple to install, set up and start using. The Capstan/Raven system had a bit of a learning curve to get to an adequate confidence level for spraying.**
- **The Capstan/Raven system requires a subscription to RTK signals for GPS error corrections while the Seletron system uses DGPS for error correction and does not require a subscription.**
- **The Seletron system is about two thirds the cost of the Capstan/Raven system.**

technology to our industry, the jury will be out for a while as to the value that these tools bring to the management of turf grass. Will the value of chemical saving ever warrant the initial expense? Is there other value that we aren't considering, possibly error avoidance or labor

savings? We do know that after technologies like these emerge; we wonder what we did before without them.

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