



APPLICATION SPOTLIGHT

Cellular Wireless Telemetry for Agricultural Irrigation System



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APPLICATION:

Marc Rowley is the fourth generation of the Rowley family to grow fruit in central Utah. He was looking for a solution to remotely monitor his orchard's pump houses that are used to supply their irrigation water. Rowley Southridge Farms has multiple locations, so staying on top of everything often starts before the sun comes up and many times dinner is cold before the day is done. During the irrigation season monitoring the water supply and its proper application to a crop is paramount to helping maximizing yield. In Utah, growers own water rights. Staying in compliance and being able to manage their rights is critical to their operations.

PRODUCT SUPPLIED:

- **RANGER Cellular Transmitters** with 3 analog and 3 discrete inputs
- **SignalFire Cloud Web Application** providing 24/7 access to sensor data, alarms, reports, and history

CHALLENGE:

The objective was to find an easy to use, easy to deploy system that would allow him to monitor all the measurements in the pump houses that feed his extensive irrigation system. Marc wanted a system to remotely from either his PC or phone. He wanted to monitor the level in his water wells, pump pressure, total water flow (water rights), water pH and the ability, at any time, to turn on

or off his variable speed drives that controls his pumps. If there was an issue, he wanted a text and or email alert of the problem.

Having multiple growing sites required a lot of time on the road. With a growing operation, managing his time and knowing what needed to be taken care of was critical in order to operate efficiently.



Marc checks the status of his system from his phone.



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SOLUTION:

The SignalFire RANGER with the optional analog input card and the SignalFire Cloud provided Marc with the insight he was looking for. With a DIY user-configurable cloud monitoring system, he can configure all of his measurement parameters along with his alarm configuration from the comfort of his home or truck. He can set up text and email alerts for not only himself but for others as well. With years of historical data, he will be able to trend and download historical data across multiple growing seasons. The SignalFire Cloud allows him to deploy as many RANGERS as he chooses without limits. Weather monitoring from popular sensors with either Modbus or SDI12 communications is a future addition that he plans to add.

With his new SignalFire solution, Marc is currently monitoring the level of well and system pressure, along with average and total flow. The hydrostatic pressure sensor and gauge pressure sensor both output a 4-20mA signal. For flow, he is using a Seametrics AG2000 Irrigation Magmeter with a pulse output. The RANGER is powered with a lithium battery. At a configured interval, the RANGER will wake up, power the hydrostatic and gauge sensors, read the output, and report their values to the SignalFire Cloud. For flow, the RANGER counts pulses while it's asleep. When it wakes up to report the other measurements it also reports the total pulses counted. Within the SignalFire Cloud, Marc was able to configure his K-Factor, flow, and total units as desired. If he chooses, he can also set up an alert to let him know when he has reached his water rights limit and turn off his pump either manually or automatically with the RANGER's built-in relay.

RESULTS:

Marc says not all things can be quantified through production improvements. He hasn't put a pencil to the cost savings yet, but just knowing that he will get an alert when he gets a spike in system pressure and the average flow is not what he's expecting gives him confidence in that he can take care of those issues immediately. Most importantly he is now able to spend more time with his family and make it home for dinner on time while knowing that his RANGERS are keeping an eye on his operations. He plans on adding pH loops to the system later this year, along with another RANGER or two next year.



On this multi-generational farm, Marc's dad is making sure he gets the repair right. He, too, appreciates the benefits of the RANGER and the SignalFire Cloud. This is pump house #2 that a second RANGER is monitoring.