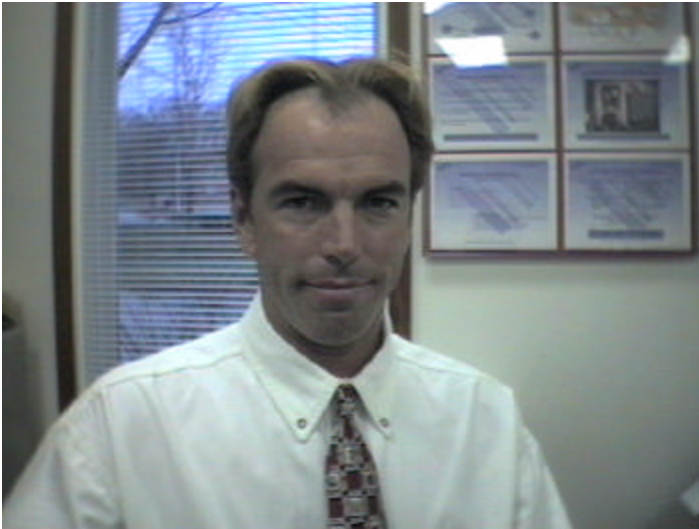


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NAVIONICS UPDATE

Serving The Rural Water And Wastewater Industries With Customer-Oriented Wireless Control and Telemetry Systems

1997 was a year of tremendous achievement for both Navionics and our customers. By listening to and working closely with the district managers and engineers, we were able to significantly advance the quality and state-of-the-art of rural water and wastewater system vigilance and control.



Jim Mimplitz

By integrating programmable control capability into the WiSTAR™ wireless controllers, the units were transformed into PLC's (Programmable Logic Controllers) -- and tailored and optimized for wireless communication...And the field-programmability has enabled us to modify control logic while on-site, and thereby react quickly and economically to evolving customer requirements.

This past Spring, we rolled out the industry's first wireless mobile monitoring and control unit, code-named the PC³ (Portable Communication, Command, and Control) Unit. This new technology equips water and wastewater district managers with the ability to monitor, view history, change setpoints, and override the automatic control system while on the road or at home after regular work hours.

Innovations such as these are the natural result of continuous advice and consultation from Navionics' customers - especially Jim Green of Consolidated Water

Service, Wally Cox of Heneghan & Associates, P.C., and Steve Fletcher of Washington County Water Company.

1997 saw the formation of a strategic alliance between Navionics and Richards Electric Motor Company of Quincy, IL. Navionics is delighted to be working alongside Richards, -- a venerated leader in the rural water and wastewater industry with considerable expertise in pump motors and drives, control panel construction, system integration, and installation.

1997 was also a year of significant advancement for the "WiSTAR™ Documentation Project", an ongoing effort to provide the highest quality documentation and drawings to our customers. Navionics completed an updated "NCL Programming Manual", an updated "WiSTAR™ Control Unit Assembly Procedures Manual", and an updated "WiSTAR™ Network Operating And Maintenance Procedures Manual", all of which are provided to the customer. Additionally, the company converted its electrical drawing operations to the industry-standard AutoCAD™ computer-aided drafting system.

Also in 1997, Navionics acquired high-resolution digital terrain maps of the entire Midwestern region, thereby equipping it with the capability to select optimal antenna tower heights for overcoming earthen obstructions. Additionally, the terrain data is fed into a communication design program which then selects antenna gains and transmission strengths so as to secure reliable signal levels at all receivers.

In the upcoming year, I hope to have a chance to visit your system, see your challenges, and listen to your ideas. In this way, we at Navionics can succeed in our striving effort to realize **your** vision of what a Wireless Control and Telemetry System can and should be.

Jim Mimplitz
President, Navionics Research, Inc.

Off-The-Shelf Wireless Controllers Offer Economical Automation For Small Water & Wastewater Systems

Making its debut at the Illinois Rural Water Association Annual Technical Conference in Effingham, IL (March 4-5, 1998) is Navionics latest addition to its powerful line of Wireless Controllers -- The **OTS™** (pronounced "oats") Off-The-Shelf Wireless Control Line.

Historically, Navionics has provided wireless control and telemetry by installing a *WiSTAR™* unit at each water tower and pump station, and subsequently tailoring custom control logic programming and signal wiring to the customer-defined control laws. For most medium and large systems, the custom control logic programming and wiring is a necessary part of the project.

However, there exist a large number of customers who are faced with virtually identical control requirements and therefore could derive substantial cost savings from their inherent economies of scale ...

The OTS™ "Tower-Pump Pair"

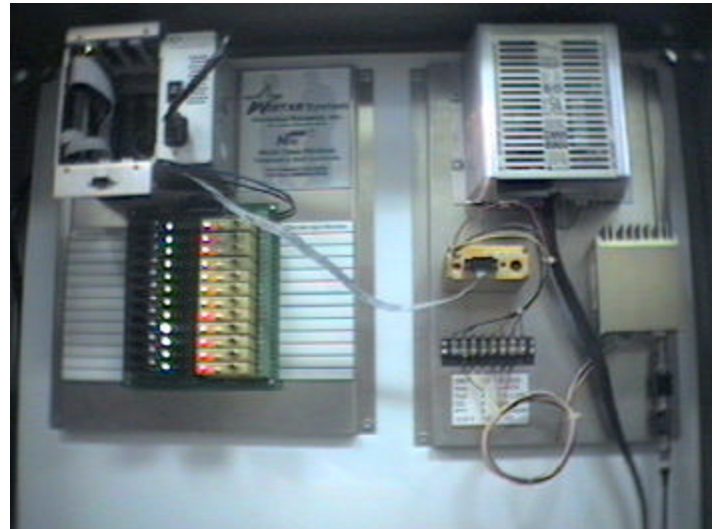
Within the rural water community, a large number of districts consist solely of a single water tower being fed by a single remote booster station equipped with 2 pumps. To address these customers economically, Navionics has developed a wireless control system which has been tailored to this application -- the economical **OTS™ "Tower-Pump-Pair"**. This pair is pre-programmed at Navionics' St. Louis Facility to perform the most commonly requested functions: User-Selectable Pump Operation Based Upon Radio Telemetry, Discharge Pressure, or Manual Control; Pump Alternation; Low-Suction Cutout; Phase-Fault Cutout; Flood Detection; Pump-Failure Detection; Alarm Contact Outputs, and more.

The OTS™ "Radio Switch"

A second **OTS™** Controller is also available -- the **OTS™ "Radio Switch"**. The Radio Switch consists of two identical units, designated *Alpha* and *Bravo*, each of which can be outfitted with up to 12 discrete input channels and 12 relay outputs.

The 12 input channels on *Alpha* control the respective relay outputs on *Bravo*, and the 12 input channels on *Bravo* provide feedback control to the respective relays on *Alpha*. In the case of a communication failure, all relays automatically fail over into the OFF (open) position.

All of the **OTS™** Controllers may be installed either by qualified customer personnel or by a local electrical contractor.



The OTS™ "Radio Switch"

How The OTS™ System Works

The **OTS™** Control Line, which was designed with an eye toward future growth and changes within the systems being controlled, is built upon the same computer platform as that which is utilized in Navionics' top-of-the-line *WiSTAR™* System. And therefore, as the customer's control requirements evolve over time, fully-custom control logic programming may be added and modified many times over while re-using the existing platform -- a very economical way to upgrade.

Future OTS™ System Designs

If you know of a need for an "Off-The-Shelf" Controller not mentioned here, please give us a call. We would greatly appreciate the chance to listen to your ideas, and to incorporate them into our **OTS™** Line of Wireless Telemetry And Control Products.

Need More Information?

Give us a call. Working together, we can configure a Navionics *WiSTAR™* System to solve your Water or Wastewater System's control and telemetry needs.

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