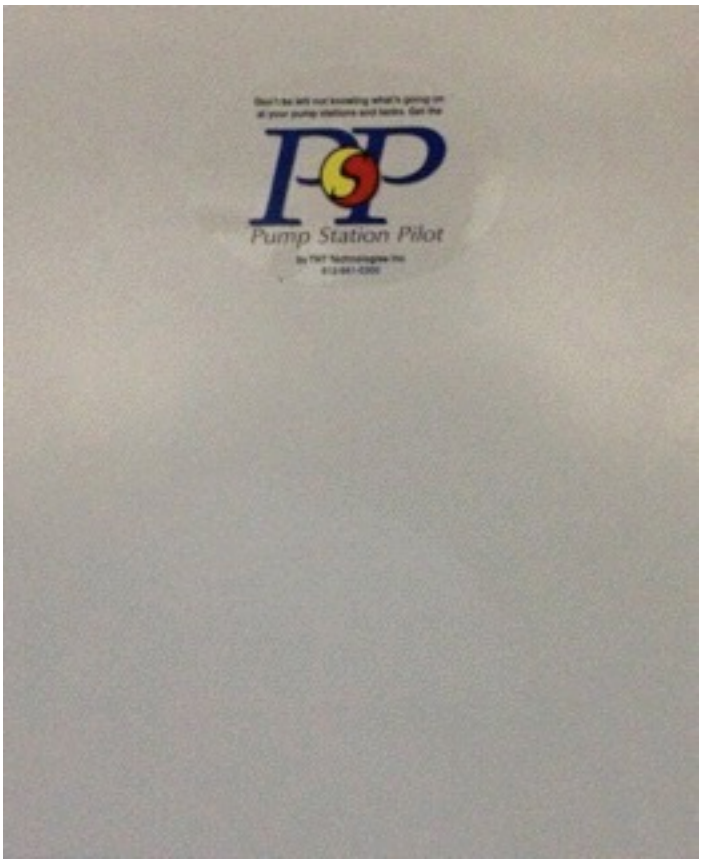
Designing a Functional and Cost Effective SCADA System for a WasteWater System Consisting of 38 Remote Pumping Stations with The PSP by TNT Technologies, Inc.

With a very limited budget and a great need for a top notch SCADA system, municipalities like the city of Mt. Washington turn to integrators like TNT Technologies, Inc. to design and implement a system that is cost efficient and able to expand in the future to meet their changing needs.



- The Pump Station Pilot was designed to cater to the needs of small to medium sized water and waste water companies like the city of Mt. Washington, Kentucky.
- The unit was designed to be user friendly and economical, yet highly functional.
- The unit gives the operator the flexibility to monitor information via e-mail without visiting the site every day and provides critical information that helps keep run time up and cost down.

Background

The city of Mt. Washington, Kentucky has approximately 15,000 people and a large waste water treatment plant that has 38 individual pumping stations.
These pumping stations all have very expensive equipment in them and require a certain level of routine maintenance in order for them to run at their greatest efficiency. In order to collect the data that is needed to keep up with the maintenance of the equipment, a person had to physically visit every site every day for the last 20 plus years.

The Challenge

The objective here, which was a real challenge, was to design a system that was complex enough to gather the data that was needed on a daily basis and have it sent to the correct person daily by means of electronic delivery. The system also needed to provide complete monitoring and control functions. The city did not have high level IT people or any engineers employed on a full time basis, so the system had to be very user friendly and not require a programming engineer to make changes or simply operate the system. That is when TNT Technologies stepped up and offered to design a system using a product that they were currently working on. It was a product that TNT had developed with a sister company for deployment overseas in under developed third world countries.

The Solution

Since there were 38 remote sites located in all parts of the city and throughout Bullitt County, they needed a system that would communicate reliably at all the sites and wanted to be able to access it from any internet capable device. TNT went to work and designed a solution that would not only monitor the activity at the pump stations but would also do all the pump station control and give them remote access to view and control all of the equipment at each site. The system alerts the operators at the very moment that any problem arises and also logs every event into a data logger. That data is sent out every day so that they can know pump run times, number of starts on each pump, wet well levels at any time in the last 24 hours, and any other data that they want to record. This was all done by the PSP and its integrated software and I/O.

The PSP has a Linux based computer on board and runs a web page so that the site can be accessed easily from any internet enabled device at any given time and does not require a central computer in order for the system to work. The backbone of the system is the cellular router that also serves as an I/O controller with an onboard I/O board. This system is non proprietary and therefore, the customer owns the software and every tool that is needed to modify the controller in any way if they have the capable personnel to do the job.The system can monitor all types of alarms including any digital, analog, or pulse signal from any type of device and it can also give a video feed back to the user if a camera is installed.

The Results

Since the final RTU was installed the system has been operating flawlessly and has provided the city with a way to cut out all overtime on weekends and holidays, because the stations no longer need to be physically checked daily. The maintenance supervisor has been able to determine every morning when he looks at the previous twenty-four hour report if there is a problem with a pump or a part of the control system. He also can determine when a pump is going to have a problem, because he can compare run times and starts for days or even months apart. The city has saved a large amount of money that was spent on gasoline and man hours due to the lack of daily inspections. The time that was spent traveling every day can now be used to do preventive maintenance instead of always doing reactive maintenance due to a failure of some type. As a testament to the success of this project, the Mayor of Mt. Washington has written a letter to TNT, which can be viewed on the tnttechnologiesinc.com website under the Products tab.